

Rudersdal Kommune  
Natur, Park og Miljø  
Øverødvej 2  
2840 Holte

DATO 11.04.2025  
SAG NR. 25053/231579  
REF. MFJ/MB

**Ansøgning om nedsivnings- og tilslutningstilladelse, kunstgræsanlæg Rundforbi Stadion – Rundforbivej 140A 2850 Nærum, matr.nr. 7 ar, Nærum By, Nærum.**

På vegne af Rudersdal Kommune, Teknik og Miljø, Øverødvej 2, 2840 Holte, ansøges hermed om nedsivnings- og tilslutningstilladelse til etablering af nyt kunstgræsanlæg ved Rundforbi Stadion, Rundforbivej 140A, 2850 Nærum, matr.nr. 7 ar, Nærum By, Nærum.

**Beskrivelse af kunstgræsanlægget**

Rudersdal Kommune ønsker at etablere et nyt kunstgræsanlæg til fodbold og amerikansk fodbold ved Rundforbi Stadions idrætsanlæg. Kunstgræsanlægget ønskes placeret på eksisterende stadionbane omkranset af atletikbanen.

Kunstgræsbanen etableres som en standard 11-mandsbane (68 m x 105 m), hvor der medtages et ekstraareal på ca. 1.250 m<sup>2</sup> i nordøst som option. Det samlede kunstgræsareal bliver da 9.485 m<sup>2</sup> inkl. arealer uden om selve fodboldbanen.

Kunstgræsanlægget udføres med en opbygning svarende til et 3. generations kunstgræssystem. Kunstgræsbanen vil blive anlagt på et planum efter afrømning af ca. 0,50 m overjord, hvorefter der udlægges et geonet. Geonettet skal minimere risikoen for, at der forekommer differenssætninger i banen, da lasten fra banen fordeles via dette. Oven på geonettet udlægges ca. 20 cm singels/nøddesten (16/32-32/64) som bund, ca. 3-5 cm ærte-/perlesten (4/8-8/16) og ca. 15 cm GAB-grus (0/16). Opbygningen afsluttes med et 50-60 mm kunstgræstæppe med infill af silica-/kvartssand og korkgranulat udlagt på en shockpad med tykkelse min. 12 mm.

Der opsættes et 1,10 m højt tilskuerhegn rundt om hele kunstgræsanlægget samt et 4 m højt panel-/gittermåltehegn bag straffesparksfeltet (ca. 40 m) i den østlige ende. Der etableres 2 stk. 1,25 m hegnslåger i tilskuerrækværket på den sydlige langside samt en dobbeltfløjet 4 m bred port i den nordøstlige ende af banearealet som driftsadgangsvej. På den nordlige langside etableres der 2 stk. hegnsåbninger i 40 cm bredde, hvilket også udføres ud for eksisterende speakerboks i det nordøstlige hjørne.

For at kunne anlægge kunstgræsbanen, er det nødvendigt at inddrage en del af de omkringliggende løbebaner, hvorfor de reduceres med 3 stk. løbespor. De resterende 3 løbebaner tilpasses det nye kunstgræsanlæg. Afstanden fra det nye tilskuerrækværk og ud til nærmeste tilbageværende løbebane/-spor vil ca. være 70 cm.

Der er ønsket et system, der overholder testkriterierne til en FIFA Quality kunstgræsbane.

Placering og opbygning af kunstgræsbanen fremgår af følgende vedlagte tegninger, se bilag 1:  
Tegning nr. 5 – Afvandingsplan i mål 1:500, dateret 11-04-2025.

Tegning nr. 14.1 – Kunstgræsbaneplan (11-mands) i mål 1:500, dateret 11-04-2025.

Tegning nr. 14.2 – Kunstgræsbaneplan (Amerikansk fodbold) i mål 1:500, dateret 11-04-2025.

Tegning nr. 23 – Boringer i mål 1:500, dateret 11-04-2025.

Tegning nr. 31.1 – Tværsnit A-A – Baneanlæg og løbebane i mål 1:25, dateret 11-04-2025.

Tegning nr. 31.2 – Principtværsnit – Baneanlæg i mål 1:10, dateret 11-04-2025.

## **Geologi**

Der er udført orienterende geotekniske boringer i området, hvor der i flere af lagfølgeboringerne øverst er truffet stærk varierende mægtigheder af fyldjord, bestående primært af sand, ler og muld. I nogle af boringerne træffes slagger eller slagerholdige materialer umiddelbart under muldlaget. Lokalt ved B4 og B5 træffes sand- og muldblandet overjord øverst.

### *Boringerne B1, B3 og B7*

Under fyldlaget træffes der blødbundsaflejringer af bl.a. gytje og tørv ned til ca. 2,20 á 4,40 m.u.t. Blødbundsaflejringerne er generelt underlejret af senglaciale nedskylds-/flyderjord lerede og siltede aflejringer til stor dybde, hvorefter der træffes glacialt moræneler eller morænesand til boringernes slutdybder.

### *Resterende boringer*

I de resterende boringer træffes generelt, umiddelbart under fyld-/muldlaget, senglaciale aflejringer med indhold af både sand, silt og ler, som underlejres af skiftende glacielle aflejringer bestående af både moræneler og morænesand, som fortsætter til boringernes slutdybde.

## **Baneopbygning**

For at reducere risikoen for sætninger i den nye kunstgræsbane, udlægges der et plastarmeringsnet (geonet) på hele planum under fremtidig bane.

Herpå opbygges med lag på ca. 20 cm nøddesten (16/32) eller singels (32/64) toppet med ca. 3-5 cm perle-/ærtesten (4/8-8/16). Stenene vil kile ned i geonettet og dermed sikre, at evt. partielle sætninger fordeles/spredes over et større areal. Perle-/ærtestenene skal sikre imod udvaskning af det overliggende 15 cm stabile grusbærelag (GAB-grus 0/16).

Efter udlægning af det stabile grusbærelag foretages en let komprimering og afretning af dette lag. Herefter udlægges en shockpad på min. 12 mm (12-23 mm afhængig af tilbudte system) og et ca. 50-60 mm kunstgræstæppe. Kunstgræstæppet udlægges i ruller med en bredde på 4 m, hvorefter det tilskæres og limes sammen.

Banernes hvide linjer skæres efterfølgende i det grønne tæppe og limes til dette.

Herefter udlægges ca. 35 kg/m<sup>2</sup> silica-/kvartssand i kunstgræstæppet, som børstes ned i bunden af tæppet for at stabilisere stråene og knuderne samt bidrage som ballast/tyngde til kunstgræstæppet. Afslutningsvis udlægges ca. 2,0 kg/m<sup>2</sup> korkgranulat, som på tilsvarende vis børstes ned mellem stråene i kunstgræstæppet. Korkgranulatet skal bidrage til de fodboldfunktionelle egenskaber.

Kunstgræstæppet er afgrænset af en kantningssten i beton med en bredde på 6 cm langs banens sider. Kantningsstenen sættes i beton.

Der etableres driftsindgang i den nord ende af kunstgræsbanen, placeret ud for den eksisterende nedkørsel til stadion.

Omkring anlægget reetableres med asfalt- og gummibelægning, som tilpasses den nye kantningssten i beton.

### Afvanding

For at sikre en god tørholdelse af fremtidige kunstgræsanlæg etableres et nyt drænsystem. Afvanding af overfladevand fra kunstgræsanlægget sker ved infiltration igennem baneopbygningen og herfra ved nedsivning igennem de underliggende jordlag samt ved opsamling i det nye drænsystem, hvorfra der etableres nødoverløb til eksisterende regnvandssystem i det nordøstlige og sydvestlige hjørne af anlægget. De nye banedræn udføres som langsgående dræn med en indbyrdes afstand på ca. 5 m og etableres med et fald på min. 3 promille.

### Regnmængder

Teoretisk beregning af regnmængden på kunstgræsanlægget er foretaget på baggrund af følgende forudsætninger:

|                                                       |         |
|-------------------------------------------------------|---------|
| Northing (WGS84 ZONE 32)                              | 6192376 |
| Easting (WGS84 ZONE 32)                               | 721774  |
| Årsmiddelnedbør [mm]                                  | 696     |
| Middelværdi ekstrem døgnnedbør DMI Klimagrid [mm/dag] | 27,5    |

IDA Spildevandskomiteens regneark til Skrift 32, Regional Regnrækkeværktøj v2023

Med udgangspunkt i en årsnedbør på ca. 696 mm fås følgende:

Baneareal = 9.485 m<sup>2</sup>

Løbebane = 1.400 m<sup>2</sup>

Samlet areal = 10.885 m<sup>2</sup>

Samlet regnmængde på kunstgræsanlægget = 7.575 m<sup>3</sup>/år.

Ift. de udførte geotekniske borer, og med baggrund i DHI-rapporten, *Vandbalance for kunstgræsbaner, Modelling af fordampning, infiltration og drænflow, rapport januar 2017*, så kan de

afledte mængder opdeles i tre kategorier, henholdsvis fordampning, drænmængde og infiltration.

I dette tilfælde skønnes der at være en årlig fordampning på 26 %, en årlig infiltration på 64 %, og en årlig afledt drænmængde på 10 %, i det jorden er klassificeret som en blanding af moræner og sand jf. de geotekniske borer, som er udført på stedet.

### **Drænmængder**

På baggrund af den samlede regnmængde beregnet i afsnittet "Regnmængder" samt den årlige afledte drænmængde på 10 %, findes den samlede regnmængde, der afledes til dræn fra arealet:

Samlet regnmængde der afledes til dræn, bliver ca. 757 m<sup>3</sup>/år.

Drænmængder afledes som overløb til det eksisterende regnvandssystem i det nordøstlige og det sydvestlige hjørne.

### **Nedsivningsmængder**

På baggrund af den samlede regnmængde beregnet i afsnittet "Regnmængder" samt den årlige infiltration på 64 %, findes den samlede regnmængde, der nedsives på arealet at være ca. 4.848 m<sup>3</sup>/år.

### **Håndtering af regnmængder**

Til eftervisning af fremtidige kunstgræsanlægs evne til håndtering af regnmængderne er der udført en beregning for det nødvendige opstuvningsvolumen ved nedsivning gennem de underliggende jordlag samt ved afledning (som nødoverløb) til eksisterende regnvandssystem med et flow på samlet 2 l/s (1 l/s i hver ende af anlægget). Ved nedsivning til de underliggende jordlag regnes der med 64 % af oplandsarealet og for afledningen til dræn, som afleder til eksisterende regnvandssystem, regnes der med 10 % af oplandsarealet jf. betragtningen under afsnittet "Regnmængder". Overfladeafstrømningen fra den omkringliggende løbebane er indregnet i nedenstående beregninger.

#### Nedsivning - baneareal

Ved nedsivning gennem de underliggende jordlag betragtes banen som et regnbed, hvor det nødvendige opstuvningsvolumen findes i baneopbygningens stenlag, da der her vil være et porevolumen på ca. 30 %. For nærværende anlæg vil det mulige opstuvningsvolumen udgøre ca. 569 m<sup>3</sup> (9.485 m<sup>2</sup> x 0,20 m x 0,30). Det reelle nedsivningsareal (bundarealet) findes ved at fratrække arealet af projekteret drænrender på 683 m<sup>2</sup> (b = 0,30 m x l = 2.275 m) fra det samlede baneareal på 9.485 m<sup>2</sup>. Ved brug af IDA Spildevandskomiteens regneark "Spildevandskomiteens LAR-regneark v2023" kan nedenstående beregning med følgende inputs opstilles:

- Kommune – Rudersdal
- Gentagelsesperiode T = 5 år
- En samlet sikkerhedsfaktor på 1,30.
  - Sikkerhedsfaktor på afstrømning: 1,0
  - Scenariefremskrivning: 1,3

- Biasfaktor: 1,0
- Befæstet areal =  $6.966 \text{ m}^2$  ( $(9.485 \text{ m}^2 + 1.400 \text{ m}^2) \times 0,64$ )
- Regnbedets bundareal =  $8.802 \text{ m}^2$  ( $9.485 \text{ m}^2 - 683 \text{ m}^2$ )
- Jordens hydrauliske ledningsevne (K) =  $9,2 \times 10^{-6} \text{ m/s}$  (NE3 i geoteknisk rapport bilag 2)

Den nødvendige opstuvningshøjde fås til 0,03 m med et opstuvningsvolumen på ca.  $235 \text{ m}^3$ . Da baneopbygningens stenlag har et porevolumen på 30 %, så bliver den reelle opstuvningshøjde i dette ca. 8 cm. Regnbedet vil have en tømme tid på 1 time, hvilket ligger inden for den anbefalede maksimale tømme tid på 72 timer. Det bemærkes, at der ved brug af Spildevandskomiteens regneark indregnes et ekstra sikkerhedstillæg på 20 % for koblede regnhændelser.

Ud fra ovenstående vil fremtidige kunstgræsanlæg have et tilstrækkeligt opstuvningsvolumen i stenlaget til håndtering af den årlige infiltrationsmængde.

Der gøres yderligere opmærksom på, at der også vil ske nedsivning i fremtidige drænrender, hvorfor dette udgør en ekstra sikkerhed for anlægget samt en reduktion i antallet af nødoverløb.

#### Afledning – drænsystem

Fremtidige drænsystem vil som nødoverløb aflede regnmængder fra maks. 10 % af oplandsarealet til eksisterende regnvandssystem i nordøst og nordvest. Dræn etableres med fald fra midten og ud mod tilslutningspunkter i hver ende, hvorfor afstrømningen til hvert punkt anses for at være halvdelen af det samlede befæstet areal. Afledningen fra drænene styres via en afløbsregulator, som sikrer en udledning på maks. 1 l/s til hvert tilslutningspunkt, hvormed den samlede udledning fra banearealet i alt bliver maks. 2 l/s.

Ved brug af IDA Spildevandskomiteens regneark "Spildevandskomiteens Regionale Regnrækkeværktøj v2023" kan nedenstående beregning med følgende inputs opstilles for definering af forsinkelsesvolumets nødvendige størrelse:

- Områdets geografiske placering
- Gentagelsesperiode  $T = 5$  år
- En samlet sikkerhedsfaktor på 1,30.
  - Sikkerhedsfaktor på afstrømning: 1,0
  - Scenariefremskrivning: 1,3
  - Biasfaktor: 1,0
- Befæstet areal =  $1.088 \text{ m}^2$  ( $(9.485 \text{ m}^2 + 1.400 \text{ m}^2) \times 0,10$ )
- Afledning: 2 l/s

Det nødvendige bassinvolumen bliver dermed  $27 \text{ m}^3$  og har en tømme tid på 3,75 timer, hvilket ligger inden for den anbefalede maksimale tømme tid på 72 timer.

Da baneopbygningens stenlag har et porevolumen på 30 %, så bliver den nødvendige opstuvningshøjde i dette ca. 1 cm for at opnå et volumen på  $27 \text{ m}^3$ .

Ud fra ovenstående vil fremtidige kunstgræsanlæg have et tilstrækkeligt opstuvningsvolumen i stenlaget til håndtering af den årlige drænmængde.

Det bemærkes, at der ved brug af Spildevandskomiteens regneark indregnes et ekstra sikkerhedstillæg på 20 % for koblede regnhændelser.

#### Samlet håndtering af regnmængder

Med udgangspunkt i de to beregninger vil der være en samlet opstuvning på ca. 9 cm i baneopbygningens stenlag for at opnå det nødvendige volumen. Stenlaget vil derfor have et tilstrækkeligt opstuvningsvolumen til håndtering af kommunens serviceniveau på  $T = 5$  år, se bilag 3 for bassinberegninger.

#### **Granulatfang**

Langs kunstgræsanlæggets sider monteres der et granulatfang ved foden af hegnet i højden ca. 40-60 cm. Dette monteres for at begrænse spredning af korkgranulat ud på de tilstødende arealer ifm. brug og drift af banen.

#### **Drift**

Erfaringer viser, at der typisk vil være behov for at tilføre ca. 0,5-1 tons korkgranulat efter første vintersæson. De efterfølgende år forventes påfyldning at være maks. 0,5 tons korkgranulat årligt. Årsagen til, at der skal tilføres mere det første år skyldes kompaktering samt når sneen ryddes, vil en del af korkgranulatet sammen med sneen blive flyttet med ud til banens randzoner. Når sneen smelter, vil korkgranulatet opfylde den frie stråhøjde i disse områder. Det vil herefter være problematisk at børste denne mængde af korkgranulat retur ind på kunstgræsbanens øvrige arealer, når sneen er smeltet. Ved næste vintersæson vil banens randzoner allerede være fyldt op med korkgranulat og de ryddede mængder af korkgranulat vil derfor lægge sig på overfladen af kunstgræstæppet og vil kunne børstes tilbage ind på banens øvrige områder. Oplæg af korkgranulat forventes opbevaret overdækket.

I forbindelse med vinterbekæmpelse vil der blive brugt mekanisk snerydning. Sneen vil blive oplagret i 11-mandsbanens ydre randzoner.

#### **Miljø- og planforhold**

Den eksisterende stadionbane er beliggende på Rundforbi Stadion omkranset af en atletikbane. Banen er beliggende i byzone og omfattet af Byplanvedtægt 14.

Syd, sydvest og øst for anlægget er de øvrige fodboldbaner til idrætsforeningen. Umiddelbart øst for banen ligger Rundforbi Svømmehal, mens Rundforbi Tennishal er beliggende syd for banen. Hertil afgrænses anlægget af randbeplantning, som grænser op til tilstødende vej og boligkvarter mod syd og øst samt af Kikhanerenden og tilstødende marker mod vest samt tilstødende vej og boligkvarter mod nord.

Den korteste afstand mellem det kommende kunstgræsanlæg og matrikelgrænsen til nærmeste arealfølsomme anvendelse, herunder beboelsesejendomme, er ca. 80 m nordøst for idrætsanlægget på den modsatte side af Egebækvej.

### *Naturforhold*

Nærmeste Natura 2000-område, nr. 144 - Nedre Mølleådal og Jægersborg Dyrehave samt habitatområde nr. 191 - Nedre Mølleådal er beliggende ca. 325 m øst for banen. Kikhanerenden er ikke en del af vandløbssystemet, som er beliggende inden for eller opstrøms Natura 2000-området.

Nærmeste § 3-beskyttede naturtype er vandløbet, Kikhanerenden, som er beliggende ca. 15 m vest for banen. På den nærliggende strækning ift. banen af Kikhanerenden, er der desuden registreret hhv. § 3-beskyttet sø og engarealer.

### *Recipienter*

Overfladevandet fra banen vil nedsive gennem banens opbygning til hhv. jordmatricen og dræn med nødoverløb til Kikhanerenden. Herfra ledes vandet mod nord, inden det udledes i Øresund, syd for Vedbæk Havn.

### Kikhanerenden

Det § 3-beskyttede vandløb Kikhanerenden er beliggende ca. 15 m vest for banen. Strømningsretningen i vandløbet er mod nord, hvor det løber igennem flere § 3-beskyttede naturtyper og fredede områder samt 2 BNBO-områder, inden det munder ud i Øresund, syd for Vedbæk Havn.

Kikhanerenden er et naturligt vandløb med typologi RW1, således svarende til et mindre vandløb med oplandsstørrelse op til 10 km<sup>2</sup> og bredde på maks. 2 m. Vandløbets samlede økologiske tilstand er dårlig som følge af kvalitetselementet for fisk. Hertil er den kemiske tilstand for vandløbet ukendt. Jf. vandplanen er der for vandløbet planlagt restaureringsindsatser og indsatser ift. regnvandsbetingede udledninger fra overløb. Miljømålet for Kikhanerenden er god økologisk og kemisk tilstand med bl.a. faunaklasse 5. Sommermiddelvandføringen nedstrøms Rundforbi er i årene 2015-2017 målt til 24 l/s.

Der er umiddelbart ikke risiko for manglende målopfyldelse i 2027 af miljømål for den samlede økologiske tilstand. For den kemiske tilstand er risikoen ukendt, som følge af den ukendte eksisterende tilstand.

### *Drikkevandsinteresser*

Banen er beliggende inden for område med særlige drikkevandsinteresser (OSD), men uden for indvindingsopland samt uden for nitrاتفølsomme indvindingsområder (NFI) og indsatsområder (IO) inden for NFI. Nærmeste almene vandværk, Trørød Vandværk, er beliggende ca. 650 m nord for banen. Den nærmeste vandværksboring, en ældre vandværksboring fra 1959, (DGU nr. 194.207) er beliggende 640 m nord for banen

Nærmeste boringsnære beskyttelsesområde (BNBO) er beliggende ca. 650 m nord.

### *Grundvand*

Ca. 70 m nordvest for banen er der jf. Rudersdals kommuneplan 2021 registreret grundvandsdannende opland, inden for disse områder skal der udvises ekstra opmærksomhed ift. aktiviteter, der kan forurene grundvandet. Hertil er grundvandsstrømningsretningen i det primære kalkmagasin mod øst og jf. den geotekniske rapport er det terrænnære grundvandsspejl pejlet til min. 1,90 m under terræn (m u.t.).

Miljømålet for det terrænnære grundvand er god kemisk tilstand samt god kvantitativ tilstand. Den nuværende kemiske og kvantitative tilstand er ringe, på baggrund af pesticider samt udnyttelsesgraden.

Miljømålet for det regionale grundvand er god kemisk tilstand samt god kvantitativ tilstand. Den nuværende kemiske tilstand er ringe, på baggrund af forekomst af bly og chrom. Den kvantitative tilstand er god.

Miljømålet for det dybe grundvand er god kemisk tilstand samt god kvantitativ tilstand. Den nuværende kemiske tilstand er ringe. Den kvantitative tilstand er ringe som følge af udnyttelsesgraden.

#### *Jordbundsforhold*

Området er beliggende uden for områdeklassificeringen og er ikke yderligere forureningskortlagt.

#### *Generelle miljøforhold for drænvand fra kunstgræsbaner*

Der er over de seneste år lavet en række undersøgelser, som alle har til hensigt, at skabe klarhed over den miljøbelastning som kunstgræsbaner har eller ikke har på miljøet.

Den nyeste rapport d.d., som har fokus på drænvand fra kunstgræsbaner, har titlen Koncept for regulering af drænvand fra nye Kunstgræsbaner og er udarbejdet af DHI for BIOFOS A/S og HOFOR A/S i august 2017. Rapportens undersøgelser bygger på analyser fra 45 etablerede kunstgræsbaner, i alt 158 stikprøver. Analyseresultaterne stammer hovedsageligt fra baner med SBR infill. Rapporten konkluderer på baggrund af analyseresultaterne, at middelkoncentrationerne af bly, kobber, zink og DEHP i drænvand fra kunstgræsbaner ligger på niveau med regnvandsstrømning fra parcelhuskvarterer.

Rapporten konkluderer yderligere at:

*"Koncentrationen af udvalgte miljøskadelige stoffer i drænvand fra kunstgræsbaner med SBR infill fra to forskellige producenter viser, at der er betydelige forskelle i de målte koncentrationer af en række af metallerne, bl.a. zink i drænvandet. Da der ikke er nøjagtigt kendskab til opbygningen af de pågældende baner, er det ikke muligt at sige om variationen skyldes forskel i SBR infillet eller andre materialer på banerne.*

*Det er derfor ikke muligt at konkludere ensidigt omkring udvaskningen af miljøskadelige stoffer fra de forskellige typer infill på baggrund af de tilgængelige data."*

/1/, afsnit 2.1.3 side 8.

I henhold til DHI-rapporten (2017) er det primært zink, som udgør et problem i drænvand. Kork, som anvendes i nærværende bane, er et naturligt infill produkt og indholdet af zink forventes derfor at være langt lavere end i SBR. Endvidere forventes det generelt, at koncentrationen af miljøfremmede stoffer i overfladevandet er signifikant lavere ift. kunstgræsbaner med SBR-, EPDM eller TPE-infill, dog kan der være et bidrag fra shockpaden.

Det kan ikke udelukkes, at der kan forekomme pesticidrester, fungicidrester eller nedbrydningsprodukter heraf i overfladevandet, som er udvasket fra korken. Såfremt der udvaskes pesticidrester, fungicidrester og nedbrydningsprodukter heraf fra korken, vil nedsivningen via jordmatricen kun medføre en rensning af immobile eller let omsættelige stoffer. Da der ikke foreligger data vedr. indholdet af pesticider, fungicider eller nedbrydningsprodukter heraf i drænvandet fra kunstgræsbaner, er det således ikke muligt på nuværende tidspunkt at vurdere, hvorvidt grundvandskvalitetskriterierne og miljøkvalitetskravene vil blive overholdt. Det vurderes dog, at indholdet af de øvrige miljøfremmede stoffer i drænvandet ikke vil medføre overskridelse af grundvandskvalitetskriterierne eller miljøkvalitetskravene.

Kork anses for at være den mest miljøvenlige type infill. Databladet dokumenterer, at produktet ikke er toksikologisk og at det ikke har nogen miljømæssige skadelige effekter. For datablade, se bilag 4.

Infill af typen SBR gummigranulat har ofte været i fokus i forbindelse med udvaskning af miljøfremmede stoffer, men også andre syntetiske materialer, såsom kunstgræstæppe og lim kan afgive miljøskadelige stoffer /1/.

### **Tømidler**

I forbindelse med vinterbekæmpelse, vil der primært blive brugt mekanisk snerydning. Sneen vil blive oplagret i de ydre randzoner af kunstgræsbanen.

### **Vurdering iht. BAT**

Når der ansøges om nedsivnings- og tilslutningstilladelse samt indirekte udledning via jordmatricen og nødoverløb, skal projektet vurderes i forhold til anvendelsen af BAT. I den forbindelse skal der redegøres for (1) valg af materialer, (2) miljøfremmede stoffers påvirkning af miljøet (3) tiltag til forebyggelse af spredning af infill til omgivelserne samt (4) påvirkning af recipient ved brug af tømidler /1/.

1) En række af syntetiske materialer indgår i opbygningen af en kunstgræsbane.

Udvaskningstests af alle de syntetiske materialer eksisterer imidlertid ikke for nuværende og datablade af produkterne giver kun begrænsede og varierende informationer. I nuværende situation er disse datablade, dog det bedste vi har at vurdere produkterne ud fra. I bilag 4 findes datablade for de produkter, der forventes, vil blive brugt til nærværende bane.

**Infill:** DHI har i 2017 /1/ samlet eksisterende dokumentation for udvaskning af miljøfremmede stoffer fra kunstgræsbaner i Danmark. I undersøgelsen indgår stikprøver fra 32 forskellige baner med SBR infill. Der er udtaget flere stikprøver fra de enkelte baner. Eftersom drænvandsprøverne er udtaget fra eksisterende baner, er det ikke muligt at dokumentere, om udvaskningen kommer

fra selve SBR infillet. Endvidere indeholder undersøgelsen ikke data over kunstgræssystemerne og deres opbygning. Banerne er etableret i perioden 2005 – 2016.

Resultaterne fra baner med SBR infill konkluderer, at de tungmetaller, der udvaskes, hovedsageligt vil blive bundet i jordmatricen og at ftalaterne vil nedbrydes biologisk under de iltrige forhold i de øverste lag.

I nærværende projekt er der valgt infill af typen korkgranulat, da den umiddelbart vurderes at indeholde færre miljøfremmede stoffer end f.eks. g (ELT) gummigranulat.

Databladet dokumenterer, at produktet ikke er toksikologisk og at det ikke har nogen miljømæssige skadelige effekter. Der er desuden, i bilag 4, vedlagt en REACH-erklæring omhandlende pesticider i produktet. Af REACH-erklæringen fremgår det, at korken, der forventes anvendt ifm. nærværende projekt, ikke indeholder pesticider.

**Kunstgræstæppe:** Databladet angiver, at produktet består af PE og PP, men angiver ellers ingen miljømæssige specifikationer. PE og PP anses ikke for problematiske i forbindelse med udvaskning. Hertil er der vedlagt en udvaskningstest af tæppet, som viser, at koncentrationen af PFAS ikke overskrider miljøkvalitetskravene eller grundvandskvalitetskriterierne.

**Shockpad:** Databladene angiver, at produktet består af termisk bundet polyolefin (PE, PP, PMP eller PB-1), hvilket er et produkt, som også bruges til legetøj og indpakning af mad, hvorfor det må anses for ikke at være miljøfarligt. Dertil kan produktet genbruges.

**Lim:** Typen af lim, som anvendes, vil afhænge af vejrmæssige faktorer, der kan derfor være stor variation mellem produkterne. Databladet angiver, at produktet ikke er biologisk nedbrydeligt og ikke har tendens til ophobning i organismer men, at det kan være svagt toksisk i akvatiske miljøer.

**Backingtape:** Databladet angiver, at produktet består af polyester og PE, som ikke anses for at være problematiske i forbindelse med udvaskning og nedsivning. Databladet angiver endvidere, at produktet ikke har nogen toksikologisk eller økologiske bivirkninger.

2) Det kan ikke udelukkes, at der kan forekomme pesticidrester, fungicidrester eller nedbrydningsprodukter heraf i overfladevandet, som er udvasket fra korken. Såfremt der udvaskes pesticidrester, fungicidrester og nedbrydningsprodukter heraf fra korken, vil nedsivningen via jordmatricen kun medføre en rensning af immobile eller let omsættelige stoffer. Da der ikke foreligger data vedr. indholdet af pesticider, fungicider eller nedbrydningsprodukter heraf i drænvandet fra kunstgræsbaner, er det således ikke muligt på nuværende tidspunkt at vurdere, hvorvidt grundvandskvalitetskriterierne og miljøkvalitetskravene vil blive overholdt. Det vurderes dog, at indholdet af de øvrige miljøfremmede stoffer i drænvandet ikke vil medføre overskridelse af grundvandskvalitetskriteriet eller miljøkvalitetskriterierne. Der vil ikke blive brugt pesticider.

3) Da banen etableres med kork, forventes det, at der ikke forekommer spredning af mikroplast fra banen.

4) Se afsnit om tømidler.

### Risikovurdering

Kunstgræsanlægget er beliggende primært inden for særlige drikkevandsinteresser (OSD), men uden for indvindingsopland samt uden for nitratfølsomme indvindingsområde (NFI). Hertil er nærmeste BNBO beliggende ca. 650 m nord for banen. Nærmeste vandforsyningsboring er beliggende ca. 640 m nord for banen.

I forbindelse med vinterbekæmpelse, vil der kun blive brugt mekanisk snerydning.

Der er ikke for os nogen kendte undersøgelser af miljøfremmede stoffer i drænvand fra kunstgræsbaner med kork infill. Der er lavet udvaskningstest for korkgranulat særskilt, dvs. uden bidraget fra græstæppe, backing, lim og shockpad og resultatet er relativt lavt for de testede tungmetaller (Pb, Cd, Cr, Sn, Hg) bortset fra Zn som måles til en koncentration på 29 ug/l.

Det beskrives i DHI fra 2013 at *"Resultaterne af laboratorieforsøgene i Miljøstyrelsens undersøgelse viser, at en række miljøskadelige stoffer kan udvaskes fra både elastisk infill (polymerisk) og kunstgræs med en mulig miljømæssig risiko ved evt. overløb af drænvand til nærliggende vandløb. Det vurderes dog på baggrund af de udenlandske lysimeter- og pilotforsøg, der viser væsentligt lavere udvaskning end i laboratorietest, at der kræves målinger af stofkoncentrationerne under reelle forhold på boldbaner for at kunne vurdere risikoen."* /2/.

Det vurderes derfor, at koncentrationerne af Zn, der er konstateret i udvaskningstest, sandsynligvis er overestimeret og at udvaskningen af metaller under de faktiske forhold således vil være lavere, end dem der fremkommer ved en udvaskningstest.

Hertil vil den eksisterende gødskning af græsbanen ophøre ifm. omlægning til kunstgræs, hvormed risikoen for udvaskning af næringsstoffer til grundvandet reduceres.

Som følge af valg af infill samt de øvrige materialer i kunstgræssystemet, vurderes det, at indholdet af miljøfremmede stoffer i overfladevandet fra banen, som nedsives, ikke vil medføre en væsentlig påvirkning af grundvandet. Evt. metaller som kan udvaskes fra bl.a. kunstgræstæppet vurderes at blive adsorberet som følge af lermineralelementerne i jordlagene under banen. Hertil vurderes det, at evt. blødgørere vil blive omsat i jorden under banen.

Det terrænnære grundvand er vurderet til ringe kemisk tilstand på baggrund af pesticider, men med god kvantitativ tilstand. Det regionale grundvand er vurderet til ringe kemisk tilstand på baggrund af bly og chrom, men med god kvantitativ tilstand. Det dybe grundvand er vurderet til ringe kemisk tilstand og ringe kvantitativ tilstand. Der vil ikke blive anvendt kloridholdige tømidler eller pesticider i forbindelse med nærværende projekt. Dertil vil nedsivningen indenfor projektområdet være uændret og vil derfor ikke påvirke udnyttelsesgrad og grundvandsdannelse. Dermed vurderes det, at nedsivningen af overfladevandet fra omlægning til kunstgræsbane ikke vil være til hinder for opfyldelsen af miljømålene for det terrænnære, regionale og dybe grundvand.

På baggrund af anlæggets beliggenhed, materialevalg og de forventede koncentrationer i drænvandet vurderes det, at nedsivningen af vandet fra kunstgræsanlægget ikke udgør en risiko for grundvands- og drikkevandsressourcen.

#### Udledning af miljøfremmede stoffer til recipienter

Overfladevandet fra banen vil hhv. nedsive og udledes via jordmatricen samt nødoverløb til Kikhanerenden, som derfra løber mod nord til sit udløb i Øresund, syd for Vedbæk Havn. På strækningen, løber Kikhanerenden ligeledes nær en række § 3-beskyttede områder.

Kikhanerenden er § 3-beskyttet og miljømålsat til god økologisk og kemisk tilstand. Den nuværende samlede tilstand er dårlig som følge af kvalitetselementet for fisk. Hertil er den kemiske tilstand for vandløbet ukendt. Jf. vandplanen er der for vandløbet planlagt restaureringsindsatser og indsatser ift. regnvandsbetingede udledninger fra overløb.

Da kork er et naturligt produkt og jf. databladet ikke er toksikologisk samt har nogen miljømæssig skadelig effekt på miljøet, vurderes risikoen for udvaskning af miljøfremmede stoffer fra materialerne i kunstgræsbanen reduceret ift. anvendelsen af SBR eller EPDM.

Drænvandsmængden vurderes ikke at afvige væsentligt fra de nuværende forhold. Derved vurderes det, at recipienterne ikke vil påvirkes, som følge af en ændret udledningsmængde. Hertil udgør drænvandsmængden fra kunstgræsanlægget, grundet afledningsforholdene, vandmængderne og recipienter, forventeligt kun en marginal andel af den samlede vandmængde fra oplandet til recipienterne

Hertil vil den eksisterende gødskning af græsbanen ophøre ifm. omlægning til kunstgræs, hvormed risikoen for udvaskning af næringsstoffer til recipienter reduceres.

Vandet fra banen, inden det når den Kikhanerenden, passerer jordlag med lerindhold, hvor de positivt ladede ioner vil binde sig til de negativt ladede lerpartikler. Mængden der udledes til Kikhanerenden via jordmatricen og nødoverløb vurderes at være begrænset. Dermed vurderes det, at udledningen af overfladevand via jordmatricen og nødoverløb fra kunstgræsbanen til Kikhanerenden ikke vil være til hinder for opfyldelsen af miljømålene for vandløbet.

På baggrund af ovenstående vurderes det, at udledningen af drænvandet via jordmatricen og nødoverløb fra kunstgræsbanen ikke medfører en indvirkning på recipienterne.

Nærmeste Natura 2000-område, nr. 144 - Nedre Mølleådal og Jægersborg Dyrehave samt habitatområde nr. 191 - Nedre Mølleådal er beliggende ca. 325 m øst for banen. Da Kikhanerenden, som overfladevand fra banen udledes til via jordmatricen og nødoverløb, er ikke en del af vandløbssystemet, som er beliggende inden for eller opstrøms Natura 2000-område vurderes det således, at udledningen af vandet fra banen ikke vil medføre en påvirkning af Natura 2000-området.

### **Samlet vurdering**

Med udgangspunkt i ovenstående vurdering af vandet fra banen, materialevalget, recipienter og grundvandet vurderes det, at det kommende kunstgræsanlæg samlet set, ikke udgør en risiko for grundvand, mennesker eller det øvrige miljø, hvis den er opbygget og vandet fra anlægget håndteres som beskrevet.

### **Øvrige oplysninger**

Det kan oplyses, at der i forlængelse af denne ansøgning fremsendes anmeldelse af VVM-screening.

Hvis der måtte være spørgsmål til ansøgningen, kan henvendelse rettes til undertegnede Mikkel Frilund Jacobsen på tlf. 23 36 24 02 eller Mia Bregendahl på tlf. 30 66 30 10.

Med venlig hilsen



Mikkel Frilund Jacobsen  
Rådgivende Ingeniør  
Dines Jørgensen & Co. A/S



Mia Bregendahl  
Miljørådgiver  
DJ Miljø & Geoteknik P/S

#### Kilder

/1/ DHI for BIOFOS A/S og HOFOR A/S (2017): Koncept for regulering af drænvand fra nye Kunstgræsbaner.

/2/ DHI Lynettefællesskabet I/S (2013): Miljø- og sundhedsskadelige stoffer i drænvand fra kunstgræsbaner. Vurdering af eksisterende analyseresultater på danske kunstgræsbaner samt supplerende måleprogram på to udvalgte baner.

/2/ Sorø Kommune (2019): Regulativ for Lygterenden, Sorø Kommune

/3/ Miljøstyrelsen (2021-2027): MiljøGIS for basisanalyse for vandområdeplaner 2021-2027

Bilag 1: Tegninger som anført i ansøgningen

Bilag 2: Geoteknisk rapport

Bilag 3: Bassinberegninger

Bilag 4: Datablade

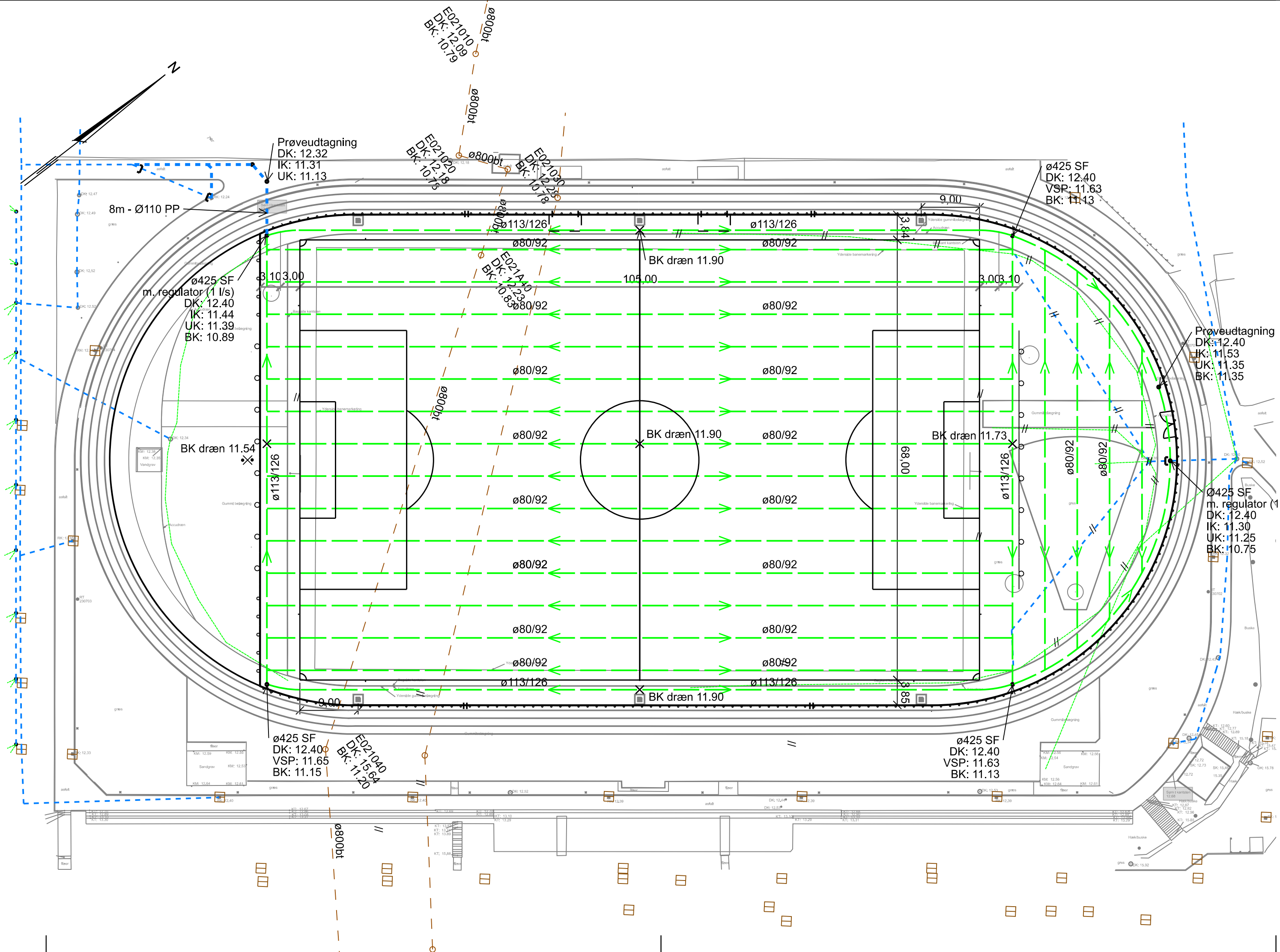
Bilag 5: Fuldmagt

#### Kopi:

Rudersdal Kommune, Natur, Park og Miljø, Øverødvej 2, 2840 Holte,  
att. Thomas Uhre Gerhauge - [tug@rudersdal.dk](mailto:tug@rudersdal.dk) & Lis Ravn - [lrav@rudersdal.dk](mailto:lrav@rudersdal.dk)

Rudersdal Kommune, Kultursekretariatet, Øverødvej 2, 2840 Holte,  
Att. Johnni Mosevang Christensen - [joch@rudersdal.dk](mailto:joch@rudersdal.dk)

## Bilag 1

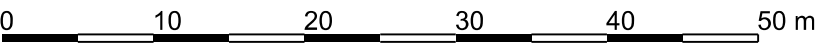


Signaturforklaring:

- Projekteret dræn Ø80/92 - Ø113/126 - min. 3‰
- Projekteret regnvandsledning
- Projekteret regnvandsbrønd
- Eksisterende afløbsledning
- Eksisterende regnvandsledning
- Eksisterende drænledning
- Eksisterende regn- og drænledning der fjernes

Referencer:

Opmåling: Landinspektørfirmaet LE34, 07.07.2023.  
Eksisterende ledninger: LER nr. 2608272, 28.06.2023.  
Indeholder data fra Geodatastyrelsen, Matrikelkortet, WMS-tjeneste.  
Indeholder data fra Styrelsen for Dataforsyning og Effektivisering, GeoDanmark, februar 2019



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|------------|---------------------------------|--------|-----------|-----------------|------------------|
| PROJEKT    | Kunstgræsbane Rundforbi Stadion |        |           | SAGS NR.        | 25053            |
| BYGHERRE   |                                 |        |           | KOORDINATSYSTEM | DKTM3            |
| ADRESSE    |                                 |        |           | KOTESYSTEM      | DVR90            |
| EMNE       | Afvandingsplan                  |        |           | TEGN. NR.       | 5                |
|            |                                 |        |           | REV. NR.        |                  |
| Tegnet af: | JHe/HK                          | KS af: | Godk. af: | Mål: 1:500      | Dato: 2025.04.11 |



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TLF: 48 26 06 66

Signaturforklaring:

- |                                                                                     |                                     |
|-------------------------------------------------------------------------------------|-------------------------------------|
|  | Kunstgræs                           |
|  | Kunstgræs - Option                  |
|  | Afmærkning - Fodbold, 11 mandsbane  |
|  | Spillerboks                         |
|  | Hegn - 4 meter                      |
|  | Hegn - 1,1 meter - Tilskuerrækværk  |
|  | Hegnsåbning i tilskuerrækværk 40 cm |
|  | Driftport                           |
|  | Projekteret lysmast                 |

Referencer:

Opmåling: Landinspektørfirmaet LE34, 07.07.2023.  
Eksisterende ledninger: LER nr. 2608272, 28.06.2023.

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| PROJEKT           |                       |            |           | Kunstgræsbane Rundforbi Stadion | SAGS NR.         | 23136 |
| BYGHERRE          | xx                    |            |           |                                 | KOORDINATSYSTEM  | DKTM3 |
| ADRESSE           | xx                    |            |           |                                 | KOTESYSTEM       | DVR90 |
| EMNE              | Kunstgræsbaneplan     |            |           |                                 | TEGN. NR.        | 14-1  |
|                   | Fodbold, 11 mandsbane |            |           |                                 | REV. NR.         |       |
|                   |                       |            |           |                                 |                  |       |
| Tegnet af: MFJ/HK |                       | KS af: JHe | Godk. af: | Mål: 1:500                      | Dato: 2025.04.11 |       |

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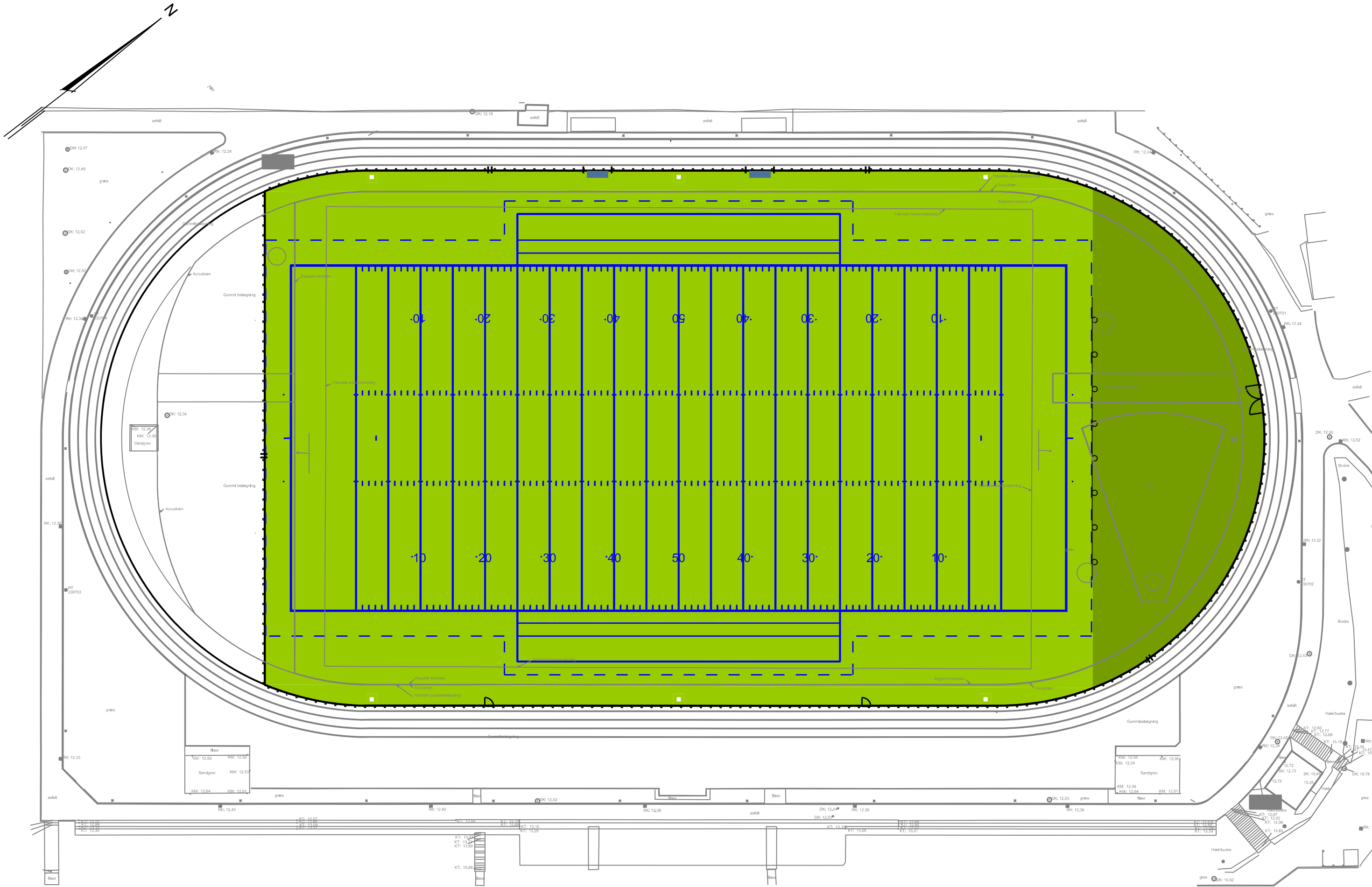
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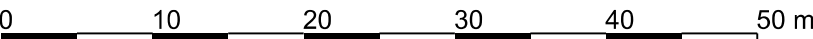


Signaturforklaring:

- Kunstgræs
- Kunstgræs - Option
- Afmærkning - Amerikansk fodbold
- Spillerboks
- Hegn - 4 meter
- Hegn - 1,1 meter - Tilskuerrækværk
- Hegnsåbning i tilskuerrækværk 40 cm
- Driftport
- Projekteret lysmast

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Opmåling: Landinspektørfirmaet LE34, 07.07.2023.  
Eksisterende ledninger: LER nr. 2608272, 28.06.2023.  
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Indeholder data fra Styrelsen for Dataforsyning og Effektivisering, GeoDanmark, februar 2019



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| PROJEKT    | Kunstgræsbane Rundforbi Stadion         |        | SAGS NR.        | 25053            |
| BYGHERRE   | xx                                      |        | KOORDINATSYSTEM | DKTM3            |
| ADRESSE    | xx                                      |        | KOTESYSTEM      | DVR90            |
| EMNE       | Kunstgræsbaneplan<br>Amerikansk fodbold |        | TEGN. NR.       | 14-2             |
|            |                                         |        | REV. NR.        |                  |
| Tegnet af: | MFI/HK                                  | KS af: | JHe             | Godk. af:        |
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|            |                                         |        |                 | Dato: 2025.04.11 |

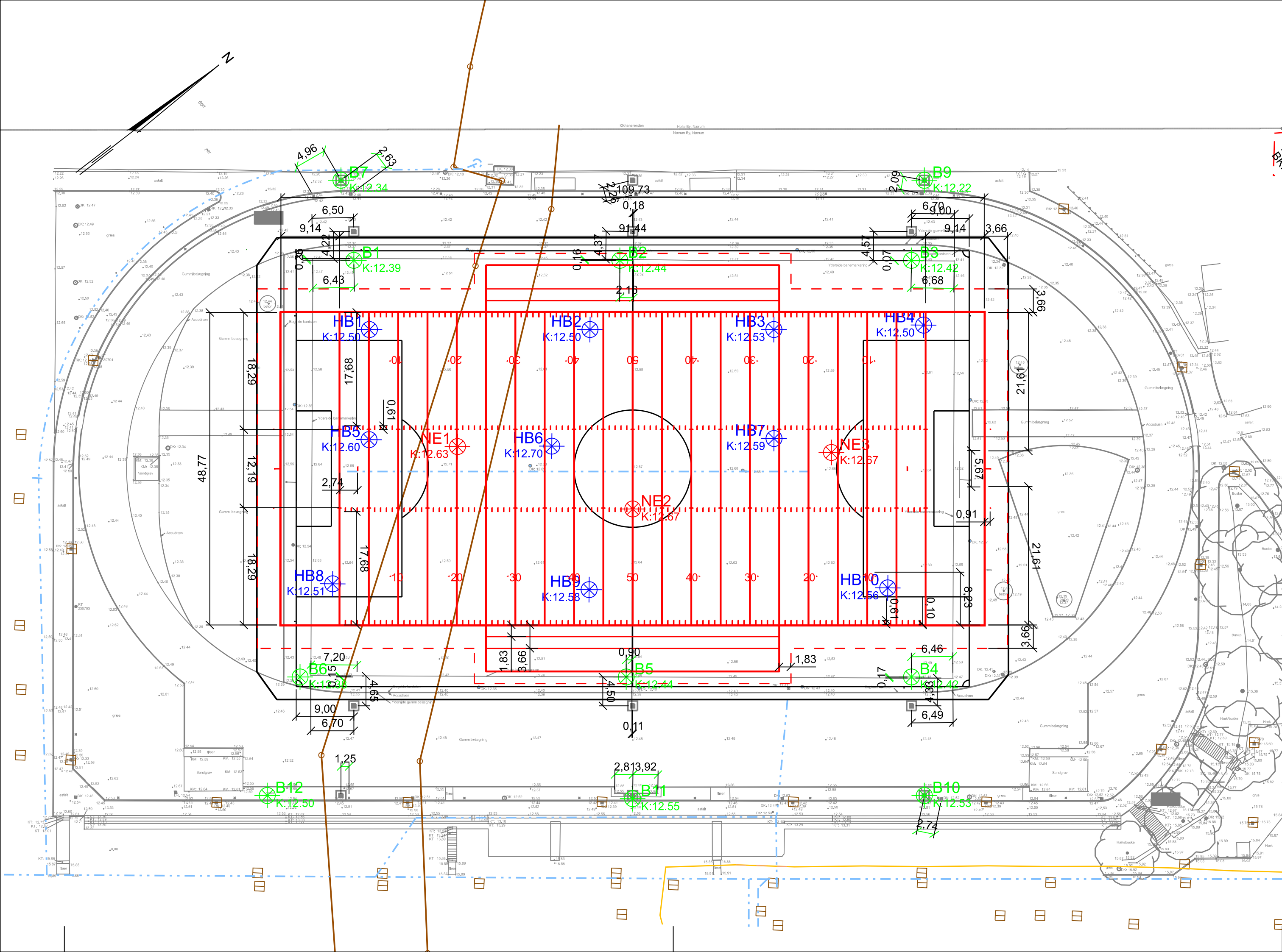
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Signaturforklaring:

- B3  
K:12.xx Geoteknisk boring
- NE1  
K:12.xx Nedsivningsforsøg
- HB7  
K:12.xx Jordprøve, håndbor

Referencer:

Opmåling: Landinspektørfirmaet LE34, 07.07.2023.  
Eksisterende ledninger: LER nr. 2608272, 28.06.2023.

Indeholder data fra Geodatastyrelsen, Matrikelkortet, WMS-tjeneste.  
Indeholder data fra Styrelsen for Dataforsyning og Effektivisering,  
GeoDanmark, februar 2019



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|          |           |                  |  |           |             |
| xx       | xx        | xx               |  | xx        | xx          |
| Rev. Nr. | Rev. Dato | Ændring omfatter |  | Udført af | Godkendt af |

|            |                                 |        |     |                 |            |
|------------|---------------------------------|--------|-----|-----------------|------------|
| PROJEKT    | Kunstgræsbane Rundforbi Stadion |        |     | SAGS NR.        | 25053      |
| BYGHERRE   | xx                              |        |     | KOORDINATSYSTEM | DKTM3      |
| ADRESSE    | xx                              |        |     | KOTESYSTEM      | DVR90      |
| EMNE       | Kunstgræsbaneplan<br>Boreplan   |        |     | TEGN. NR.       | 23         |
|            |                                 |        |     | REV. NR.        |            |
| Tegnet af: | MFI/HK                          | KS af: | JHe | Godk. af:       |            |
|            |                                 |        |     | Mål:            | 1:500      |
|            |                                 |        |     | Dato:           | 2025.04.11 |

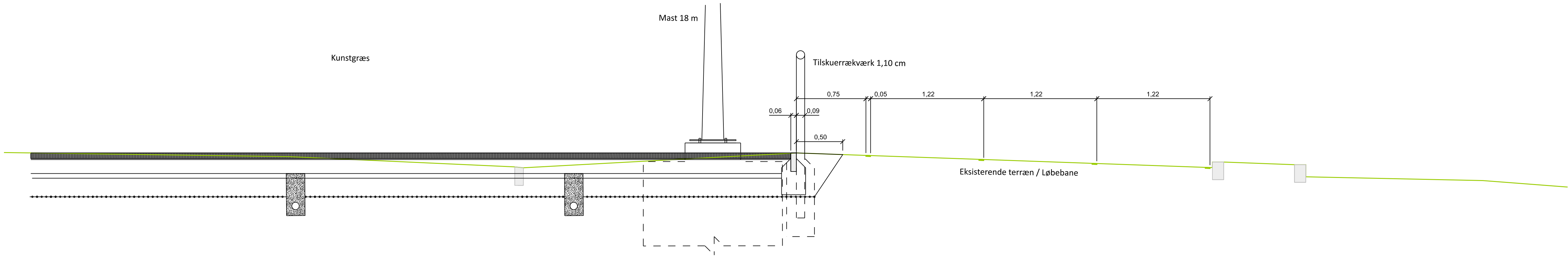
DINES JØRGENSEN & CO. A/S RÅDGIVENDE INGENIØRER FRI

KIRSEBÆRALLE 9-11  
3400 HILLERØD  
TLF: 48 26 06 66

ENERGIVEJ 3  
4180 SORØ  
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EMAIL: [dj@dj-co.dk](mailto:dj@dj-co.dk)  
WEB: [www.dj-co.dk](http://www.dj-co.dk)  
TLF: 48 26 06 66



Snit A - A

NOTE:

Alle ubenævnte mål, stationering og koter er i m.

- Baneopbygning: 50-60 mm kunstgræstæppe  
12-23 mm shockpad  
150 mm GAB grus  
30-50 mm perle/ærtesten 4/8 eller 8/16  
200 mm nøddesten/singles 16/32 eller 32/64  
Geonet
- Kantsten: Betonkantsten 60x200x500 mm sat i beton C20/25
- Hegn: Panel-/gittermåtehegn bag mål 4,00 m  
Tilskuerrækværk 1,10 m

SIGNATUR:

Eksisterende terræn



|          |           |                  |           |             |
|----------|-----------|------------------|-----------|-------------|
|          |           |                  |           |             |
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| xx       | xx        | xx               | xx        | xx          |
| Rev. Nr. | Rev. Dato | Ændring omfatter | Udført af | Godkendt af |

|          |                                 |                 |       |
|----------|---------------------------------|-----------------|-------|
| PROJEKT  | Kunstgræsbane Rundforbi Stadion | SAGS NR.        | 25053 |
| BYGHERRE |                                 | KOORDINATSYSTEM | DKTM3 |
| ADRESSE  |                                 | KOTESYSTEM      | DVR90 |
| EMNE     | Tværsnit A - A                  | TEGN. NR.       | 31-1  |
|          |                                 | REV. NR.        |       |

|                   |        |           |           |                  |
|-------------------|--------|-----------|-----------|------------------|
| Tegnet af: JHe/HK | KS af: | Godk. af: | Mål: 1:25 | Dato: 2025.04.11 |
|-------------------|--------|-----------|-----------|------------------|



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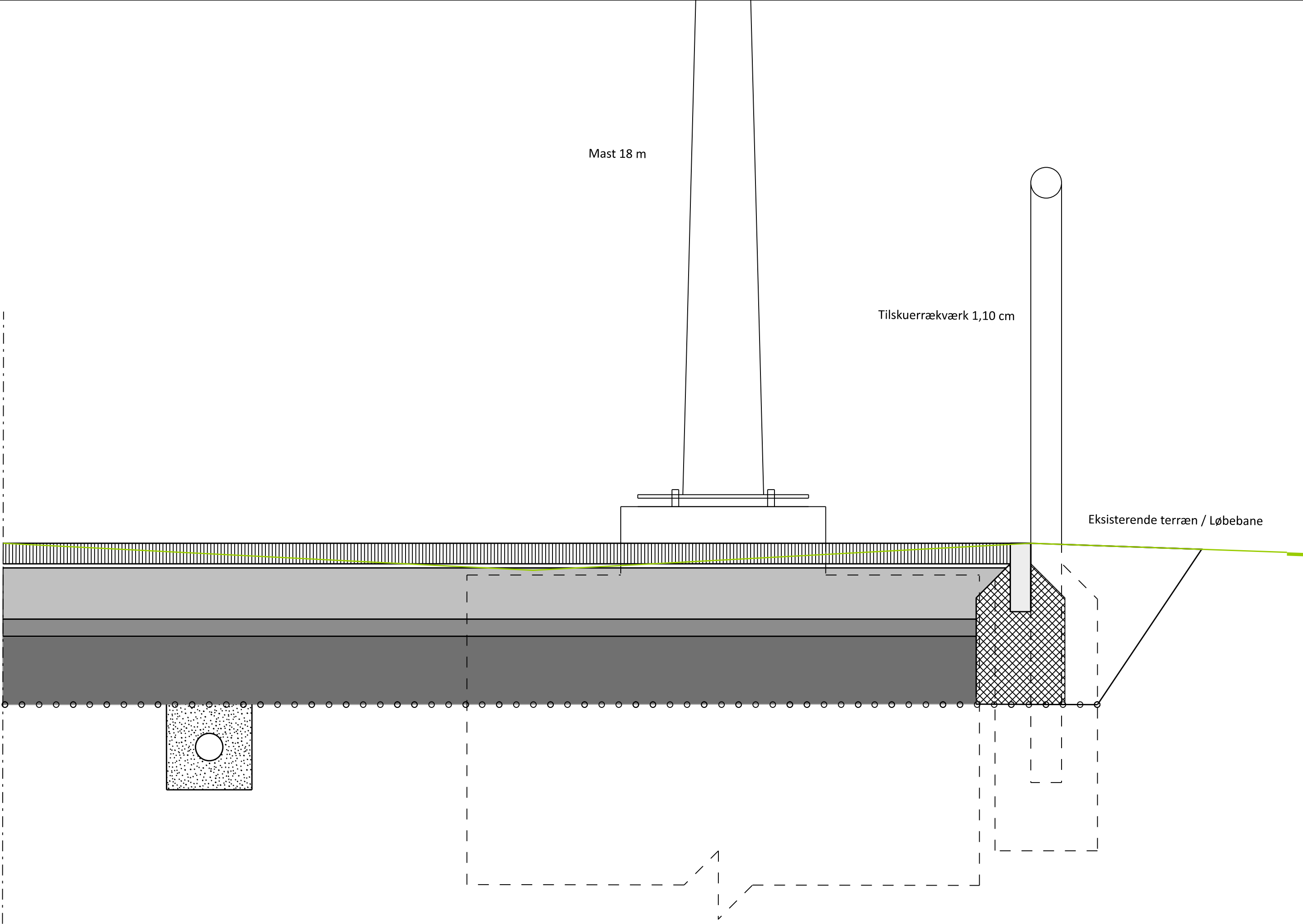
KIRSEBÆRALLE 9-11  
3400 HILLERØD  
TLF: 48 26 06 66

ENERGIVEJ 3  
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5260 ODENSE S  
TLF: 48 29 06 66

EMAIL: dj@dj-co.dk  
WEB: www.dj-co.dk  
TLF: 48 26 06 66

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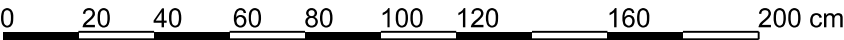


NOTE:  
Alle ubenævnte mål, stationering og koter er i m.

- Baneopbygning: 50-60 mm kunstgræstæppe  
12-23 mm shockpad  
150 mm GAB grus  
30-50 mm perle/ærtesten 4/8 eller 8/16  
200 mm nøddesten/singles 16/32 eller 32/64  
Geonet
- Kantsten: Betonkantsten 60x200x500 mm sat i beton C20/25
- Hegn: Panel-/gittermåltehegn bag mål 4,00 m  
Tilskuerrækværk 1,10 m

SIGNATUR:

|  |                   |  |               |
|--|-------------------|--|---------------|
|  | Kunstgræs         |  | Geonet        |
|  | GAB grus          |  | Beton         |
|  | Perle/ærtesten    |  | Betonkantsten |
|  | Nøddesten/singles |  |               |



|          |           |                  |           |             |
|----------|-----------|------------------|-----------|-------------|
|          |           |                  |           |             |
|          |           |                  |           |             |
|          |           |                  |           |             |
| xx       | xx        | xx               | xx        | xx          |
| Rev. Nr. | Rev. Dato | Ændring omfatter | Udført af | Godkendt af |

|                   |                                 |                 |                  |
|-------------------|---------------------------------|-----------------|------------------|
| PROJEKT           | Kunstgræsbane Rundforbi Stadion | SAGS NR.        | 25053            |
| BYGHERRE          | xx                              | KOORDINATSYSTEM | DKTM3            |
| ADRESSE           | xx                              | KOTESYSTEM      | DVR90            |
| EMNE              | Principtværnsnit                | TEGN. NR.       | 31-2             |
|                   |                                 | REV. NR.        |                  |
| Tegnet af: JHe/HK | KS af:                          | Godk. af:       | Mål: 1:10        |
|                   |                                 |                 | Dato: 2025.04.11 |

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ENERGIVEJ 3  
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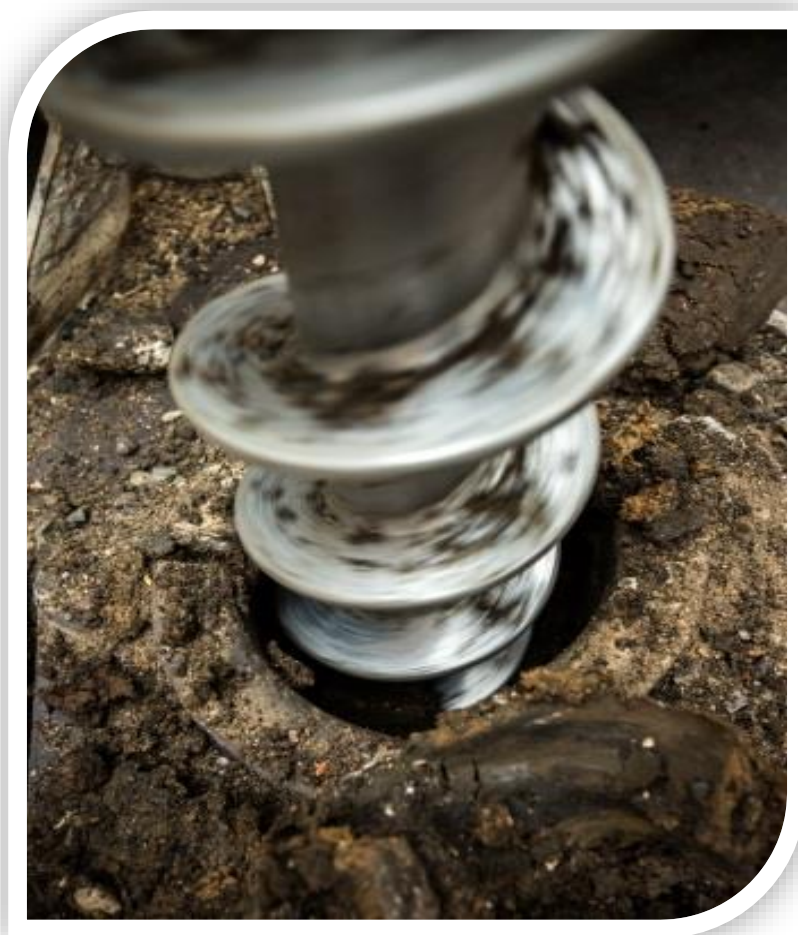
EMAIL: dj@dj-co.dk  
WEB: www.dj-co.dk  
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## Bilag 2

# Geoteknisk rapport

Parameterundersøgelse

Egebækvej 111, 2850 Nærum



## Rekvirent

Dines Jørgensen & Co A/S  
Energivej 3, 4180 Sorø

## DJ Miljø & Geoteknik

|                   |                  |
|-------------------|------------------|
| Udarbejdet af:    | Victor Dobrescu  |
| Kvalitetssikring: | Lars Friis Olsen |
| Dato:             | 20.10.2023       |
| Revision:         | -                |
| Sagsnr.:          | 231579           |
| Kundenr.:         | 23136            |

## Indhold

|                                            |   |
|--------------------------------------------|---|
| 1. Formål .....                            | 3 |
| 2. Boringer .....                          | 3 |
| 3. Laboratorieforsøg .....                 | 3 |
| 4. Nivellement.....                        | 3 |
| 5. Geologiske forhold.....                 | 3 |
| 6. Grundvandsforhold.....                  | 4 |
| 7. Funderingsforhold .....                 | 4 |
| 8. Overskudsjord.....                      | 6 |
| 9. Nedsivningsforsøg .....                 | 6 |
| 10. Pæle: .....                            | 7 |
| 11. Konklusion .....                       | 8 |
| 11.1 Kunstgræsbane.....                    | 8 |
| 11.2 Lysmaster – Boring B7 (og B1).....    | 8 |
| 11.3 Lysmaster – resterende boringer ..... | 8 |
| 12. Bemærkninger .....                     | 9 |

## Bilag

|                               |
|-------------------------------|
| Bilag 1: Plan over boringer   |
| Bilag 2: Boreprofiler         |
| Bilag 3: Signaturforklaring   |
| Bilag 4: Nedsivningsforsøg    |
| Bilag 5: Miljø klassificering |
| Bilag 6: Miljø analyserapport |

## 1. Formål

Formål med undersøgelsen er at give en orientering om jordbunds- og grundvandsforholdene i forbindelse med etablering af en kunstgræsbane. If. med etablering af banen skal der også etableres lysmaster.

Den geotekniske rapport er udført iht. den europæiske funderingsnorm, DS/EN 1997.

## 2. Boringer

Der er i oktober 2023 udført i alt 11 stk. boringer på stedet, uden anvendelse af foringsrør, boring nr. B1-B7 samt B9 - B12. Boringen B8 udgår pga. pladsmangel.

Boringerne er udført som 6" snegleboringer med et hydraulisk boreværk.

Boringerne er ført til 4,0-7,0 meter under terræn (m.u.t.). Der er udtaget jordprøver i hvert enkelt jordlag, dog maksimalt 0,50 meter mellem de enkelte prøver.

I boringerne er der udført styrkeforsøg i alle relevante aflejringer, ligesom betydende laggrænser er indmålt.

Resultatet af boringer, inkl. vingeforsøg, er optegnet på vedlagte boreprofiler.

Boringerne er foretaget som angivet på vedlagte plan.

Markarbejdet er udført iht. DGF Bulletin 14, "Felthåndbogen," August 1999.

## 3. Laboratorieforsøg

På de optagne prøver er der udført geologisk bedømmelse, samt bestemmelse af jordens naturlige vandindhold. Resultaterne af laboratorieundersøgelserne er opstillet på boreprofilerne bagerst i rapporten.

Jordprøverne opbevares 14 dage fra dags dato, med mindre andet aftales.

Samtlige prøver er geologisk bedømt og klassificeret iht. DGF Bulletin 1, "Vejledning i ingeniørgeologisk prøvebeskrivelse," December 2021.

## 4. Nivellement

Der er foretaget nivellement til boresteder med GPS system DKTM3 i kotesystem DVR90.

Der gøres opmærksom på, at der i forbindelse med etablering af kunstgræsbanen kan ske en terrænregulering, og derved kan koter og jordlagenes tykkelse ændres.

## 5. Geologiske forhold

I flere af lagfølgeboringerne er der øverst truffet stærk varierende mægtigheder af fyldjord, bestående primært af sand, ler og muld. I nogen af disse boringer træffes slagger eller slagerholdige materialer umiddelbart under muldlaget. Lokalt ved B4 og B5 træffes sand- og muldblandet overjord øverst.

### *Boringerne B1, B3 og B7*

Under fyldlaget træffes der blødbundsaflejringer af bla. gytje og tørv ned til ca. 2,20 á 4,40 m.u.t. Disse blødbundsaflejringer er generelt underlejret af senglaciale nedskylds/flyderjord lerede og siltede aflejringer til stor dybde, hvorefter der træffes glacial moræneler eller morænesand til boringernes slutdybder.

### Resterende boringer

I de resterende boringer træffes generelt, umiddelbart under fyld-/muldlaget, senglaciale aflejringer med indhold af både sand, silt og ler, som underlejres af skiftende glaciale aflejringer bestående af både moræneler og morænesand, som fortsætter til boringernes slutdybde.

## 6. Grundvandsforhold

I flere af boringerne er der konstateret frit vandspejl ved borearbejdets afslutning, som vist i nedenstående skema, samt på boreprofiler.

Der er nedsat pejlerør i boringerne B7 – B12 for senere kontrol af vandspejl.

Vandspejlet har formentlig ikke nået at stabilisere sig i pejlerørene, så det må anbefales at kontrollere vandspejlet, inden gravearbejdet opstartes.

Der gøres opmærksom på, at vandspejlets placering i øvrigt kan variere afhængig af årstid og nedbørsmængde.

| Boring nr. | Terrænkote<br>[DVR90] | Vandstand       |                  |
|------------|-----------------------|-----------------|------------------|
|            |                       | Kote<br>[DVR90] | Ca. dybde<br>[m] |
| B1         | +12,39                | -               | Tør              |
| B2         | +12,44                | -               | Tør              |
| B3         | +12,42                | +9,22           | 3,20             |
| B4         | +12,42                | -               | Tør              |
| B5         | +12,44                | -               | Tør              |
| B6         | +12,38                | -               | Tør              |
| B7         | +12,34                | +8,84           | 3,50             |
| B9         | +12,22                | +9,02           | 3,20             |
| B10        | +12,53                | +10,63          | 1,90             |
| B11        | +12,55                | +9,35           | 3,20             |
| B12        | +12,53                | +10,10          | 2,40             |

Tabel 6.1 Registrerede vandspejl.

## 7. Funderingsforhold

På grundlag af ovennævnte boreresultater skal følgende udskiftningsdybder til etablering af kunstgræsbanen samt funderingsdybder til etablering af fundamenter under lysmaster m.m., være overholdt, som angivet i nedenstående skema, samt på boreprofiler.

| Boring nr. | Terrænkote<br>[m] | OBL         |                  |
|------------|-------------------|-------------|------------------|
|            |                   | Kote<br>[m] | Ca. dybde<br>[m] |
| B1         | +12,39            | +9,59       | 2,80             |
| B2         | +12,44            | +11,34      | 1,10             |
| B3         | +12,42            | +10,22      | 2,20             |
| B4         | +12,42            | +11,67      | 0,75             |
| B5         | +12,44            | +12,33      | 0,11             |
| B6         | +12,38            | +11,98      | 0,40             |
| B7         | +12,34            | +7,94       | 4,40             |

|     |        |        |      |
|-----|--------|--------|------|
| B9  | +12,22 | +10,47 | 1,75 |
| B10 | +12,53 | +10,93 | 1,60 |
| B11 | +12,55 | +12,15 | 0,40 |
| B12 | +12,53 | +12,33 | 0,17 |

**Tabel 7.1** Oversigt over AFRN og OBL niveauer.

”OBL” (*overside bæredygtigt lag*) angiver dybden til overside af bæredygtige aflejringer for de kommende fundamenter.

Idet jordbundsforholdene kan variere væsentligt indenfor få meters afstand fra de steder, hvor boreprøverne er udført, skal man under udgravningsarbejdet være meget opmærksom på variationer i jordbundsforholdene, da ovennævnte funderingsdybder kun giver sikkerhed for bæreevnen i de enkelte prøvepunkter.

Da der i niveau med bæredygtig lag træffes både sandede og lerede aflejringer, bør banens/fundamenternes bæreevne bestemmes ud fra nedenstående målte og skønnede parametre, samt efter den europæiske funderingsnorm EN 1997 og det nationale anneks.

| Aflejring             | Rumvægt<br>$\gamma/\gamma'$ | Korttidstilstanden |                                | Langtidstilstanden |                             |
|-----------------------|-----------------------------|--------------------|--------------------------------|--------------------|-----------------------------|
|                       | (kN/m <sup>3</sup> )        | $\phi_{pl,k}$ (°)  | $C_{u,k}$ (kN/m <sup>2</sup> ) | $\phi'_k$ (°)      | $c'_k$ (kN/m <sup>2</sup> ) |
| Marint sand           | 17/10                       | 33                 | -                              | 33                 | -                           |
| Senglacialt sand      | 18/10                       | 35                 | -                              | 35                 | -                           |
| Senglacialt ler/-silt | 19/9                        | -                  | 45 - 85                        | 25                 | 4 - 8                       |
| Moræneler             | 21/11                       | -                  | 45 - 85                        | 30                 | 4 - 8                       |
| Morænesand            | 21/11                       | 38                 | -                              | 38                 | -                           |

**Tabel 7.2.** Skønnede og målte styrkeparametre.

Nedenstående skema angiver tykkelsen på muld og muldfyld i den enkelte boring.

| Boring nr. | Muldfyld/Intakt muld (m) | Fyld (andet) (m) |
|------------|--------------------------|------------------|
| B1         | 0,13                     | 1,07             |
| B2         | 0,11                     | 0,99             |
| B3         | 0,12                     | 1,68             |
| B4         | -                        | 0,40 – 0,75      |

|             |             |      |
|-------------|-------------|------|
| B5          | -           | 0,11 |
| B6          | 0,40        | -    |
| B7          | -           | 2,40 |
| B9          | -           | 1,75 |
| B10         | 0,20        | 1,40 |
| B11         | 0,15        | 0,25 |
| B12         | 0,17        | -    |
| HB1 – HB10* | 0,10 – 0,15 |      |

**Tabel 7.3.** Tykkelsen på muld og muldblandet fyldjord samt fyldjord af andet forekomst

\*Håndboringer foretaget med miljøundersøgelse formål, som fremgår af bilag 1

## 8. Overskudsjord

Det bemærkes i øvrigt, at der i forbindelse med bortskaffelse af eventuel overskuds-jord er krav om dokumentation for jordens forureningsgrad iht. Miljøstyrelsens Bekendtgørelse nr. 1479 "Om anmeldelse og dokumentation i forbindelse med flytning af jord".

Denne dokumentation skal typisk leveres i form af miljøtekniske jordanalyser.

I forbindelse med den geotekniske undersøgelse på Egebækvej, 2850 Nærum, er der udtaget og analyseret 10 jordprøver. Prøverne er benævnt HB1-HB10 og er udtaget i dybdefraktion 0-0,5 m. u. t.

Som det fremgår af vedlagte analyseresultater, klassificeres prøverne som "klasse 0" jord, svarende til ren jord kategori 1.

Såfremt jorden skal bortskaffes fra matriklen, kan der med udgangspunkt i de analyserede jordprøver bortskaffes 300 tons ren jord efter anmeldelse til kommunen. De oplyste jordmængder, er i henhold til Jordflytningsbekendtgørelsen. Såfremt der skal bortskaffes jord ud over de 300 tons jord, skal der udtages supplerende jordprøver til analyse.

## 9. Nedsivningsforsøg

DJ Miljø & Geoteknik P/S har den 04. oktober 2023 udført 3 stk. infiltrationsforsøg på stedet. Forsøgene er udført iht. retningslinjer angivet i DS/EN 12616 – Sportsbelægninger – Bestemmelse af vandinfiltration udgivet af Dansk Standard.

Ringtestforsøgene udføres således at to ringe - en indre og en ydre ring - trykkes ca. 5 cm ned i jorden. Bagefter fyldes ringene med vand. Formålet med den ydre ring er at etablere vertikalt flow ned i jorden. Nedsivningen måles i den lille ring. Synkehastigheden måles

jævnligt efter ca. 40 min. Når hastigheden er næsten ens ved 2 målinger efter hinanden, kan forsøget begynde. Der måles, hvor langt vandet synker i ca. 20 minutter. Synkehastigheden af den vertikale nedsivning omregnes til m/s.

#### Beregning

Den målte sænkning omregnes til en hydrauliske ledningsevne.

Da jordbunden kan være varierende i området kan der være stor forskel på jordens permeabilitet.

Hydrauliske ledningsevne, K beregnes efter følgende formel

$$K = \frac{\Delta F \cdot 10^{-3} m}{\Delta t \cdot 60 s}$$

Hvor  $\Delta F$  er sænkning af vandstand i mm og  $\Delta t$  er tid i minutter. Enhed på K er m/s.

| Forsøg | Dybde | Jordart ved forsøg | Hydrauliske ledningsevne, K [m/s] | Kategori |
|--------|-------|--------------------|-----------------------------------|----------|
| NE1    | 0,15  | Sandmuld           | $1,5 \times 10^{-5}$              | Egnet    |
| NE2    | 0,15  | Sandmuld           | $9,2 \times 10^{-6}$              | Egnet    |
| NE3    | 0,15  | Sandmuld           | $1,8 \times 10^{-5}$              | Egnet    |

Tabel 9.1. Det udregnet hydraulisk ledningsevne der hvor nedsivningsforsøgene er udført. Den bestemte K-værdi er kun gældende i de enkelte punkter.

Da jordbunden kan være varierende i området kan der være stor forskel på jordens permeabilitet.

## 10. Pæle:

Ved en pæleberegning skal der tages højde for den negative overflademodstand på den del af pælene, der befinder sig i og over de sætningsgivende aflejringer.

For rammede pæle kan den negative overflademodstand reduceres ved at asfaltere den øverste del af pælene, der befinder sig i og over de sætningsgivende aflejringer.

Ved rammede pæle skal bæreevnerne bestemmes ud fra den danske rammeformel. Det anbefales, at udføre prøveramninger, som kan fastsætte de endelige pælelængder.

På prøvepæle skal der optages fuld rammejournal, mens der på de øvrige pæle optages journal på minimum den sidste meter.

Generelt for jernbetonpæle rammes pælene ca. 4-8 meter ned i rene og intakte aflejringer, mens minipæle af stål rammes ca. 3-5 meter ned i rene og intakte aflejringer, men det skal bemærkes, at rammeformlen kan give ret pessimistiske resultater ved hurtig ramning.

Før rammearbejdet opstartes skal nabobygninger gennemgås nøje og eventuelle revnedannelser m.v. registreres, og under selve rammearbejdet skal disse holdes under observation.

Det er forbeholdt bygherre at tegne rammeforsikring. Der skal endvidere gøres opmærksom på, at der forud for rammearbejdet skal varsles i henhold til byggeloven, 14 dage i forvejen.

Af hensyn til nabohuse skal der rammes med stort lod og lille faldhøjde for at mindske risikoen for skader som følge af rystelser.

## 11. Konklusion

### 11.1 Kunstgræsbane

Det anbefales generelt at foretage en udskiftning af de muldholdige aflejringer samt ukontrolleret fyldjord og blødbundsaflejringer ned til intakte bæredygtige aflejringer og derfra foretage opbygning af kunstgræsbanen.

Alternativ til en generel udskiftning af muld og muldholdige aflejringer samt ukontrolleret fyldjord og blødbundsaflejringer kan der udføres en normal opbygning oven på disse aflejringer og udlægges geonet i denne opbygning.

Ved etablering af kunstgræsbanen uden at udskifte de muldholdige aflejringer og den ukontrollerede fyld samt blødbundsaflejringer, kan der ikke gives garanti for, at der ikke kan opstå mindre differenssætninger.

For at imødegå eventuelle lokale sætninger vil vi anbefale, at der i forbindelse med opbygning af banen udlægges geonet. Udlægning af geonet skal kun ske, såfremt der ikke foretages udskiftning af de muldholdige aflejringer samt fyldjorden under nuværende terræn. Dette forhold vurderes særligt at være gældende på stort set hele banen på nær af områderne omkring boringerne B5 og B6 samt B11 og B12.

Ved terrænregulering og herved merbelastning på banen kan der forventes mindre sætninger lokalt som følge af krybning af jorden i den ukontrollerede fyldjord.

### 11.2 Lysmaster – Boring B7 (og B1)

Med de konstaterede jordbundsforhold må det anbefales, at udføre en punktfundering på minipæle i området omkring B7 og muligvis omkring B1. Der må påregnes med ca. 7 - 9 meter lange pæle.

Projektet udføres i geoteknisk kategori 1.

Der medregnes negativ overfladelast.

En pælefundering kan udføres uden gene fra grundvandet.

### 11.3 Lysmaster – resterende boringer

Der kan foretages en direkte og direkte dybere fundering til ovennævnte funderingsdybder af fremtidige master.

Samtlige fundamenter føres til rene intakte aflejringer med de fornødne styrker for den kommende lysmast.

Fundamenter føres til minimum frostfri dybde 1,20 meter under fremtidig terræn, og samtidig skal de i pkt. 7 angivne funderingsdybder til bæredygtige aflejringer overholdes.

Fundamenter ved eksisterende installationer skal overholde krav i henhold til den europæiske funderingsnorm, DS/EN 1997 samt det nationale annek. Inden udstøbning af fundamenter, skal der foretages en effektiv manuel oprensning af alt løst eventuelt nedskredet materiale.

Det må anbefales, at vi foretager inspektion af fundamentudgravningen for at kontrollere ovenstående parametre i henhold til den europæiske funderingsnorm.

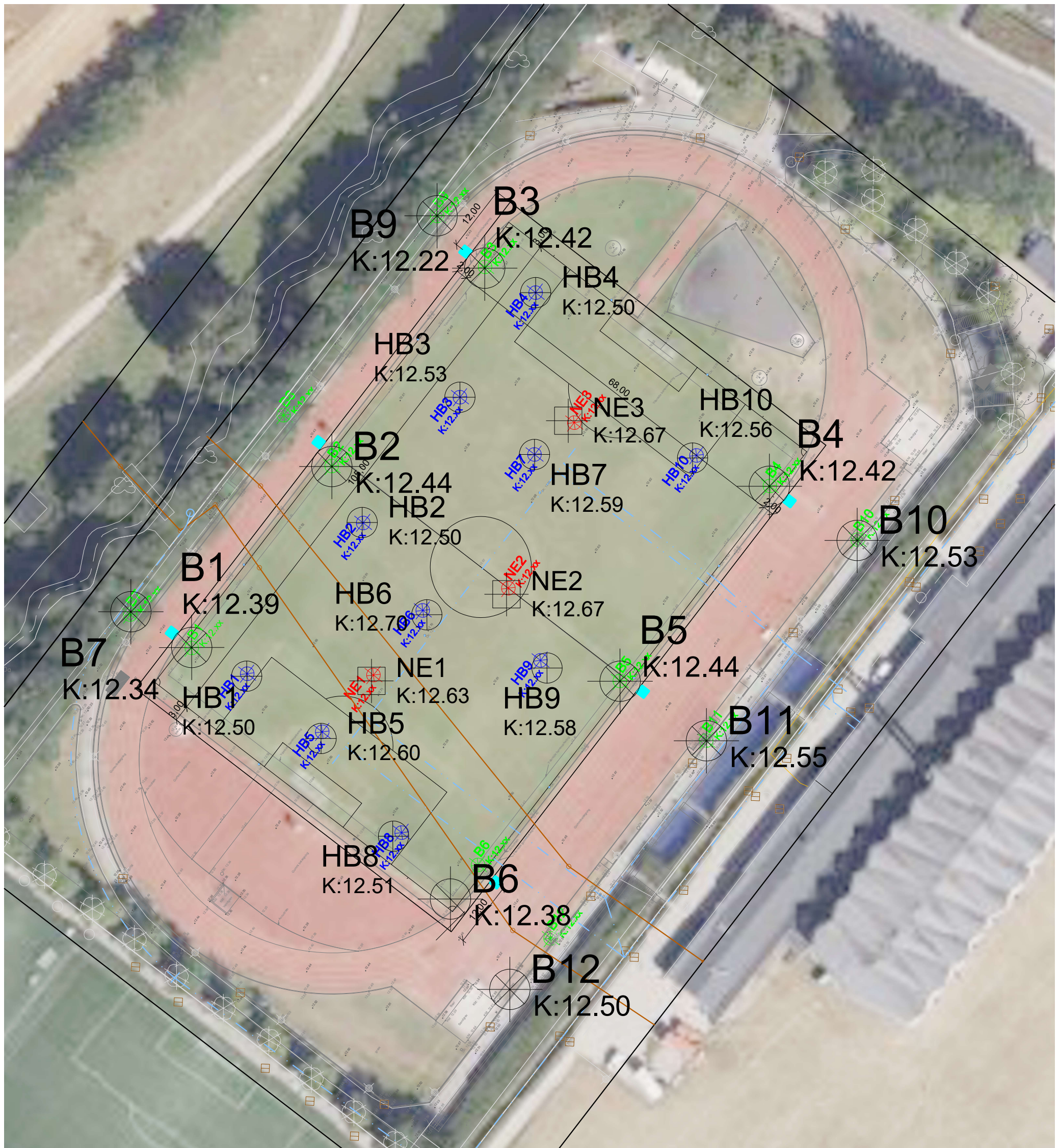
Det vurderes at der kan være gener med tilløbende grundvand i forbindelse med udgravning til fundamenter. Ved udgravninger under grundvandsspejl skal der udføres en midlertidig tørholdelse af udgravningen. I de aktuelle aflejringer vurderes det, at en tørholdelse kan udføres ved etablering af pumpesumpe.

Fundamenter anbefales udført med revnearmering.

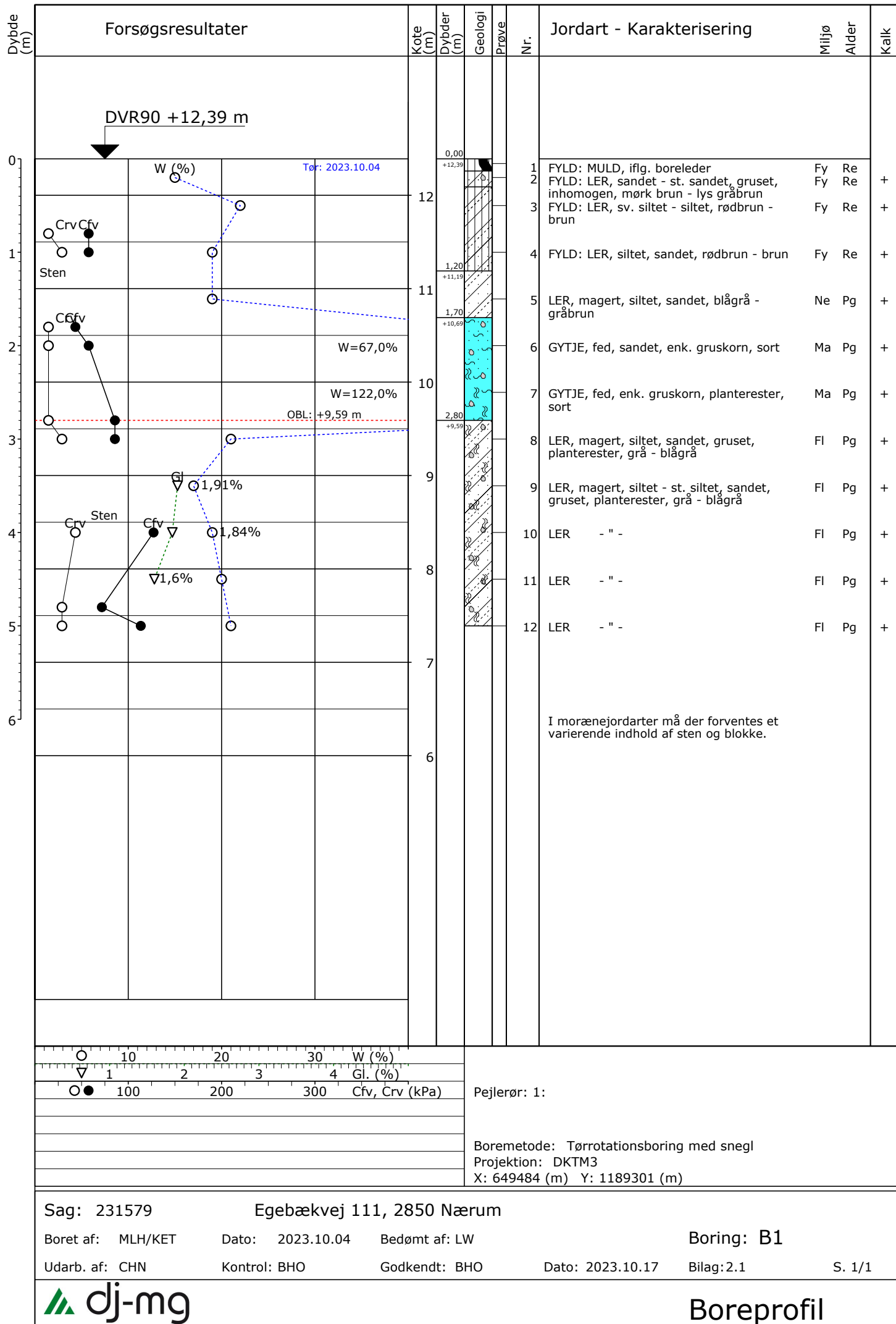
## 12. Bemærkninger

Iht. Brøndborerbekendtgørelsen er det ejerens ansvar at borerne sløjfes senest 1 måned efter endt brug.

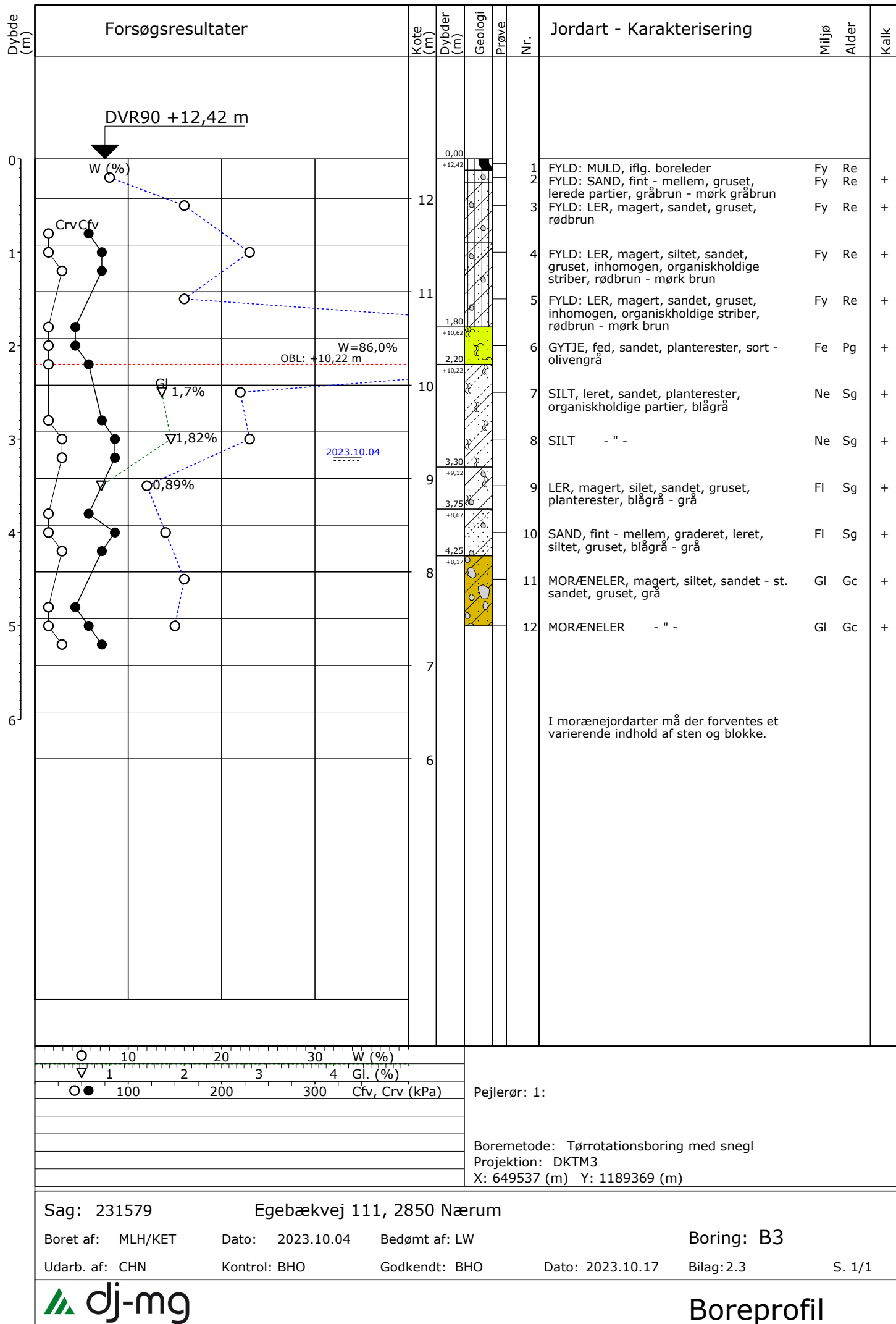
Det bemærkes, at denne rapport er en undersøgelsesrapport, og at den iht. DS/EN 1997 skal følges op af en projekteringsrapport.



mg@dj-mg.dk  
www.dj-mg.dk



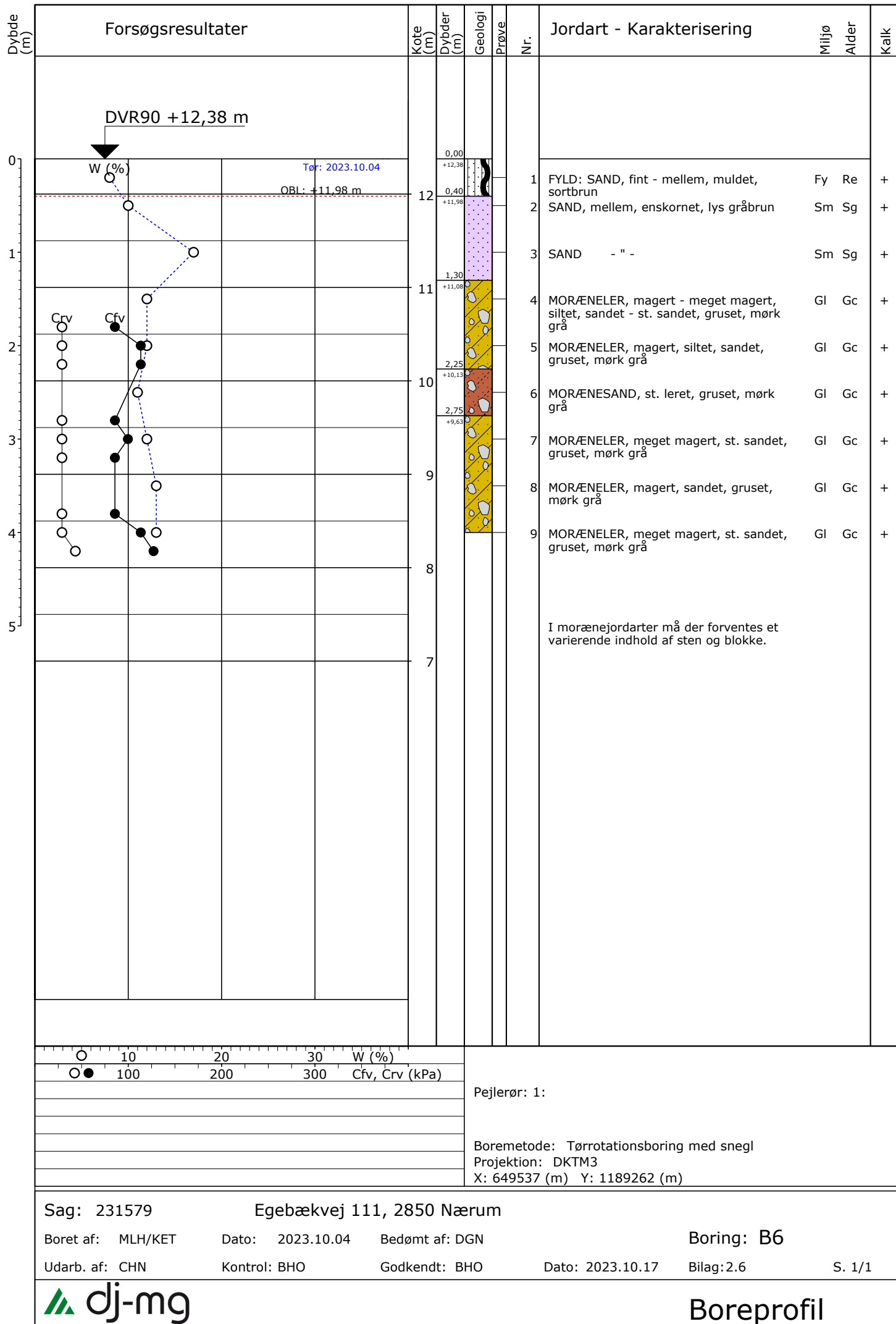






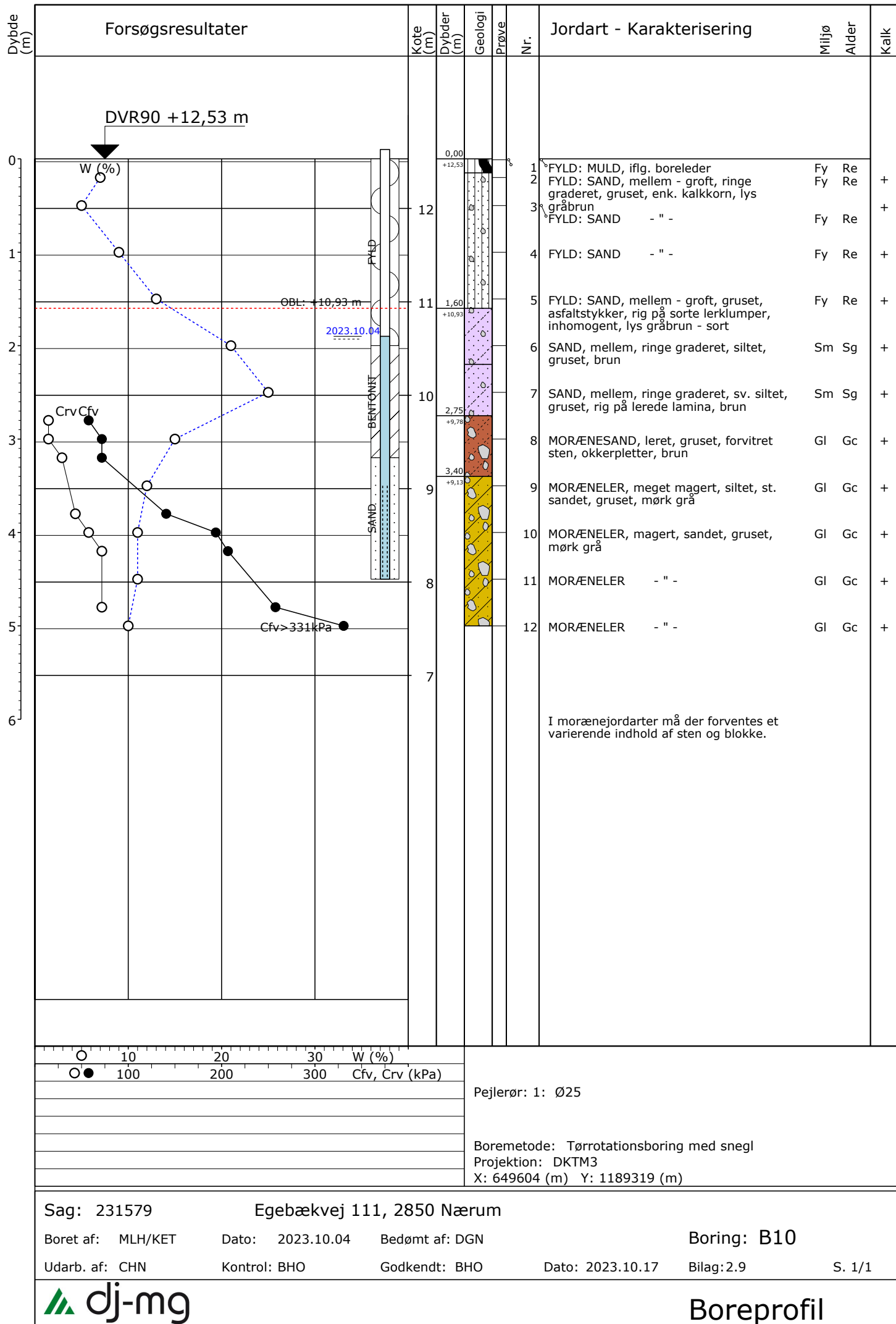


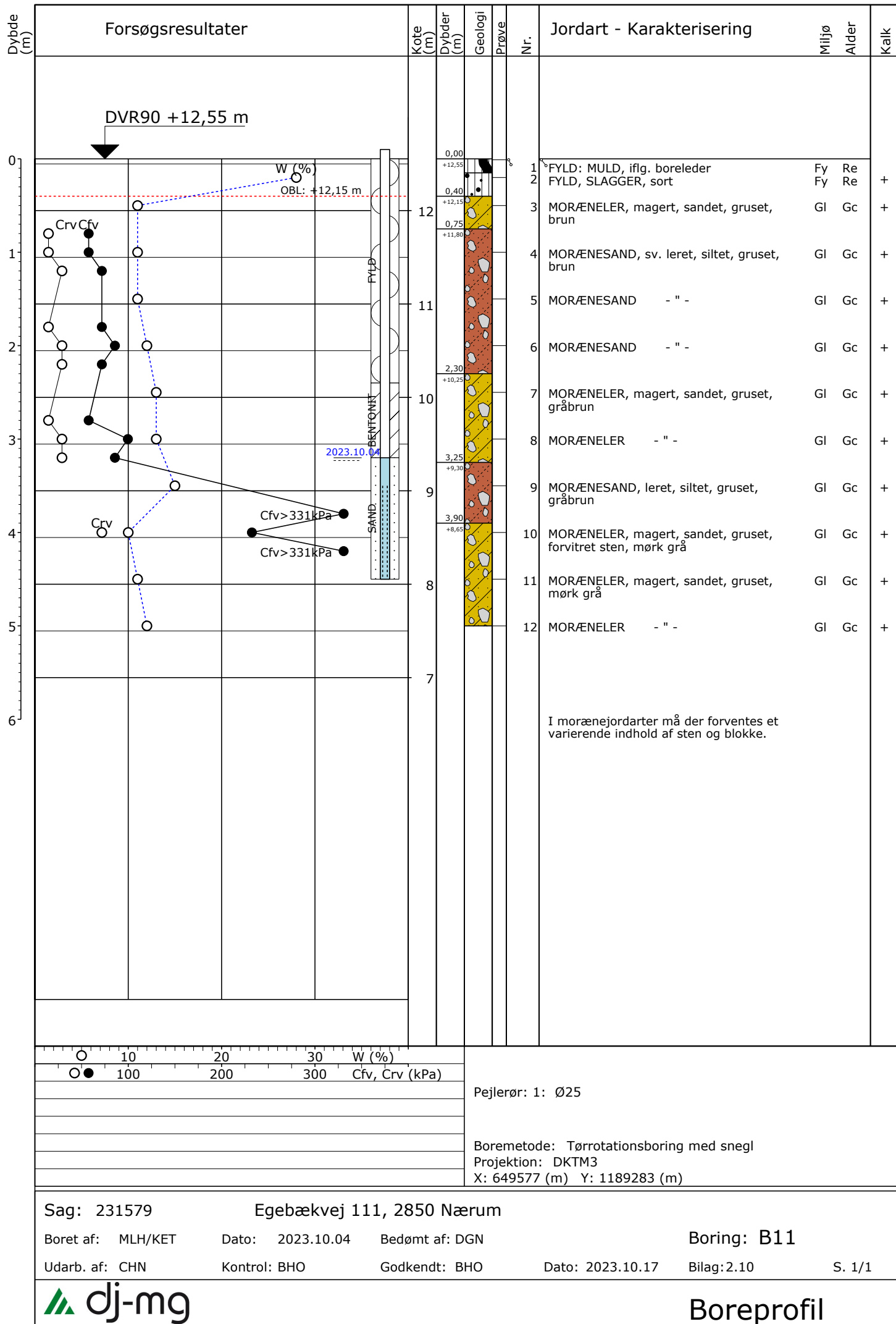
GeoGIS2020 20.02.82 DJ-MG 2021 17-10-2023 09:36:55

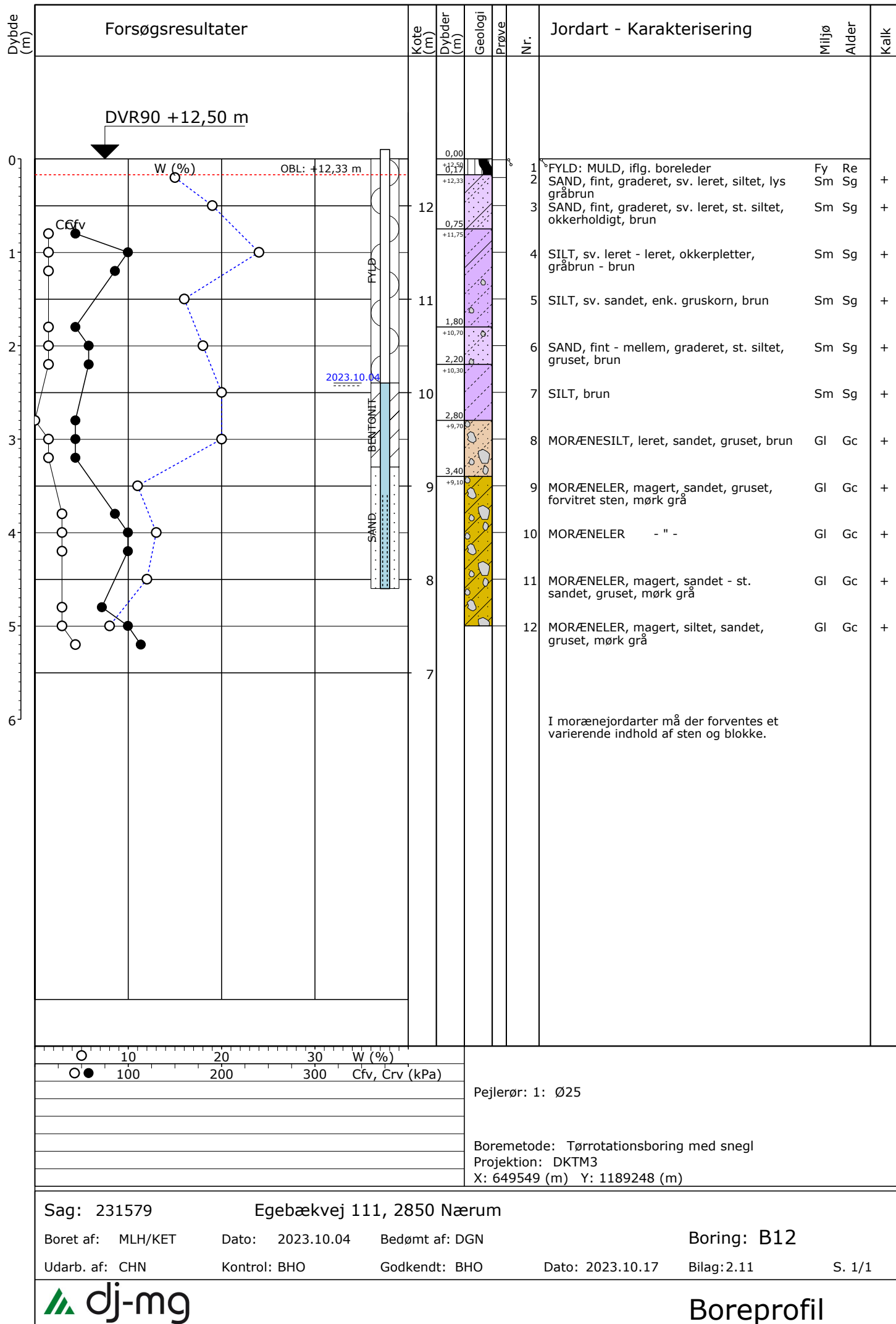










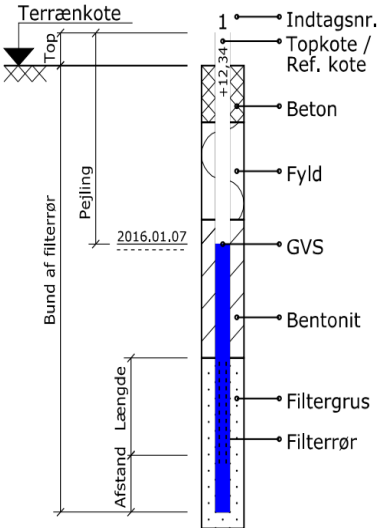


# Forsøgsresultater

## Jordartssignatur

|  |                   |  |              |  |      |  |              |
|--|-------------------|--|--------------|--|------|--|--------------|
|  | FYLD              |  | MORÆNESAND   |  | STEN |  | GYTJE        |
|  | MULD              |  | MORÆNESILT   |  | GRUS |  | SKALLER      |
|  | MULD, sandet      |  | MORÆNELER    |  | SAND |  | TØRV         |
|  | SAND, muldet      |  | KALK (KRIDT) |  | SILT |  | TØRVEDYND    |
|  | SAND, muldpartier |  | FLINT        |  | LER  |  | PLANTERESTER |
|  |                   |  | KLIPPE       |  |      |  |              |

I moræneaflejringer kan der forventes sten og blokke, der ikke ses i borerne.

| Situationsplan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Geologiske forkortelser                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                            | Pejlerør |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|----------|
| <div><div> Geotekniske borer</div><div> Miljøboringer</div><div> Nedsivning</div><div> Håndboring</div><div> Filtersat boring</div><div> Pejleboring</div><div> Prøvegravning</div><div> Sigte</div><div> Faskine</div><div> Skel</div></div> | <div><div>Miljø</div><div>Br Brakvand</div><div>Fe Ferskvand</div><div>Fl Flydejord</div><div>Gl <u>Gletscher</u></div><div>Ma Marin</div><div><u>Ne Nedskyl</u></div><div>P Overjord</div><div>Sk Skredjord</div><div>Sm Smeltevand</div><div>Vi Vindaflejet</div><div>Vu Vulkansk</div><div>Oi <u>Oligocæn</u></div></div> <div><div>Alder</div><div><u>Pg Postglacial</u></div><div><u>Sg Senglacial</u></div><div><u>Al Allerød</u></div><div><u>Gc Glacial</u></div><div><u>Ig Interglacial</u></div><div><u>Is Interstadial</u></div><div><u>Te Tertiær</u></div><div><u>Ng Neogen</u></div><div><u>Pn Palæogen</u></div><div><u>Pi Pliocæn</u></div><div><u>Mi Miocæn</u></div><div><u>Eo Eocæn</u></div><div><u>Pl Palæocæn</u></div><div><u>Sl Selandien</u></div><div><u>Da Danien</u></div><div><u>Kt Kridt</u></div><div><u>Ms Maastrichtian</u></div><div><u>Se Senon</u></div><div><u>Re Recent</u></div></div> | <div><div></div></div> |          |

## Definationer

| Signatur   | Emne                    | Fork. | Enhed                | Beskrivelse                                                                                                                         |
|------------|-------------------------|-------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| ○          | Vandindhold             | W     | [%]                  | Vand i % af tørstofvægt                                                                                                             |
| ∇          | Glødetab                | gl    | [%]                  | Vægttab ved glødning i % af tørstofvægt                                                                                             |
| -/(+)/+/++ | Kalkprøver              | kp    |                      | Reaktion med saltsyre:<br>- kf.: Kalkfrit, (+) sv. khl.: svagt kalkholdigt,<br>+ khl.: Kalkholdigt, ++ st. khl.: strækt kalkholdigt |
| ●          | Vingestyrke, intakt     | cfv   | [kN/m <sup>2</sup> ] | Udrænet forskydningsstyrke målt ved vingeforsøg i intakt jord.                                                                      |
| ○          | Vingestyrke, omrørt     | cfv   | [kN/m <sup>2</sup> ] | Udrænet forskydningsstyrke målt ved vingeforsøg i omrørt jord.                                                                      |
| ⌒          | Let rammesonde          | RLSD  | N200                 | Antal slag pr. 200 mm nedsynkning                                                                                                   |
| ▼          | -SPT-sonde, lukket/åben | SPT   | N300                 | Antal slag pr. 300 mm nedsynkning                                                                                                   |

# Infiltrationstest

Bestemmelse af hydraulisk ledningsevne

Ring infiltrationstest

Sagsnr:

231579

Bilag:

4

Dato:

04-10-2023

Udført af:

KET/MLH

Sagsbehandler:

VAD

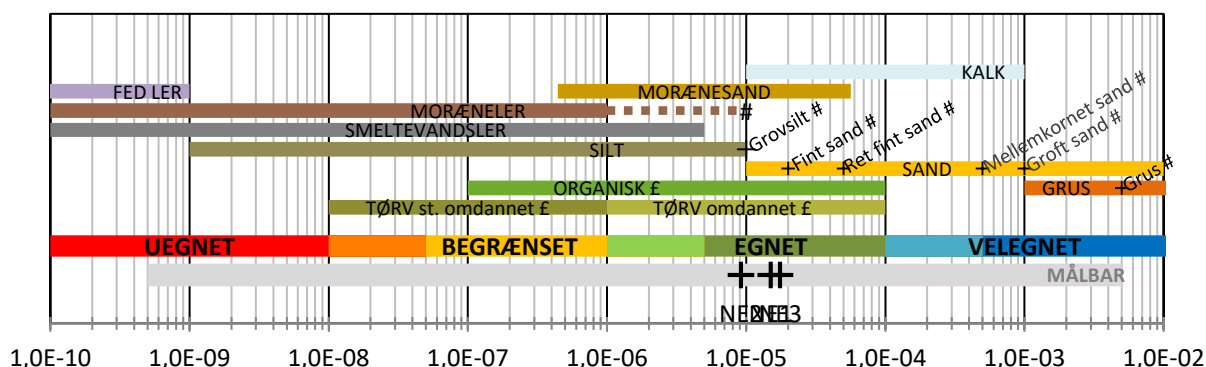
## Nedsivningstest

| ID  | Dybde<br>[m.u.t.] | Aflejring | Tid   |       | Sænkning[mm]       |                   | $\Delta$ Tid<br>[min] | $\Delta F$<br>[mm] | K<br>[m/s] |
|-----|-------------------|-----------|-------|-------|--------------------|-------------------|-----------------------|--------------------|------------|
|     |                   |           | Start | Slut  | F <sub>Start</sub> | F <sub>slut</sub> |                       |                    |            |
| NE1 | 0,15              | sandmuld  | 09:00 | 09:20 | 100                | 82                | 20                    | 18                 | 1,5E-05    |
| NE2 | 0,15              | sandmuld  | 09:20 | 09:40 | 100                | 89                | 20                    | 11                 | 9,2E-06    |
| NE3 | 0,15              | sandmuld  | 09:40 | 10:00 | 100                | 79                | 20                    | 21                 | 1,8E-05    |
|     |                   |           |       |       |                    |                   |                       |                    |            |
|     |                   |           |       |       |                    |                   |                       |                    |            |
|     |                   |           |       |       |                    |                   |                       |                    |            |
|     |                   |           |       |       |                    |                   |                       |                    |            |
|     |                   |           |       |       |                    |                   |                       |                    |            |
|     |                   |           |       |       |                    |                   |                       |                    |            |
|     |                   |           |       |       |                    |                   |                       |                    |            |
|     |                   |           |       |       |                    |                   |                       |                    |            |
|     |                   |           |       |       |                    |                   |                       |                    |            |

\*) meget ringe eller ingen nedsivning.

|  |  |  |  |  |            |         |
|--|--|--|--|--|------------|---------|
|  |  |  |  |  | Min.       | 9,2E-06 |
|  |  |  |  |  | Gennemsnit | 1,4E-05 |
|  |  |  |  |  | Maks.      | 1,8E-05 |

## Hydrauliske ledningsevne



Kilder:

Dimensionering af LAR-anlæg, Spildevandskomiteen, Ingeniørforeningen i Danmark. Notat og regneark 2015.

#) Tabel 3.1 Hydraulisk ledningsevne for nogle danske jordarter. Lærebog i Geoteknik, p66., 2. udgave, Polyteknisk Forlag, 2012.

E) Arbejdsrapport fra Miljøstyrelsen, nr. 10, 2003

Sagsnummer: 231579 - Sagsnavn: Egebækvej, 2850 Nærum - Rundforbi Stadion  
 Jordplan Sjælland, april 2008, nyt bilag A3 af 27.09.2010.  
 Resultater med hvid/gul baggrund er ikke medtaget i klassificeringen!

| Lab Nr         | Samlet Klasse | Prøve Id | Dybde       | Kulbrinter C6H6-C10 | Kulbrinter >C10-C15 | Kulbrinter >C15-C20 | Kulbrinter >C20-C35 | Totalkulbrinter, sum af 4 | Benzo(a)pyren | Dibenz(a,h)anthracen | Sum af PAH (7 stk.) | Bly      | Cadmium  | Chrom, Cr | Kobber   | Nikkel   | Zink     |
|----------------|---------------|----------|-------------|---------------------|---------------------|---------------------|---------------------|---------------------------|---------------|----------------------|---------------------|----------|----------|-----------|----------|----------|----------|
|                |               |          |             | mg/kg TS            | mg/kg TS            | mg/kg TS            | mg/kg TS            | mg/kg TS                  | mg/kg TS      | mg/kg TS             | mg/kg TS            | mg/kg TS | mg/kg TS | mg/kg TS  | mg/kg TS | mg/kg TS | mg/kg TS |
| JO23400201-001 | KLASSE 0      | HB1      | 0-0,5       | <2                  | <5                  | <5                  | <20                 | #                         | 0,0091        | <0,005               | 0,048               | 9,5      | 0,23     | 5,8       | 11       | 5,6      | 25       |
| JO23400201-002 | KLASSE 0      | HB2      | 0-0,5       | <2                  | <5                  | <5                  | <20                 | #                         | <0,005        | <0,005               | 0,016               | 7,3      | 0,23     | 4,3       | 6,9      | 4,0      | 19       |
| JO23400201-003 | KLASSE 0      | HB3      | 0-0,5       | <2                  | <5                  | <5                  | <20                 | #                         | <0,005        | <0,005               | 0,016               | 6,6      | 0,22     | 3,3       | 5,2      | 3,9      | 20       |
| JO23400201-004 | KLASSE 0      | HB4      | 0-0,5       | <2                  | <5                  | <5                  | <20                 | #                         | 0,021         | <0,005               | 0,094               | 6,8      | 0,16     | 3,4       | 5,9      | 3,9      | 17       |
| JO23400201-005 | KLASSE 0      | HB5      | 0-0,5       | <2                  | <5                  | <5                  | <20                 | #                         | 0,0058        | <0,005               | 0,032               | 7,8      | 0,18     | 4,9       | 7,9      | 4,3      | 20       |
| JO23400201-006 | KLASSE 0      | HB6      | 0-0,5       | <2                  | <5                  | <5                  | <20                 | #                         | 0,0088        | <0,005               | 0,048               | 10       | 0,27     | 5,7       | 11       | 5,4      | 27       |
| JO23400201-007 | KLASSE 0      | HB7      | 0-0,5       | <2                  | <5                  | <5                  | <20                 | #                         | 0,0070        | <0,005               | 0,038               | 7,0      | 0,19     | 4,1       | 6,5      | 4,4      | 19       |
| JO23400201-008 | KLASSE 0      | HB8      | 0-0,5       | <2                  | <5                  | <5                  | <20                 | #                         | 0,0066        | <0,005               | 0,034               | 8,5      | 0,21     | 4,5       | 7,8      | 4,3      | 20       |
| JO23400201-009 | KLASSE 0      | HB9      | 0-0,5       | <2                  | <5                  | <5                  | <20                 | #                         | 0,0068        | <0,005               | 0,038               | 7,9      | 0,21     | 4,4       | 7,7      | 5,3      | 22       |
| JO23400201-010 | KLASSE 0      | HB10     | 0-0,5       | <2                  | <5                  | <5                  | <20                 | #                         | 0,0073        | <0,005               | 0,039               | 7,2      | 0,23     | 4,3       | 6,9      | 5,1      | 20       |
| Class Name     |               |          | Class Grade | Kulbrinter C6H6-C10 | Kulbrinter >C10-C15 | Kulbrinter >C15-C20 | Kulbrinter >C20-C35 | Totalkulbrinter, sum af 4 | Benzo(a)pyren | Dibenz(a,h)anthracen | Sum af PAH (7 stk.) | Bly      | Cadmium  | Chrom, Cr | Kobber   | Nikkel   | Zink     |
| KLASSE 0       |               |          | KLASSE 0    | 25                  | 40                  | 55                  | 100                 | 100                       | 0,1           | 0,1                  | 1**                 | 40       | 0,5      | 50        | 30       | 15       | 100      |
| KLASSE 1       |               |          | KLASSE 1    | 25                  | 40                  | 55                  | 100                 | 100                       | 0,3***        | 0,3***               | 4**                 | 40       | 0,5      | 500       | 500      | 30       | 500      |
| KLASSE 2       |               |          | KLASSE 2    | 35                  | 60                  | 83                  | 200                 | 200                       | 1             | 1                    | 15**                | 120      | 1        | 500       | 500      | 40       | 500      |
| KLASSE 3       |               |          | KLASSE 3    | 50                  | 80                  | 110                 | 300                 | 300                       | 5             | 5                    | 75**                | 400      | 5        | 750       | 750      | 100      | 1500     |
| KLASSE 4       |               |          | KLASSE 4    | >50                 | >80                 | >110                | >300                | >300                      | >5            | >5                   | >75**               | >400     | >5       | >750      | >750     | >100     | >1500    |

Højvang Laboratorier A/S fraskriver sig ethvert ansvar i forbindelse med anvendelsen af de foretagne klassificeringer. Brugeren bør i hvert tilfælde sikre sig korrektheden af klassificeringen.

\* Skal vurderes særskilt afhængigt af kviksløvs tilstandsform

\*\* Summen af 7 enkeltkomponenter: Fluoranthen, benz(b,j,k)fluoranthen, benz(a)pyren, dibenz(a,h)anthracen og indeno(1,2,3-cd)pyren.

\*\*\* Teknisk tilpasning som følge af udmelding fra Miljøstyrelsen den 22. december 2005.

Ved hasteanalyser kan reduceret ekstraktionstid medføre nedsat ekstraktionsudbytte for kulbrinter. Udbyttet vil typisk udgøre 80- 90% af udbyttet ved normal ekstraktionstid (ved højtstående kulbrinter dog ned til 50%). Der er ved klassificeringen ikke taget højde for dette.

## ANALYSERAPPORT

DJ Miljø & Geoteknik P/S  
Falkevej 12  
3400 Hillerød

Prøver modtaget den: 04-10-2023  
Analyse påbegyndt den: 04-10-2023  
Antal prøver: 10

Sagsnavn: Egebækvej, 2850 Nærum - Rundforbi Stadion  
Sags nr.: 231579  
Sagsbeh.: BHO  
Prøvetager: Ekstern/KET  
Rapport dato: 09-10-2023 10:43:23  
Rapport nr.: 68689

Labnr.: JO23400201-001  
Prøvetype: Jord  
Emballage: Membranglas og PE-pose

Rekvirent prøve ID: HBI  
Dybde: 0-0,5

| Parameter                 | Resultat | Enhed    | DL        | Urel %□   | Intern  | Reference                       | Princip |
|---------------------------|----------|----------|-----------|-----------|---------|---------------------------------|---------|
| Tørstof, TS               | 86       | W/W%     | <0,002    | 10        | HM001   | DS 204:1980 ^ d)                | Tørring |
| Kulbrinter C6H6-C10       | <2       | mg/kg TS | <2        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C10-C15       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C15-C20       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C20-C35       | <20      | mg/kg TS | <20       | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Totalkulbrinter, sum af 4 | #        | mg/kg TS | Beregning | Beregning | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Benzo(a)pyren             | 0,0091   | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Dibenz(a,h)anthracen      | <0,005   | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Sum af PAH (7 stk.)       | 0,048    | mg/kg TS | Beregning | Beregning | HM039_1 | Reflab 4(2):2008 d)             | GC-MS   |
| Bly                       | 9,5      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Cadmium                   | 0,23     | mg/kg TS | <0,02     | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Chrom, Cr                 | 5,8      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Kobber                    | 11       | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Nikkel                    | 5,6      | mg/kg TS | <0,5      | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Zink                      | 25       | mg/kg TS | <3        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |

### Provekommentar:

Ved metoden, totalkulbrinter - GC-FID, er der i prøverne konstateret flg. kulbrinter.\*:

Ikke påvist totalkulbrinter.

Rapport Status: Final

### Betegnelser:

- Ekspanderet usikkerhed, dækningsfaktor 2. Resultater på detektionsgrænseniveau er behæftet med en relativ større måleusikkerhed end generelt gældende
- \* Ikke akkrediteret.
- # Symboliserer at alle komponenter der indgår i den pågældende sum, har en konc. mindre end den enkelte komponents detektionsgrænse.
- F Foreløbigt resultat
- DL Detektionsgrænse
- Urel Den relative usikkerhed %
- ^ Analyseret efter kvalitetskrav til miljømålinger

## ANALYSERAPPORT

DJ Miljø & Geoteknik P/S  
Falkevej 12  
3400 Hillerød

Prøver modtaget den: 04-10-2023  
Analyse påbegyndt den: 04-10-2023  
Antal prøver: 10

Sagsnavn: Egebækvej, 2850 Nærum - Rundforbi Stadion  
Sags nr.: 231579  
Sagsbeh.: BHO  
Prøvetager: Ekstern/KET  
Rapport dato: 09-10-2023 10:43:23  
Rapport nr.: 68689

Labnr.: JO23400201-002  
Prøvetype: Jord  
Emballage: Membranglas og PE-pose

Rekvirent prøve ID: HB2  
Dybde: 0-0,5

| Parameter                 | Resultat | Enhed    | DL        | Urel %□   | Intern  | Reference                       | Princip |
|---------------------------|----------|----------|-----------|-----------|---------|---------------------------------|---------|
| Tørstof, TS               | 87       | W/W%     | <0,002    | 10        | HM001   | DS 204:1980 ^ d)                | Tørring |
| Kulbrinter C6H6-C10       | <2       | mg/kg TS | <2        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C10-C15       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C15-C20       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C20-C35       | <20      | mg/kg TS | <20       | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Totalkulbrinter, sum af 4 | #        | mg/kg TS | Beregning | Beregning | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Benzo(a)pyren             | <0,005   | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Dibenz(a,h)anthracen      | <0,005   | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Sum af PAH (7 stk.)       | 0,016    | mg/kg TS | Beregning | Beregning | HM039_1 | Reflab 4(2):2008 d)             | GC-MS   |
| Bly                       | 7,3      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Cadmium                   | 0,23     | mg/kg TS | <0,02     | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Chrom, Cr                 | 4,3      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Kobber                    | 6,9      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Nikkel                    | 4,0      | mg/kg TS | <0,5      | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Zink                      | 19       | mg/kg TS | <3        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |

### Provekommentar:

Ved metoden, totalkulbrinter - GC-FID, er der i prøverne konstateret flg. kulbrinter.\*:

Ikke påvist totalkulbrinter.

Rapport Status: Final

### Betegnelser:

- Ekspanderet usikkerhed, dækningsfaktor 2. Resultater på detektionsgrænseniveau er behæftet med en relativ større måleusikkerhed end generelt gældende
- \* Ikke akkrediteret.
- # Symboliserer at alle komponenter der indgår i den pågældende sum, har en konc. mindre end den enkelte komponents detektionsgrænse.
- F Foreløbigt resultat
- DL Detektionsgrænse
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## ANALYSERAPPORT

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Falkevej 12  
3400 Hillerød

Prøver modtaget den: 04-10-2023  
Analyse påbegyndt den: 04-10-2023  
Antal prøver: 10

Sagsnavn: Egebækvej, 2850 Nærum - Rundforbi Stadion  
Sags nr.: 231579  
Sagsbeh.: BHO  
Prøvetager: Ekstern/KET  
Rapport dato: 09-10-2023 10:43:23  
Rapport nr.: 68689

Labnr.: JO23400201-003  
Prøvetype: Jord  
Emballage: Membranglas og PE-pose

Rekvirent prøve ID: HB3  
Dybde: 0-0,5

| Parameter                 | Resultat | Enhed    | DL        | Urel %□   | Intern  | Reference                       | Princip |
|---------------------------|----------|----------|-----------|-----------|---------|---------------------------------|---------|
| Tørstof, TS               | 90       | W/W%     | <0,002    | 10        | HM001   | DS 204:1980 ^ d)                | Tørring |
| Kulbrinter C6H6-C10       | <2       | mg/kg TS | <2        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C10-C15       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C15-C20       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C20-C35       | <20      | mg/kg TS | <20       | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Totalkulbrinter, sum af 4 | #        | mg/kg TS | Beregning | Beregning | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Benzo(a)pyren             | <0,005   | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Dibenz(a,h)anthracen      | <0,005   | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Sum af PAH (7 stk.)       | 0,016    | mg/kg TS | Beregning | Beregning | HM039_1 | Reflab 4(2):2008 d)             | GC-MS   |
| Bly                       | 6,6      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Cadmium                   | 0,22     | mg/kg TS | <0,02     | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Chrom, Cr                 | 3,3      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Kobber                    | 5,2      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Nikkel                    | 3,9      | mg/kg TS | <0,5      | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Zink                      | 20       | mg/kg TS | <3        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |

### Provekommentar:

Ved metoden, totalkulbrinter - GC-FID, er der i prøverne konstateret flg. kulbrinter.\*:

Ikke påvist totalkulbrinter.

Rapport Status: Final

### Betegnelser:

- Ekspanderet usikkerhed, dækningsfaktor 2. Resultater på detektionsgrænse niveau er behæftet med en relativ større måleusikkerhed end generelt gældende
- \* Ikke akkrediteret.
- # Symboliserer at alle komponenter der indgår i den pågældende sum, har en konc. mindre end den enkelte komponents detektionsgrænse.
- F Foreløbigt resultat
- DL Detektionsgrænse
- Urel Den relative usikkerhed %
- ^ Analyseret efter kvalitetskrav til miljømålinger

## ANALYSERAPPORT

DJ Miljø & Geoteknik P/S  
Falkevej 12  
3400 Hillerød

Prøver modtaget den: 04-10-2023  
Analyse påbegyndt den: 04-10-2023  
Antal prøver: 10

Sagsnavn: Egebækvej, 2850 Nærum - Rundforbi Stadion  
Sags nr.: 231579  
Sagsbeh.: BHO  
Prøvetager: Ekstern/KET  
Rapport dato: 09-10-2023 10:43:23  
Rapport nr.: 68689

Labnr.: JO23400201-004  
Prøvetype: Jord  
Emballage: Membranglas og PE-pose

Rekvirent prøve ID: HB4  
Dybde: 0-0,5

| Parameter                 | Resultat | Enhed    | DL        | Urel %□   | Intern  | Reference                       | Princip |
|---------------------------|----------|----------|-----------|-----------|---------|---------------------------------|---------|
| Tørstof, TS               | 91       | W/W%     | <0,002    | 10        | HM001   | DS 204:1980 ^ d)                | Tørring |
| Kulbrinter C6H6-C10       | <2       | mg/kg TS | <2        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C10-C15       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C15-C20       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C20-C35       | <20      | mg/kg TS | <20       | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Totalkulbrinter, sum af 4 | #        | mg/kg TS | Beregning | Beregning | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Benzo(a)pyren             | 0,021    | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Dibenz(a,h)anthracen      | <0,005   | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Sum af PAH (7 stk.)       | 0,094    | mg/kg TS | Beregning | Beregning | HM039_1 | Reflab 4(2):2008 d)             | GC-MS   |
| Bly                       | 6,8      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Cadmium                   | 0,16     | mg/kg TS | <0,02     | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Chrom, Cr                 | 3,4      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Kobber                    | 5,9      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Nikkel                    | 3,9      | mg/kg TS | <0,5      | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Zink                      | 17       | mg/kg TS | <3        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |

### Provekommentar:

Ved metoden, totalkulbrinter - GC-FID, er der i prøverne konstateret flg. kulbrinter.\*:

Ikke påvist totalkulbrinter.

Rapport Status: Final

### Betegnelser:

- Ekspanderet usikkerhed, dækningsfaktor 2. Resultater på detektionsgrænseniveau er behæftet med en relativ større måleusikkerhed end generelt gældende
- \* Ikke akkrediteret.
- # Symboliserer at alle komponenter der indgår i den pågældende sum, har en konc. mindre end den enkelte komponents detektionsgrænse.
- F Foreløbigt resultat
- DL Detektionsgrænse
- Urel Den relative usikkerhed %
- ^ Analyseret efter kvalitetskrav til miljømålinger

## ANALYSERAPPORT

DJ Miljø & Geoteknik P/S  
Falkevej 12  
3400 Hillerød

Prøver modtaget den: 04-10-2023  
Analyse påbegyndt den: 04-10-2023  
Antal prøver: 10

Sagsnavn: Egebækvej, 2850 Nærum - Rundforbi Stadion  
Sags nr.: 231579  
Sagsbeh.: BHO  
Prøvetager: Ekstern/KET  
Rapport dato: 09-10-2023 10:43:23  
Rapport nr.: 68689

Labnr.: JO23400201-005  
Prøvetype: Jord  
Emballage: Membranglas og PE-pose

Rekvirent prøve ID: HB5  
Dybde: 0-0,5

| Parameter                 | Resultat | Enhed    | DL        | Urel %□   | Intern  | Reference                       | Princip |
|---------------------------|----------|----------|-----------|-----------|---------|---------------------------------|---------|
| Tørstof, TS               | 88       | W/W%     | <0,002    | 10        | HM001   | DS 204:1980 ^ d)                | Tørring |
| Kulbrinter C6H6-C10       | <2       | mg/kg TS | <2        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C10-C15       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C15-C20       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C20-C35       | <20      | mg/kg TS | <20       | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Totalkulbrinter, sum af 4 | #        | mg/kg TS | Beregning | Beregning | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Benzo(a)pyren             | 0,0058   | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Dibenz(a,h)anthracen      | <0,005   | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Sum af PAH (7 stk.)       | 0,032    | mg/kg TS | Beregning | Beregning | HM039_1 | Reflab 4(2):2008 d)             | GC-MS   |
| Bly                       | 7,8      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Cadmium                   | 0,18     | mg/kg TS | <0,02     | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Chrom, Cr                 | 4,9      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Kobber                    | 7,9      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Nikkel                    | 4,3      | mg/kg TS | <0,5      | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Zink                      | 20       | mg/kg TS | <3        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |

### Provekommentar:

Ved metoden, totalkulbrinter - GC-FID, er der i prøverne konstateret flg. kulbrinter.\*:

Ikke påvist totalkulbrinter.

Rapport Status: Final

### Betegnelser:

- Ekspanderet usikkerhed, dækningsfaktor 2. Resultater på detektionsgrænseniveau er behæftet med en relativ større måleusikkerhed end generelt gældende
- \* Ikke akkrediteret.
- # Symboliserer at alle komponenter der indgår i den pågældende sum, har en konc. mindre end den enkelte komponents detektionsgrænse.
- F Foreløbigt resultat
- DL Detektionsgrænse
- Urel Den relative usikkerhed %
- ^ Analyseret efter kvalitetskrav til miljømålinger

## ANALYSERAPPORT

DJ Miljø & Geoteknik P/S  
Falkevej 12  
3400 Hillerød

Prøver modtaget den: 04-10-2023  
Analyse påbegyndt den: 04-10-2023  
Antal prøver: 10

Sagsnavn: Egebækvej, 2850 Nærum - Rundforbi Stadion  
Sags nr.: 231579  
Sagsbeh.: BHO  
Prøvetager: Ekstern/KET  
Rapport dato: 09-10-2023 10:43:23  
Rapport nr.: 68689

Labnr.: JO23400201-006  
Prøvetype: Jord  
Emballage: Membranglas og PE-pose

Rekvirent prøve ID: HB6  
Dybde: 0-0,5

| Parameter                 | Resultat | Enhed    | DL        | Urel %□   | Intern  | Reference                       | Princip |
|---------------------------|----------|----------|-----------|-----------|---------|---------------------------------|---------|
| Tørstof, TS               | 88       | W/W%     | <0,002    | 10        | HM001   | DS 204:1980 ^ d)                | Tørring |
| Kulbrinter C6H6-C10       | <2       | mg/kg TS | <2        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C10-C15       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C15-C20       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C20-C35       | <20      | mg/kg TS | <20       | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Totalkulbrinter, sum af 4 | #        | mg/kg TS | Beregning | Beregning | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Benzo(a)pyren             | 0,0088   | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Dibenz(a,h)anthracen      | <0,005   | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Sum af PAH (7 stk.)       | 0,048    | mg/kg TS | Beregning | Beregning | HM039_1 | Reflab 4(2):2008 d)             | GC-MS   |
| Bly                       | 10       | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Cadmium                   | 0,27     | mg/kg TS | <0,02     | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Chrom, Cr                 | 5,7      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Kobber                    | 11       | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Nikkel                    | 5,4      | mg/kg TS | <0,5      | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Zink                      | 27       | mg/kg TS | <3        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |

### Provekommentar:

Ved metoden, totalkulbrinter - GC-FID, er der i prøverne konstateret flg. kulbrinter.\*:

Ikke påvist totalkulbrinter.

Rapport Status: Final

### Betegnelser:

- Ekspanderet usikkerhed, dækningsfaktor 2. Resultater på detektionsgrænseniveau er behæftet med en relativ større måleusikkerhed end generelt gældende
- \* Ikke akkrediteret.
- # Symboliserer at alle komponenter der indgår i den pågældende sum, har en konc. mindre end den enkelte komponents detektionsgrænse.
- F Foreløbigt resultat
- DL Detektionsgrænse
- Urel Den relative usikkerhed %
- ^ Analyseret efter kvalitetskrav til miljømålinger

## ANALYSERAPPORT

DJ Miljø & Geoteknik P/S  
Falkevej 12  
3400 Hillerød

Prøver modtaget den: 04-10-2023  
Analyse påbegyndt den: 04-10-2023  
Antal prøver: 10

Sagsnavn: Egebækvej, 2850 Nærum - Rundforbi Stadion  
Sags nr.: 231579  
Sagsbeh.: BHO  
Prøvetager: Ekstern/KET  
Rapport dato: 09-10-2023 10:43:23  
Rapport nr.: 68689

Labnr.: JO23400201-007  
Prøvetype: Jord  
Emballage: Membranglas og PE-pose

Rekvirent prøve ID: HB7  
Dybde: 0-0,5

| Parameter                 | Resultat | Enhed    | DL        | Urel %□   | Intern  | Reference                       | Princip |
|---------------------------|----------|----------|-----------|-----------|---------|---------------------------------|---------|
| Tørstof, TS               | 89       | W/W%     | <0,002    | 10        | HM001   | DS 204:1980 ^ d)                | Tørring |
| Kulbrinter C6H6-C10       | <2       | mg/kg TS | <2        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C10-C15       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C15-C20       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C20-C35       | <20      | mg/kg TS | <20       | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Totalkulbrinter, sum af 4 | #        | mg/kg TS | Beregning | Beregning | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Benzo(a)pyren             | 0,0070   | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Dibenz(a,h)anthracen      | <0,005   | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Sum af PAH (7 stk.)       | 0,038    | mg/kg TS | Beregning | Beregning | HM039_1 | Reflab 4(2):2008 d)             | GC-MS   |
| Bly                       | 7,0      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Cadmium                   | 0,19     | mg/kg TS | <0,02     | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Chrom, Cr                 | 4,1      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Kobber                    | 6,5      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Nikkel                    | 4,4      | mg/kg TS | <0,5      | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Zink                      | 19       | mg/kg TS | <3        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |

### Provekommentar:

Ved metoden, totalkulbrinter - GC-FID, er der i prøverne konstateret flg. kulbrinter.\*:

Ikke påvist totalkulbrinter.

Rapport Status: Final

### Betegnelser:

- Ekspanderet usikkerhed, dækningsfaktor 2. Resultater på detektionsgrænseniveau er behæftet med en relativ større måleusikkerhed end generelt gældende
- \* Ikke akkrediteret.
- # Symboliserer at alle komponenter der indgår i den pågældende sum, har en konc. mindre end den enkelte komponents detektionsgrænse.
- F Foreløbigt resultat
- DL Detektionsgrænse
- Urel Den relative usikkerhed %
- ^ Analyseret efter kvalitetskrav til miljømålinger

## ANALYSERAPPORT

DJ Miljø & Geoteknik P/S  
Falkevej 12  
3400 Hillerød

Prøver modtaget den: 04-10-2023  
Analyse påbegyndt den: 04-10-2023  
Antal prøver: 10

Sagsnavn: Egebækvej, 2850 Nærum - Rundforbi  
Stadion  
Sags nr.: 231579  
Sagsbeh.: BHO  
Prøvetager: Ekstern/KET  
Rapport dato: 09-10-2023 10:43:23  
Rapport nr.: 68689

Labnr.: JO23400201-008  
Prøvetype: Jord  
Emballage: Membranglas og PE-pose

Rekvirent prøve ID: HB8  
Dybde: 0-0,5

| Parameter                 | Resultat | Enhed    | DL        | Urel %□   | Intern  | Reference                       | Princip |
|---------------------------|----------|----------|-----------|-----------|---------|---------------------------------|---------|
| Tørstof, TS               | 90       | W/W%     | <0,002    | 10        | HM001   | DS 204:1980 ^ d)                | Tørring |
| Kulbrinter C6H6-C10       | <2       | mg/kg TS | <2        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C10-C15       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C15-C20       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C20-C35       | <20      | mg/kg TS | <20       | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Totalkulbrinter, sum af 4 | #        | mg/kg TS | Beregning | Beregning | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Benzo(a)pyren             | 0,0066   | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Dibenz(a,h)anthracen      | <0,005   | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Sum af PAH (7 stk.)       | 0,034    | mg/kg TS | Beregning | Beregning | HM039_1 | Reflab 4(2):2008 d)             | GC-MS   |
| Bly                       | 8,5      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Cadmium                   | 0,21     | mg/kg TS | <0,02     | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Chrom, Cr                 | 4,5      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Kobber                    | 7,8      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Nikkel                    | 4,3      | mg/kg TS | <0,5      | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Zink                      | 20       | mg/kg TS | <3        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |

### Provekommentar:

Ved metoden, totalkulbrinter - GC-FID, er der i prøverne konstateret flg. kulbrinter.\*:

Ikke påvist totalkulbrinter.

Rapport Status: Final

### Betegnelser:

- Ekspanderet usikkerhed, dækningsfaktor 2. Resultater på detektionsgrænseniveau er behæftet med en relativ større måleusikkerhed end generelt gældende
- \* Ikke akkrediteret.
- # Symboliserer at alle komponenter der indgår i den pågældende sum, har en konc. mindre end den enkelte komponents detektionsgrænse.
- F Foreløbigt resultat
- DL Detektionsgrænse
- Urel Den relative usikkerhed %
- ^ Analyseret efter kvalitetskrav til miljømålinger

## ANALYSE RAPPORT

DJ Miljø & Geoteknik P/S  
Falkevej 12  
3400 Hillerød

Prøver modtaget den: 04-10-2023  
Analyse påbegyndt den: 04-10-2023  
Antal prøver: 10

Sagsnavn: Egebækvej, 2850 Nærum - Rundforbi Stadion  
Sags nr.: 231579  
Sagsbeh.: BHO  
Prøvetager: Ekstern/KET  
Rapport dato: 09-10-2023 10:43:23  
Rapport nr.: 68689

Labnr.: JO23400201-009  
Prøvetype: Jord  
Emballage: Membranglas og PE-pose

Rekvirent prøve ID: HB9  
Dybde: 0-0,5

| Parameter                 | Resultat | Enhed    | DL        | Urel %□   | Intern  | Reference                       | Princip |
|---------------------------|----------|----------|-----------|-----------|---------|---------------------------------|---------|
| Tørstof, TS               | 90       | W/W%     | <0,002    | 10        | HM001   | DS 204:1980 ^ d)                | Tørring |
| Kulbrinter C6H6-C10       | <2       | mg/kg TS | <2        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C10-C15       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C15-C20       | <5       | mg/kg TS | <5        | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Kulbrinter >C20-C35       | <20      | mg/kg TS | <20       | 10        | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Totalkulbrinter, sum af 4 | #        | mg/kg TS | Beregning | Beregning | HM002   | Reflab1:2010, FID + M047 ^ d)   | GC-FID  |
| Benzo(a)pyren             | 0,0068   | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Dibenz(a,h)anthracen      | <0,005   | mg/kg TS | <0,005    | 30        | HM039_1 | Reflab 4(2):2008 ^ d)           | GC-MS   |
| Sum af PAH (7 stk.)       | 0,038    | mg/kg TS | Beregning | Beregning | HM039_1 | Reflab 4(2):2008 d)             | GC-MS   |
| Bly                       | 7,9      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Cadmium                   | 0,21     | mg/kg TS | <0,02     | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Chrom, Cr                 | 4,4      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Kobber                    | 7,7      | mg/kg TS | <1        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Nikkel                    | 5,3      | mg/kg TS | <0,5      | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |
| Zink                      | 22       | mg/kg TS | <3        | 30        | HM003   | DS 11885:2009, DS 259:2003 ^ d) | ICP     |

### Provekommentar:

Ved metoden, totalkulbrinter - GC-FID, er der i prøverne konstateret flg. kulbrinter.\*:

Ikke påvist totalkulbrinter.

Rapport Status: Final

### Betegnelser:

- Ekspanderet usikkerhed, dækningsfaktor 2. Resultater på detektionsgrænse niveau er behæftet med en relativ større måleusikkerhed end generelt gældende
- \* Ikke akkrediteret.
- # Symboliserer at alle komponenter der indgår i den pågældende sum, har en konc. mindre end den enkelte komponents detektionsgrænse.
- F Foreløbigt resultat
- DL Detektionsgrænse
- Urel Den relative usikkerhed %
- ^ Analyseret efter kvalitetskrav til miljømålinger

## ANALYSE RAPPORT

DJ Miljø & Geoteknik P/S  
Falkevej 12  
3400 Hillerød

Prøver modtaget den: 04-10-2023  
Analyse påbegyndt den: 04-10-2023  
Antal prøver: 10

Sagsnavn: Egebækvej, 2850 Nærum - Rundforbi Stadion  
Sags nr.: 231579  
Sagsbeh.: BHO  
Prøvetager: Ekstern/KET  
Rapport dato: 09-10-2023 10:43:23  
Rapport nr.: 68689

Labnr.: JO23400201-010  
Prøvetype: Jord  
Emballage: Membranglas og PE-pose

Rekvirent prøve ID: HB10  
Dybde: 0-0,5

| Parameter                 | Resultat | Enhed    | DL        | Urel % <sup>□</sup> | Intern  | Reference                                  | Princip |
|---------------------------|----------|----------|-----------|---------------------|---------|--------------------------------------------|---------|
| Tørstof, TS               | 88       | W/W%     | <0,002    | 10                  | HM001   | DS 204:1980 <sup>^</sup> d)                | Tørring |
| Kulbrinter C6H6-C10       | <2       | mg/kg TS | <2        | 10                  | HM002   | Reflab1:2010, FID + M047 <sup>^</sup> d)   | GC-FID  |
| Kulbrinter >C10-C15       | <5       | mg/kg TS | <5        | 10                  | HM002   | Reflab1:2010, FID + M047 <sup>^</sup> d)   | GC-FID  |
| Kulbrinter >C15-C20       | <5       | mg/kg TS | <5        | 10                  | HM002   | Reflab1:2010, FID + M047 <sup>^</sup> d)   | GC-FID  |
| Kulbrinter >C20-C35       | <20      | mg/kg TS | <20       | 10                  | HM002   | Reflab1:2010, FID + M047 <sup>^</sup> d)   | GC-FID  |
| Totalkulbrinter, sum af 4 | #        | mg/kg TS | Beregning | Beregning           | HM002   | Reflab1:2010, FID + M047 <sup>^</sup> d)   | GC-FID  |
| Benzo(a)pyren             | 0,0073   | mg/kg TS | <0,005    | 30                  | HM039_1 | Reflab 4(2):2008 <sup>^</sup> d)           | GC-MS   |
| Dibenz(a,h)anthracen      | <0,005   | mg/kg TS | <0,005    | 30                  | HM039_1 | Reflab 4(2):2008 <sup>^</sup> d)           | GC-MS   |
| Sum af PAH (7 stk.)       | 0,039    | mg/kg TS | Beregning | Beregning           | HM039_1 | Reflab 4(2):2008 d)                        | GC-MS   |
| Bly                       | 7,2      | mg/kg TS | <1        | 30                  | HM003   | DS 11885:2009, DS 259:2003 <sup>^</sup> d) | ICP     |
| Cadmium                   | 0,23     | mg/kg TS | <0,02     | 30                  | HM003   | DS 11885:2009, DS 259:2003 <sup>^</sup> d) | ICP     |
| Chrom, Cr                 | 4,3      | mg/kg TS | <1        | 30                  | HM003   | DS 11885:2009, DS 259:2003 <sup>^</sup> d) | ICP     |
| Kobber                    | 6,9      | mg/kg TS | <1        | 30                  | HM003   | DS 11885:2009, DS 259:2003 <sup>^</sup> d) | ICP     |
| Nikkel                    | 5,1      | mg/kg TS | <0,5      | 30                  | HM003   | DS 11885:2009, DS 259:2003 <sup>^</sup> d) | ICP     |
| Zink                      | 20       | mg/kg TS | <3        | 30                  | HM003   | DS 11885:2009, DS 259:2003 <sup>^</sup> d) | ICP     |

### Provekommentar:

Ved metoden, totalkulbrinter - GC-FID, er der i prøverne konstateret flg. kulbrinter.\*:

Ikke påvist totalkulbrinter.

Rapport Status: Final

### Betegnelser:

- Ekspanderet usikkerhed, dækningsfaktor 2. Resultater på detektionsgrænse niveau er behæftet med en relativ større måleusikkerhed end generelt gældende
- \* Ikke akkrediteret.
- # Symboliserer at alle komponenter der indgår i den pågældende sum, har en konc. mindre end den enkelte komponents detektionsgrænse.
- F Foreløbigt resultat
- DL Detektionsgrænse
- Urel Den relative usikkerhed %
- <sup>^</sup> Analyseret efter kvalitetskrav til miljømålinger

## ANALYSERAPPORT

DJ Miljø & Geoteknik P/S  
Falkevej 12  
3400 Hillerød

Prøver modtaget den: 04-10-2023  
Analyse påbegyndt den: 04-10-2023  
Antal prøver: 10

Sagsnavn: Egebækvej, 2850 Nærum - Rundforbi Stadion  
Sags nr.: 231579  
Sagsbeh.: BHO  
Prøvetager: Ekstern/KET  
Rapport dato: 09-10-2023 10:43:23  
Rapport nr.: 68689

### Lokationsreference:

d) Højvang Laboratorier A/S, Dianalund. DANAK nr.: 428

### Rapporten sendes pr E-mail til:

Miljø afd./miljoe@dj-mg.dk

Prøvningsresultaterne gælder kun for de prøvede emner/delmængder. Uden laboratoriets skriftlige tilladelse må rapporten kun gengives i sin helhed.

Højvang Laboratorier A/S fraskriver sig ethvert ansvar i forbindelse med data oplyst af rekvirenten.

Analyseresultater anføres i rapporten med 2 betydende cifre medmindre andet er aftalt. Ved sammenligning med eventuelle grænse- og/eller kravværdi, anvendes analyseresultatet i rapporten.

Højvang Laboratorier A/S undersiger sig at udtale sig om holdninger og fortolkninger.

Udført iht: BEK nr 2362 af 26/11/2021 Bekendtgørelse om kvalitetskrav til miljømålinger.

Resultaterne gælder for prøven som den er modtaget.

Godkendt af:



Helle Rasmussen  
Laborant

### Bilag til denne rapport:

Rekvisation - JO23400201.pdf-0001694915.pdf  
Pivot Results-0001698489.csv  
-0001698490.xlsx

Rapport Status: Final

### Betegnelser:

- Ekspanderet usikkerhed, dækningsfaktor 2. Resultater på detektionsgrænseniveau er behæftet med en relativ større måleusikkerhed end generelt gældende
- \* Ikke akkrediteret.
- # Symboliserer at alle komponenter der indgår i den pågældende sum, har en konc. mindre end den enkelte komponents detektionsgrænse.
- F Foreløbigt resultat
- DL Detektionsgrænse
- Urel Den relative usikkerhed %
- ^ Analyseret efter kvalitetskrav til miljømålinger

## Bilag 3

Nedbørskararakteristika

KommuneRudersdal

Designkarakteristika

Gentagelsesperiode (år)5 år

Sikkerhedsfaktor (klima, fremtidig udbygning, etc)1,3

Oplandskarakteristika

Befæstet areal (m²)6966 m²

Jord- og nedsivningskarakteristika

K (Hydraulisk ledningsevne) - se evt måling nederst9,20E-06 m/s

Indtast blå og røde tal i kolonne B.  
Derefter tryk på knappen "Beregn"

Pil ikke - intern beregning

Afskærende lednings kapacitet l/s

3,68E+00

Volumen m³

18

Total opland (m²)

1000

|            | Beregningstjek | Vol m³   | Dræn kap l/s | Iterationsafstand | Antal iterationer |
|------------|----------------|----------|--------------|-------------------|-------------------|
| Faskine    | OK             | 131,1919 | 23,46356564  | 0,0526%           | 14                |
| Regnbed    | OK             | 235,3776 | 80,9784      | 0,0000%           | 1                 |
| Grøft      | OK             | 309,3001 | 4,520040076  | 0,0158%           | 3                 |
| Perm. bel. | OK             | 17,99414 | 3,68         | 0,0000%           | 1                 |

Faskine

Bredde0,35 m

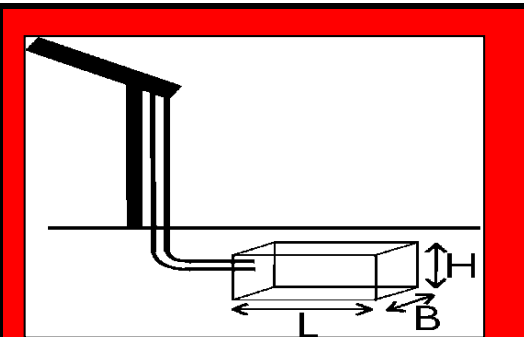
Højde0,5 m

Hulrums andel i faskine [Plast: 0,95, sten: 0,25]0,25 0-1

Udsivning i faskinebund: 0=Nej ,1=ja1

Længde faskine2998,7 m

Dræn kapacitet, gennemsnit2,35E+01 l/s



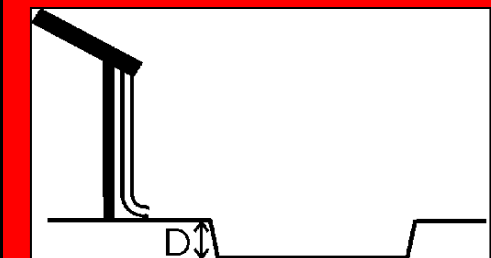
Regnbed

Areal regnbed8802,0 m²

Dybde0,03 m

Dræn kapacitet8,10E+01 l/s

Samlet opland (befæstet areal + eget areal)15768,0 m²



Grøft / wadi, V-formet

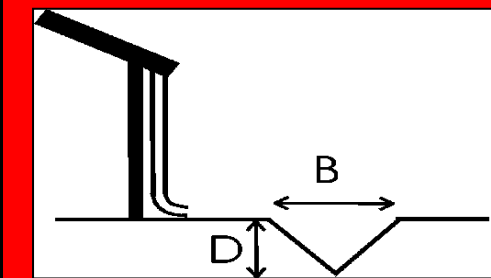
Bredde (kronekant)3,5 m

Længde grøft262,0 m

Dybde0,67 m

Dræn kapacitet, gns-snit4,52E+00 l/s

Samlet opland (befæstet areal + eget areal)7883,0 m²



Permeabel belægning

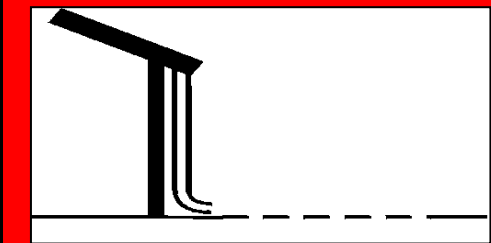
Areal af permeabel belægning400 m²

Areal af tilstødende afvandingsareal (tag, vej, etc)600 m²

Hulrumsandel af lag under belægning [0-1]0,3 0-1

Dybde af lag under belægning150 mm

Dræn kapacitet3,68E+00 l/s



Hjælpestørrelser, faskine

Opstuvningsvolumen131,19 [m³]

Faskine volumen524,77 [m³]

Regn, der holdes umiddelbart18,83 [mm]

Regn, der siver pr døgn290,87 [mm/døgn]

Tømmetid2 timer5,59E+03 [s]

Afløbstal3,37E+01 [l/sek/ha]

Dimensionerende kasseregn, Afløbsteknik s. 269

Vr,k (mm)15,69

Varighed (h)0,56

Karakteritika for dimensionerende kasseregn

Samlet nedbør (mm)22,44

Intensitet (l/sek/ha)112,01

Hjælpestørrelser, regnbed

Opstuvningsvolumen235,38 [m³]

Regn, der holdes umiddelbart14,93 [mm]

Regn, der siver pr døgn443,72 [mm/døgn]

Tømmetid1 timer2,91E+03 [s]

Afløbstal5,14E+01 [l/sek/ha]

Dimensionerende kasseregn, Afløbsteknik s. 269

Vr,k (mm)12,44

Varighed (h)0,33

Karakteritika for dimensionerende kasseregn

Samlet nedbør (mm)18,53

Intensitet (l/sek/ha)156,17

Hjælpestørrelser, grøft

Opstuvningsvolumen309,30 [m³]

Regn, der holdes umiddelbart39,24 [mm]

Regn, der siver pr døgn49,55 [mm/døgn]

Tømmetid19 timer6,84E+04 [s]

Afløbstal5,73E+00 [l/sek/ha]

Dimensionerende kasseregn, Afløbsteknik s. 269

Vr,k (mm)32,70

Varighed (h)5,67

Karakteritika for dimensionerende kasseregn

Samlet nedbør (mm)44,41

Intensitet (l/sek/ha)21,74

Hjælpestørrelser, perm. belægning

Opstuvningsvolumen17,99 [m³]

Belægningsvolumen59,98 [m³]

Regn, der holdes umiddelbart17,99 [mm]

Regn, der siver pr døgn317,95 [mm/døgn]

Tømmetid1 timer4,89E+03 [s]

Afløbstal3,68E+01 [l/sek/ha]

Dimensionerende kasseregn, Afløbsteknik s. 269

Vr,k (mm)15,00

Varighed (h)0,50

Karakteritika for dimensionerende kasseregn

Samlet nedbør (mm)21,59

Intensitet (l/sek/ha)120,46

| Tabelværdier for den hydrauliske ledningsevne, K. Værdierne rækker over et stort spænd og K skal måles aktuelt på stedet. |                |     |                 |          |
|---------------------------------------------------------------------------------------------------------------------------|----------------|-----|-----------------|----------|
| Grus                                                                                                                      | 1e-3 til 0,1   | m/s | 3.600 - 360.000 | mm/ time |
| Sand:                                                                                                                     | 1e-5 til 1e-2  | m/s | 36 - 36.000     | mm/ time |
| Silt:                                                                                                                     | 1e-9 til 1e-5  | m/s | 0,0036 - 36     | mm/ time |
| Ren ler:                                                                                                                  | under 1,0e-9   | m/s | under 0,0036    | mm/ time |
| Moræneler                                                                                                                 | 1e-10 til 1e-6 | m/s | 0,00036 - 3,6   | mm/ time |

BASSIN-DIMENSIONERING

Sagnavn:

Sagsnr.:

Dato:

Sagsnr.:

Bilag nr.:

Ny kunstgræsbane - Rundforbi Stadion

25053

11.04.2025

4

WGS84 ZONE 32

Northing

6192376

Eastning

721774

Gentagelsesperiode

5

år

Benyt krak for at få koordinatsæt

Operational faktor

Sikkerhedsfaktor på afstrømning

1,00

Beskriver den samlede usikkerhed på regn, afstrømning og hydraulisk model.

Scenarietremskrivning

Klimafaktor, indtastnings værdi

VÆLG

Beskriver ved en klimafaktor på nedbør samt en beskrivelse af byfortætning (enten i form af en fortætningsfaktor eller ved ændring i planmodellen).

Klimafaktor

1,30

2025

år

25

år

Biasfaktor (eventuelt)

1,00

Beskriver forskellen mellem den regionale model for regn og en lokal (observeret) regnserie.

Samlede operational sikkerhedsfaktor

1,30

Befæstet areal

10.885,00

m²

1,09

ha

Afløbskoefficienten, φ

0,10

Reduceret befæstet areal

1.088,50

m²

0,11

ha

BEREGN!

Hydrologisk reduktionsfaktor

1

Afskærende lednings kapacitet

2

I/s

VÆLG

Den maksimalt tilladte afledning

2,00

I/s

Risiko for tilstopning ved konstant afledning. Det anbefales, at anvende en dynamisk afledning

Regulatorens afledningsform

Konstant afledning

VÆLG

Konstant afledning

0,65

Tryk på knappen for at tage en kopi af resultaterne. Foretag derefter en ny beregning og sammenlign resultaterne mellem den konstante og den dynamiske afledning.

Konstant afledning

0,65

1,00

I/s

28,36

µm/s

283,62

I/s \* ha

Det projekterende afskærende lednings kapacitet

2,00

I/s

Regnintensitet for 10 min. regnskyl

#VÆRDI!

µm/s

#VÆRDI!

I/s \* ha

Bassinets nødvendige forsinkelsesvolumen

#VÆRDI!

m³

195

m³

Effekten af koblede regn ER inkluderet (20 % ekstra volumen)  
Tjek volumenkurven for at validere om de 20 % er fornuftigt

Fjern sammenligning

Tømmetiden

#VÆRDI!

timer

54,23

timer

#VÆRDI!

#VÆRDI!

2,26

døgn

Volumentillæg

Det faste volumentillæg på 20% af hensyn til koblede hændelser, vurderes at være

tilstrækkeligt jf. volumenkurven

350

utilstrækkeligt jf. volumenkurven, og et yderligere tillæg er nødvendigt

2

%

3

m³

198

m³

55,14

timer

Vandsspejlskote for beregningsudgangspunkt i stuvningsberegning:

24,70

## Bilag 4

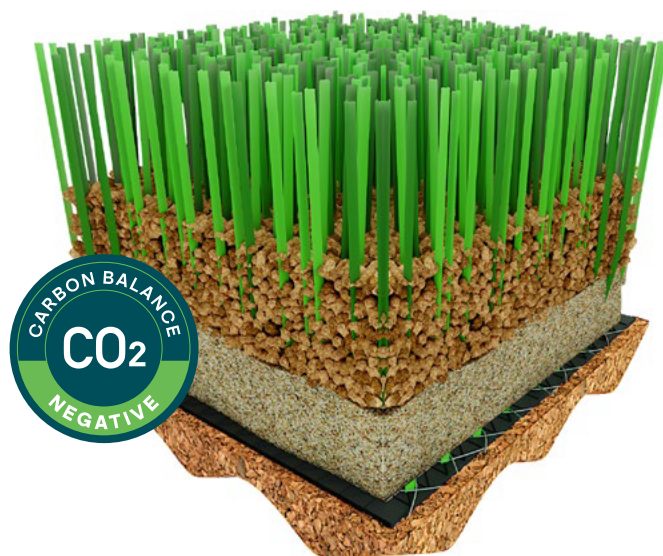
## Bilag 4

Infill

## Nature 130

### Product Data Sheet

### Material Description & Properties



### Physical and mechanical properties

|                                                |         |
|------------------------------------------------|---------|
| Cork Granule Size (mm)                         | 1–2     |
| Bulk Density (kg/m <sup>3</sup> ) <sup>1</sup> | 110–130 |
| Moisture Content (%) <sup>2</sup>              | <12     |

(1) ISO 2031

(2) ISO 2190

\*This result was based on a tool specifically developed by PwC – PricewaterhouseCoopers, which makes it possible to estimate the Carbon Footprint associated to granules produced from cork and cork waste, from the management phase of the cork oak forest, transport of these raw materials, processing and packaging, to the factory gate, using the Cradle-to-Gate approach (which does not include transport, application or end-of-life destination).

The data provided in this Product Data Sheet represents typical values. This information is not intended to be used as a purchasing specification and does not imply suitability for use in a specific application or with other specific components. IT IS THE CUSTOMER'S AND/OR INSTALLER'S RESPONSIBILITY TO ENSURE THAT THE COMBINATION OF ALL COMPONENTS (INCLUDING OUR PRODUCTS) OF A GIVEN ARTIFICIAL TURF AND ITS METHOD OF APPLICATION ENSURE ADEQUATE DRAINAGE PROPERTIES. Failure to select the proper product and its installation system may result in either product damage or personal injury. WITH THE EXCEPTION OF COMPLIANCE WITH THE AMORIM'S PRODUCT SPECIFICATIONS SHEET (PDA), AMORIM SPORTS EXPRESSLY DISCLAIMS ANY OTHER WARRANTY, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE. IN ANY CASE, AMORIM SPORTS IS NOT LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR PUNITIVE DAMAGES AS A RESULT OF USING THE INFORMATION LISTED IN THIS MATERIAL DATA SHEET, ANY OF ITS BROCHURES, ITS PRODUCTS OR ANY FUTURE USE OR RE-USE OF THEM BY ANY PERSON OR ENTITY. For contractual purposes, please request our Product Specifications Sheet (PDA).

[www.amorim-sports.com](http://www.amorim-sports.com)

**Amorim Nature 130** is a natural artificial turf infill based on cork granules with size between 1 and 2 mm (less than 5% below 0.85 mm).

### Benefits

#### Sports function

- Great energy absorption, avoiding player injury under fall
- Improved rotational friction, avoiding player injury
- Low energy restitution, aiming players comfort
- High elasticity and compression resistance

#### Construction

- Provides the support required by the pile
- Decay resistant
- Flame retardancy properties
- Key component in safety and performance characteristics of the pitch
- Decreased surface temperature

#### Sustainability

- 100% natural, renewable and recyclable
- With a negative carbon balance of -72,5kg CO<sub>2</sub>e/kg\*, contributes to a lower carbon footprint of sports surfaces
- No chemical contamination, 100% free according to REACH
- Odourless



## Jørgen Hegner

---

**Emne:** VS: [EXTERNAL] Pesticid  
**Vedhæftede filer:** SVHC declaration\_ACC\_en.pdf  
**orbit-archived:** 00704 JHE - Jørgen Hegner

**Fra:** Barbara Amorim (AS) <[barbara.amorim@amorim.com](mailto:barbara.amorim@amorim.com)>  
**Sendt:** 14. februar 2024 13:46  
**Til:** Lars Offenbach Poulsen <[lp@citylawn.dk](mailto:lp@citylawn.dk)>  
**Cc:** Theis Elkjær - Citylawn <[te@citylawn.dk](mailto:te@citylawn.dk)>; Patricia Ramos (ACC) <[patricia.ramos@amorim.com](mailto:patricia.ramos@amorim.com)>  
**Emne:** RE: [EXTERNAL] Pesticid

Dear Lars,

I hope you are doing well.  
Our cork infill is free of pesticides, usually we provide the REACH declaration that should be enough.  
Please find attached.

If this is not you are looking for, please let me know so I can forward you request to your technical department.

Thank you.

Kind Regards / Com os melhores cumprimentos,

**Bárbara Amorim**  
Sales Manager

+351 969 860 241 M

+351 227 475 480 T



[Amorim-sports.com](http://Amorim-sports.com)

Follow Us



## REACH SVHC DECLARATION

According to REACH Regulation nº 1907/2006/EC, the European Chemicals Agency (ECHA) have produced a list of substances, last revision in January 23<sup>th</sup> of 2024 (with 5 new substances added), that are designated as being Substances of Very High Concern (SVHC) and will become subject to Authorisation.

After analysing the revised List, Amorim Cork Composites declares that do not intentionally add any of those SVHC to our Cork Composite Materials and to the best of our knowledge the raw materials we use in our materials do not contain the listed Substances in a concentration above 0.1% w/w.

For more detailed information regarding this List, regulations, date and reason for inclusion, please refer to ECHA website:

[Candidate List of substances of very high concern for Authorisation - ECHA \(europa.eu\)](https://echa.europa.eu/candidate-list-table)

The response provided by Amorim Cork Composites is based upon the knowledge on the raw materials used in the manufacture of our products.

If we may be of any further assistance, please do not hesitate to contact us.

Amorim Cork Composites  
Inovation Department  
João Paulo Carvalho



07 of February 2024

## TEST REPORT

## RAPPORT D'ESSAIS / INFORME DE ENSAYOS

Test on infill materials / Essais sur matériaux de remplissage /  
Materiales de relleno

Test realized according to NF P90-112, EN 15330-1, NF EN 71-3, REACH standards and FIFA, WORLD RUGBY handbooks  
Essais réalisés selon les normes NF P90-112, EN 15330-1, NF EN 71-3, REACH et les référentiels FIFA, WORLD RUGBY  
Ensayos según las normas NF P90-112, EN 15330-1, NF EN 71-3, REACH y los referenciales FIFA, WORLD RUGBY

### NATURE 130

### AMORIM CORK COMPOSITES

Interim report / rapport provisoire / informe provisional  
n°R201599-A2

Date : 23/02/2021



This report R201599-A2 cancels and replaces the previous report R201599-A1. We ask you to destroy the previous document and we inform you that we disclaim all responsibility in case of use or circulation of the report R201599-A1. Modifications brought to the report are identified with the symbol (m) in bold and red.

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The results are valid only for the assessed sample / Les résultats concernent uniquement les objets soumis aux essais / Los resultados del presente informe se refieren exclusivamente a las muestras objeto de los ensayos.

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## **SUMMARY / SOMMAIRE / INDICE**

### **1 ■ IDENTIFICATION / IDENTIFICATION / IDENTIFICACION**

### **2 ■ AGEING / VIEILLISSEMENT / ENVEJECIMIENTO**

### **3 ■ TOXICOLOGY AND ENVIRONNEMENT / TOXICOLOGIE ET ENVIRONNEMENT/ TOXICOLOGIA Y MEDIOAMBIANTE**

**3.1 Analysis of heavy metals after leading / Analyse des métaux lourds après lixiviation / Análisis de metales pesados después de la lixiviación**

**3.2 EOX**

**3.3 PAH / HAP**

**3.4 Analysis of heavy metals / Analyse des métaux lourds / Análisis de metales pesados**

**3.5 Chlorinated paraffins / Chloroparaffines / Parafina clorada**

**3.6 Phthalates / Phtalates / Ftalatos**

### **SYNTHESIS / SYNTHESE / SÍNTESIS**

## 1 ■ IDENTIFICATION / IDENTIFICATION / IDENTIFICACION

**Information provided by the supplier** / Caractéristiques fournies par le fabricant / Características comunicadas por el fabricante

|                                                                 |                                                           |
|-----------------------------------------------------------------|-----------------------------------------------------------|
| <b>Company</b><br>Société<br>Empresa                            | AMORIM CORK COMPOSITES                                    |
| <b>Address</b><br>Adresse<br>dirección                          | Rua de Meladas, 260<br>P.O. Box 1<br>MOZELOS-VFR 4536-902 |
| <b>Commercial name</b><br>Nom commercial<br>Nombre del producto | NATURE 130                                                |
| <b>Colour</b><br>Couleur<br>Color                               | Brown / marron / marrón                                   |
| <b>Nature</b><br>Nature<br>Naturaleza                           | VEGETAL                                                   |

**Specimen information** / Information concernant l'échantillon / Datos sobre la muestra

|                                                                             |                                     |
|-----------------------------------------------------------------------------|-------------------------------------|
| <b>Date of order</b><br>Date de commande<br>Fecha de pedido                 | 18/11/2020                          |
| <b>Specimen taken by</b><br>Echantillons prélevés par<br>Muestra tomada por | AMORIM CORK COMPOSITES              |
| <b>Date of reception</b><br>Date de réception<br>Fecha de recepción         | 20/11/2020                          |
| <b>Receipt number</b><br>Numéro de réception<br>Número de recepción         | 029310                              |
| <b>Date of tests</b><br>Date des essais<br>Fecha de ensayos                 | From/du 20/11/2020 to/au 08/01/2021 |

| Parameter<br>Elément<br>Elemento                                                                                                                                                                                                          | Unit<br>Unité<br>Unidad | Test method<br>Méthode d'essai<br>El método de ensayo | Result<br>Résultat<br>Resultado  | NF P90-112<br>(2016) | FIFA | World Rugby | EN15330-1 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------|----------------------------------|----------------------|------|-------------|-----------|
| <b>Particle shape</b><br>Forme / Forma                                                                                                                                                                                                    | (-)                     | EN 14955                                              | A3                               | V                    | V    | V           | V         |
| <b>Bulk density</b><br>Densité / Densidad                                                                                                                                                                                                 | (g/cm <sup>3</sup> )    | EN 1097-3                                             | 0,11 0,12 0,11<br>Moyenne : 0,11 | V                    | V    | V           | V         |
| <b>Particle size</b><br>d                                                                                                                                                                                                                 | (mm)                    | EN 933-1                                              | 1,000                            | ≥ 0.5                | V    | V           | V         |
| <b>D</b>                                                                                                                                                                                                                                  | (mm)                    | EN 933-1                                              | 2,500                            | ≤ 3,15               | V    | V           | V         |
| <b>Color</b><br>Couleur / Color                                                                                                                                                                                                           | (-)                     | visual                                                | Brown / marron /<br>marrón       | V                    | V    | V           | -         |
| <b>Permeability*</b><br>Perméabilité / Permeabilidad                                                                                                                                                                                      | (m/s)                   | EN 12616                                              | 0,0067                           | ≥ 0.0001             | -    | -           | -         |
| <b>Thermogravimetric Analysis TGA /</b><br>Analyse thermogravimétrique ATG /<br>Análisis Termogravimétrico ATG                                                                                                                            |                         |                                                       |                                  |                      |      |             |           |
| charge / charge / carga                                                                                                                                                                                                                   | (%)                     |                                                       | 22,2                             | -                    | V    | V           | -         |
| organic / organique / orgánico                                                                                                                                                                                                            | (%)                     |                                                       | 77,8                             | -                    | V    | V           | -         |
| **Mass loss between beginning of second peak<br>(around 400 °C) and 650°C /<br>Perte de masse entre le début du second pic<br>(autour de 400°C) et 650°C /<br>Perdida de masa entre el inicio del segundo pico<br>(aprox. 400 °C) y 650°C |                         |                                                       | *** N/A                          | > 20                 | V    | V           | -         |

V : required for identification / demandé pour l'identification

\*Water temperature/Température de l'eau/ Temperatura del agua : 19 °C

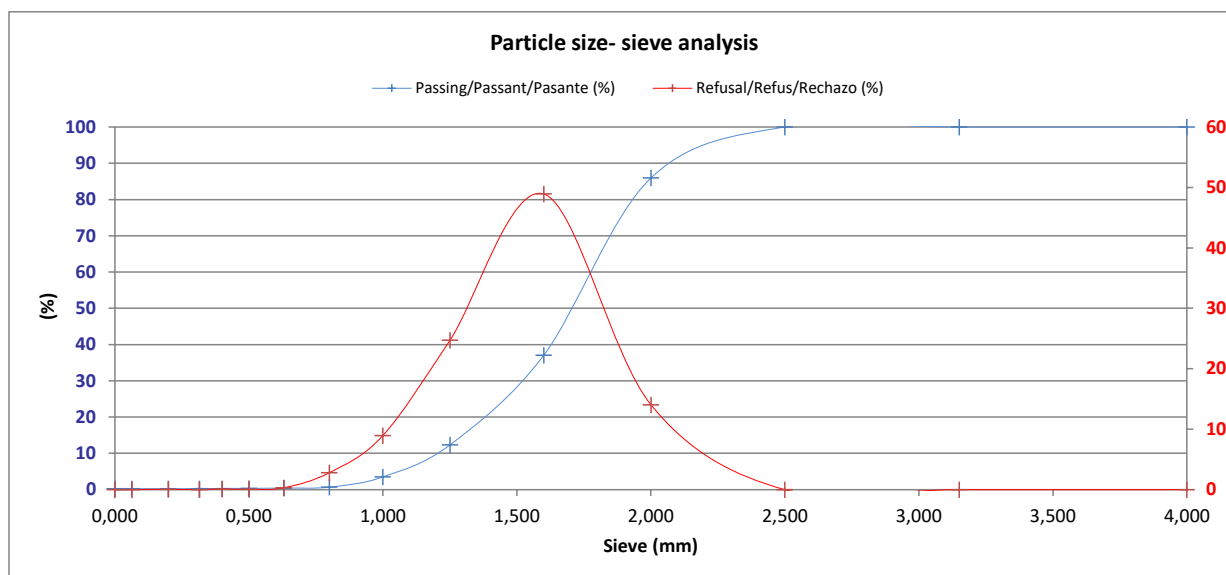
\*\* : 'elastomer content' as defined in FIFA manual / 'teneur en élastomère' telle que définie dans le règlement FIFA

\*\*\* N/A : La norme NF P90-112 mentionne la possible utilisation d'un remplissage de type organique pour les gazons synthétiques.

**Particle size d/D**

Granulométrie / Granulometría

| Sieve/Tamis/Cribas (mm)     | 0,000 | 0,063 | 0,200 | 0,315 | 0,400 | 0,500 | 0,630 | 0,800 | 1,000 | 1,250 | 1,600 | 2,000 | 2,500 | 3,150 | 4,000 |
|-----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Refusal/Refus/Rechazo(g)    | 78,4  | 78,39 | 78,4  | 78,4  | 78,4  | 78,3  | 78,3  | 78,1  | 75,9  | 68,9  | 49,5  | 11,0  | 0,0   | 0     | 0     |
| Passing/Passant/Pasante (%) | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 1     | 3     | 12    | 37    | 86    | 100   | 100   | 100   |
| Refusal/Refus/Rechazo (%)   | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 3     | 9     | 25    | 49    | 14    | 0     | 0     | 0     |



Definitions :

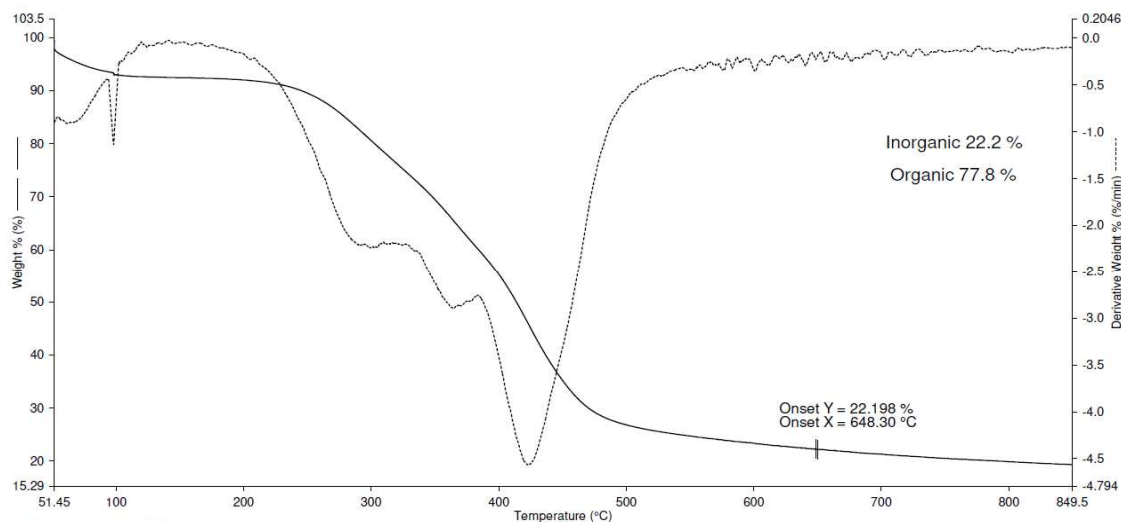
d : largest sieve / plus grand tamis <10%

D : smallest sieve / plus petit tamis >90%

Thermogravimetric Analysis TGA / Analyse thermogravimétrique ATG / Análisis Termogravimétrico ATG

Data Collected: 05/01/2021 10:45:36  
Operator ID: FRA  
Sample ID: 20-1599  
Sample Weight: 16.036 mg  
Initial Purge Gas: Argon  
Comment: PerkinElmer TGA4000 - Serial number 522A2092805 - calibration : alumel / perkalloy / iron

20-1599: 029310 (0009-01).t6d  
Weight % (%) : Steps: 1-3  
20-1599: 029310 (0009-01).t6d  
Derivative Weight % (%/min) (Smoothed) : Steps: 1-3



06/01/2021 16:01:42

- 1) Hold for 1.0 min at 50.00°C
- 2) Heat from 50.00°C to 850.00°C at 10.00°C/min
- 3) Hold for 1.0 min at 850.00°C

## 2 ■ AGEING / VIEILLISSEMENT / ENVEJECIMIENTO

**Hot water ageing then hot air ageing / Vieillissement à l'eau chaude puis à l'air chaud / Envejecimiento al agua caliente y aire caliente**

**Test method** / Norme d'essai / Método de ensayo : EN 13744 / EN 13817

| Parameter<br>Elément<br>Elemento                       | Unit<br>Unité<br>Unidad | Test method<br>Méthode d'essai<br>El método de ensayo | Result<br>Résultat<br>Resultado | NF P90-112 (2016) |
|--------------------------------------------------------|-------------------------|-------------------------------------------------------|---------------------------------|-------------------|
| <b>Particle size</b><br>Granulométrie / Granulometría  |                         |                                                       |                                 |                   |
| d                                                      | (mm)                    | EN 933-1                                              | 1,000 No variation              | No variation      |
| D                                                      | (mm)                    | EN 933-1                                              | 2,500 No variation              | No variation      |
| <b>Color</b><br>Couleur / Color                        |                         |                                                       |                                 |                   |
|                                                        | (-)                     | visual                                                | Brown / marron / marrón         | -                 |
| <b>Visual aspect</b><br>Aspect visuel / Aspecto visual |                         |                                                       |                                 |                   |
|                                                        | (-)                     | visual                                                | No agglomeration                | No agglomeration  |
|                                                        |                         |                                                       | No cracking                     | No cracking       |
|                                                        |                         |                                                       | No white film                   | No white film     |

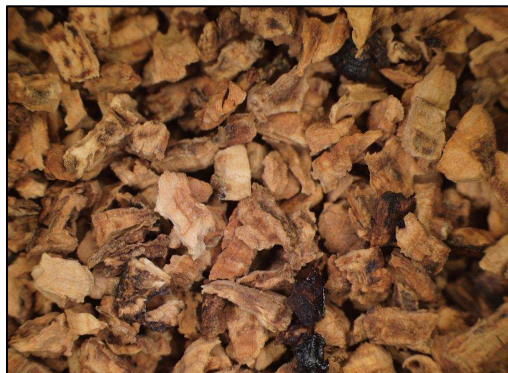
### View of the new product

Photographie du produit neuf  
Fotografía del producto nuevo



### View after ageing

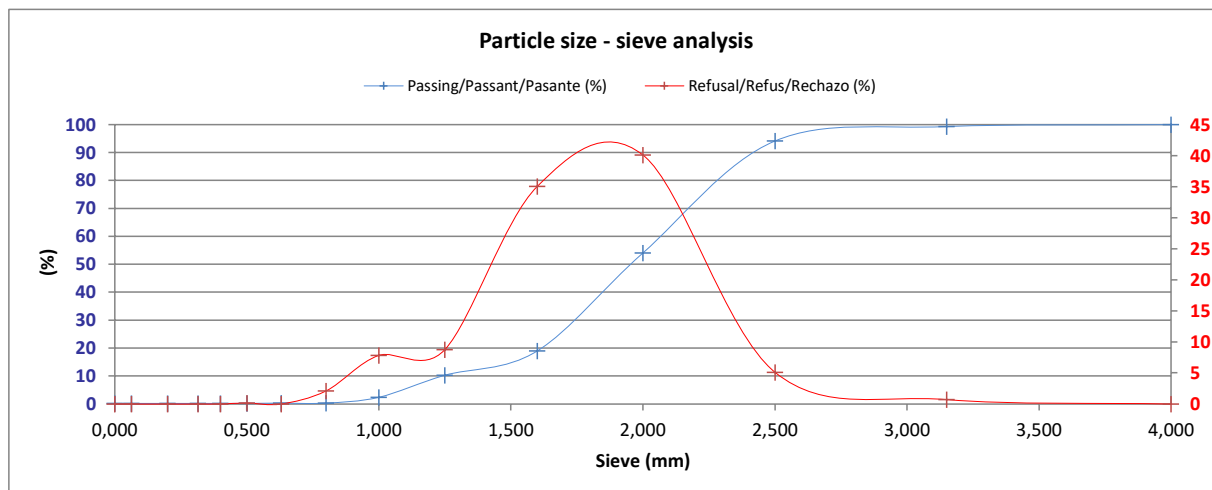
Photographie du produit après vieillissement  
Fotografía del producto después del envejecimiento



Particle size d/D after ageing

Granulométrie / Granulometria

| Sieve/Tamis/Cribas (mm)     | 0,000 | 0,063 | 0,200 | 0,315 | 0,400 | 0,500 | 0,630 | 0,800 | 1,000 | 1,250 | 1,600 | 2,000 | 2,500 | 3,150 | 4,000 |
|-----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Refusal/Refus/Rechazo(g)    | 72,1  | 72,14 | 72,1  | 72,1  | 72,1  | 72,1  | 72,1  | 72,1  | 70,5  | 64,9  | 58,5  | 33,2  | 4,2   | 0,49  | 0     |
| Passing/Passant/Pasante (%) | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 2     | 10,2  | 19    | 54    | 94    | 99    | 100   |
| Refusal/Refus/Rechazo (%)   | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 2     | 8     | 9     | 35    | 40    | 5     | 1     | 0     |



Definitions :

d : largest sieve / plus grand tamis <10%

D : smallest sieve / plus petit tamis >90%

**UVB (313 nm) ageing (4896 kJ - 2550 Hours) / Vieillissement aux UVB / Envejecimiento a los UVB**

**Test method** / Norme d'essai / Método de ensayo : EN 14836 - Method 2

| Parameter<br>Elément<br>Elemento                       | Unit<br>Unité<br>Unidad | Test method<br>Méthode d'essai<br>El método de ensayo | Result<br>Résultat<br>Resultado | NF P90-112 (2016) |
|--------------------------------------------------------|-------------------------|-------------------------------------------------------|---------------------------------|-------------------|
| <b>Color</b><br>Couleur / Color                        | (-)                     | visual                                                | In progress                     | -                 |
| <b>Grey scale</b><br>Echelle de gris / Escala de gris  | (-)                     | EN 20105-A02                                          | In progress                     | ≥ 3               |
| <b>Visual aspect</b><br>Aspect visuel / Aspecto visual | (-)                     | visual                                                | In progress                     | No change         |

**View of the new product**

Photographie du produit neuf  
Fotografía del producto nuevo

**View after ageing**

Photographie du produit après vieillissement  
Fotografía del producto después del envejecimiento

### 3 ■ TOXICOLOGY AND ENVIRONNEMENT / TOXICOLOGIE ET ENVIRONNEMENT / TOXICOLOGIA Y MEDIOAMBIANTE

#### 3.1 Analysis of heavy metals after leading / Analyse des métaux lourds après lixiviation / Análisis de metales pesados después de la lixiviación

**NF P 90-112 (2016):** The first eluate after leading without bubbling (24 hours) is analyzed. If the tests on the analysis of zinc and COD are not consistent (respectively between 0.5 and 1 mg/l and between 50 and 100 mg/l), the second eluate after leading without bubbling (48 hours) is analyzed. Leading test method : EN 12457-4. / Le premier éluat après lixiviation sans barbotage (24 heures) est analysé. Si les essais concernant l'analyse du Zinc et du COD ne sont pas conformes (respectivement compris entre 0.5 et 1 mg/l et compris entre 50 et 100 mg/l), le second éluat après lixiviation sans barbotage (48 heures) est analysé. Méthode d'essais pour la lixiviation : EN 12457-4.

| Parameter<br>Elément<br>Elemento                                       | Unit<br>Unité<br>Unidad | Test method<br>Méthode d'essai<br>El método de ensayo | Result<br>Résultat<br>Resultado               | NF P 90-112 (2016) |
|------------------------------------------------------------------------|-------------------------|-------------------------------------------------------|-----------------------------------------------|--------------------|
| <b>Lead Pb</b><br>Plomb / Plomo                                        | mg/l                    |                                                       | < 0,005                                       | ≤ 0.025            |
| <b>Cadmium Cd</b><br>Cadmio                                            | mg/l                    |                                                       | 0.003 <sup>(m)</sup>                          | ≤ 0.005            |
| <b>Chromium total Cr</b><br>Chrome total / Cromo total                 | mg/l                    | NF EN ISO 11885                                       | 0,003                                         | ≤ 0.050            |
| <b>Tin Sn</b><br>Etain / Estaño                                        | mg/l                    |                                                       | < 0,005                                       | ≤ 0.040            |
| <b>Zinc Zn</b><br>Zinc / Cinc                                          | mg/l                    |                                                       | Eluat 24H: 0,029<br>Eluat 48H: -              | ≤ 0.5              |
| <b>Dissolved organic carbone DOC</b><br>Carbone Organique Dissous      | mg/l                    | NF EN 1484                                            | Eluat 24H: N/A <sup>(a)</sup><br>Eluat 48H: - | ≤ 50               |
| <b>Chromium hexavalent Cr</b><br>Chrome hexavalent / Cromo hexavalente | mg/l                    | NF T90-043<br>DIN 38405-24                            | < 0,008                                       | ≤ 0.008            |
| <b>Mercury Hg</b><br>Mercure / Mercurio                                | mg/l                    | NF EN 13506<br>DIN 12846                              | < 0,000015                                    | ≤ 0.0010           |

N/A<sup>(a)</sup> : For organic infill, the DOC content is naturally higher and therefore we consider that the requirement criteria of 50 mg/l is not applicable for this type of material (Source: RAL-GZ 944 , Anlage D) / Pour les remplissages de type organique (charge naturelle composée de matériaux issus du règne végétal), la teneur en COD est naturellement plus élevée et donc par conséquent nous considérons que le critère d'exigence appliqué de 50 mg/l n'est pas applicable pour ce type de matériau (Source : RAL-GZ 944, Anl)

#### 3.2 EOX

| Parameter<br>Elément<br>Elemento                                                                                    | Unit<br>Unité<br>Unidad | Test method<br>Méthode d'essai<br>El método de ensayo | Result<br>Résultat<br>Resultado | NF P 90-112 (2016) |
|---------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------|---------------------------------|--------------------|
| <b>Extractable Organic Halides EOX</b><br>Organo-halogénés extractibles EOX<br>Extraíbles Orgánicas Halogenuros EOX | mg/kg                   | DIN 38414-17                                          | 33                              | ≤ 100              |

### 3.3 PAH - Polycyclic Aromatic Hydrocarbon / HAP - Hydrocarbures Aromatiques Polycycliques / HAP - Hidrocarburos Aromáticos Policíclicos

The rubber granules used as infill material for synthetic turf surfaces are classified as "mixtures" by the European REACH regulations. / Les granulats de caoutchouc utilisés comme matériaux de remplissage pour les surfaces de gazon synthétique sont classés comme « mélanges » par les réglementations européennes REACH<sup>(1)</sup>.

As such, rubber granules need to comply with entry 28 of annex XVII to the REACH regulations. / En tant que tel, les granulats de caoutchouc doivent être conforme à l'entrée 28 de l'annexe XVII du règlement REACH. Les HAP sont une partie de l'entrée 28 de l'annexe XVII du règlement REACH.

<sup>(1)</sup> ECHA (European Chemical Agency), 28-02-2017 Annex XV report, an evaluation of the possible health risks of recycled rubber granules used as infill in synthetic turf sports fields.

granules used as infill in synthetic turf sports fields.

| Parameter<br>Élément<br>Elemento | Unit<br>Unité<br>Unidad | Test method<br>Méthode d'essai<br>El método de ensayo | Result<br>Résultat<br>Resultado |      | Reach-Mixture<br>Reach-Mélange<br>Reach-Mezcla |
|----------------------------------|-------------------------|-------------------------------------------------------|---------------------------------|------|------------------------------------------------|
| Benzo(a) Pyrène                  | mg/kg                   | US EPA 8270<br>(2)                                    | <                               | 0,2  | 100                                            |
| Benzo(e) Pyrène                  | mg/kg                   |                                                       | <                               | 0,2  | 1000                                           |
| Benzo(A) Anthracène              | mg/kg                   |                                                       | <                               | 0,2  | 1000                                           |
| Chrysène                         | mg/kg                   |                                                       | <                               | 0,2  | 1000                                           |
| Benzo(J+B) Fluoranthène          | mg/kg                   |                                                       | <                               | 0,2  | 2000                                           |
| Benzo(K) Fluoranthène            | mg/kg                   |                                                       | <                               | 0,2  | 1000                                           |
| Dibenzo(A,H) Anthracène          | mg/kg                   |                                                       | <                               | 0,2  | 100                                            |
| Total 8 PAH                      |                         |                                                       | <                               | 1,4  |                                                |
| Indeno 1,2,3 (CD) Pyrène         | mg/kg                   | US EPA 8270<br>(2)                                    | <                               | 0,2  | /                                              |
| Benzo(G,H,I) Perylène            | mg/kg                   |                                                       | <                               | 0,2  | /                                              |
| Naphtalène                       | mg/kg                   |                                                       | <                               | 0,2  | /                                              |
| Acenaphtène                      | mg/kg                   |                                                       | <                               | 0,2  | /                                              |
| Acenaphtylène                    | mg/kg                   |                                                       | <                               | 0,2  | /                                              |
| Anthracène                       | mg/kg                   |                                                       | <                               | 0,2  | /                                              |
| Fluoranthène                     | mg/kg                   |                                                       | <                               | 0,2  | /                                              |
| Fluorène                         | mg/kg                   |                                                       | <                               | 0,2  | /                                              |
| Phenanthrène                     | mg/kg                   |                                                       | <                               | 0,2  | /                                              |
| Pyrène                           | mg/kg                   |                                                       |                                 | 0,20 | /                                              |
| Total 18 PAH                     |                         |                                                       | <                               | 3,4  | /                                              |

<sup>(2)</sup> ECHA (European Chemical Agency) compendium of test methods, March 2016 / Recueil des méthodes d'essai ECHA (European Chemical Agency), mars 2016.

### 3.4 Analysis of heavy metals / Analyse des métaux lourds / Análisis de metales pesados

The EN 71-3 standard specifies the maximum migration limits for toy materials. The migration limits of the elements are expressed in milligrams per kilogram of toy material. The limits taken into account are those of category III (polymers). These limits are intended to limit as much as possible the exposure of children to certain potentially toxic elements.

La norme EN 71-3 spécifie des limites de migration maximales applicables à des matériaux-jouet. Les limites de migration des éléments sont exprimées en milligrammes par kilogramme matériau-jouet. Les limites prises en compte sont celles de la catégorie III (polymères). Ces limites visent à limiter autant que possible l'exposition des enfants à certains éléments potentiellement toxiques.

| Parameter<br>Elément<br>Elemento | Unit<br>Unité<br>Unidad  | Test method<br>Méthode d'essai<br>El método de ensayo | Result<br>Résultat<br>Resultado | NF EN 71-3 (cat III) |
|----------------------------------|--------------------------|-------------------------------------------------------|---------------------------------|----------------------|
| Aluminium                        | mg/kg MS                 | ICP                                                   | 3,85                            | < 70 000             |
| Antimony                         | mg/kg MS                 | ICP                                                   | 0,3                             | < 560                |
| Arsenic                          | mg/kg MS                 | ICP                                                   | < 0,05                          | < 47                 |
| Barium                           | mg/kg MS                 | ICP                                                   | 18,3                            | < 18 750             |
| Boron                            | mg/kg MS                 | ICP                                                   | 8,3                             | < 15 000             |
| Cadmium                          | mg/kg MS                 | ICP                                                   | 0,05                            | < 17                 |
| Chromium total                   | mg/kg MS                 | ICP                                                   | 0,1                             | -                    |
| Chromium III                     | mg/kg MS NF EN ISO 11885 |                                                       | 0,1                             | < 460                |
| Chromium VI                      | mg/kg MS NF T 90-043     |                                                       | < 0,053                         | < 0.053              |
| Cobalt                           | mg/kg MS                 | ICP                                                   | < 0,05                          | < 130                |
| Copper                           | mg/kg MS                 | ICP                                                   | 2,3                             | < 7 700              |
| Lead                             | mg/kg MS                 | ICP                                                   | < 0,25                          | < 23                 |
| Manganese                        | mg/kg MS                 | ICP                                                   | 34,6                            | < 15 000             |
| Mercury                          | mg/kg MS NF EN ISO 17852 |                                                       | < 0,00075                       | < 94                 |
| Nickel                           | mg/kg MS                 | ICP                                                   | 0,3                             | < 930                |
| Selenium                         | mg/kg MS                 | ICP                                                   | < 0,25                          | < 460                |
| Strontium                        | mg/kg MS                 | ICP                                                   | 7,55                            | < 56 000             |
| Tin                              | mg/kg MS                 | ICP                                                   | < 0,25                          | < 180 000            |
| Organic Tin <sup>(1)</sup>       | mg/kg MS                 | ICP                                                   | NR                              | < 12                 |
| Zinc                             | mg/kg MS                 | ICP                                                   | 1,9                             | < 46 000             |

(1) NR : Non réalisé

### 3.5 Chlorinated paraffins / Chloroparaffines / Parafina clorada

| Parameter<br>Elément<br>Elemento                                     | Unit<br>Unité<br>Unidad | Test method<br>Méthode d'essai<br>El método de ensayo | Result<br>Résultat<br>Resultado |
|----------------------------------------------------------------------|-------------------------|-------------------------------------------------------|---------------------------------|
| <b>Chlorinated paraffins</b><br>Chloroparaffines<br>Parafina clorada | mg/kg                   | DIN 18035-7 stt                                       | < 10                            |

### 3.6 Phthalates / Phtalates / Ftalatos

| Parameter<br>Elément<br>Elemento           | Unit<br>Unité<br>Unidad | Test method<br>Méthode d'essai<br>El método de ensayo | Result<br>Résultat<br>Resultado |
|--------------------------------------------|-------------------------|-------------------------------------------------------|---------------------------------|
| <b>Phthalates</b><br>Phtalates<br>Ftalatos |                         |                                                       |                                 |
| Dimethylphtalate                           | mg/kg                   | DIN 18035-7 stt                                       | < 1                             |
| Diethylphtalate                            | mg/kg                   |                                                       | < 1                             |
| Di-iso-butylphtalate                       | mg/kg                   |                                                       | < 1                             |
| Di-n-butylphtalate                         | mg/kg                   |                                                       | < 1                             |
| Bis-(2-methoxyethyl) phtalate              | mg/kg                   |                                                       | < 6                             |
| Benzylbutylphtalate                        | mg/kg                   |                                                       | < 1                             |
| Bis-(2-ethylhexyl) phtalate                | mg/kg                   |                                                       | < 1                             |
| Di-n-octylphtalate                         | mg/kg                   |                                                       | < 1                             |
| Di-iso-nonylphtalate                       | mg/kg                   |                                                       | < 115                           |
| Di-iso-decylphtalate                       | mg/kg                   |                                                       | < 6                             |
| <b>Total</b>                               | mg/kg                   |                                                       | < 134                           |

## SYNTHESIS / SYNTHÈSE / SÍNTESIS

### 1. Identification / identification / identificación

| Tests<br>Essais / Pruebas                                 | Requirements<br>Exigences / Exigencias | Conformity<br>Conformité / Cumplimiento |
|-----------------------------------------------------------|----------------------------------------|-----------------------------------------|
| <b>Identification</b><br>identification<br>identificación | NF P 90-112 (2016)                     | Pass / conforme / cumple                |

### 2. Ageing / Vieillissement / Envejecimiento

| Tests<br>Essais / Pruebas                                                                                                                          | Requirements<br>Exigences / Exigencias | Conformity<br>Conformité / Cumplimiento |
|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------------------------------------|
| <b>Hot water ageing then hot air ageing</b><br>Vieillissement à l'eau chaude puis à l'air chaud<br>Envejecimiento al agua caliente y aire caliente | NF P 90-112 (2016)                     | Pass / conforme / cumple                |
| <b>UVB (313nm - 4896kJ - 2550H) ageing</b><br>Vieillissement aux UVB<br>Envejecimiento a los UVB                                                   | NF P 90-112 (2016)                     | In progress / en cours / en progreso    |

### 3. Toxicology and environment / Toxicologie et environnement / Toxicología y medioambiente

| Tests<br>Essais / Pruebas                                                                                                                                | Requirements<br>Exigences / Exigencias | Conformity<br>Conformité / Cumplimiento                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------------------------------------------------|
| <b>Analysis of heavy metals after leaching</b><br>Analyse des métaux lourds après lixiviation<br>Análisis de metales pesados después de la lixiviación   | NF P 90-112 (2016)                     | Pass / conforme / cumple                                                         |
| <b>Extractable Organic Halides EOX</b><br>Organo-halogénés extractibles EOX /<br>Extraíbles Orgánica Halogenuros EOX                                     | NF P 90-112 (2016)                     | Pass / conforme / cumple                                                         |
| <b>Polycyclic Aromatic Hydrocarbon PAH</b><br>Hydrocarbures Aromatiques Polycycliques HAP<br>Hidrocarburos Aromáticos Policíclicos HAP                   | REACH Mixture                          | Pass / conforme / cumple                                                         |
| <b>Analysis of heavy metals risks by ingestion</b><br>Analyse des métaux lourds risques par ingestion<br>Análisis de metales pesados riesgo de ingestión | NF EN 71-3 (cat III)                   | Pass / conforme / cumple<br>for the tests carried out / pour les essais réalisés |

Date : 23/02/2021



**APPROBATEUR**  
Benoît BOSSUET  
Responsable Technique Sols Synthétiques




**REDACTEUR**  
Steve BAZEILLE  
Responsable du Laboratoire

Kvartssand

**SIGTEANALYSE**

Udskrevet: 25-07-2011

Vare nr.: 50

Varebetegnelse: Sand nr. 50

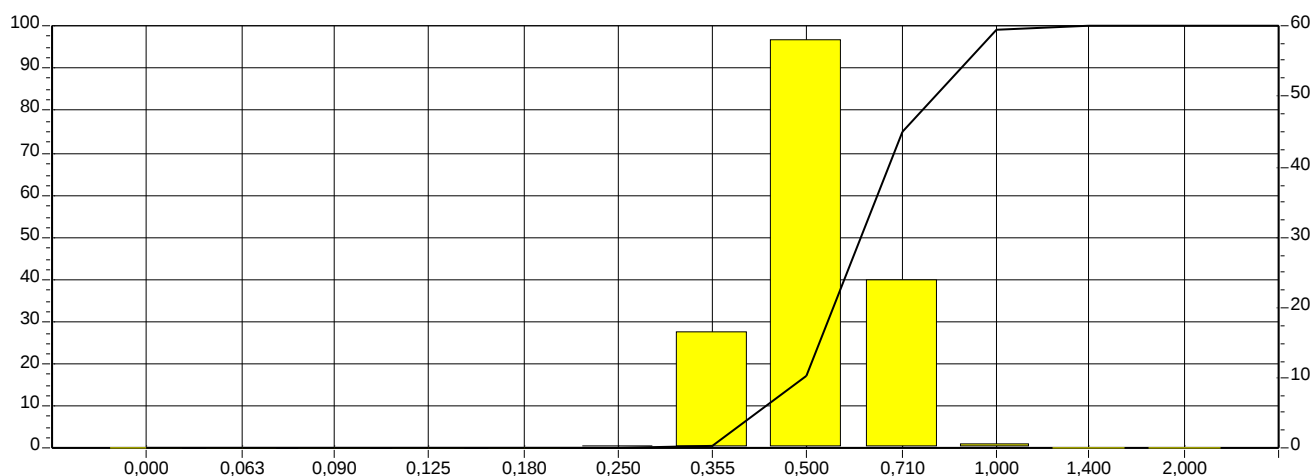
Periode: 01-01-2010 - 25-07-2011

| Maskeåbning, mm<br>ISO 565 | Sandmængde på sigte |       | Sandmængde gennem sigte |           |        |
|----------------------------|---------------------|-------|-------------------------|-----------|--------|
|                            | g                   | %     | Max, %                  | Aktuel, % | Min, % |
| 2,000                      | 0,00                | 0,0   |                         | 100,0     |        |
| 1,400                      | 0,13                | 0,1   |                         | 99,9      |        |
| 1,000                      | 0,60                | 0,6   |                         | 99,3      |        |
| 0,710                      | 24,07               | 24,1  |                         | 75,2      |        |
| 0,500                      | 58,00               | 58,1  |                         | 17,0      |        |
| 0,355                      | 16,53               | 16,6  |                         | 0,5       |        |
| 0,250                      | 0,40                | 0,4   |                         | 0,1       |        |
| 0,180                      | 0,00                | 0,0   |                         | 0,1       |        |
| 0,125                      | 0,07                | 0,1   |                         | 0,0       |        |
| 0,090                      | 0,00                | 0,0   |                         | 0,0       |        |
| 0,063                      | 0,00                | 0,0   |                         | 0,0       |        |
| 0,000                      | 0,00                | 0,0   |                         | 0,0       |        |
| Sum                        | 99,80               | 100,0 |                         |           |        |

Middelkornstørrelse, mm: 0,630    Teoretisk kornoverflade, cm<sup>2</sup>/g: 37    American Fineness No.: 24  
Gleichmäßigkeitsgrad (GG): 78

Massefylde, kg/m<sup>3</sup>: 2604    Rumvægt, g/cm<sup>3</sup>: 1,456    Glødetab, %: 0,20

SiO<sub>2</sub>, %: 99,400    Al<sub>2</sub>O<sub>3</sub>, %: 0,320    CaO, %: 0,010    Na<sub>2</sub>O, %: 0,000  
K<sub>2</sub>O, %: 0,190    Fe<sub>2</sub>O<sub>3</sub>, %: 0,054    TiO<sub>2</sub>, %: 0,010



# Leverandørbrugsanvisning

## Kvartssand

Dato: 2. februar 2005  
Side 1 af 4



TEKNOLOGISK  
INSTITUT

|                       |                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------|
| <b>1. Handelsnavn</b> | Kvartssand                                                                            |
| <b>Anvendelse:</b>    | Kvartssandet anvendes som støberisand, filtersand, sandblæsningssand samt sandmørtel. |
| <b>Firma:</b>         | Dansk Kvarts Industri A/S, Lervejdal 14 D, Addit, DK-8740 Brædstrup                   |
| <b>Producent:</b>     | Dansk Kvarts Industri A/S, Lervejdal 14 D, Addit, DK-8740 Brædstrup                   |

|                                                                                       |            |                         |               |                    |             |
|---------------------------------------------------------------------------------------|------------|-------------------------|---------------|--------------------|-------------|
| <b>2. Sammensætning/oplysninger om indholdsstoffer</b>                                |            |                         |               |                    |             |
| <b>Kemisk karakter:</b>                                                               | Kvartssand |                         |               |                    |             |
| <b>Stofbetegnelse:</b>                                                                | <b>%</b>   | <b>CAS-nr. / EF-nr.</b> | <b>Symbol</b> | <b>R-sætninger</b> | <b>Note</b> |
| Kvartssand                                                                            | 100        | 14808-60-7              | -             | -                  | 1)          |
| 1) Produktet indeholder mindre end 0,01 % respirabelt støv (partikler mindre end 5 µ) |            |                         |               |                    |             |

|                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>3. Fareidentifikation</b>                                                                                                                           |
| Støv har en irriterende effekt ved kontakt med øjne og ved indånding.<br>Produktet er ikke underlagt krav om udarbejdelse af leverandørbrugsanvisning. |

|                                        |                                                                                                                                                                      |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>4. Førstehjælpsforanstaltninger</b> |                                                                                                                                                                      |
| <b>Indånding:</b>                      | Søg i frisk luft.                                                                                                                                                    |
| <b>Hudkontakt:</b>                     | Ingen særlige bemærkninger.                                                                                                                                          |
| <b>Øjenkontakt:</b>                    | Skyl straks øjet med vand. Spil øjet godt op. Fjern eventuelle kontaktlinser. Søg læge ved vedvarende gener.                                                         |
| <b>Indtagelse:</b>                     | Skyl munden grundigt med vand. Drik vand. Anden behandling er unødvendig ved de mængder, der normalt vil være tale om ved arbejdsuheld. Søg læge ved ildebefindende. |

|                                 |                |
|---------------------------------|----------------|
| <b>5. Brandbekæmpelse</b>       |                |
| <b>Egnede slukningsmidler:</b>  | Ikke relevant. |
| <b>Uegnede slukningsmidler:</b> | Ikke relevant. |
| <b>Særlige farer:</b>           | Ikke relevant. |
| <b>Personlige værnemidler:</b>  | Ikke relevant. |

|                                                   |                                                      |
|---------------------------------------------------|------------------------------------------------------|
| <b>6. Forholdsregler overfor udslip ved uheld</b> |                                                      |
| <b>Sikkerhedsforanstaltninger:</b>                | Undgå indånding af støv. Brug støvmaske.             |
| <b>Miljøbeskyttelsesforanstaltninger:</b>         | Begræns spredning og undgå at det kommer i kloakken. |
| <b>Metoder til oprydning:</b>                     | Spildet opsamles, så det støver mindst muligt.       |

# Leverandørbrugsanvisning

## Kvartssand

Dato: 2. februar 2005  
Side 2 af 4



TEKNOLOGIS  
INSTITUT

### 7. Håndtering og opbevaring

|                      |                             |
|----------------------|-----------------------------|
| Håndtering:          | Undgå indånding af støv.    |
| Opbevaring:          | Ingen særlige bemærkninger. |
| Særlige anvendelser: | Ingen særlige bemærkninger. |

### 8. Eksponeringskontrol/personlige værnemidler

**Arbejdsstedets indretning:** Arbejdsplads og -metode skal være indrettet således, at indånding af støv fra produktet undgås.

Følgende grænseværdier skal iagttages (oktober 2002):

| Stof                                                                    | ppm | mg/m <sup>3</sup> |
|-------------------------------------------------------------------------|-----|-------------------|
| Kvarts, respirabel                                                      | 0,1 | K                 |
| Mineralsk støv med indhold af respirabelt kvarts (gælder for støberier) | 0,5 |                   |

**Tekniske hjælpemidler:** Øjenskylleflaske skal findes på arbejdsstedet.  
Der skal være adgang til rindende vand.  
Støvmaske skal findes på arbejdspladsen.

**Personlige værnemidler:**

|           |                                                                                                     |
|-----------|-----------------------------------------------------------------------------------------------------|
| Åndedræt: | Brug støvmaske, hvis det ikke er muligt at fjerne eventuel støvforurening med mekanisk ventilation. |
| Hænder:   | Brug eventuelt handsker.                                                                            |
| Øjne:     | Ved risiko for støv i øjnene, brug beskyttelsesbriller.                                             |
| Hud:      | Tøj forurenet med støv skal altid skiftes og vaskes inden videre brug.                              |

**Foranstaltninger til begrænsning af eksponering af miljøet:** Affald, se punkt 13.

### 9. Fysisk-kemiske egenskaber

|                                            |               |                               |               |                               |               |
|--------------------------------------------|---------------|-------------------------------|---------------|-------------------------------|---------------|
| <b>Udseende:</b>                           | Sand          | <b>Lugt:</b>                  | Ingen         | <b>Massefylde:</b>            | -             |
| <b>pH:</b>                                 | Ikke relevant | <b>Vand-opløselighed:</b>     | Ikke relevant | <b>Viskositet:</b>            | Ikke relevant |
| <b>Smeltepunkt:</b>                        | Ikke relevant | <b>Kogepunkt:</b>             | Ikke relevant | <b>Flammepunkt:</b>           | Ikke relevant |
| <b>Eksplorative egenskaber:</b>            | Ikke relevant |                               |               |                               |               |
| <b>Oxiderende egenskaber:</b>              | Ikke relevant |                               |               |                               |               |
| <b>Antændelighed (fast stof, luftart):</b> | Ikke relevant |                               |               |                               |               |
| <b>Damptryk:</b>                           | Ikke relevant | <b>Dampmassefylde:</b>        | Ikke relevant | <b>Fordampningshastighed:</b> | Ikke relevant |
| <b>Fedtopløselighed:</b>                   | Ikke relevant | <b>Fordelingskoefficient:</b> | Ikke relevant | <b>Andet:</b>                 |               |



### 10. Stabilitet og reaktivitet

**Forhold og materialer, der skal undgås:** Ingen

**Farlige reaktioner og nedbrydningsprodukter:** Ingen

### 11. Toksikologiske oplysninger

**Indånding:** Indånding af støv kan medføre hoste og irritation af luftvejene.

**Hudkontakt:** Ingen.

**Øjenkontakt:** Støv i øjnene kan medføre forbigående smerte på grund af mekanisk irritation.

**Indtagelse:** Irriterende virkning.

**Langtidsvirkninger:** Langvarig eller gentagen indånding af kvarts kan medføre stenlunger (silikose). Sygdommen viser sig ved stakåndethed ved anstrengelse på grund af ødelæggelse af dele af lungevævet. Symptomerne kan forværres, selvom eksponeringen for kvarts er ophørt.  
Gentagen indånding af kvarts kan endvidere medføre lungekræft.

### 12. Miljøoplysninger

**Miljøklassificering:** Produktet indeholder ikke stoffer, som er klassificeret miljøfarlige.

**Økotoksicitet:** Sand er ikke giftigt overfor vandlevende organismer.

**Mobilitet:** Ingen særlige bemærkninger.

**Persistens og nedbrydelighed:** Ingen særlige bemærkninger.

**Bioakkumulationspotentiale:** Ingen særlige bemærkninger.

**Andet:** —

### 13. Bortskaffelse

**Forholdsregler og bortskaffelsesmetoder:** Produktet emballeres forsvarligt og bortskaffes sammen med andet industriaffald.

**Mærkning:** Produktet er ikke klassificeret som farligt affald.

### 14. Transportoplysninger

Produktet er ikke omfattet af reglerne om transport af farligt gods.



### 15. Regulering

**Fareetikette:** Produktet er ikke mærkningspligtigt i henhold til Miljøministeriets bekendtgørelse nr. 329 af 16. maj 2002.

**Indeholder:** – **EF-nr.:**

**Faresymbol:** –

**R-sætninger:** –

**S-sætninger:** –

**Kodenr. (1993):** Ikke relevant.

**Særlige regler for opbevaring:** 00001

**Særlige regler for uddannelse:** Der kræves ingen særlig uddannelse.

**Anvendelsesbegrænsninger:** Ingen

**Andet:** –

### 16. Andre oplysninger, herunder anvendelsesområder

**Anvendte R-sætninger (i punkt 2):** Ingen

**Øvrige oplysninger:**

Denne leverandørbrugsanvisning er udarbejdet i henhold til Arbejdsministeriets bekendtgørelse nr. 559 af 4. juli 2002 den 2. februar 2005 Teknologisk Institut, Kirsten Pommer på grundlag af leverandørens oplysninger om produktets sammensætning.

Alle informationer og instruktioner er baseret på den aktuelle videnskabelige opfattelse og tekniske viden.

Udgave: 2. udgave (opdatering i forhold til gældende lovgivning.)

Teknologisk Institut  
Gregersensvej  
Postboks 141  
2630 Taastrup  
Tlf.: 72 20 20 00

Kunstgræstæppe

## Duo Shape 40

ESI01941

### PRODUCT CHARACTERISTICS

|                                                  |       |          |       |     |
|--------------------------------------------------|-------|----------|-------|-----|
| PILE HEIGHT                                      | mm    | 40       | +/- 2 | mm  |
| TOTAL LENGTH OF TUFT PILE                        | mm    | 86       | +/- 4 | mm  |
| GAUGE                                            |       | 3/4 -5/8 |       |     |
| PRODUCTION METHOD (DIN 61151)                    |       | TUFTED   |       |     |
| STITCH RATE PER M2 APPROX.                       | nr    | 9.450    | +/-   | 5 % |
| FILAMENTS PER M2 APPROX.                         | nr    | 113.400  | +/-   | 5 % |
| TOTAL WEIGHT                                     | gr/m2 | 2.230    | +/-   | 5 % |
| PERFORATION DIAMETER                             | mm    | 5        | +/- 1 | mm  |
| NUMBER OF PERFORATIONS                           | nr/m2 | 90       |       |     |
| WATER PERMEABILITY (EN12616-REQUIREMENTS>360L/H) |       | >360 l/h |       |     |

### YARN CHARACTERISTICS

|                   |        |                                |     |     |
|-------------------|--------|--------------------------------|-----|-----|
| DECITEX           | dtex   | 13.000                         | +/- | 5 % |
| COMPOSITION       |        | 100% Polyethylene              |     |     |
| THICKNESS         | micron | 440/300                        | +/- | 5 % |
| TYPE              |        | Straight Monofilament          |     |     |
| COLOUR            |        | Bicolor (Light and Dark Green) |     |     |
| TOTAL YARN WEIGHT | gr/m2  | 1.100                          | +/- | 5 % |

### BACKING CHARACTERISTICS

|                        |       |                        |     |      |
|------------------------|-------|------------------------|-----|------|
| PRIMARY BACKING        |       | Polypropylen/Polyester |     |      |
| PRIMARY BACKING WEIGHT | gr/m2 | 180                    | +/- | 8 %  |
| COATING                |       | Latex                  |     |      |
| COATING WEIGHT         | gr/m2 | 950                    | +/- | 10 % |

The technical specifications and the quantities of the infill material to be used for the configuration of the system must comply with the certificates of the single national and/or international Federations or can be requested to our technical office. Limonta Sport Spa, reserves the right to modify above specifications without prior notice in order to update and improve the characteristics of the product in accordance with the most recent developments.

# Analyserapport

|           |                                                |                |                                                                                                                             |
|-----------|------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------|
| Rekvirent | Citylawn A/S<br>Bildsøvej 106<br>4200 Slagelse | Identifikation | Sagsnavn: PFAS 22 i kunstgræstæppe<br>Sagsnr.: -<br>Sagsbeh.: Lars Offenbach Poulsen<br>Udt.dato:-<br>Prøvetager: Rekvirent |
|-----------|------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------|

|                        |            |               |            |
|------------------------|------------|---------------|------------|
| Prøver modtaget den:   | 13-12-2023 | Rapport dato: | 04-01-2023 |
| Analyse påbegyndt den: | 14-12-2023 | Rapport nr.:  | 2250008    |
| Opbevaring for analyse | På køl     | Antal prøver: | 1          |
|                        |            | Bilag:        | 0 stk.     |

| Lab. nr.                                 |  | 2250008001 | 2250008002 |  |  |       |                                           |                  |              |
|------------------------------------------|--|------------|------------|--|--|-------|-------------------------------------------|------------------|--------------|
| Prøvetype                                |  | Materiale  | Materiale  |  |  | Enhed | Metode                                    | Detektionsgrænse | Usikkerhed:± |
| Emballage                                |  | s          | s          |  |  |       |                                           |                  |              |
| Prøvetager                               |  | Rekvirent  | Rekvirent  |  |  |       |                                           |                  |              |
| Prøve ID                                 |  | 1-A        | 1-B        |  |  |       |                                           |                  |              |
| <b>Parameter</b>                         |  |            |            |  |  |       |                                           |                  |              |
| Perfluorbutansyre (PFBA)                 |  | 2,5        | <0,60      |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup>   | 0,6              | +/- 29 %     |
| Perfluorbutansulfonsyre (PFBS)           |  | <0,30      | <0,30      |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 0,3              | +/- 29 %     |
| Perfluoropentansyre (PFPeA)              |  | 1,1        | <0,30      |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 0,3              | +/- 29 %     |
| Perfluoropentansulfonsyre (PFPeS)        |  | <0,30      | <0,30      |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 0,3              | +/- 29 %     |
| Perfluorhexansyre (PFHxA)                |  | 1,9        | <0,30      |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 0,3              | +/- 29 %     |
| Perfluorhexansulfonsyre (PFHxS)          |  | <0,30      | <0,30      |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 0,3              | +/- 29 %     |
| Perfluorheptansyre (PFHpA)               |  | 0,54       | <0,30      |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 0,3              | +/- 29 %     |
| Perfluorheptansulfonsyre (PFHpS)         |  | <0,30      | <0,30      |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 0,3              | +/- 29 %     |
| Perfluoroktansyre (PFOA)                 |  | 0,77       | 0,32       |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 0,3              | +/- 29 %     |
| Perfluoroktansulfonsyre (PFOS)           |  | <0,20      | <0,20      |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 0,2              | +/- 29 %     |
| Fluortelomersulfonat (6:2 FTS)           |  | 0,76       | <0,30      |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 0,3              | +/- 29 %     |
| Perfluoroktansulfonamid (PFOSA)          |  | <0,30      | <0,30      |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 0,3              | +/- 29 %     |
| Perfluoromonansyre (PFNA)                |  | 0,40       | <0,30      |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 0,3              | +/- 29 %     |
| Perfluoromonansulfonsyre (PFNS)          |  | <0,30      | <0,30      |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 0,3              | +/- 29 %     |
| Perfluordekansyre (PFDA)                 |  | <0,30      | <0,30      |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 0,3              | +/- 29 %     |
| Perfluordekansulfonsyre (PFDS)           |  | <0,30      | <0,30      |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 0,3              | +/- 29 %     |
| Perfluorundekansyre (PFUnDA)             |  | <0,30      | <0,30      |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 0,3              | +/- 29 %     |
| Perfluorundekansulfonsyre (PFUnDS)       |  | <1,0       | <1,0       |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 1                | +/- 29 %     |
| Perfluordodekansyre (PFDoDA)             |  | <0,30      | <0,30      |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 0,3              | +/- 29 %     |
| Perfluordodekansulfonsyre (PFDoDS)       |  | <1,0       | <1,0       |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 1                | +/- 29 %     |
| Perfluortridekansyre (PFTTrDA)           |  | <1,0       | <1,0       |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 1                | +/- 29 %     |
| Perfluortridekansulfonsyresyre (PFTTrDS) |  | <1,0       | <1,0       |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * | 1                | +/- 29 %     |
| Sum af PFOA, PFOS, PFNA og PFHxS         |  | 1,2        | 0,32       |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * |                  |              |
| Sum af PFAS                              |  | 8,0        | 0,32       |  |  | ng/l  | DIN38407-42 mod. LC-MS-MS <sup>3)</sup> * |                  |              |

Betegnelser:  
se sidste side

Godkendt af  
  
Helle Rasmussen  
Laborant

## Analyserapport

|                        |                                                                     |                |                                                                                                                                    |
|------------------------|---------------------------------------------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------|
| Rekvirent              | <b>Citylawn A/S</b><br><b>Bildsøvej 106</b><br><b>4200 Slagelse</b> | Identifikation | Sagsnavn: PFAS 22 i kunstgræstæppe<br>Sagsnr.: -<br>Sagsbeh.: Lars Offenbach Poulsen<br>Udt.dato:-<br><b>Prøvetager: Rekvirent</b> |
| Prøver modtaget den:   | 13-12-2023                                                          | Rapport dato:  | 04-01-2023                                                                                                                         |
| Analyse påbegyndt den: | 14-12-2023                                                          | Rapport nr.:   | <b>2250008</b>                                                                                                                     |
| Opbevaring for analyse | På køl                                                              | Antal prøver:  | 1                                                                                                                                  |
|                        |                                                                     | Bilag:         | 0 stk.                                                                                                                             |

### Betegnelser fra rapporten:

✂ Ekspanderet usikkerhed, dækningsfaktor 2. Resultater på detektionsgrænseniveau er behæftet med en relativ større måleusikkerhed end generelt gældende.

#: Symboliserer at alle komponenter der indgår i den pågældende sum, har en konc. mindre end den enkelte komponents detektionsgrænse.

Emballage betegnelse: m (membranglas), r (rilsanpose), p (plastpose) s (staniol). \* Ikke akkrediteret.

Afviselser/kommentar ved denne rapport: Ingen.

3) Analysen er foretaget af akkrediteret underleverandør med SWEDAC reg. nr. 1977

Højvang Laboratorier A/S fraskriver sig ethvert ansvar i forbindelse med data oplyst af rekvirenten.

Analyseresultater anføres i rapporten med 2 betydende cifre medmindre andet er aftalt. Ved sammenligning med eventuelle grænse- og/eller kravværdi, anvendes analyseresultatet i rapporten.

Resultaterne gælder for prøven/prøverne som den/de er modtaget.

Med mindre andet er oplyst, fremsendes rapporten til den/de på rekvisitionen oplyste mailadresser.

Prøvningsresultaterne gælder kun for de prøvede emner/delmængder. Uden laboratoriets skriftlige tilladelse må rapporten kun gengives i sin helhed.

Godkendt af

  
Helle Rasmussen

Laborant

Shockpad



TESTING TECHNOLOGY FOR SPORT

# Shockpad Analysis Report

EN 15330-4:2022

Specification for shockpads used with synthetic turf,  
needle-punch and textile sports surfaces

ProGame 5012 XC-Cut

Report Number: 13358/8623

Report Status: Final

Client: Trocellen GmbH  
Mülheimer Straße 26  
Troisdorf 53840  
Germany



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## REGIONAL LOCATIONS

- England
- Italy
- Morocco
- Netherlands
- Norway
- South Africa
- Turkey
- United States

**Foreword**

This report has been prepared by Sports Labs Ltd with all reasonable skill, care and diligence within the terms of the contract with the Client and within the limitations of the resources devoted to it.

This report is confidential to the Client, and Sports Labs Ltd accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk.

\* Not all tests carried out are within our scope of ISO 17025 accreditation.

**Declaration of Conformity**

We confirm that the tests described in this report have been carried out in accordance with EN 15330-4:2022 Specification for shockpads used with synthetic turf, needle-punch and textile sports surfaces, and this report accurately reflects the outcome of the tests conducted.

|                           |                                                                                    |                           |                                                                                      |
|---------------------------|------------------------------------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------|
| <b>Report Written By:</b> | Craig Melrose                                                                      | <b>Report Checked By:</b> | Sean Ramsay                                                                          |
| <b>Date:</b>              | 14/08/2023                                                                         | <b>Date:</b>              | 14/08/2023                                                                           |
| <b>Signed:</b>            |  | <b>Signed:</b>            |  |

**Test Laboratory**

|                                      |                                         |
|--------------------------------------|-----------------------------------------|
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**Client**

|                                      |                          |
|--------------------------------------|--------------------------|
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| <b>City &amp; Postal (ZIP) Code:</b> | Troisdorf 53840          |
| <b>State or Province:</b>            | North Rhine-Westphalia   |
| <b>Country:</b>                      | Germany                  |
| <b>Telephone:</b>                    | +49 2241 2549 215        |
| <b>Email:</b>                        | BKuhlmeier@trocellen.com |

| Product Description                                                                |          |                                                                                    |               |
|------------------------------------------------------------------------------------|----------|------------------------------------------------------------------------------------|---------------|
| Product Name:                                                                      |          | ProGame 5012 XC-Cut                                                                |               |
| Product Type:                                                                      |          | Prefabricated shockpad                                                             |               |
| Product Description:                                                               |          | Cross-linked polyolefin foam                                                       |               |
| Nominal Thickness:                                                                 |          | 12 mm Foam + non-woven textile layer                                               |               |
| Substrate:                                                                         |          | Rigid Engineered Base                                                              |               |
| Sample Image [Plan View]:                                                          |          | Sample Image [End Elevation]:                                                      |               |
|  |          |  |               |
| Sample Reference                                                                   |          |                                                                                    |               |
| Laboratory Job No.                                                                 |          | 13358                                                                              | Date Received |
| Sample Reference No.                                                               | Shockpad | 8623                                                                               | 08/03/2023    |
| Ambient Temperature Range During Testing                                           |          | 21.0 – 25.0 °C (unless otherwise stated)                                           |               |
| Ambient Humidity Range During Testing                                              |          | 40 – 60 %                                                                          |               |

| Physical Properties                                               |                       |                |                        |
|-------------------------------------------------------------------|-----------------------|----------------|------------------------|
| Property                                                          | Test Method           | Test Condition | Mean Result            |
| Thickness                                                         | EN 1969:2000 Method A | As supplied    | 13.2 mm                |
| Mass per unit area                                                | ISO 8543: 2020        | As supplied    | 751 g/m <sup>2</sup>   |
| Physical Properties of Prefabricated Foam and Foam Chip Shockpads |                       |                |                        |
| Chemical Composition                                              | ISO 11357-3:2018*     | As supplied    | Polyolefin             |
| Volume Weight                                                     | ISO 845:2006*         | As supplied    | 56.9 kg/m <sup>3</sup> |

\* Not all tests carried out are within our scope of ISO 17025 accreditation.

## Performance Testing Results - Shock Absorption PD CEN/TS 16717:2015\*

| Test Condition                               | Use of Load Spreading Plate | Mean Result    | Requirement                       | Pass/ Fail           |
|----------------------------------------------|-----------------------------|----------------|-----------------------------------|----------------------|
| DRY (23 ± 2) °C                              | No                          | 45 %           | ≥ 20 %                            | PASS                 |
| DRY (23 ± 2) °C                              | Yes                         | 58 %           | ≥ 30 %                            | PASS                 |
| DRY (23 ± 2) °C after accelerated air ageing | Yes                         | 57 %           | ≥ 30 %                            | PASS                 |
| WET (23 ± 2) °C                              | Yes                         | 56 %           | ≥ 30 %                            | PASS                 |
| Non-Standard Laboratory Conditions           |                             |                |                                   |                      |
| DRY (40 ± 2) °C                              | Yes                         | 55 %           | No requirement (Information only) |                      |
| DRY (5 ± 2) °C                               | Yes                         | 55 %           |                                   |                      |
| FROZEN (-5 ± 2) °C                           | Yes                         | 53 %           |                                   |                      |
| CLASSIFICATION                               | CLASS AC<br>CLASS BC        | Classification |                                   |                      |
|                                              |                             | SA%            | A                                 | B                    |
|                                              |                             | ≤ 29 %         | Class A (-5 to 40°C)              | Class A (+5 to 40°C) |
|                                              |                             | 30 – 40 %      | Class B (-5 to 40°C)              | Class B (+5 to 40°C) |
|                                              |                             | 41 – 50 %      | Class C (-5 to 40°C)              | Class C (+5 to 40°C) |
|                                              |                             | 51 – 60 %      | Class D (-5 to 40°C)              | Class D (+5 to 40°C) |
|                                              |                             | ≥ 61 %         | Class E (-5 to 40°C)              | Class E (+5 to 40°C) |

NOTE: Products not complying with 6.1.1 or 6.1.2 of EN 15330-4 can serve other functions within a sports surfacing system and also contribute to the sports performance properties, but they do not comply with this document or satisfy its definition of a shockpad.

## Performance Testing Results - Deformation PD CEN/TS 16717:2015\*

| Test Condition                               | Use of Load Spreading Plate | Mean Result | Requirement                            | Pass/ Fail |
|----------------------------------------------|-----------------------------|-------------|----------------------------------------|------------|
| DRY (23 ± 2) °C                              | No                          | 8.3 mm      | ± 2 mm from manufacturer's declaration | PASS       |
| DRY (23 ± 2) °C                              | Yes                         | 7.3 mm      | ± 2 mm from manufacturer's declaration | PASS       |
| WET (23 ± 2) °C                              | Yes                         | 7.1 mm      | ± 2 mm from manufacturer's declaration | PASS       |
| <b>Non-Standard Laboratory Conditions</b>    |                             |             |                                        |            |
| DRY (23 ± 2) °C after accelerated air ageing | Yes                         | 8.3 mm      | No requirement (Information only)      |            |
| DRY (40 ± 2) °C                              | Yes                         | 7.5 mm      |                                        |            |
| DRY (5 ± 2) °C                               | Yes                         | 7.0 mm      |                                        |            |
| FROZEN (-5 ± 2) °C                           | Yes                         | 6.3 mm      |                                        |            |

\* Not all tests carried out are within our scope of ISO 17025 accreditation.

## Performance Testing Results - Water Permeability EN 12616:2023\*

| Property                                                       | Mean Result   |   | Requirement                                                                                                                      | Pass/ Fail     |
|----------------------------------------------------------------|---------------|---|----------------------------------------------------------------------------------------------------------------------------------|----------------|
| Vertical Water Infiltration<br>EN 12616:2023 Part 1 Method A * | 14286 mm/h    |   | ≥ 500 mm/h                                                                                                                       | PASS           |
| Horizontal Drainage<br>EN 12616:2023 Part 2*                   | 0.5% Gradient | - | ≥ 0.1 l/(m.s)                                                                                                                    | Not Applicable |
|                                                                | 1% Gradient   | - |                                                                                                                                  |                |
|                                                                | -             |   | CLASS HD 1: 0.1 – 0.25 l/(m.s)<br>CLASS HD 2: 0.25 – 0.4 l/(m.s)<br>CLASS HD 3: 0.4 – 0.55 l/(m.s)<br>CLASS HD 4: > 0.55 l/(m.s) |                |

NOTE: Vertical Water Infiltration applies to shockpads designed for vertical flow of water, Horizontal Drainage applies to shockpads designed to provide horizontal drainage (eg. drainage layers)

## Performance Testing Results - Tensile Properties EN 12230:2023\*

| Property                                                                                                                           | Mean Result | Requirement | Pass/ Fail     |
|------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|----------------|
| Shockpads without slots, grooves or holes and that are less than 25mm thick<br>EN 12230:2023 Method 1*                             | -           | ≥ 0.15 MPa  | Not Applicable |
| Shockpads without slots, grooves or holes and that are equal to or greater than 25mm thick<br>EN 12230:2023 Method 2 (Transverse)* | -           | ≥ 0.10 MPa  | Not Applicable |
| Shockpads with slots, grooves or holes, or with tangled filaments or net core<br>EN 12230:2023 Method 3*                           | 2.08 kN/m   | ≥ 0.5 kN/m  | PASS           |

NOTE: Some sports federations have set higher requirements than EN 15330-4. If a shockpad is used in a synthetic turf system that requires certification by a sports federation it shall preferably comply with their enhanced requirement.

## Performance Testing Results - Dimensional Stability EN17326:2020\*

| Property                         | Mean Result     | Requirement                                          | Pass/ Fail |
|----------------------------------|-----------------|------------------------------------------------------|------------|
| Resistance to bowing and curling | 0 mm            | ≤ 5 mm                                               | PASS       |
| Physical Damage                  | No damage noted | There shall be no cracking or other permanent damage |            |

\* Not all tests carried out are within our scope of ISO 17025 accreditation.

## Performance Testing Results - Resistance to Dynamic Fatigue EN17324:2020\*

| Property                | Mean Result     |            |                           |         | Requirement                                          | Pass/ Fail |
|-------------------------|-----------------|------------|---------------------------|---------|------------------------------------------------------|------------|
|                         | Before test     | After test | Effect of dynamic fatigue |         |                                                      |            |
| Shock Absorption (% FR) | 44.9 %          | 42.6 %     | Difference                | - 2.3 % | ≤± 5 % Absolute FR loss from unaged and ≥ 20 %       | PASS       |
| Thickness (mm)          | 12.2            | 11.2       | %                         | - 8.3 % | ≤± 15 % from unaged and maximum 1.5 mm loss          |            |
| Physical Damage         | No damage noted |            |                           |         | There shall be no cracking or other permanent damage |            |

## Performance Testing Results - Resistance to Permanent Deformation after Short Term Loading EN15330-4: Annex A\*

| Property        | Median Result   |               |           | Requirement                                          | Pass/ Fail |
|-----------------|-----------------|---------------|-----------|------------------------------------------------------|------------|
|                 | Before test     | Recovery Time |           |                                                      |            |
|                 |                 | After 30 min  | After 1 h |                                                      |            |
| Thickness (mm)  | 13.2 mm         | 12.9 mm       | 12.9 mm   | ≤ 1.0 mm difference from unaged after 1 hour         | PASS       |
|                 | Difference      | 0.3 mm        | 0.3 mm    |                                                      |            |
| Physical Damage | No damage noted |               |           | There shall be no cracking or other permanent damage |            |

NOTE: For some sports any form of deformation, even during the recovery period, can have an adverse effect on the performance of the playing surface. In such cases, shockpads that show deformation  $\leq 1$  mm after 30 min recovery should be used.

## Performance Testing Results - Resistance to Permanent Deformation after Static Loading EN15330-4: Annex B\*

| Property        | Median Result   |               |           |           |            |            | Requirement                                          | Pass/ Fail |
|-----------------|-----------------|---------------|-----------|-----------|------------|------------|------------------------------------------------------|------------|
|                 | Before test     | Recovery Time |           |           |            |            |                                                      |            |
|                 |                 | After 30 min  | After 1 h | After 6 h | After 24 h | After 72 h |                                                      |            |
| Thickness (mm)  | 13.3            | 11.1          | 11.3      | 12.1      | 12.4       | 12.6       | ≤ 1.5 mm difference from unaged after 72 hours       | PASS       |
|                 | Difference      | 2.2           | 2.0       | 1.2       | 0.9        | 0.7        |                                                      |            |
| Physical Damage | No damage noted |               |           |           |            |            | There shall be no cracking or other permanent damage |            |

\* Not all tests carried out are within our scope of ISO 17025 accreditation.

## Performance Testing Results - Thermal Conductivity (informative) - EN 12664:2001\*

| Mean Temperature | Mean Result        |                    |                   | Requirement                       |
|------------------|--------------------|--------------------|-------------------|-----------------------------------|
|                  | Upper Conductivity | Lower Conductivity | Mean Conductivity |                                   |
| 10.02 °C         | 0.04263            | 0.04256            | <b>0.04259</b>    | No requirement (Information only) |
| 20.02 °C         | 0.04393            | 0.04404            | <b>0.04398</b>    |                                   |
| 30.03 °C         | 0.04507            | 0.04595            | <b>0.04551</b>    |                                   |
| 40.02 °C         | 0.04622            | 0.04764            | <b>0.04693</b>    |                                   |

NOTE: Guidance on using thermal conductivity and thermal resistance data to select shockpads for use in cold climates is given in Annex C of EN 15330-4.

\* Not all tests carried out are within our scope of ISO 17025 accreditation.

## Environmental and Toxicological Properties (informative) – EN 15330-4 Annex D\*

| Property                                    |      | Mean Result    | Requirement                     | Pass/ Fail  |
|---------------------------------------------|------|----------------|---------------------------------|-------------|
| DOC<br>(dissolved organically bound carbon) |      | <b>20.1</b>    | $\leq 50 \text{ mg/l}^{(a)}$    | <b>PASS</b> |
| EOX<br>(extractible organic halides)        |      | <b>5.26</b>    | $\leq 100 \text{ mg/kg}$        |             |
| Lead                                        | Pb   | <b>&lt; QL</b> | $\leq 0.025 \text{ mg/l}$       |             |
| Cadmium                                     | Cd   | <b>&lt; QL</b> | $\leq 0.005 \text{ mg/l}$       |             |
| Total Chromium                              | Cr   | <b>&lt; QL</b> | $\leq 0.05 \text{ mg/l}$        |             |
| Chromium VI                                 | CrVI | <b>&lt; QL</b> | $\leq 0.008 \text{ mg/l}^{(b)}$ |             |
| Mercury                                     | Hg   | <b>&lt; QL</b> | $\leq 0.001 \text{ mg/l}$       |             |
| Zinc                                        | Zn   | <b>0.045</b>   | $\leq 0.5 \text{ mg/l}$         |             |
| Tin                                         | Sn   | <b>&lt; QL</b> | $\leq 0.04 \text{ mg/l}$        |             |

NOTE: Guidance on the environmental properties of shockpads, for use in countries where there are no specific national regulations, is given in Annex D.

\* Not all tests carried out are within our scope of ISO 17025 accreditation.

(a) Materials with a DOC content of more than 100 mg/l in an aqueous 24 h eluate fail to meet these recommendations. In cases where the DOC concentration in the 24 h eluate is in the range of  $> 50 \text{ mg/l}$  to  $100 \text{ mg/l}$ , the limits stated for the 50 mg/l criterion for DOC in the 48-h eluate may be used to assess conformity.

(b) Since the standardized spectrophotometry method (see DIN 38405-24) or ion chromatography (see EN ISO 10304-3) can only determine Cr (VI) concentrations of  $\geq 0,05 \text{ mg/l}$ , samples with total Cr contents of  $\leq 0,008 \text{ mg/l}$  meet these recommendations. If this is not the case, proof that the Cr (VI) concentrations are  $\leq 0,008 \text{ mg/l}$  should be provided by means of another, non-standardized test method.

#### Conclusion

The product submitted was tested in accordance with the methods and requirements outlined in EN 15330-4: 2022 Surfaces for sports areas - Synthetic turf and needle-punched surfaces primarily designed for outdoor use - Part 4: Specification for shockpads used with synthetic turf, needle-punch and textile sports surfaces. Based upon the test results we consider the product supplied to have:

- ☒ Met all specified requirements of EN15330-4: 2022.
- ☐ Failed to meet some requirements of EN15330-4: 2022. Any failures have been highlighted within the results.

## Manufacturer's Product Declaration

## ARTIFICIAL TURF SHOCK PADS



**PROGAME**  
**XC-CUT**

Technical Data Sheet/  
Product Specification **5012 XC-Cut**  
Cross-linked polyolefin foam edition: 16.01.2019

Product description: The Trocellen XC series includes high-quality shock pads made of closed-cell, chemically cross-linked polyethylene foam specially developed for artificial grass sports grounds. The combination of the unique XC punching with a layer of laminated PET nonwoven fabric guarantees excellent drainage properties: quick and easy installation; and very high dimensional stability on every field. Due to the wide range thicknesses (6 - 14 mm) and densities (30 - 90 kg / m<sup>3</sup>) the requirements of a variety of sports can be served. The foam sheets delivered as roll ware and can be specifically tailored in width and length to meet the field's requirements.

| Properties                     | Value     | Unit                 | Method   |
|--------------------------------|-----------|----------------------|----------|
| Width                          | 2000 ± 30 | mm                   | ISO 1923 |
| Slit size (width)              | 3,0 ± 2,0 | mm                   | ISO 1923 |
| Weight                         | 680 ± 15  | g/m <sup>2</sup> ± % | ISO 845  |
| Thermal stability 4 h at 80 °C | < 2,0     | %                    | ISO 2796 |
| Shock absorption               | 45 ± 5    | %                    | FIFA 04a |
| Vertical deformation           | 8,0 ± 1   | mm                   | FIFA 05a |
| Tensile strength               | > 0,15    | MPa                  | EN 12230 |
| Water permeability             | > 12500   | mm/h                 | EN 12616 |

all properties above were measured at finished product  
(Non woven 100 % PET 150 g/m<sup>2</sup> à DIN EN 29073-1)

|                                       |             |                   |            |
|---------------------------------------|-------------|-------------------|------------|
| Density                               | 50 ± 7      | kg/m <sup>3</sup> | internal   |
| Thickness                             | 12 ± 10     | mm ± %            | ISO 1923   |
| Compression stress at 10 % deflection | 35 ± 15     | kPa               | ISO 3386/1 |
| Compression stress at 25 % deflection | 60 ± 15     | kPa               | ISO 3386/1 |
| Compression stress at 50 % deflection | 135 ± 15    | kPa               | ISO 3386/1 |
| Compression set 22 h / 25 % / 0,5 h   | < 16        | %                 | ISO 1856   |
| Compression set 22 h / 25 % / 24 h    | < 10        | %                 | ISO 1856   |
| Water absorption                      | closed cell |                   | ISO 2896   |

all properties above were measured at prematerial

Please note that the values listed above are based only on the properties of Trocellen cross-linked polyolefin foam. These values, to the best of our knowledge, true and accurate information, can only be regarded as technical indication; they do not replace your own examination to find out the product's suitability for the intended application, use and/or subsequent treatment. Our company does not undertake responsibility for variations in the above listed values. We reserve the right to update and change these indications without prior notice. Your satisfaction is important to us, therefore we strive to be better every day and to deliver products with exceptional quality, according to the agreed conditions of sale and terms of delivery.

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END OF REPORT





# Environmental performance and health aspects of ProPlay

Report SGS INTRON B.V.

Status: Final report  
Date: 30 September 2022  
Document number: A127530/R20220838

WHEN YOU NEED TO BE SURE



## Colophon

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A127530/O20210765

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opdracht 11/2/2022

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Date:

30 September 2022

Reason of change:

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## Contents

|                                              |    |
|----------------------------------------------|----|
| Colophon .....                               | 2  |
| Summary .....                                | 4  |
| 1. Preface .....                             | 5  |
| 2. DIN 18035-7 .....                         | 6  |
| 3. Dutch Soil Quality Decree .....           | 7  |
| 3.1. Formal testing .....                    | 7  |
| 3.2. Leaching of organic components .....    | 8  |
| 4. European leaching test TS 16637-2 .....   | 10 |
| 5. Belgian VLAREMA Regulation .....          | 11 |
| 6. SVHC analysis .....                       | 12 |
| 7. Safety of Toys EN 71-3 .....              | 13 |
| Appendix A. SGS analysis report 220626 ..... | 14 |
| Appendix B. SGS report HKTEC2200937501 ..... | 15 |

## Summary

### Preface

Schmitz Foam produces ProPlay shock pad for application on sports fields or underneath local playgrounds. ProPlay is made of polyethylene foam layered on top of polyester textile. ProPlay is applied in outdoor applications and therefore the environmental performance must be known to ensure that it does not contaminate the surrounding environment: soil, groundwater or surface water. The health aspects of ProPlay are relevant at the construction stage.

### Goal

The report gives an overview of the environmental and health performance of ProPlay aimed at customers of Schmitz Foam who apply ProPlay in artificial turf fields.

### Executed work

SGS has performed several environmental tests as well as tests aimed at health and safety aspects. The test results are inventoried and where relevant connected to existing limit values from national and international regulations.

### Conclusion

Based on the inventory of the test results from extensive testing on ProPlay we identified no environmental or health risks.

## 1. Preface

Schmitz Foam produces ProPlay shock pad for application on sports fields or underneath local playgrounds. ProPlay is made of polyethylene foam layered on top of polyester textile. The polyethylene raw material for the production is postindustrial waste. ProPlay is applied in outdoor applications and therefore the environmental performance must be known to ensure that it does not contaminate the surrounding environment: soil, groundwater or surface water.

This report gives an overview of the test results of environmental testing on ProPlay. The tests were all conducted by SGS as an independent testing laboratory. When available, the test results are assessed against applicable criteria. In the European Union the environmental requirements to materials in outdoor applications are set by the member states; therefore the requirements differ for individual member states.

In addition to the general environmental requirements for member states, which are applicable to the application of materials in general, there are specific requirements for artificial turf fields. These are found in the standard DIN 18035-7. The assessment of ProPlay against these requirements is given in paragraph 2. Paragraph 3 presents the assessment of ProPlay against the Dutch Soil Quality Decree. The Soil Quality decree is the most elaborate system of requirements on content and emission (leaching) in the European Union. It is applicable to both primary materials and to secondary materials. Most EU member states only set requirements for the application of secondary materials.

Paragraph 4 shows the results of the recent EU leaching test CEN TS 16637-2 on ProPlay..CEN TS 16637-2 has been developed by CEN TC 350, a horizontal technical committee of the European Union. The leaching test is intended for all products that are used in constructions.

Paragraph 5 presents the test results with respect to the Belgian Vlarema regulation, Paragraph 6 presents the data on the SVHC analysis and paragraph 7 the data on the EU limits for toys.

## 2. DIN 18035-7

DIN 18035-7 is a test standard for synthetic sport areas first issued in 1993. Chapter 6.11 of the standard states the testing on the impact on soil and groundwater. The product is eluted with water and with CO<sub>2</sub>-saturated water and the concentration in the eluate is reported. The test is with a water/solid ratio of L/S = 10 during 24 hours.

ProPlay has been tested on this standard for the regular parameters from DIN 18035-7 as well as for additional heavy metals and for selected organic components. In addition to the specified heavy metals and organic components additional parameters are analyzed: DOC, dissolved organic carbon and EOX, extractable organohalogenes.

Table 1. Results of test on DIN 18035-7.

| Parameter eluate DIN 18035-7       | Test result     | Maximum concentration |
|------------------------------------|-----------------|-----------------------|
| DOC                                | 8,2 mg/l        | ≤ 40 mg/l             |
| EOX                                | 9,3 mg/kg       | ≤ 100 mg/kg           |
| Lead (Pb)                          | < 0,01 mg/l*    | ≤ 0,04 mg/l           |
| Cadmium (Cd)                       | < 0,0001 mg/l*  | ≤ 0,005 mg/l          |
| Chromium (Cr)                      | < 0,01 mg/l*    | ≤ 0,05 mg/l           |
| Mercury (Hg)                       | < 0,00004 mg/l* | ≤ 0,001 mg/l          |
| Zinc (Zn) (CO <sub>2</sub> -water) | 0,52 mg/l       | ≤ 3 mg/l              |
|                                    | 0,16 mg/l       | ≤ 0,5 mg/l            |
| Tin (Sn)                           | < 0,002 mg/l*   | ≤ 0,05 mg/l           |
|                                    |                 |                       |

\*: "<" indicates: not detected. The number is the reporting limit for this parameter.

We conclude that ProPlay complies with the requirements from DIN 18035-7.

### 3. Dutch Soil Quality Decree

#### 3.1. Formal testing

The Soil Quality decree poses limits on the content and the emission from materials in outdoor constructions. For organic components the limits are on content. For inorganic components (heavy metals and anions) the limits are on emission (leaching). ProPlay does not fall under the Soil Quality Decree, because the SQD is intended for stony building materials, defined as having a total amount of silicon + aluminum + calcium of more than 10% m/m. ProPlay is a polymeric material which does not formally fall under this Regulation. The regulation has however been applied to assess the leaching and content data of ProPlay.

The limits on leaching are for shaped materials given in mg/m<sup>2</sup>. The applicable test is the so-called tank test (NEN 7375). In this test the material is brought into a tank with water and the water is refreshed 7 times and analyzed on the concentration of 19 inorganic components.

SGS INTRON has tested the ProPlay product with tank test. The test results are the average of three tests on ProPlay products

Table 2. Emission from ProPlay material (tank test)

| parameter                   | ProPlay              | Maximum emission SQD |
|-----------------------------|----------------------|----------------------|
|                             | (mg/m <sup>2</sup> ) | (mg/m <sup>2</sup> ) |
| Arsenic (As)                | < 2,8*               | 260                  |
| Barium (Ba)                 | 43                   | 1500                 |
| Cadmium (Cd)                | < 0,056              | 3,8                  |
| Chromium (Cr)               | < 5,6                | 120                  |
| Cobalt (Co)                 | < 1,7                | 60                   |
| Copper (Cu)                 | < 2,8                | 98                   |
| Mercury (Hg)                | < 0,022              | 1,4                  |
| Molybdenum (Mo)             | 0,57                 | 144                  |
| Nickel (Ni)                 | < 2,8                | 400                  |
| Lead (Pb)                   | < 5,6                | 81                   |
| Antimony (Sb)               | 2,3                  | 8,7                  |
| Selenium (Se)               | < 0,39               | 4,8                  |
| Tin (Sn)                    | < 1,1                | 50                   |
| Vanadium (V)                | < 11                 | 320                  |
| Zinc (Zn)                   | 16                   | 800                  |
| Bromide (Br)                | < 1,7                | 670                  |
| Chloride (Cl)               | 33                   | 110000               |
| Fluoride (F)                | < 56                 | 2500                 |
| Sulphate (SO <sub>4</sub> ) | < 1100               | 165000               |

\* A "<" sign indicates that it is not detected above the given reporting limit

Table 1 indicates that all components comply with the limit values from the Soil Quality Decree. Almost all components are below 10% of the maximum emission value with the exception of antimony which is at 26% of the maximum emission value.

The results of the content analyses on ProPlay are presented in table 3.

Table 3. Content of organic components in ProPlay material (column percolation test)

| parameter              | ProPlay 3  | Maximum content SQD |
|------------------------|------------|---------------------|
|                        | (mg/kg dm) | (mg/kg dm)          |
| Benzene                | < 0,05     | 1                   |
| Ethylbenzene           | < 0,05     | 1,25                |
| Toluene                | < 0,05     | 1,25                |
| Xylene                 | < 0,07     | 1,25                |
| Phenol                 | < 0,3      | 1,25                |
| Mineral oil            | 1500       | -                   |
| Naphtalene             | < 0,7      | 5                   |
| Phenanthrene           | < 0,7      | 20                  |
| Anthracene             | < 0,7      | 10                  |
| Fluoranthene           | < 0,7      | 35                  |
| Benzo(a)anthracene     | < 0,7      | 40                  |
| Chrysene               | < 0,7      | 10                  |
| Benzo(k)fluoranthene   | < 0,7      | 40                  |
| Benzo(a)pyrene         | < 0,7      | 10                  |
| Benzo(ghi)perylene     | < 0,7      | 40                  |
| Indeno(1,2,3,cd)pyrene | < 0,7      | 40                  |
| PAH (som 10 VROM)      | < 8,4**    | 50                  |
| PCB (som-7)            | < 3,4**    | 0,5                 |

\* A "<" sign indicates that it is not detected above the given reporting limit

\*\* Higher reporting limit due to effects from the matrix on the analysis. The reporting limit is than the limit value

Table 2 and 3 indicate that all components comply with the limit values from the Soil Quality Decree. The limit value of mineral oil from the SQD (500 mg/kg dm) is not valid for polymeric materials. Mineral oil is defined as the analysis result of a gaschromographic analysis of anything with a boiling point between C10 and C40 molecules. Polymeric materials have low amounts of low molecular weight substances in their polymeric materials and therefore cannot comply with the limit values.

We conclude that ProPlay complies with the requirements on content and emission from the Soil Quality decree.

### 3.2. Leaching of organic components

No limit values exist for the leaching of organic components. However, the leaching of mineral oil was investigated, because it is present at relative high concentrations in the product, as I usual for polymeric products. In the analysis it is extracted with organic solvents from the product, but does the mineral oil in its application in the turf field leach to soil and groundwater?.

Tested is the expected concentration of mineral oil with respect to the maximum values (MTR-values) in surface water where the drain water is lead to.

The leaching of organic components (of the individual mineral oil components) is examined for ProPlay. This is measured for 8 aliphatic and aromatic fractions for which the MTR values are set.

For the fractions for which no MTR value is set it is expected, due to their poor solubility in water, that no concentration will be reached that may interact with the ecosystem.

There is only an aliphatic fraction measured (C10-C12) which can be seen as diffusion-controlled leaching, for which MTR values are applicable. The leaching of the fraction C16-C35 is also clearly analyzed, however no leaching MTR-value is established due to the low ecotoxicity of this group.

Table 4. Calculated concentration of mineral oil fractions in surface water after 1 year

| Parameter         | C <sub>sw</sub> | MTR    |
|-------------------|-----------------|--------|
|                   | (µg/l)          | (µg/l) |
| C10-C12 aliphatic | 0,00024         | 0,084  |
| C21-C35 aromatic  | 0,0039          | 0,21   |

Given the low leaching, which demonstrates that the most critical MTR values are not exceeded, it can be concluded that the use of the ProPlay layer in an artificial turf field is also not a threat to soil and groundwater by the leaching of mineral oil.

The leaching of organic components has also been tested by the leaching test DIN 18035-7. The tested components benzene, toluene, ethylbenzene, xylenes and PAH's were not detected in the eluate.

## 4. European leaching test TS 16637-2

Recently new European leaching tests have been published. These are the TS 16637-2 for shaped and moulded materials and the TS 16637-3 for granular materials. The tests have been published by CEN and they will be incorporated in the harmonized product standards of construction products under the CPR (Construction Product Regulation). The leaching tests are so-called horizontal tests which are applicable to all types of construction products. For ProPlay TS 16637-2 is the right choice, because it is a shaped material. The results of the leaching test are presented in appendix A and are summarized in table 5. The cumulative emission after 64 days  $E_{64d}$  is shown. For comparison, the limit values from the Dutch SQD are also presented in the table.

Table 5. Emission of ProPlay from TS 16637-2

| Component                   | Emission*<br>$E_{64d}$ in mg/m <sup>2</sup> | Max. emission conform SQD<br>$E_{64d}$ in mg/m <sup>2</sup> |
|-----------------------------|---------------------------------------------|-------------------------------------------------------------|
| Sample number               | (mg/m <sup>2</sup> )                        |                                                             |
| Antimony (Sb)               | 3,0                                         | 8,7                                                         |
| Arsenic (As)                | 0 - 3,2                                     | 260                                                         |
| Barium (Ba)                 | 15 - 44                                     | 1.500                                                       |
| Cadmium (Cd)                | 0 - 0,064                                   | 3,8                                                         |
| Chromium (Cr)               | 0 - 6,4                                     | 120                                                         |
| Cobalt (Co)                 | 0 - 1,9                                     | 60                                                          |
| Copper (Cu)                 | 0 - 3,2                                     | 98                                                          |
| Mercury (Hg)                | 0 - 0,026                                   | 1,4                                                         |
| Molybdenum (Mo)             | 0,14 - 0,70                                 | 144                                                         |
| Lead (Pb)                   | 0 - 6,4                                     | 400                                                         |
| Nickel (Ni)                 | 0 - 3,2                                     | 81                                                          |
| Selenium (Se)               | 0 - 0,45                                    | 4,8                                                         |
| Tin (Sn)                    | 0,17 - 1,3                                  | 50                                                          |
| Vanadium (V)                | 0 - 13                                      | 320                                                         |
| Zink (Zn)                   | 35                                          | 800                                                         |
| Fluoride (F)                | 64                                          | 2.500                                                       |
| Chloride (Cl)               | 84                                          | 110.000                                                     |
| Sulphate (SO <sub>4</sub> ) | 120                                         | 165.000                                                     |
| Bromide (Br)                | 64                                          | 670                                                         |

\* If a range in table 5 has a lower value 0, the parameter is below reporting limit

The emission from the material in the lab test can be used to calculate the immission in soil in its application in the artificial sports field.

Most European member states do not yet have general regulations on the leaching of components from shaped materials. In addition to the Netherlands, Belgium (Flanders region) has a regulation where the calculated immission into the soil from secondary shaped materials is regulated (next paragraph). It is however the intention of the European Commission that data on the Release of dangerous substances from construction products will be integrated in the product declaration of performances (DOP) under the CPR, Construction Product Regulation. The request for data according to the new standard TS 16637-2 will increase.

The Dutch Soil Quality Decree, which poses leaching limits on shaped and moulded products with equal requirements for primary and secondary materials is considered to have strict requirements and may be used to assess the results from this test. It is, however, up to the individual member states to define the maximum leaching limits.

## 5. Belgian VLAREMA Regulation

The Belgian VLAREMA regulation imposes limit values on the use of waste materials in constructions. The test methods are from the compendium for sampling and analysis (CMA). Since the test methods are quite similar to those from the SQD (paragraph 3) we assess test results from the SQD to the limits values in the VLAREMA. The list of components is not complete: no data are available for styrene, octane, heptane and hexane.

Table 5. Content of organic components assessed against VLAREMA

| parameter              | ProPlay    | Maximum content<br>VLAREMA |
|------------------------|------------|----------------------------|
|                        | (mg/kg dm) | (mg/kg dm)                 |
| Benzene                | < 0,05     | 0.5                        |
| Ethylbenzene           | < 0,05     | 5                          |
| Toluene                | < 0,05     | 15                         |
| Xylene                 | < 0,07     | 15                         |
| Mineral oil            | 1500       | 1000                       |
| Naphtalene             | < 0,7      | 20                         |
| Phenanthrene           | < 0,7      | 30                         |
| Fluoranthene           | < 0,7      | 40                         |
| Benzo(a)anthracene     | < 0,7      | 35                         |
| Chrysene               | < 0,7      | 400                        |
| Benzo(k)fluoranthene   | < 0,7      | 55                         |
| Benzo(a)pyrene         | < 0,7      | 8,5                        |
| Benzo(ghi)perylene     | < 0,7      | 35                         |
| Indeno(1,2,3,cd)pyrene | < 0,7      | 35                         |
| PCB (som-7)            | < 3,4**    | 0,5                        |

\* A "<" sign indicates that it is not detected above the given reporting limit

\*\* Higher reporting limit due to effects from the matrix on the analysis. The reporting limit is than the limit value

For mineral oil we point to the remarks in paragraph 3. For the other components ProPlay complies with the limit values form VLAREMA.

VLAREMA presents maximum values from the immission in the soil over 100 years, The emission values from table 2 have therefore been recalculated to  $I_{(100 \text{ years})}$ , the immission over 100 years using the results of the tank test.

Table 6. Immission of inorganic components calculated from TS 16637-2

| parameter     | I <sub>(100 years)</sub> in mg/m <sup>2</sup> | Maximum immission VLAREMA |
|---------------|-----------------------------------------------|---------------------------|
|               | (mg/m <sup>2</sup> )                          | (mg/m <sup>2</sup> )      |
| Arsenic (As)  | 0 – 48                                        | 285                       |
| Cadmium (Cd)  | 0 – 0,96                                      | 12                        |
| Chromium (Cr) | 0 - 96                                        | 555                       |
| Copper (Cu)   | 0 – 48                                        | 255                       |
| Mercury (Hg)  | 0 – 0,39                                      | 8,2                       |
| Nickel (Ni)   | 0 – 48                                        | 136                       |
| Lead (Pb)     | 0 – 96                                        | 609                       |
| Zinc (Zn)     | 35                                            | 924                       |

All parameters comply with the maximum immission limits from VLAREMA.

## 6. SVHC analysis

ProPlay material has been investigated on the presence of Substances of Very High Concern (SVHC). The analysis results are presented in appendix A. SVHC screening was performed according to 223 substances in the candidate list of SVHC published on and before January 17, 2022 regarding regulation (EV) No 1907.2006 concerning Reach. The analysis report is in appendix B.

The only SVHC substance that was detected above the relevant concentration for Reach is diazene-1,2-dicarboxamide (C,C'-diazodi(formamide)) CAS 123-77-3, known as ADCA. The concentration is 0,25% m/m. ADCA is a foaming agent in polymers, which explains the presence in ProPlay. It has been banned in the European Union since August 2005 to the manufacture of plastic articles that are intended to come into direct contact with food.

ADCA is classified as dangerous due to causing allergy of asthma symptoms or breathing difficulties if inhaled. As a residual component in low concentrations in the application under artificial grass fields the consequences are very limited because the risk of inhalation is absent.

No other SVHC components were identified in the ProPlay material.

## 7. Safety of Toys test

The test EN 71-3 is applied to test the safety of toys. It tests the migration of inorganic components to stomach fluids.

Table 7. Migration of components

| Component      | Migration | Emission limit mg/kg |
|----------------|-----------|----------------------|
|                |           | (mg/kg)              |
| Aluminium      | <50       | 28,130               |
| Antimony       | 12        | 560                  |
| Arsenic        | <10       | 47                   |
| Barium         | <50       | 18,750               |
| Boron          | <50       | 15,000               |
| Cadmium        | <5,0      | 17                   |
| Chromium (III) | <5,0      | 460                  |
| Chromium (IV)  | <0.020    | 0.053                |
| Cobalt         | <10       | 130                  |
| Copper         | <50       | 7,700                |
| Lead           | <10       | 23                   |
| Manganese      | <50       | 15,000               |
| Mercury        | <10       | 94                   |
| Nickel         | <10       | 930                  |
| Selenium       | <10       | 460                  |
| Strontium      | <50       | 56,000               |
| Tin            | <0.20     | 180,000              |
| Organic Tin    | <4.9      | 12                   |
| Zinc           | <50       | 46,000               |

\* A "<" sign indicates that it is not detected above the given reporting limit

All parameters comply with the maximum migration limits from EN 71-3.



## Appendix A. SGS analysis report 220626

## Analyserapport

SGS INTRON B.V.  
t.a.v. de heer dr. U. Hofstra  
Postbus 5187  
6130 PD SITTARD  
Nederland

Datum : 24-05-2022  
Betreft : Uitloogonderzoek aan Schmitz ProPlay  
Uw code : A127530  
Laboratoriumnummer : 220626  
Monsterneming : 18-2-2022 door opdrachtgever  
Periode onderzoek : 24-02-2022 t/m 13-05-2022

### MONSTERGEGEVENS

| Monsternummer | Monstertype      | Monstercode     | Acceptatiedatum |
|---------------|------------------|-----------------|-----------------|
| 1             | foam             | Schmitz ProPlay | 24-02-2022      |
| 141           | eluaat standtest | 220626-141      | 24-02-2022      |
| 142           | eluaat standtest | 220626-142      | 24-02-2022      |
| 143           | eluaat standtest | 220626-143      | 24-02-2022      |
| 144           | eluaat standtest | 220626-144      | 24-02-2022      |
| 145           | eluaat standtest | 220626-145      | 24-02-2022      |
| 146           | eluaat standtest | 220626-146      | 24-02-2022      |
| 147           | eluaat standtest | 220626-147      | 24-02-2022      |
| 148           | eluaat standtest | 220626-148      | 24-02-2022      |

## ANALYSEMETHODEN

| Analyse                          | Methode                                        | Q | u |
|----------------------------------|------------------------------------------------|---|---|
| Antimoon                         | NVN 7323 (1997), AP04-E-XIII                   | Q |   |
| Arseen                           | NEN 6966, AP04-E-V                             | Q |   |
| Barium                           | NEN 6966, AP04-E-X                             | Q |   |
| Bromide                          | NEN-EN-ISO 10304-1, AP04-E-XVII, NEN-EN 16192  | Q |   |
| Cadmium                          | NEN 6966, AP04-E-II                            | Q |   |
| Chloride                         | NEN-EN-ISO 10304-1, AP04-E-XVII, NEN-EN 16192  | Q |   |
| Chroom totaal                    | NEN 6966, AP04-E-VI                            | Q |   |
| Conserveren                      | Eigen methode                                  |   |   |
| Diffusieproef (8 fracties)       | TS16637-2                                      |   |   |
| Fluoride                         | NEN-EN-ISO 10304-1, AP04-E-XVIII, NEN-EN 16192 | Q |   |
| Geleidbaarheid 25°C              | AP04-U-V, NEN-EN 16192 (NEN-ISO 7888)          | Q |   |
| Kobalt                           | NEN 6966, AP04-E-XII                           | Q |   |
| Koper                            | NEN 6966, AP04-E-VII                           | Q |   |
| Kwik                             | NEN 7324 (2001), AP04-E-VIII                   | Q |   |
| Lood                             | NEN 6966, AP04-E-I                             | Q |   |
| Molybdeen                        | NEN 6966, AP04-E-IX                            | Q |   |
| Nikkel                           | NEN 6966, AP04-E-IV                            | Q |   |
| Onderzoek                        | Eigen methode                                  |   |   |
| pH                               | NEN-ISO 10523, AP04-U-IV                       | Q |   |
| Seleen                           | NVN 7323 (1997), AP04-E-XIV                    | Q |   |
| Sulfaat                          | NEN-EN-ISO 10304-1, AP04-E-XVII, NEN-EN 16192  | Q |   |
| Tin                              | NEN 6966, AP04-E-XI                            | Q |   |
| Vanadium                         | NEN 6966, AP04-E-XV                            | Q |   |
| Voorbehandeling tbv uitbesteding | Eigen methode                                  |   |   |
| Zink                             | NEN 6966, AP04-E-III                           | Q |   |

Q = geaccrediteerd door RvA, u = uitbesteed bij onderaannemer, Qu = geaccrediteerd bij de onderaannemer

## RESULTATEN

### Horizontal dynamic surface leaching test NPR-CEN/TS 16637-2

|                            |                 |
|----------------------------|-----------------|
| <b>Sample description:</b> | Schmitz ProPlay |
| <b>Sampling location:</b>  | N.B.            |

|                   |                   |
|-------------------|-------------------|
| <b>Client:</b>    | SGS INTRON B.V.   |
| <b>Labnumber:</b> | 220626-1          |
| <b>Date:</b>      | 3-5-2022 08:40:00 |

|                          |       |                      |
|--------------------------|-------|----------------------|
| <b>Data sample</b>       |       |                      |
| dry density              | 580   | [kg/m <sup>3</sup> ] |
| loss of weight:          | 1     | [g/m <sup>2</sup> ]  |
| total geometric surface: | 902,1 | [cm <sup>2</sup> ]   |
| totale mass sample:      | 142   | [g]                  |
| L/A ratio:               | 80    | [l/m <sup>2</sup> ]  |
| loss of weight step 1-2: | 1     | [g/m <sup>2</sup> ]  |
| loss of weight step 3-8: | 0     | [g/m <sup>2</sup> ]  |

|                        |        |      |
|------------------------|--------|------|
| <b>Data eluates</b>    |        |      |
| volume of the leachant | 7217   | [ml] |
| temperature:           | 20 ± 2 | [°C] |

| Fraction      |         | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
|---------------|---------|-----|-----|-----|-----|-----|-----|-----|-----|
| acidity:      | [pH]    | 7,6 | 7,0 | 6,9 | 7,2 | 7,0 | 6,9 | 7,0 | 7,4 |
| conductivity: | [µS/cm] | 10  | 4,6 | 3,7 | 3,9 | 5,9 | 6,7 | 12  | 9,9 |

| Component                  | OBG<br>[µg/l] | concentrations per step<br>[µg/l] |         |         |         |         |         |         |         |
|----------------------------|---------------|-----------------------------------|---------|---------|---------|---------|---------|---------|---------|
| antimony (Sb)              | 0,4           | 4,0                               | 3,6     | 3,4     | 3,1     | 4,4     | 3,1     | 8,3     | 7,6     |
| arsenic (As)               | 5             | < 5,0                             | < 5,0   | < 5,0   | < 5,0   | < 5,0   | < 5,0   | < 5,0   | < 5,0   |
| barium (Ba)                | 60            | < 60                              | < 60    | < 60    | < 60    | < 60    | < 60    | 92      | 94      |
| cadmium (Cd)               | 0,1           | < 0,10                            | < 0,10  | < 0,10  | < 0,10  | < 0,10  | < 0,10  | < 0,10  | < 0,10  |
| chromium (Cr)              | 10            | < 10                              | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    |
| cobalt (Co)                | 3             | < 3,0                             | < 3,0   | < 3,0   | < 3,0   | < 3,0   | < 3,0   | < 3,0   | < 3,0   |
| copper (Cu)                | 5             | < 5,0                             | < 5,0   | < 5,0   | < 5,0   | < 5,0   | < 5,0   | < 5,0   | < 5,0   |
| mercury (Hg)               | 0,04          | < 0,040                           | < 0,040 | < 0,040 | < 0,040 | < 0,040 | < 0,040 | < 0,040 | < 0,040 |
| molybdenum (Mo)            | 1             | < 1,0                             | < 1,0   | < 1,0   | 1,7     | < 1,0   | < 1,0   | < 1,0   | < 1,0   |
| lead (Pb)                  | 10            | < 10                              | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    |
| nickel (Ni)                | 5             | < 5,0                             | < 5,0   | < 5,0   | < 5,0   | < 5,0   | < 5,0   | < 5,0   | < 5,0   |
| selenium (Se)              | 0,7           | < 0,70                            | < 0,70  | < 0,70  | < 0,70  | < 0,70  | < 0,70  | < 0,70  | < 0,70  |
| tin (Sn)                   | 2             | 2,1                               | < 2,0   | < 2,0   | < 2,0   | < 2,0   | < 2,0   | < 2,0   | < 2,0   |
| vanadium (V)               | 20            | < 20                              | < 20    | < 20    | < 20    | < 20    | < 20    | < 20    | < 20    |
| zink (Zn)                  | 20            | 100                               | < 20    | 29      | 26      | 48      | 51      | 87      | 71      |
| fluoride (F)               | 100           | < 100                             | < 100   | < 100   | < 100   | < 100   | < 100   | < 100   | < 100   |
| chloride (Cl)              | 50            | 280                               | 470     | < 50    | < 50    | < 50    | < 50    | < 50    | < 50    |
| sulfaat (SO <sub>4</sub> ) | 100           | 630                               | 200     | < 100   | < 100   | < 100   | < 100   | < 100   | 180     |
| bromide (Br)               | 100           | < 100                             | < 100   | < 100   | < 100   | < 100   | < 100   | < 100   | < 100   |
| calcium (Ca)               | 1000          | n.b.                              | n.b.    | n.b.    | n.b.    | n.b.    | n.b.    | n.b.    | n.b.    |
| sodium (Na)                | 300           | n.b.                              | n.b.    | n.b.    | n.b.    | n.b.    | n.b.    | n.b.    | n.b.    |

| Component                   | released quantities per step<br>(mg/m <sup>2</sup> ) |       |      |      |      |      |      |       |
|-----------------------------|------------------------------------------------------|-------|------|------|------|------|------|-------|
| antimony (Sb)               | 0,32                                                 | 0,29  | 0,27 | 0,25 | 0,35 | 0,25 | 0,66 | 0,61  |
| arsenic (As)                | 0,40                                                 | 0,40  | 0,40 | 0,40 | 0,40 | 0,40 | 0,40 | 0,40  |
| barium (Ba)                 | 4,80                                                 | 4,80  | 4,80 | 4,80 | 4,80 | 4,80 | 7,36 | 7,52  |
| cadmium (Cd)                | 0,01                                                 | 0,01  | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01  |
| chromium (Cr)               | 0,80                                                 | 0,80  | 0,80 | 0,80 | 0,80 | 0,80 | 0,80 | 0,80  |
| cobalt (Co)                 | 0,24                                                 | 0,24  | 0,24 | 0,24 | 0,24 | 0,24 | 0,24 | 0,24  |
| copper (Cu)                 | 0,4                                                  | 0,4   | 0,4  | 0,4  | 0,4  | 0,4  | 0,4  | 0,4   |
| mercury (Hg)                | 0,00                                                 | 0,00  | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00  |
| molybdenum (Mo)             | 0,08                                                 | 0,08  | 0,08 | 0,14 | 0,08 | 0,08 | 0,08 | 0,08  |
| lead (Pb)                   | 0,80                                                 | 0,80  | 0,80 | 0,80 | 0,80 | 0,80 | 0,80 | 0,80  |
| nickel (Ni)                 | 0,40                                                 | 0,40  | 0,40 | 0,40 | 0,40 | 0,40 | 0,40 | 0,40  |
| selenium (Se)               | 0,06                                                 | 0,06  | 0,06 | 0,06 | 0,06 | 0,06 | 0,06 | 0,06  |
| tin (Sn)                    | 0,17                                                 | 0,16  | 0,16 | 0,16 | 0,16 | 0,16 | 0,16 | 0,16  |
| vanadium (V)                | 1,60                                                 | 1,60  | 1,60 | 1,60 | 1,60 | 1,60 | 1,60 | 1,60  |
| zink (Zn)                   | 8,00                                                 | 1,60  | 2,32 | 2,08 | 3,84 | 4,08 | 6,96 | 5,68  |
| fluoride (F)                | 8,00                                                 | 8,00  | 8,00 | 8,00 | 8,00 | 8,00 | 8,00 | 8,00  |
| chloride (Cl)               | 22,40                                                | 37,60 | 4,00 | 4,00 | 4,00 | 4,00 | 4,00 | 4,00  |
| sulphate (SO <sub>4</sub> ) | 50,40                                                | 16,00 | 8,00 | 8,00 | 8,00 | 8,00 | 8,00 | 14,40 |
| bromide (Br)                | 8,00                                                 | 8,00  | 8,00 | 8,00 | 8,00 | 8,00 | 8,00 | 8,00  |
| calcium (Ca)                |                                                      |       |      |      |      |      |      |       |
| sodium (Na)                 |                                                      |       |      |      |      |      |      |       |

n.d. = not determined



Labnumber: 220626-1

Release mechanism

| Component                  | overall low concentrations | surface wash-off followed by low concentrations | diffusion | surface wash-off preceding diffusion | diffusion followed by depletion | dissolution or unidentified mechanism |  |  |  | ε64 (mg/m <sup>2</sup> ) |
|----------------------------|----------------------------|-------------------------------------------------|-----------|--------------------------------------|---------------------------------|---------------------------------------|--|--|--|--------------------------|
|                            |                            |                                                 |           |                                      |                                 |                                       |  |  |  | area release             |
| antimony (Sb)              | no                         | no                                              | yes       | no                                   | no                              |                                       |  |  |  | 3,0                      |
| arsenic (As)               | yes                        |                                                 |           |                                      |                                 |                                       |  |  |  | 0 - 3,2                  |
| barium (Ba)                | yes                        | no                                              | no        |                                      |                                 |                                       |  |  |  | 15 - 44                  |
| cadmium (Cd)               | yes                        |                                                 |           |                                      |                                 |                                       |  |  |  | 0 - 0,064                |
| chromium (Cr)              | yes                        |                                                 |           |                                      |                                 |                                       |  |  |  | 0 - 6,4                  |
| cobalt (Co)                | yes                        |                                                 |           |                                      |                                 |                                       |  |  |  | 0 - 1,9                  |
| copper (Cu)                | yes                        |                                                 |           |                                      |                                 |                                       |  |  |  | 0 - 3,2                  |
| mercury (Hg)               | yes                        |                                                 |           |                                      |                                 |                                       |  |  |  | 0 - 0,026                |
| molybdenum (Mo)            | yes                        | no                                              |           |                                      |                                 |                                       |  |  |  | 0,14 - 0,70              |
| lead (Pb)                  | yes                        |                                                 |           |                                      |                                 |                                       |  |  |  | 0 - 6,4                  |
| nickel (Ni)                | yes                        |                                                 |           |                                      |                                 |                                       |  |  |  | 0 - 3,2                  |
| selenium (Se)              | yes                        |                                                 |           |                                      |                                 |                                       |  |  |  | 0 - 0,45                 |
| tin (Sn)                   | yes                        |                                                 |           |                                      |                                 |                                       |  |  |  | 0,17 - 1,3               |
| vanadium (V)               | yes                        |                                                 |           |                                      |                                 |                                       |  |  |  | 0 - 13                   |
| zink (Zn)                  | no                         | no                                              | yes       | yes                                  | yes                             |                                       |  |  |  | 33 - 35                  |
| fluoride (F)               | yes                        |                                                 |           |                                      |                                 |                                       |  |  |  | 0 - 64                   |
| chloride (Cl)              | no                         |                                                 |           |                                      |                                 |                                       |  |  |  | 60 - 84                  |
| sulfaat (SO <sub>4</sub> ) | yes                        |                                                 |           |                                      |                                 |                                       |  |  |  | 81 - 120                 |
| bromide (Br)               | yes                        |                                                 |           |                                      |                                 |                                       |  |  |  | 0 - 64                   |
| calcium (Ca)               |                            |                                                 |           |                                      |                                 |                                       |  |  |  |                          |
| sodium (Na)                |                            |                                                 |           |                                      |                                 |                                       |  |  |  |                          |

| Component                   | ε64<br>area release<br>(mg/m <sup>2</sup> ) |  |  |
|-----------------------------|---------------------------------------------|--|--|
|                             |                                             |  |  |
| antimony (Sb)               | 3,0                                         |  |  |
| arsenic (As)                | 3,2                                         |  |  |
| barium (Ba)                 | 44                                          |  |  |
| cadmium (Cd)                | 0,064                                       |  |  |
| chromium (Cr)               | 6,4                                         |  |  |
| cobalt (Co)                 | 1,9                                         |  |  |
| copper (Cu)                 | 3,2                                         |  |  |
| mercury (Hg)                | 0,026                                       |  |  |
| molybdenum (Mo)             | 0,70                                        |  |  |
| lead (Pb)                   | 6,4                                         |  |  |
| nickel (Ni)                 | 3,2                                         |  |  |
| selenium (Se)               | 0,45                                        |  |  |
| tin (Sn)                    | 1,3                                         |  |  |
| vanadium (V)                | 13                                          |  |  |
| zink (Zn)                   | 35                                          |  |  |
| fluoride (F)                | 64                                          |  |  |
| chloride (Cl)               | 84                                          |  |  |
| sulphate (SO <sub>4</sub> ) | 120                                         |  |  |
| bromide (Br)                | 64                                          |  |  |
| calcium (Ca)                |                                             |  |  |
| sodium (Na)                 |                                             |  |  |

## INFORMATIE OVER DE GESCHIKTHEID VAN DE MONSTERS VOOR ANALYSE

SGS INTRON is conform internationale voorschriften (NEN-EN-ISO/IEC 17025) verplicht te controleren of aangeboden monsters geschikt zijn voor het beoogde onderzoek en moet borgen dat monsters niet achteruit gaan voordat het gehalte is zekergesteld. Het vereist daarom ook dat de leveranciers van monsters ze tijdig en op een juiste wijze verpakt en geconserveerd aanleveren bij het laboratorium.

Er zijn geen verschillen met de richtlijnen geconstateerd die mogelijk de betrouwbaarheid van de resultaten van onderstaande monsters of analyses hebben beïnvloed.

Het monster is niet geconserveerd aangeleverd.

|                   |  |
|-------------------|--|
| Betreft monsters: |  |
|-------------------|--|

Het monster is voor de volgende analyse in een ongeschikte verpakking aangeleverd.

|                   |  |
|-------------------|--|
| Betreft monsters: |  |
|-------------------|--|

De conserveringstermijn is voor de volgende analyse overschreden.

| Analyse(s) | monster(s) |
|------------|------------|
|            |            |

## DISCLAIMER

- Dit rapport mag zonder schriftelijke toestemming van het SGS INTRON laboratorium uitsluitend in zijn geheel worden gereproduceerd.
- De resultaten hebben uitsluitend betrekking op de onderzochte monsters.
- De NEN-EN-ISO/IEC 17025 accreditatie omvat alle resultaten behorende bij analyses die bij analysemethoden met een Q zijn gemarkeerd.
- De meetonzekerheid van de gerapporteerde resultaten en overige prestatiekenmerken kunt u opvragen bij SGS INTRON
- Op verzoek kan een lijst van de geaccrediteerde analysemethoden opgevraagd worden, welke de relatie (conform, gelijkwaardig, eigen methode) met de onderliggende norm beschrijft.



## **Appendix B. SGS report HKTEC2200937501**



**Test Report  
(SVHC)**

No. HKTEC2200937501

Date : 15 Mar 2022

Page 1 of 20

SGS INTRON B.V.  
DR. NOLENSLAAN 126  
6136 GV SITTARD  
NETHERLANDS

The following sample(s) was/were submitted by the client as: A127530 (220626-1)

SGS Job No. : 4993127 - HK  
Item No. Given by Client : 1 SAMPLE  
Date of Sample Received : 01 Mar 2022  
Testing Period : 01 Mar 2022 - 15 Mar 2022

Test Requested :As requested by client, SVHC screening is performed according to:  
(i) Two hundred and twenty-three (223) substances in the Candidate List of Substances of Very High Concern (SVHC) for authorization published by European Chemicals Agency (ECHA) on and before Jan 17, 2022 regarding Regulation (EC) No 1907/2006 concerning the REACH.

Test Result(s) :Please refer to next page(s).

**Summary:**

According to the specified scope and evaluation screening, the test results of SVHC are > 0.1% (w/w) in the submitted sample. See Sample ID 001.

See remark 2 for obligation under REACH

Signed for and on behalf of  
SGS Hong Kong Limited

Wong Ka Ming, Polly  
Chemist

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## Test Report (SVHC)

No. HKTEC2200937501

Date : 15 Mar 2022

Page 2 of 20

### Remark :

1. The chemical analysis of specified SVHC is performed by means of currently available analytical techniques against the following SVHC related documents published by ECHA:  
<http://echa.europa.eu/web/guest/candidate-list-table>

These lists are under evaluation by ECHA and may subject to change in the future.

2. REACH obligation:

#### 2.1 Concerning article(s):

##### Communication:

Article 33 of Regulation (EC) No 1907/2006 requires supplier of an article containing a substance meeting the criteria in Article 57 and identified in accordance with Article 59(1) in a concentration above 0.1% weight by weight (w/w) shall provide the recipient of the article with sufficient information, available to the supplier, to allow safe use of the article including, as a minimum, the name of that substance in the Candidate List.

##### Notification:

In accordance with Regulation (EC) No 1907/2006, any EU producer or importer of articles shall notify ECHA, in accordance with paragraph 4 of Article 7, if a substance meets the criteria in Article 57 and is identified in accordance with Article 59(1) of the Regulation, if (a) the substance in the Candidate List is present in those articles in quantities totaling over one tonne per producer or importer per year; and (b) the substance in the Candidate List is present in those articles above a concentration of 0.1% weight by weight (w/w).

SGS adopts the ruling of the Court of Justice of the European Union on the definition of an article under REACH unless indicated otherwise. Detail explanation is available at the following link:

<http://www.sgs.com/-/media/global/documents/technical-documents/technical-bulletins/sgs-crs-position-statement-on-svhc-in-articles-a4-en-16-06.pdf?la=en>

#### 2.2 Concerning material(s):

Test results in this report are based on the tested sample. This report refers to testing result of tested sample submitted as homogenous material(s). In case such material is being used to compose an article, the results indicated in this report may not represent SVHC concentration in such article. If this report refers to testing result of composite material group by equal weight proportion, the material in each composite test group may come from more than one article.

If the sample is a substance or mixture, and it directly exports to EU, client has the obligation to comply with the supply chain communication obligation under Article 31 of Regulation (EC) No. 1907/2006 and the conditions of Authorization of substance of very high concern included in the Annex XIV of the Regulation (EC) No. 1907/2006.

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## Test Report (SVHC)

No. HKTEC2200937501

Date : 15 Mar 2022

Page 3 of 20

### 2.3 Concerning substance and preparation:

If a SVHC is found over 0.1% (w/w) and/or the specific concentration limit which is set in Regulation (EC) No 1272/2008 and its amendments, client is suggested to prepare a Safety Data Sheet (SDS) against the SVHC to comply with the supply chain communication obligation under Regulation (EC) No 1907/2006, in which:

- a substance that is classified as hazardous under the CLP Regulation (EC) No 1272/2008.
- a mixture that is classified as hazardous under the CLP Regulation (EC) No 1272/2008, when it contains a substance with concentration equal to, or greater than the classification limit as set in Regulation (EC) No. 1272/2008; or
- a mixture is not classified as hazardous under the CLP Regulation (EC) No 1272/2008, but contains either:

- (a) a substance posing human health or environmental hazards in an individual concentration of  $\geq 1\%$  by weight for mixtures that are solid or liquids (i.e., non-gaseous mixtures) or  $\geq 0.2\%$  by volume for gaseous mixtures; or
- (b) a substance that is PBT, or vPvB in an individual concentration of  $\geq 0.1\%$  by weight for mixtures that are solid or liquids (i.e., non-gaseous mixtures); or
- (c) a substance on the SVHC candidate list (for reasons other than those listed above), in an individual concentration of  $\geq 0.1\%$  by weight for non-gaseous mixtures; or
- (d) a substance for which there are Europe-wide workplace exposure limits

3. If a SVHC is found over the reporting limit, client is suggested to identify the component which contains the SVHC and the exact concentration of the SVHC by requesting further quantitative analysis from the laboratory.

## Test Sample :

### Sample Description:

| Specimen No. | SGS Sample ID    | Description                           |
|--------------|------------------|---------------------------------------|
| SN1          | HKT22-009375.001 | Multicolor plastic w/ white non woven |

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**Test Report  
(SVHC)**

No. HKTEC2200937501

Date : 15 Mar 2022

Page 4 of 20

**Test Method:**

SGS In-House method-CTS-HL-114-1, CTS-HL-234-5, Analyzed by ICP-OES, UV-VIS, GC-MS, HPLC-DAD/MS and Colorimetric Method.

**Test Result: (Substances in the Candidate List of SVHC)**

| Batch | Substance Name                                    | CAS No.  | 001<br>Concentration<br>(%) | RL (%) |
|-------|---------------------------------------------------|----------|-----------------------------|--------|
| VIII  | Diazeno-1,2-dicarboxamide (C,C'-azodi(formamide)) | 123-77-3 | 0.258                       | 0.010  |
| -     | Other tested SVHC in candidate list               | -        | ND                          | -      |

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## Test Report (SVHC)

No. HKTEC2200937501

Date : 15 Mar 2022

Page 5 of 20

### Notes:

1. The table above only shows detected SVHC, and SVHC that below RL are not reported. Please refer to Appendix for the full list of tested SVHC.
2. RL = Reporting Limit (Test data will be shown if  $\geq$  RL. RL is not regulatory limit.)  
ND = Not detected (lower than RL), ND is denoted on the SVHC substance.  
NA<sup>^</sup> = Upon further test verification on the specific detected element(s) of SVHC and also information provided from client, the possibility that the element(s) content originate from SVHC is very unlikely, even though their presence cannot be exclude entirely. It may be assumed that the detected element(s) have a non-SVHC source.
3. \* The test result is based on the calculation of selected element(s) and to the worst-case scenario.  
\*\* The test result is based on the calculation of selected marker(s) and to the worst-case scenario.
4. RL = 0.001% is evaluated for element (i.e. cobalt, arsenic, lead, chromium (VI), aluminum, zirconium, boron, strontium, zinc, antimony, titanium, barium and cadmium respectively), except molybdenum RL=0.0005%.
5. Calculated concentration of boric compounds are based on the total boron for liquid, powder and paste samples and water extractive boron for other samples by ICP-OES.
6. § The substance is proposed for the identification as SVHC only where it contains Michler's ketone (CAS Number: 90-94-8) or Michler's base (CAS Number: 101-61-1)  $\geq 0.1\%$  (w/w).

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**Appendix 1**

| Category | Decision Rule Statement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | <p>The decision rule for conformity reporting is based on the non-binary statement with guard band (is equal to the expanded measurement uncertainty with a 95% coverage probability, <math>w = U95</math>) in ILAC-G8:09/2019 Clause 4.2.3.</p> <p>A. "Pass - the measured value is within (or below / above) the acceptance limit, where the acceptance limit is below / above to the guard band." or "Pass - The measured values were observed in tolerance at the points tested. The specific false accept risk is up to 2.5%."</p> <p>B. "Conditional Pass - The measured values were observed in tolerance at the points tested. However, a portion of the expanded measurement uncertainty intervals about one or more measured values exceeded / out of tolerance. When the measured result is close to the tolerance, the specific false accept risk is up to 50%."</p> <p>C. "Conditional Fail - One or more measured values were observed out of tolerance at the points tested. However, a portion of the expanded measurement uncertainty intervals about one or more measured values were in tolerance. When the measured result is close to the tolerance, the specific false reject risk is up to 50%."</p> <p>D. "Fail - the measured value is out of (or below / above) the tolerance limit added / subtracted to the guard band." or "Fail - One or more measured values were observed out of tolerance at the points tested". The specific false reject risk is up to 2.5%.</p> |
| 2        | <p>The decision rule for conformity reporting is based on BS EN 1811:2011+A1:2015: Reference test method for release of nickel from all post assemblies which are inserted into pierced parts of the human body and articles intended to come into direct and prolonged contact with the skin in Section 9.2 interpretation of results.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 3        | <p>The decision rule for conformity reporting is based on the general consideration of simple acceptance as stated in ISO/IEC Guide 98-3: "Uncertainty of measurement - Part 3: Guide to the expression of uncertainty in measurement (GUM 1995)", and more specifically for analytical measurements to the EURACHEM/CITAC Guide 2012 "Quantifying Uncertainty in Analytical Measurement".</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 4        | <p>The decision rule for conformity reporting is according to the IEC 62321-7-1 Edition 1.0 2015-09 Section 7: Table 1-(comparison to standard and interpretation of result)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 5        | <p>The decision rule for conformity reporting is according to the IEC 62321-3-1 Edition 1.0 2013-06 Annex A.3 interpretation of result.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 6        | <p>The decision rule for conformity reporting is according to the GB/T 26125-2011 Annex A to H</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 7        | <p>The decision rule for conformity reporting is according to the requested specification or standard<br/>(ASTM F963-17 section 4.3.5)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 8        | <p>The decision rule for conformity reporting is according to the requested specification or standard<br/>(AS/NZS ISO 8124 Part 3 section 4.2)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Remark   | <p>If the decision rule is not feasible to be used and the uncertainty of the result is able to be provided, the uncertainty range of the result will be shown in the report. Otherwise, only result will be shown in the report.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

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# Test Report (SVHC)

No. HKTEC2200937501

Date : 15 Mar 2022

Page 7 of 20

## Appendix Full list of tested SVHC:

| Batch | No. | Substance Name                                                                                                                                  | CAS No.                  | RL (%)<br>(Mixed<br>Components) | RL (%)<br>(Individual<br>Components) |
|-------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------------|--------------------------------------|
| I     | 1   | 4,4'-Diaminodiphenylmethane(MDA)                                                                                                                | 101-77-9                 | 0.050                           | 0.010                                |
| I     | 2   | 5-tert-butyl-2,4,6-trinitro-m-xylene<br>(musk xylene)                                                                                           | 81-15-2                  | 0.050                           | 0.010                                |
| I     | 3   | Alkanes, C10-13, chloro (Short Chain<br>Chlorinated Paraffins)                                                                                  | 85535-84-8               | 0.050                           | 0.010                                |
| I     | 4   | Anthracene                                                                                                                                      | 120-12-7                 | 0.050                           | 0.010                                |
| I     | 5   | Benzyl butyl phthalate (BBP)                                                                                                                    | 85-68-7                  | 0.050                           | 0.010                                |
| I     | 6   | Bis(2-ethylhexyl)phthalate (DEHP)                                                                                                               | 117-81-7                 | 0.050                           | 0.010                                |
| I     | 7   | Bis(tributyltin)oxide (TBTO)                                                                                                                    | 56-35-9                  | 0.050                           | 0.010                                |
| I     | 8   | Cobalt dichloride*                                                                                                                              | 7646-79-9                | 0.005                           | 0.001                                |
| I     | 9   | Diarsenic pentaoxide*                                                                                                                           | 1303-28-2                | 0.005                           | 0.001                                |
| I     | 10  | Diarsenic trioxide*                                                                                                                             | 1327-53-3                | 0.005                           | 0.001                                |
| I     | 11  | Dibutyl phthalate (DBP)                                                                                                                         | 84-74-2                  | 0.050                           | 0.010                                |
| I     | 12  | Hexabromocyclododecane (HBCDD)<br>and all major diastereoisomers<br>identified ( $\alpha$ -HBCDD, $\beta$ -HBCDD, $\gamma$ -<br>HBCDD) $\Delta$ | -                        | 0.050                           | 0.010                                |
| I     | 13  | Lead hydrogen arsenate*                                                                                                                         | 7784-40-9                | 0.005                           | 0.001                                |
| I     | 14  | Sodium dichromate*                                                                                                                              | 7789-12-0,<br>10588-01-9 | 0.005                           | 0.001                                |
| I     | 15  | Triethyl arsenate*                                                                                                                              | 15606-95-8               | 0.005                           | 0.001                                |
| II    | 16  | 2,4-Dinitrotoluene                                                                                                                              | 121-14-2                 | 0.050                           | 0.010                                |
| II    | 17  | Acrylamide                                                                                                                                      | 79-06-1                  | 0.050                           | 0.010                                |
| II    | 18  | Anthracene oil**                                                                                                                                | 90640-80-5               | 0.050                           | 0.010                                |

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| Batch | No. | Substance Name                                               | CAS No.                                | RL (%)<br>(Mixed Components) | RL (%)<br>(Individual Components) |
|-------|-----|--------------------------------------------------------------|----------------------------------------|------------------------------|-----------------------------------|
| II    | 19  | Anthracene oil, anthracene paste**                           | 90640-81-6                             | 0.050                        | 0.010                             |
| II    | 20  | Anthracene oil, anthracene paste, anthracene fraction**      | 91995-15-2                             | 0.050                        | 0.010                             |
| II    | 21  | Anthracene oil, anthracene paste, distn. Lights**            | 91995-17-4                             | 0.050                        | 0.010                             |
| II    | 22  | Anthracene oil, anthracene-low**                             | 90640-82-7                             | 0.050                        | 0.010                             |
| II    | 23  | Diisobutyl phthalate                                         | 84-69-5                                | 0.050                        | 0.010                             |
| II    | 24  | Lead chromate molybdate sulphate red (C.I. Pigment Red 104)* | 12656-85-8                             | 0.005                        | 0.001                             |
| II    | 25  | Lead chromate*                                               | 7758-97-6                              | 0.005                        | 0.001                             |
| II    | 26  | Lead sulfochromate yellow (C.I. Pigment Yellow 34)*          | 1344-37-2                              | 0.005                        | 0.001                             |
| II    | 27  | Pitch, coal tar, high temp. **                               | 65996-93-2                             | 0.050                        | 0.00025                           |
| II    | 28  | Tris(2-chloroethyl)phosphate                                 | 115-96-8                               | 0.050                        | 0.010                             |
| III   | 29  | Ammonium dichromate*                                         | 7789-09-5                              | 0.005                        | 0.001                             |
| III   | 30  | Boric acid*                                                  | -                                      | 0.005                        | 0.001                             |
| III   | 31  | Disodium tetraborate, anhydrous*                             | 1303-96-4,<br>1330-43-4,<br>12179-04-3 | 0.005                        | 0.001                             |
| III   | 32  | Potassium chromate*                                          | 7789-00-6                              | 0.005                        | 0.001                             |
| III   | 33  | Potassium dichromate*                                        | 7778-50-9                              | 0.005                        | 0.001                             |
| III   | 34  | Sodium chromate*                                             | 7775-11-3                              | 0.005                        | 0.001                             |
| III   | 35  | Tetraboron disodium heptaoxide, hydrate*                     | 12267-73-1                             | 0.005                        | 0.001                             |
| III   | 36  | Trichloroethylene                                            | 79-01-6                                | 0.050                        | 0.010                             |
| IV    | 37  | 2-Ethoxyethanol                                              | 110-80-5                               | 0.050                        | 0.010                             |

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# Test Report (SVHC)

No. HKTEC2200937501

Date : 15 Mar 2022

Page 9 of 20

| Batch | No. | Substance Name                                                              | CAS No.                | RL (%)<br>(Mixed<br>Components) | RL (%)<br>(Individual<br>Components) |
|-------|-----|-----------------------------------------------------------------------------|------------------------|---------------------------------|--------------------------------------|
| IV    | 38  | 2-Methoxyethanol                                                            | 109-86-4               | 0.050                           | 0.010                                |
| IV    | 39  | Chromic acid, Oligomers of chromic acid and dichromic acid, Dichromic acid* | -                      | 0.005                           | 0.001                                |
| IV    | 40  | Chromium trioxide*                                                          | 1333-82-0              | 0.005                           | 0.001                                |
| IV    | 41  | Cobalt(II) carbonate*                                                       | 513-79-1               | 0.005                           | 0.001                                |
| IV    | 42  | Cobalt(II) diacetate*                                                       | 71-48-7                | 0.005                           | 0.001                                |
| IV    | 43  | Cobalt(II) dinitrate*                                                       | 10141-05-6             | 0.005                           | 0.001                                |
| IV    | 44  | Cobalt(II) sulphate*                                                        | 10124-43-3             | 0.005                           | 0.001                                |
| V     | 45  | 1,2,3-trichloropropane                                                      | 96-18-4                | 0.050                           | 0.010                                |
| V     | 46  | 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich        | 71888-89-6             | 0.050                           | 0.010                                |
| V     | 47  | 1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters     | 68515-42-4             | 0.050                           | 0.010                                |
| V     | 48  | 1-methyl-2-pyrrolidone                                                      | 872-50-4               | 0.050                           | 0.010                                |
| V     | 49  | 2-ethoxyethyl acetate                                                       | 111-15-9               | 0.050                           | 0.010                                |
| V     | 50  | Hydrazine                                                                   | 7803-57-8,<br>302-01-2 | 0.050                           | 0.010                                |
| V     | 51  | strontium chromate*                                                         | 7789-06-2              | 0.005                           | 0.001                                |
| VI    | 52  | 1,2-Dichloroethane                                                          | 107-06-2               | 0.050                           | 0.010                                |
| VI    | 53  | 2,2'-dichloro-4,4'-methylenedianiline                                       | 101-14-4               | 0.050                           | 0.010                                |
| VI    | 54  | 2-Methoxyaniline; o-Anisidine                                               | 90-04-0                | 0.050                           | 0.010                                |
| VI    | 55  | 4-(1,1,3,3-tetramethylbutyl)phenol                                          | 140-66-9               | 0.050                           | 0.010                                |
| VI    | 56  | Aluminosilicate Refractory Ceramic Fibres*                                  | -                      | 0.005                           | 0.001                                |

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# Test Report (SVHC)

No. HKTEC2200937501

Date : 15 Mar 2022

Page 10 of 20

| Batch | No. | Substance Name                                                                                                                                         | CAS No.    | RL (%)<br>(Mixed Components) | RL (%)<br>(Individual Components) |
|-------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------|-----------------------------------|
| VI    | 57  | Arsenic acid*                                                                                                                                          | 7778-39-4  | 0.005                        | 0.001                             |
| VI    | 58  | Bis(2-methoxyethyl) ether                                                                                                                              | 111-96-6   | 0.050                        | 0.010                             |
| VI    | 59  | Bis(2-methoxyethyl) phthalate                                                                                                                          | 117-82-8   | 0.050                        | 0.010                             |
| VI    | 60  | Calcium arsenate*                                                                                                                                      | 7778-44-1  | 0.005                        | 0.001                             |
| VI    | 61  | Dichromium tris(chromate)*                                                                                                                             | 24613-89-6 | 0.005                        | 0.001                             |
| VI    | 62  | Formaldehyde, oligomeric reaction products with aniline                                                                                                | 25214-70-4 | 0.050                        | 0.010                             |
| VI    | 63  | Lead diazide, Lead azide*                                                                                                                              | 13424-46-9 | 0.005                        | 0.001                             |
| VI    | 64  | Lead dipicrate*                                                                                                                                        | 6477-64-1  | 0.005                        | 0.001                             |
| VI    | 65  | Lead styphnate*                                                                                                                                        | 15245-44-0 | 0.005                        | 0.001                             |
| VI    | 66  | N,N-dimethylacetamide                                                                                                                                  | 127-19-5   | 0.050                        | 0.010                             |
| VI    | 67  | Pentazinc chromate octahydroxide*                                                                                                                      | 49663-84-5 | 0.005                        | 0.001                             |
| VI    | 68  | Phenolphthalein                                                                                                                                        | 77-09-8    | 0.050                        | 0.010                             |
| VI    | 69  | Potassium hydroxyoctaoxodizincatedichromate*                                                                                                           | 11103-86-9 | 0.005                        | 0.001                             |
| VI    | 70  | Trilead diarsenate*                                                                                                                                    | 3687-31-8  | 0.005                        | 0.001                             |
| VI    | 71  | Zirconia Aluminosilicate Refractory Ceramic Fibres*                                                                                                    | -          | 0.005                        | 0.001                             |
| VII   | 72  | [4-[[4-anilino-1-naphthyl]](4-(dimethylamino)phenyl)methylene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Blue 26) <sup>§</sup> | 2580-56-5  | 0.050                        | 0.010                             |
| VII   | 73  | [4-[4,4'-bis(dimethylamino)benzhydrylidene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Violet 3) <sup>§</sup>                   | 548-62-9   | 0.050                        | 0.010                             |
| VII   | 74  | 1,2-bis(2-methoxyethoxy)ethane (TEGDME; triglyme)                                                                                                      | 112-49-2   | 0.050                        | 0.010                             |

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# Test Report (SVHC)

No. HKTEC2200937501

Date : 15 Mar 2022

Page 11 of 20

| Batch | No. | Substance Name                                                                                                        | CAS No.     | RL (%)<br>(Mixed<br>Components) | RL (%)<br>(Individual<br>Components) |
|-------|-----|-----------------------------------------------------------------------------------------------------------------------|-------------|---------------------------------|--------------------------------------|
| VII   | 75  | 1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME)                                                           | 110-71-4    | 0.050                           | 0.010                                |
| VII   | 76  | 4,4'-bis(dimethylamino) benzophenone (Michler's Ketone)                                                               | 90-94-8     | 0.050                           | 0.010                                |
| VII   | 77  | 4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol <sup>§</sup>                                                  | 561-41-1    | 0.050                           | 0.010                                |
| VII   | 78  | Diboron trioxide*                                                                                                     | 1303-86-2   | 0.005                           | 0.001                                |
| VII   | 79  | Formamide                                                                                                             | 75-12-7     | 0.050                           | 0.010                                |
| VII   | 80  | Lead(II) bis(methanesulfonate)*                                                                                       | 17570-76-2  | 0.005                           | 0.001                                |
| VII   | 81  | N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base)                                                        | 101-61-1    | 0.050                           | 0.010                                |
| VII   | 82  | TGIC (1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione)                                               | 2451-62-9   | 0.050                           | 0.010                                |
| VII   | 83  | $\alpha,\alpha$ -Bis[4-(dimethylamino)phenyl]-4(phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4) <sup>§</sup> | 6786-83-0   | 0.050                           | 0.010                                |
| VII   | 84  | $\beta$ -TGIC (1,3,5-tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione)                        | 59653-74-6  | 0.050                           | 0.010                                |
| VIII  | 85  | [Phthalato(2-)]dioxotrilead*                                                                                          | 69011-06-9  | 0.005                           | 0.001                                |
| VIII  | 86  | 1,2-Benzenedicarboxylic acid, dipentylester, branched and linear                                                      | 84777-06-0  | 0.050                           | 0.010                                |
| VIII  | 87  | 1,2-Diethoxyethane                                                                                                    | 629-14-1    | 0.050                           | 0.010                                |
| VIII  | 88  | 1-Bromopropane                                                                                                        | 106-94-5    | 0.050                           | 0.010                                |
| VIII  | 89  | 3-Ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine                                                                    | 143860-04-2 | 0.050                           | 0.010                                |
| VIII  | 90  | 4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated                                                                       | -           | 0.050                           | 0.010                                |
| VIII  | 91  | 4,4'-Methylenedi-o-toluidine                                                                                          | 838-88-0    | 0.050                           | 0.010                                |
| VIII  | 92  | 4,4'-Oxydianiline and its salts                                                                                       | 101-80-4    | 0.050                           | 0.010                                |

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# Test Report (SVHC)

No. HKTEC2200937501

Date : 15 Mar 2022

Page 12 of 20

| Batch | No. | Substance Name                                                                                                                                  | CAS No.    | RL (%)<br>(Mixed<br>Components) | RL (%)<br>(Individual<br>Components) |
|-------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------------|--------------------------------------|
| VIII  | 93  | 4-Aminoazobenzene                                                                                                                               | 60-09-3    | 0.050                           | 0.010                                |
| VIII  | 94  | 4-Methyl- <i>m</i> -phenylenediamine                                                                                                            | 95-80-7    | 0.050                           | 0.010                                |
| VIII  | 95  | 4-Nonylphenol, branched and linear                                                                                                              | -          | 0.050                           | 0.010                                |
| VIII  | 96  | 6-Methoxy- <i>m</i> -toluidine                                                                                                                  | 120-71-8   | 0.050                           | 0.010                                |
| VIII  | 97  | Acetic acid, lead salt, basic*                                                                                                                  | 51404-69-4 | 0.005                           | 0.001                                |
| VIII  | 98  | Biphenyl-4-ylamine                                                                                                                              | 92-67-1    | 0.050                           | 0.010                                |
| VIII  | 99  | Bis(pentabromophenyl) ether<br>(DecaBDE)                                                                                                        | 1163-19-5  | 0.050                           | 0.010                                |
| VIII  | 100 | Cyclohexane-1,2-dicarboxylic<br>anhydride,<br>cis-cyclohexane-1,2-dicarboxylic<br>anhydride,<br>trans-cyclohexane-1,2-dicarboxylic<br>anhydride | -          | 0.050                           | 0.010                                |
| VIII  | 101 | Diazene-1,2-dicarboxamide (C,C'-<br>azodi(formamide))                                                                                           | 123-77-3   | 0.050                           | 0.010                                |
| VIII  | 102 | Dibutyltin dichloride (DBTC)                                                                                                                    | 683-18-1   | 0.050                           | 0.010                                |
| VIII  | 103 | Diethyl sulphate                                                                                                                                | 64-67-5    | 0.050                           | 0.010                                |
| VIII  | 104 | Diisopentylphthalate                                                                                                                            | 605-50-5   | 0.050                           | 0.010                                |
| VIII  | 105 | Dimethyl sulphate                                                                                                                               | 77-78-1    | 0.050                           | 0.010                                |
| VIII  | 106 | Dinoseb                                                                                                                                         | 88-85-7    | 0.050                           | 0.010                                |
| VIII  | 107 | Dioxobis(stearato)trilead*                                                                                                                      | 12578-12-0 | 0.005                           | 0.001                                |
| VIII  | 108 | Fatty acids, C16-18, lead salts*                                                                                                                | 91031-62-8 | 0.005                           | 0.001                                |
| VIII  | 109 | Furan                                                                                                                                           | 110-00-9   | 0.050                           | 0.010                                |
| VIII  | 110 | Henicosafuoroundecanoic acid                                                                                                                    | 2058-94-8  | 0.050                           | 0.010                                |
| VIII  | 111 | Heptacosafuorotetradecanoic acid                                                                                                                | 376-06-7   | 0.050                           | 0.010                                |

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# Test Report (SVHC)

No. HKTEC2200937501

Date : 15 Mar 2022

Page 13 of 20

| Batch | No. | Substance Name                                                                                                                                      | CAS No.     | RL (%)<br>(Mixed<br>Components) | RL (%)<br>(Individual<br>Components) |
|-------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------------------|--------------------------------------|
| VIII  | 112 | Hexahydromethylphthalic anhydride, Hexahydro-4-methylphthalic anhydride, Hexahydro-1-methylphthalic anhydride, Hexahydro-3-methylphthalic anhydride | -           | 0.050                           | 0.010                                |
| VIII  | 113 | Lead bis(tetrafluoroborate)*                                                                                                                        | 13814-96-5  | 0.005                           | 0.001                                |
| VIII  | 114 | Lead cyanamidate*                                                                                                                                   | 20837-86-9  | 0.005                           | 0.001                                |
| VIII  | 115 | Lead dinitrate*                                                                                                                                     | 10099-74-8  | 0.005                           | 0.001                                |
| VIII  | 116 | Lead monoxide*                                                                                                                                      | 1317-36-8   | 0.005                           | 0.001                                |
| VIII  | 117 | Lead oxide sulfate*                                                                                                                                 | 12036-76-9  | 0.005                           | 0.001                                |
| VIII  | 118 | Lead tetroxide (orange lead)*                                                                                                                       | 1314-41-6   | 0.005                           | 0.001                                |
| VIII  | 119 | Lead titanium trioxide*                                                                                                                             | 12060-00-3  | 0.005                           | 0.001                                |
| VIII  | 120 | Lead titanium zirconium oxide*                                                                                                                      | 12626-81-2  | 0.005                           | 0.001                                |
| VIII  | 121 | Methoxyacetic acid                                                                                                                                  | 625-45-6    | 0.050                           | 0.010                                |
| VIII  | 122 | Methyloxirane (Propylene oxide)                                                                                                                     | 75-56-9     | 0.050                           | 0.010                                |
| VIII  | 123 | N,N-Dimethylformamide                                                                                                                               | 68-12-2     | 0.050                           | 0.010                                |
| VIII  | 124 | N-Methylacetamide                                                                                                                                   | 79-16-3     | 0.050                           | 0.010                                |
| VIII  | 125 | N-Pentyl-isopentylphthalate                                                                                                                         | 776297-69-9 | 0.050                           | 0.010                                |
| VIII  | 126 | <i>o</i> -Aminoazotoluene                                                                                                                           | 97-56-3     | 0.050                           | 0.010                                |
| VIII  | 127 | <i>o</i> -Toluidine                                                                                                                                 | 95-53-4     | 0.050                           | 0.010                                |
| VIII  | 128 | Pentacosafuorotridecanoic acid                                                                                                                      | 72629-94-8  | 0.050                           | 0.010                                |
| VIII  | 129 | Pentalead tetraoxide sulphate*                                                                                                                      | 12065-90-6  | 0.005                           | 0.001                                |
| VIII  | 130 | Pyrochlore, antimony lead yellow*                                                                                                                   | 8012-00-8   | 0.005                           | 0.001                                |

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# Test Report (SVHC)

No. HKTEC2200937501

Date : 15 Mar 2022

Page 14 of 20

| Batch | No. | Substance Name                                                                                                                                       | CAS No.    | RL (%)<br>(Mixed Components) | RL (%)<br>(Individual Components) |
|-------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------|-----------------------------------|
| VIII  | 131 | Silicic acid, barium salt, lead-doped*                                                                                                               | 68784-75-8 | 0.005                        | 0.001                             |
| VIII  | 132 | Silicic acid, lead salt*                                                                                                                             | 11120-22-2 | 0.005                        | 0.001                             |
| VIII  | 133 | Sulfurous acid, lead salt, dibasic*                                                                                                                  | 62229-08-7 | 0.005                        | 0.001                             |
| VIII  | 134 | Tetraethyllead*                                                                                                                                      | 78-00-2    | 0.005                        | 0.001                             |
| VIII  | 135 | Tetralead trioxide sulphate*                                                                                                                         | 12202-17-4 | 0.005                        | 0.001                             |
| VIII  | 136 | Tricosafuorododecanoic acid                                                                                                                          | 307-55-1   | 0.050                        | 0.010                             |
| VIII  | 137 | Trilead bis(carbonate)dihydroxide (basic lead carbonate)*                                                                                            | 1319-46-6  | 0.005                        | 0.001                             |
| VIII  | 138 | Trilead dioxide phosphonate*                                                                                                                         | 12141-20-7 | 0.005                        | 0.001                             |
| IX    | 139 | 4-Nonylphenol, branched and linear, ethoxylated                                                                                                      | -          | 0.050                        | 0.010                             |
| IX    | 140 | Ammonium pentadecafluorooctanoate (APFO)**                                                                                                           | 3825-26-1  | 0.050                        | 0.010                             |
| IX    | 141 | Cadmium oxide*                                                                                                                                       | 1306-19-0  | 0.005                        | 0.001                             |
| IX    | 142 | Cadmium                                                                                                                                              | 7440-43-9  | 0.005                        | 0.001                             |
| IX    | 143 | Dipentyl phthalate (DPP)                                                                                                                             | 131-18-0   | 0.050                        | 0.010                             |
| IX    | 144 | Pentadecafluorooctanoic acid (PFOA)                                                                                                                  | 335-67-1   | 0.050                        | 0.010                             |
| X     | 145 | Cadmium sulphide*                                                                                                                                    | 1306-23-6  | 0.005                        | 0.001                             |
| X     | 146 | Diethyl phthalate                                                                                                                                    | 84-75-3    | 0.050                        | 0.010                             |
| X     | 147 | Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28)                                           | 573-58-0   | 0.050                        | 0.010                             |
| X     | 148 | Disodium 4-amino-3-[[4'-[(2,4-diaminophenyl)azo][1,1'-biphenyl]-4-yl]azo]-5-hydroxy-6-(phenylazo)naphthalene-2,7-disulphonate (C.I. Direct Black 38) | 1937-37-7  | 0.050                        | 0.010                             |
| X     | 149 | Imidazolidine-2-thione; (2-imidazoline-2-thiol)                                                                                                      | 96-45-7    | 0.050                        | 0.010                             |

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# Test Report (SVHC)

No. HKTEC2200937501

Date : 15 Mar 2022

Page 15 of 20

| Batch | No. | Substance Name                                                                                                                                                                                                                                           | CAS No.                   | RL (%)<br>(Mixed Components) | RL (%)<br>(Individual Components) |
|-------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------------------|-----------------------------------|
| X     | 150 | Lead di(acetate)*                                                                                                                                                                                                                                        | 301-04-2                  | 0.005                        | 0.001                             |
| X     | 151 | Trixylyl phosphate                                                                                                                                                                                                                                       | 25155-23-1                | 0.050                        | 0.010                             |
| XI    | 152 | 1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear                                                                                                                                                                                         | 68515-50-4                | 0.050                        | 0.010                             |
| XI    | 153 | Cadmium chloride*                                                                                                                                                                                                                                        | 10108-64-2                | 0.005                        | 0.001                             |
| XI    | 154 | Sodium perborate; perboric acid, sodium salt*                                                                                                                                                                                                            | -                         | 0.005                        | 0.001                             |
| XI    | 155 | Sodium peroxometaborate*                                                                                                                                                                                                                                 | 7632-04-4                 | 0.005                        | 0.001                             |
| XII   | 156 | 2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)                                                                                                                                                                                                 | 25973-55-1                | 0.050                        | 0.010                             |
| XII   | 157 | 2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)                                                                                                                                                                                                     | 3846-71-7                 | 0.050                        | 0.010                             |
| XII   | 158 | 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)                                                                                                                                                                   | 15571-58-1                | 0.050                        | 0.010                             |
| XII   | 159 | Cadmium fluoride*                                                                                                                                                                                                                                        | 7790-79-6                 | 0.005                        | 0.001                             |
| XII   | 160 | Cadmium sulphate*                                                                                                                                                                                                                                        | 10124-36-4,<br>31119-53-6 | 0.005                        | 0.001                             |
| XII   | 161 | Reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate & 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (reaction mass of DOTE & MOTE) | -                         | 0.050                        | 0.010                             |
| XIII  | 162 | 1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with ≥ 0.3% of dihexyl phthalate                                                                                             | -                         | 0.050                        | 0.010                             |
| XIII  | 163 | 5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [1], 5-sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [2] [covering any of the individual isomers of [1] and [2] or any combination thereof]                      | -                         | 0.050                        | 0.010                             |

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# Test Report (SVHC)

No. HKTEC2200937501

Date : 15 Mar 2022

Page 16 of 20

| Batch | No. | Substance Name                                                                                                                                                                                            | CAS No.    | RL (%)<br>(Mixed Components) | RL (%)<br>(Individual Components) |
|-------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------|-----------------------------------|
| XIV   | 164 | 1,3-propanesultone                                                                                                                                                                                        | 1120-71-4  | 0.050                        | 0.010                             |
| XIV   | 165 | 2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl) phenol (UV-327)                                                                                                                                           | 3864-99-1  | 0.050                        | 0.010                             |
| XIV   | 166 | 2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl) phenol (UV-350)                                                                                                                                     | 36437-37-3 | 0.050                        | 0.010                             |
| XIV   | 167 | Nitrobenzene                                                                                                                                                                                              | 98-95-3    | 0.050                        | 0.010                             |
| XIV   | 168 | Perfluorononan-1-oic-acid and its sodium and ammonium salts                                                                                                                                               | -          | 0.050                        | 0.010                             |
| XV    | 169 | Benzo[def]chrysene (Benzo[a]pyrene)                                                                                                                                                                       | 50-32-8    | 0.050                        | 0.010                             |
| XVI   | 170 | 4,4'-isopropylidenediphenol (bisphenol A)                                                                                                                                                                 | 80-05-7    | 0.050                        | 0.010                             |
| XVI   | 171 | 4-Heptylphenol, branched and linear                                                                                                                                                                       | -          | 0.050                        | 0.010                             |
| XVI   | 172 | Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts                                                                                                                                      | -          | 0.050                        | 0.010                             |
| XVI   | 173 | p-(1,1-dimethylpropyl)phenol                                                                                                                                                                              | 80-46-6    | 0.050                        | 0.010                             |
| XVII  | 174 | Perfluorohexane-1-sulphonic acid and its salts                                                                                                                                                            | -          | 0.050                        | 0.010                             |
| XVIII | 175 | 1,6,7,8,9,14,15,16,17,17,18,18-Dodecachloropentacyclo[12.2.1.16,9.0 2,13.05,10]octadeca-7,15-diene ("Dechlorane Plus"™) [covering any of its individual anti- and syn-isomers or any combination thereof] | -          | 0.050                        | 0.010                             |
| XVIII | 176 | Benz[a]anthracene                                                                                                                                                                                         | 56-55-3    | 0.050                        | 0.010                             |
| XVIII | 177 | Cadmium nitrate*                                                                                                                                                                                          | 10325-94-7 | 0.005                        | 0.001                             |
| XVIII | 178 | Cadmium carbonate*                                                                                                                                                                                        | 513-78-0   | 0.005                        | 0.001                             |
| XVIII | 179 | Cadmium hydroxide*                                                                                                                                                                                        | 21041-95-2 | 0.005                        | 0.001                             |
| XVIII | 180 | Chrysene                                                                                                                                                                                                  | 218-01-9   | 0.050                        | 0.010                             |
| XVIII | 181 | Reaction products of 1,3,4-thiadiazolidine-2,5-dithione, formaldehyde and 4-heptylphenol, branched and linear (RP-HP) [with                                                                               | -          | 0.050                        | 0.010                             |

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# Test Report (SVHC)

No. HKTEC2200937501

Date : 15 Mar 2022

Page 17 of 20

| Batch | No. | Substance Name                                                                                                                                               | CAS No.    | RL (%)<br>(Mixed Components) | RL (%)<br>(Individual Components) |
|-------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------|-----------------------------------|
|       |     | ≥0.1% w/w 4-heptylphenol, branched and linear]                                                                                                               |            |                              |                                   |
| XIX   | 182 | Benzene-1,2,4-tricarboxylic acid 1,2 anhydride (trimellitic anhydride) (TMA)                                                                                 | 552-30-7   | 0.050                        | 0.010                             |
| XIX   | 183 | Benzo[ghi]perylene                                                                                                                                           | 191-24-2   | 0.050                        | 0.010                             |
| XIX   | 184 | Decamethylcyclopentasiloxane (D5)                                                                                                                            | 541-02-6   | 0.050                        | 0.010                             |
| XIX   | 185 | Dicyclohexyl phthalate (DCHP)                                                                                                                                | 84-61-7    | 0.050                        | 0.010                             |
| XIX   | 186 | Disodium octaborate*                                                                                                                                         | 12008-41-2 | 0.005                        | 0.001                             |
| XIX   | 187 | Dodecamethylcyclohexasiloxane (D6)                                                                                                                           | 540-97-6   | 0.050                        | 0.010                             |
| XIX   | 188 | Ethylenediamine (EDA)                                                                                                                                        | 107-15-3   | 0.050                        | 0.010                             |
| XIX   | 189 | Lead                                                                                                                                                         | 7439-92-1  | 0.005                        | 0.001                             |
| XIX   | 190 | Octamethylcyclotetrasiloxane (D4)                                                                                                                            | 556-67-2   | 0.050                        | 0.010                             |
| XIX   | 191 | Terphenyl, hydrogenated                                                                                                                                      | 61788-32-7 | 0.050                        | 0.010                             |
| XX    | 192 | 1,7,7-trimethyl-3-(phenylmethylene)bicyclo[2.2.1]heptan-2-one (3-benzylidene camphor)                                                                        | 15087-24-8 | 0.050                        | 0.010                             |
| XX    | 193 | 2,2-bis(4'-hydroxyphenyl)-4-methylpentane                                                                                                                    | 6807-17-6  | 0.050                        | 0.010                             |
| XX    | 194 | Benzo[k]fluoranthene                                                                                                                                         | 207-08-9   | 0.050                        | 0.010                             |
| XX    | 195 | Fluoranthene                                                                                                                                                 | 206-44-0   | 0.050                        | 0.010                             |
| XX    | 196 | Phenanthrene                                                                                                                                                 | 85-01-8    | 0.050                        | 0.010                             |
| XX    | 197 | Pyrene                                                                                                                                                       | 129-00-0   | 0.050                        | 0.010                             |
| XXI   | 198 | 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid, its salts and its acyl halides (covering any of their individual isomers and combinations thereof) | -          | 0.050                        | 0.010                             |
| XXI   | 199 | 2-methoxyethyl acetate                                                                                                                                       | 110-49-6   | 0.050                        | 0.010                             |

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# Test Report (SVHC)

No. HKTEC2200937501

Date : 15 Mar 2022

Page 18 of 20

| Batch | No. | Substance Name                                                                                                                                                                                               | CAS No.     | RL (%)<br>(Mixed Components) | RL (%)<br>(Individual Components) |
|-------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------|-----------------------------------|
| XXI   | 200 | 4-tert-butylphenol (PTBP)                                                                                                                                                                                    | 98-54-4     | 0.050                        | 0.010                             |
| XXI   | 201 | Tris(4-nonylphenyl, branched and linear) phosphite (TNPP) with $\geq 0.1\%$ w/w of 4-nonylphenol, branched and linear (4-NP)                                                                                 | -           | 0.050                        | 0.010                             |
| XXII  | 202 | 2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone                                                                                                                                                          | 119313-12-1 | 0.050                        | 0.010                             |
| XXII  | 203 | 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one                                                                                                                                                     | 71868-10-5  | 0.050                        | 0.010                             |
| XXII  | 204 | Diisohexyl phthalate                                                                                                                                                                                         | 71850-09-4  | 0.050                        | 0.010                             |
| XXII  | 205 | Perfluorobutane sulfonic acid (PFBS) and its salts                                                                                                                                                           | -           | 0.050                        | 0.010                             |
| XXIII | 206 | 1-vinylimidazole                                                                                                                                                                                             | 1072-63-5   | 0.050                        | 0.010                             |
| XXIII | 207 | 2-methylimidazole                                                                                                                                                                                            | 693-98-1    | 0.050                        | 0.010                             |
| XXIII | 208 | Butyl 4-hydroxybenzoate                                                                                                                                                                                      | 94-26-8     | 0.050                        | 0.010                             |
| XXIII | 209 | Dibutylbis(pentane-2,4-dionato-O,O')tin**                                                                                                                                                                    | 22673-19-4  | 0.050                        | 0.010                             |
| XXIV  | 210 | bis(2-(2-methoxyethoxy)ethyl) ether                                                                                                                                                                          | 143-24-8    | 0.050                        | 0.010                             |
| XXIV  | 211 | Dioctyltin dilaurate, stannane, dioctyl-, bis(coco acyloxy) derivs., and any other stannane, dioctyl-, bis(fatty acyloxy) derivs. wherein C12 is the predominant carbon number of the fatty acyloxy moiety** | -           | 0.050                        | 0.010                             |
| XXV   | 212 | 1,4-dioxane                                                                                                                                                                                                  | 123-91-1    | 0.050                        | 0.010                             |
| XXV   | 213 | 2,2-bis(bromomethyl)propane-1,3-diol (BMP) 2,2-dimethylpropan-1-ol, tribromo derivative/3-bromo-2,2-bis(bromomethyl)-1-propanol (TBNPA) 2,3-dibromo-1-propanol (2,3-DBPA)                                    | -           | 0.050                        | 0.010                             |
| XXV   | 214 | 2-(4-tert-butylbenzyl)propionaldehyde and its individual stereoisomers                                                                                                                                       | -           | 0.050                        | 0.010                             |
| XXV   | 215 | 4,4'-(1-methylpropylidene)bisphenol (bisphenol B)                                                                                                                                                            | 77-40-7     | 0.050                        | 0.010                             |
| XXV   | 216 | Glutaral                                                                                                                                                                                                     | 111-30-8    | 0.050                        | 0.010                             |

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# Test Report (SVHC)

No. HKTEC2200937501

Date : 15 Mar 2022

Page 19 of 20

| Batch | No. | Substance Name                                                                                                                                                                                | CAS No.     | RL (%)<br>(Mixed Components) | RL (%)<br>(Individual Components) |
|-------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------|-----------------------------------|
| XXV   | 217 | Medium-chain chlorinated paraffins (MCCP) [UVCB substances consisting of more than or equal to 80% linear chloroalkanes with carbon chain lengths within the range from C14 to C17]           | -           | 0.050                        | 0.010                             |
| XXV   | 218 | Orthoboric acid, sodium salt*                                                                                                                                                                 | 13840-56-7  | 0.005                        | 0.001                             |
| XXV   | 219 | Phenol, alkylation products (mainly in para position) with C12-rich branched or linear alkyl chains from oligomerisation, covering any individual isomers and/ or combinations thereof (PDDP) | -           | 0.050                        | 0.010                             |
| XXVI  | 220 | (±)-1,7,7-trimethyl-3-[(4-methylphenyl)methylene]bicyclo[2.2.1]heptan-2-one covering any of the individual isomers and/or combinations thereof (4-MBC)                                        | -           | 0.050                        | 0.010                             |
| XXVI  | 221 | 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol (DBMC)                                                                                                                                           | 119-47-1    | 0.050                        | 0.010                             |
| XXVI  | 222 | S-(tricyclo[5.2.1.0 <sup>2,6</sup> ]deca-3-en-8(or 9)-yl) O-(isopropyl or isobutyl or 2-ethylhexyl) O-(isopropyl or isobutyl or 2-ethylhexyl) phosphorodithioate                              | 255881-94-8 | 0.050                        | 0.010                             |
| XXVI  | 223 | Tris(2-methoxyethoxy)vinylsilane                                                                                                                                                              | 1067-53-4   | 0.050                        | 0.010                             |

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# Test Report (SVHC)

No. HKTEC2200937501

Date : 15 Mar 2022

Page 20 of 20

Sample photo :



SGS authenticate the photo on original report only

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## ABOUT SGS

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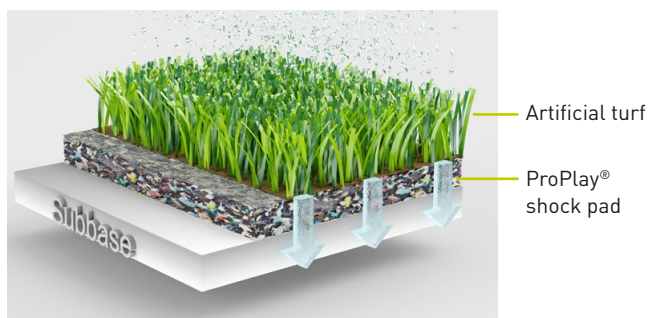
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### GENERAL INFORMATION



Artificial turf system with ProPlay®-Sport shock pad



Puzzle shaped ProPlay® sheets with expansion slots

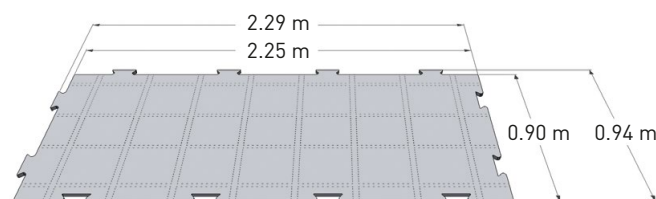


### Product description

**ProPlay®-Sport** is a high performance shock and drainage pad, and the perfect basis for high-quality artificial grass systems for sports fields, multi-game and play areas.

ProPlay®-Sport is made of thermal bonded (closed-cell) cross-linked polyethylene foam (XPE). This foam originates from production residues and contains no contaminants.

ProPlay®-Sport performs in all weather conditions and is renowned for its excellent water permeability. If desired it can be delivered with in-plane drainage channels, offering excellent lateral drainage in case the artificial grass system is to be built on an impermeable subbase.



Dimensions ProPlay®-Sport sheet

### ENVIRONMENT, HEALTH AND SAFETY CREDENTIALS

Crosslinked polyolefins are chemically stable by nature. Any compounds contained in the material will not be released during the lifetime of the product. ProPlay® can be safely used for any artificial grass system. The products do not leach chemicals that pose a risk for the environment and/or human health.

ProPlay®-Sport complies with:

- The European Community:
  - Regulation No 1272/2008 of the European Parliament and of the Council on Classification, Labelling and Packaging of substances and mixtures (CLP).
  - Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).
- The state of California's Code of Regulations (CCR):
  - Title 22 'Social Security' – Division 4.5 'Environmental Health Standards for the Management of Hazardous Waste'.
  - Title 27 'Environmental Protection' – Division 4 'Office of Environmental Health Hazard Assessment' – Chapter 1 'Safe Drinking Water and Toxic Enforcement Act of 1986' (Proposition 65).
- Toxicology requirements from ESTC (ESTO) Shock pad Working Group's 'Performance Guide for Shock pad'.

## TECHNICAL DATA

| Physical characteristics          | Tolerance | ProPlay <sup>®</sup> Value | Unit              | Standard       |
|-----------------------------------|-----------|----------------------------|-------------------|----------------|
| Thickness at 2 kPa (0.3 psi) load | +/- 1     | 20                         | mm                | EN-ISO 9863-1* |
| Mass per unit area                | +/- 0.3   | 3.0                        | kg/m <sup>2</sup> | EN-ISO 9864*   |

\* As modified by Schmitz

| Required characteristics International Sports Associations |        | ProPlay <sup>®</sup> Value | Unit | Standard |
|------------------------------------------------------------|--------|----------------------------|------|----------|
| Tensile strength                                           | > 0.15 | 0.26                       | MPa  | EN 12230 |
| Tensile strength after (air) ageing acc. EN 13817          | > 0.15 | 0.25                       | MPa  | EN 12230 |
| Water infiltration rate [IA]                               | > 180  | 72,000                     | mm/h | EN 12616 |

| Performance characteristics                         | ProPlay <sup>®</sup> Value | Unit                | Standard |
|-----------------------------------------------------|----------------------------|---------------------|----------|
| Force reduction                                     | 56                         | %                   | AAA**    |
| Energy restitution                                  | 43                         | %                   | AAA**    |
| Vertical deformation                                | 6.8                        | mm                  | AAA**    |
| Shock absorption                                    | 56                         | %                   | EN 14808 |
| Vertical deformation                                | 5.3                        | mm                  | EN 14809 |
| Critical fall height (Head Injury Criterion ~ 1000) | 0.68                       | m                   | EN 1177  |
| Thermal resistance (R-value)                        | 0.40                       | m <sup>2</sup> .K/W | EN 12667 |

\*\* Advanced Artificial Athlete

### INSTALLATION DISCLAIMER

- Installation of ProPlay®-Sport must be done under the code of good workmanship. Schmitz Foam Products B.V. does not accept any liability for the design, or construction of any facilities, or actions of any parties employed, as a result of, or in connection with, any information provided in this document.
- It is recommended that the subbase is designed and approved by an architect or civil engineer, based on the geotechnical and meteorological conditions of the site and any (local) restrictions to the drainage discharge.
- Although ProPlay®-Sport can be installed on any kind of subbase, as long as the construction itself is strong enough to hold installation and maintenance equipment, it is advised that the subbase has a minimum undrained shear strength of at least 50 kN/m<sup>2</sup> (BS 1377, part 7) or a minimum California Bearing Ratio of 5% (BS 1377, part 4) or equivalent.
- The regularity of the surface of the subbase should be within 10 mm under a 3 m straight edge.
- When a ProPlay®-Sport "D" variant (for lateral drainage) is applied, the slope of the surface of the subbase should be at least 0.5%, although 1.0% is better. When the surface of the subbase can rinse out, it is recommended to use a liner (foil or geotextile).
- One of the inherent properties of ProPlay®-Sport is the expansion/shrinkage under influence of temperature. To limit the impact of expansion/shrinkage during installation and to prevent shrinkage after completion of the installation, the ProPlay®-Sport Installation Manual must be followed in its entirety.
- ProPlay®-Sport is produced in a controlled environment, enabling to measure the sheet sizes in stable conditions. Therefore we can maintain a tolerance in sheet length of - 0.5% / +1.0% at a temperature of 20 °C. Please be aware that measuring the sheet size in different conditions can lead to different outcomes regarding the expansion/shrinkage properties
- The textile of the ProPlay®-Sport should not be exposed to UV-radiation (i.e. daylight) for more than 1 month.
- It is advised to install the synthetic turf within 1 week after installation of the ProPlay®-Sport.
- The synthetic turf shall not be glued (or in any other way be attached) to the ProPlay®-Sport, since the ProPlay®-Sport needs to be able to expand/contract without any hampering.
- It is strongly recommended to stabilize the synthetic turf with at least 15 kg/m<sup>2</sup> (~3.1 lbs/ft<sup>2</sup>) of sand, or (preferably) to use a turf with a fiberglass reinforced backing.
- In any case, it is advised to fix the turf to the perimeter of the field (according to the guidelines of the turf supplier).
- During installation of the ProPlay®-Sport or after installation (when installing and filling the synthetic turf) it is allowed to drive over the ProPlay®-Sport with installation equipment/machines. The load (per tyre) of the installation equipment shall be less than 40 psi (~276 kN/m<sup>2</sup>) for short time frames (e.g. driving over the surface). Vehicles that are temporarily parked on the surface should have a load of less than 20 psi (~138 kN/m<sup>2</sup>) per tyre.

### GENERAL DISCLAIMER

- This ProPlay® product data sheet provides general product properties and is not related to specific sportfield and playground installation regulations. Relevant ProPlay® shock pad installation instructions can be found in the ProPlay® installation recommendation guide. Please note there are separate installation manual for ProPlay®-Sport and ProPlay® for Playgrounds products.
- The given information is based on (independent) measurements and (where possible) based on average values measured over a long and representative period. Additional information can be made available upon request.
- Great attention to the accuracy of this document was taken during its compilation. This publication supersedes and replaces all previous datasheets. Schmitz Foam Products B.V. cannot, however, guarantee the total accuracy of the information included. If you have any doubts or further questions please do not hesitate to contact us by phone +31 475 370 270.

Schmitz Foam Products B.V. is the global supplier of ProPlay®, the perfect shock and drainage pad for high-quality artificial grass systems in sports and fall protection.



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www.schmitzfoam.com

## **TEST REPORT**

No. 2303712/4 dated 27.03.2012



### **Pro Play Sport 20/150**

- 1. Summary:**

Testing of an elastic layer in accordance with DIN SPEC 18035-7:2011-10, Table 10 – requirements for elastic layers installed on a asphalt layer, the German specification for sport surfaces – Part 7: synthetic turf.
- 2. Test Institute:**

**ISP – Institut für Sportstättenprüfung**  
Stormweg 6  
49196 Bad Laer  
Germany

Contact person: Mr Dennis Frank

T: +49 (0) 5424 80 97 891  
F: +49 (0) 5424 80 97 893

Email: [D.Frank@ISP-Germany.com](mailto:D.Frank@ISP-Germany.com)  
Web: [ISP-Germany.com](http://ISP-Germany.com)
- 3. Client / Manufacturer:**

**Schmitz Foam Products B.V.**  
Produktienweg 6  
6045 JC Roermond  
The Neatherlands
- 4. ISP-Ref.-no.:**

**2303712/4**
- 5. Date of designing:**

**24.02. – 14.03.2012**

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Reference samples are stored at the ISP-archive. The results in this report relate solely to the tested sample and its individual components.

The ISP - Institut für Sportstättenprüfung is an DIN EN ISO/IEC 17025:2005 accredited test institute. The accreditation covers all test method listed in the certificate of the DAkkS no. D-PL-11193-01-00.

6. **Technician:** D. Frank & P. Dück

8. **Author for this report** D. Frank

9. **Sample discription**

The tested sample was a 20 mm thick, prefabricated elastic layer, formed out of thermal bonded PE-foam-flakes with a non-woven fabric on the backside.

The sample was received on 17.02.2012 at the ISP-laboratory in Südstr. 1a, Bad Laer, Germany.

Further information:

2303712/4      Dimension: approximately 100 cm x 90 cm  
                    Thickness of the elastic layer: approximately 20mm  
                    Markings on the sample: Pro Play Sport 20/150



**Picture 1** – Side view of the elastic layer

## 10. Test Procedure

We conducted the testing of an elastic layer in accordance with DIN SPEC 18035-7:2011-10, Table 10 – requirements for elastic layers installed on a asphalt layer, the German specification for sport surfaces – Part 7: synthetic turf.

The sample was tested under dry condition. The tests were conducted on the received sample, laid loose on a concrete floor.

The following tests were conducted:

| Methods                                                | Measuring inaccuracy |
|--------------------------------------------------------|----------------------|
| Determination of force reduction                       | 1 %                  |
| Determination of water permeability                    | -                    |
| Determination of thickness                             | 0,5 mm               |
| Determination of torsion strength                      | 1 Nm                 |
| Determination of dimensional stability                 | -                    |
| Determination of environmental impact assessment (EIA) | -                    |

The determination of the force reduction was assessed with a unreduced force value of 6.42 kN.

The environmental impact assessment was conducted by the ISO 17025 accredited chemical laboratory Dr. Dirk Stegemann, Germany. The results of this assessment were reported in the test report no. 112020079. The results were incorporated into this report.

All other tests were conducted at the ISP laboratory in Bad Laer, Germany.

During the testing, the following testing and conditioning climate was recorded:

| Temperature [ in °C ] |      | relative humidity [ in % ] |     |
|-----------------------|------|----------------------------|-----|
| min                   | max  | min                        | max |
| 21.4                  | 23.5 | 45                         | 53  |

The temperature and relative humidity were in accordance with the requirements of DIN SPEC 18035-7:2011-10.

## 11. Test results

### 11.1 Test results of the 20 mm EL

**Table 10 of DIN SPEC 18035-7**

Requirements for the laboratory tests methods for elastic layer, when installed on a asphalt layer.

| Test                                                                          | Unit     | Result        |             | Requirements                             | Method                    |
|-------------------------------------------------------------------------------|----------|---------------|-------------|------------------------------------------|---------------------------|
|                                                                               |          |               |             |                                          |                           |
| Thickness                                                                     | mm       | 20            |             | -                                        | DIN EN 1969.<br>method A  |
|                                                                               |          |               |             |                                          |                           |
| Torsion strength <sup>a</sup>                                                 | Nm       | 56            |             | ≥ 40 Nm                                  | DIN SPEC<br>18035-7 : 7.3 |
|                                                                               |          |               |             |                                          |                           |
| Permeability <sup>a</sup>                                                     | L / 5min | 2L / 00:00:04 |             | > 2L / 5min                              | DIN V<br>18035-6          |
|                                                                               |          |               |             |                                          |                           |
| Force reduction <sup>a</sup><br>at a temperature range<br>of 23 °C till 40 °C | %        | 23 °C<br>57   | 40 °C<br>57 | Football: 55 – 65%<br><br>MUGA: 50 – 65% | DIN EN 14808              |
|                                                                               |          |               |             |                                          |                           |
| Dimensional stability <sup>a, b</sup>                                         | %        | 0.2           |             | ≤ 0.5 %                                  | DIN SPEC<br>18035-7 : 7.4 |
| <sup>a</sup> The tolerances of this test are 5% (relative)                    |          |               |             |                                          |                           |
| <sup>b</sup> Only relevant for prefabricated material                         |          |               |             |                                          |                           |
|                                                                               |          |               |             |                                          |                           |

## 11.2 Test results of the environmental impact assessment of the 20 mm EL

**Table 22 of DIN SPEC 18035-7**

Requirements for the laboratory tests of the environmental impact assessment

| Test               | Requirement                                                | Result         | Method                |                       |
|--------------------|------------------------------------------------------------|----------------|-----------------------|-----------------------|
|                    |                                                            |                | Preparation           | Analytical method     |
| DOC                | $\leq 50 \text{ mg/l}^b$<br>$\leq 100 \text{ mg/l}^{c, f}$ | 5.5            | 7.13.2 und 7.13.3     | 7.13.5                |
| EOX                | $\leq 100 \text{ mg/kg}$                                   | 6.0            | 7.13.4.1              | 7.13.4.2              |
| Lead (Pb)          | $< 0,025 \text{ mg/l}$                                     | $< 0.005$      | 7.13.2                | 7.13.6                |
| Cadmium (Cd)       | $\leq 0,005 \text{ mg/l}$                                  | $< 0.0002$     | 7.13.2                | 7.13.6                |
| Chrome (Cr) total  | $\leq 0,05 \text{ mg/l}$                                   | $< 0.001$      | 7.13.2                | 7.13.6                |
| Chromate           | $\leq 0,008 \text{ mg/l}^d$                                | $< 0.008$      | 7.13.2                | 7.13.7                |
| Quicksilver (Hg)   | $\leq 0,001 \text{ mg/l}$                                  | $< 0.001$      | 7.13.2                | 7.13.6                |
| Zinc (Zn)          | $\leq 0,5 \text{ mg/l}^e$                                  | 0.09           | 7.13.2 und 7.13.3     | 7.13.6                |
| Tin (Sn)           | $\leq 0,04 \text{ mg/l}$                                   | $< 0.04$       | 7.13.2                | 7.13.6                |
| Smell              | -                                                          | typical        | -                     | -                     |
| Outside appearance | -                                                          | coloured       | -                     | -                     |
| Chloroparaffin     | none <sup>a</sup>                                          | Not detectable | 7.13.8.1 und 7.13.8.2 | 7.13.8.1 und 7.13.8.2 |
| Phthalate          | none <sup>a</sup>                                          | Not detectable | 7.13.9                | 7.13.9                |

<sup>a</sup> There are no limits for chlorinated paraffins and phthalates. The concentrations should be determined to experience collection

<sup>b</sup> without consideration of EOX

<sup>c</sup> under consideration of EOX

<sup>d</sup> As the standard method uses spectrophotometry (see DIN 38405-24) or ion chromatography (see DIN EN ISO 10304-3) only CrVI concentrations of  $\geq 0.05 \text{ mg/l}$  can be detected

<sup>e</sup> Elastic infill, the zinc content in the aqueous 24-h eluate (prepared according to 7.13.2) 1 mg/l limit does not meet the requirements (KO-criterion). In the event that the zinc concentrations of elastic infill in the 24-h eluate is 0.5 mg/l to 1 mg/l, is to assess compliance with the 0.5 mg/l criterion for zinc in 48h (prepared by be used 7.13.3)

<sup>f</sup> DOC concentrations, which in aqueous 24-h eluate (prepared according to 7.13.2) exceed 100 mg/l fail to meet the requirements (knock-out criterion). In the event that the DOC concentrations in the 24-h eluate is in the range 50 mg/l to 100 mg/l, can be used for assessing compliance with the 50 mg / l criterion be used for DOC in the eluate 48h (prepared according to 7.13.3)

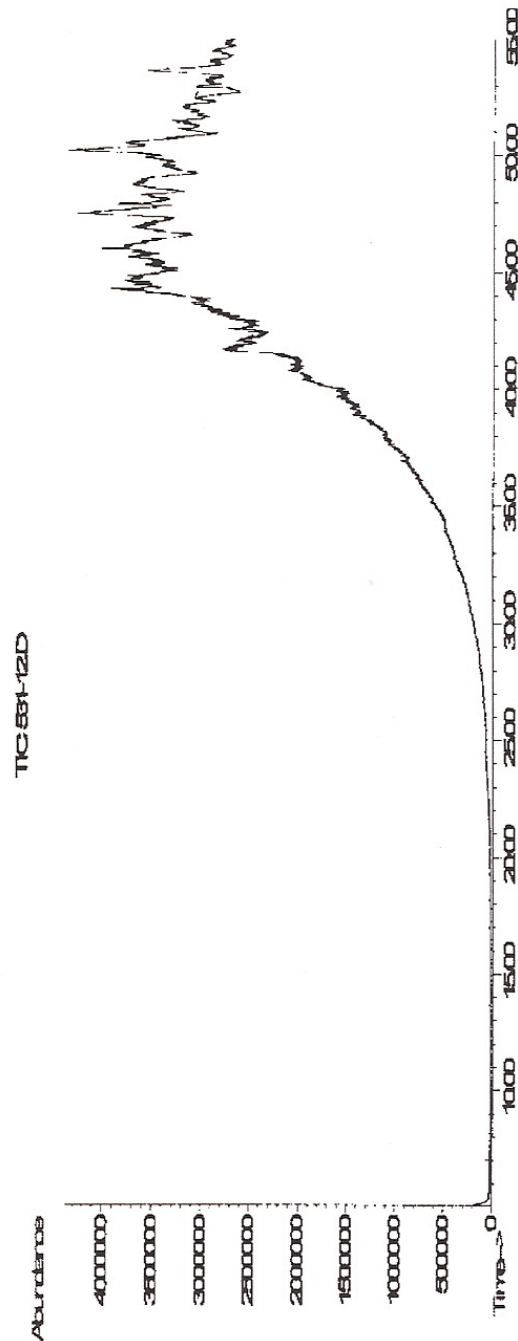
### 11.3 Test results of the determination of Chloroparaffin and Phthalate

**Tgb.-Nr. 531/12:** Probenbezeichnung 112020079

Aussehen: gepresster Kunststoff  
Farbe: schwarz, gelb, blau, weiß, rot

Es fanden sich keine Hinweise auf signifikante Gehalte an Phthalaten oder Chlorparaffinen.

GC/MS-Totalionenstromchromatogramm:



## 12. Conclusion

The evaluation of the test results is based on the requirements of DIN SPEC 18035-7:2011-10, the German standard for *Sports grounds – Part 7: Synthetic turf areas*.

## END OF THE REPORT

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Bad Laer, 27.03.2012



Dr. Uwe Schattke  
INSTITUTSLEITER



Dennis Frank  
LABORLEITER





## Analyserapport

|                             |                                                                                |                |                                                                                    |
|-----------------------------|--------------------------------------------------------------------------------|----------------|------------------------------------------------------------------------------------|
| Rekvirent                   | <b>Trocellen GmbH</b><br><b>Mülheimer Strasse 26</b><br><b>53840 Troisdorf</b> | Identifikation | <b>Sagsnavn: Shockpad</b><br><b>Sagsnr.: -</b><br><b>Sagsbeh.: Bjørn Kuhlmeier</b> |
| <b>Prøvetager: Rekvisit</b> |                                                                                |                |                                                                                    |

|                        |            |               |                     |
|------------------------|------------|---------------|---------------------|
| Prøver modtaget den:   | 28-04-2023 | Rapport dato: | 10-05-2023          |
| Analyse påbegyndt den: | 01-05-2023 | Rapport nr.:  | <b>2318-001-002</b> |
| Opbevaring for analyse | På køl     | Antal prøver: | 1                   |
|                        |            | Bilag:        | 0 stk.              |

|            |                 |                 |  |  |  |       |             |
|------------|-----------------|-----------------|--|--|--|-------|-------------|
| Lab. nr.   | 23180010201     | 23180010202     |  |  |  |       |             |
| Prøvetype  | Materiale       | Materiale       |  |  |  | Enhed | Metode      |
| Emballage  |                 |                 |  |  |  |       | Detektions- |
| Prøvetager | Rekvirent       | Rekvirent       |  |  |  |       | grænse      |
| Prøve ID   | <b>Shockpad</b> | <b>Shockpad</b> |  |  |  |       | Usikker-    |
|            |                 |                 |  |  |  |       | hed         |

### 1. udvaskningstri. udvaskningstrin

| Parameter                            |                 |                 |  |  |  |                                                                   |              |
|--------------------------------------|-----------------|-----------------|--|--|--|-------------------------------------------------------------------|--------------|
| Udvaskning                           | 5 l/kg, 1. trin | 5 l/kg, 2. trin |  |  |  | prEN12457-3 (DSF42581), 5 l/kg, 2 trin, uden størrelse reduktion* |              |
| pH                                   | 7,2             | 6,9             |  |  |  | DS287                                                             | +/- 0,1      |
| Ledningsevne v. 25 °C                | 57              | 46              |  |  |  | µS/cm DS/EN 27888                                                 | 0,01 +/- 3 % |
| Perfluorbutansyre (PFBA)             | <1,0            | <1,0            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 1,0 +/- 29 % |
| Perfluorbutansulfonsyre (PFBS)       | <1,0            | <1,0            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 1,0 +/- 29 % |
| Perfluoropentansyre (PFPeA)          | <0,3            | <0,3            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 0,3 +/- 29 % |
| Perfluoropentansulfonsyre (PFPeS)    | <1,0            | <1,0            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 1,0 +/- 29 % |
| Perfluorhexansyre (PFHxA)            | <0,3            | <0,3            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 0,3 +/- 29 % |
| Perfluorhexansulfonsyre (PFHxS)      | <1,0            | <1,0            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 1,0 +/- 29 % |
| Perfluorheptansyre (PFHpA)           | <0,3            | <0,3            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 0,3 +/- 29 % |
| Perfluorheptansulfonsyre (PFHpS)     | <0,3            | <0,3            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 0,3 +/- 29 % |
| Perfluoroktansyre (PFOA)             | <0,3            | <0,3            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 0,3 +/- 29 % |
| Perfluoroktansulfonsyre (PFOS)       | <0,2            | <0,2            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 0,2 +/- 29 % |
| Fluortelomersulfonat (6:2 FTS)       | 1,8             | <1,0            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 1,0 +/- 29 % |
| Perfluoroktansulfonamid (PFOSA)      | <0,3            | <0,3            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 0,3 +/- 29 % |
| Perfluoromonansyre (PFNA)            | <0,3            | <0,3            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 0,3 +/- 29 % |
| Perfluoromonansulfonsyre (PFNS)      | <0,3            | <0,3            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 0,3 +/- 29 % |
| Perfluordecansyre (PFDA)             | <0,3            | <0,3            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 0,3 +/- 29 % |
| Perfluordecansulfonsyre (PFDS)       | <0,3            | <0,3            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 0,3 +/- 29 % |
| Perfluorundekansyre (PFUnDA)         | <1,0            | <1,0            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 1,0 +/- 29 % |
| Perfluorundekansulfonsyre (PFUnDS)   | <1,0            | <1,0            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 1,0 +/- 29 % |
| Perfluordodekansyre (PFDoDA)         | <0,3            | <0,3            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 0,3 +/- 29 % |
| Perfluordodekansulfonsyre (PFDoDS)   | <1,0            | <1,0            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 1,0 +/- 29 % |
| Perfluortridekansyre (PFTTrDA)       | <1,0            | <1,0            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 1,0 +/- 29 % |
| Perfluortridekansulfonsyre (PFTTrDS) | <1,0            | <1,0            |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup>                       | 1,0 +/- 29 % |
| Sum af PFOA, PFOS, PFNA og PFHxS     | <               | <               |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup> *                     |              |
| Sum af PFAS                          | 1,8             | <               |  |  |  | ng/l IN38407-42 mod. LC-MS-MS <sup>3)</sup> *                     |              |

Betegnelser:

se sidste side

Godkendt af

*Helle Rasmussen*

Helle Rasmussen

Laborant



## Analyserapport

|                              |                                                                                |                |                                                                            |
|------------------------------|--------------------------------------------------------------------------------|----------------|----------------------------------------------------------------------------|
| Rekvirent                    | <b>Trocellen GmbH</b><br><b>Mülheimer Strasse 26</b><br><b>53840 Troisdorf</b> | Identifikation | Sagsnavn: <b>Shockpad</b><br>Sagsnr.: -<br>Sagsbeh.: <b>Bjorn Kuhlmeiy</b> |
| Prøvetager: <b>Rekvirent</b> |                                                                                |                |                                                                            |

|                        |            |               |                     |
|------------------------|------------|---------------|---------------------|
| Prøver modtaget den:   | 28-04-2023 | Rapport dato: | 10-05-2023          |
| Analyse påbegyndt den: | 01-05-2023 | Rapport nr.:  | <b>2318-001-002</b> |
| Opbevaring for analyse | På køl     | Antal prøver: | 1                   |
|                        |            | Bilag:        | 0 stk.              |

|                                    |             |             |  |  |  |       |        |                       |                  |
|------------------------------------|-------------|-------------|--|--|--|-------|--------|-----------------------|------------------|
| Lab. nr.                           | 23180010201 | 23180010202 |  |  |  |       |        |                       |                  |
| Prøvetype                          | Materiale   | Materiale   |  |  |  | Enhed | Metode | Detektions-<br>grænse | Usikker-<br>hed☼ |
| Emballage                          |             |             |  |  |  |       |        |                       |                  |
| Prøvetager                         | Rekvirent   | Rekvirent   |  |  |  |       |        |                       |                  |
| Prøve ID                           | Shockpad    | Shockpad    |  |  |  |       |        |                       |                  |
| 1. udvaskningstri, udvaskningstrin |             |             |  |  |  |       |        |                       |                  |

| Parameter                            |                 |                 |  |  |  |                |           |  |                                                                   |
|--------------------------------------|-----------------|-----------------|--|--|--|----------------|-----------|--|-------------------------------------------------------------------|
| Udvaskning                           | 5 l/kg, 1. trin | 5 l/kg, 2. trin |  |  |  |                |           |  | prEN12457-3 (DSF42581), 5 l/kg, 2 trin, uden størrelse reduktion* |
| Perfluorbutansyre (PFBA)             | <5,0            | <5,0            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluorbutansulfonsyre (PFBS)       | <5,0            | <5,0            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluorpentansyre (PFPeA)           | <1,5            | <1,5            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluorpentansulfonsyre (PFPeS)     | <5,0            | <5,0            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluorhexansyre (PFHxA)            | <1,5            | <1,5            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluorhexansulfonsyre (PFHxS)      | <5,0            | <5,0            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluorheptansyre (PFHpA)           | <1,5            | <1,5            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluorheptansulfonsyre (PFHpS)     | <1,5            | <1,5            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluoroktansyre (PFOA)             | <1,5            | <1,5            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluoroktansulfonsyre (PFOS)       | <1,0            | <1,0            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Fluortelomersulfonat (6:2 FTS)       | 9,0             | <5,0            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluoroktansulfonamid (PFOSA)      | <1,5            | <1,5            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluornonansyre (PFNA)             | <1,5            | <1,5            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluornonansulfonsyre (PFNS)       | <1,5            | <1,5            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluordecansyre (PFDA)             | <1,5            | <1,5            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluordecansulfonsyre (PFDS)       | <1,5            | <1,5            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluorundekansyre (PFUnDA)         | <5,0            | <5,0            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluorundekansulfonsyre (PFUnDS)   | <5,0            | <5,0            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluordodekansyre (PFDoDA)         | <1,5            | <1,5            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluordodekansulfonsyre (PFDoDS)   | <5,0            | <5,0            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluortridekansyre (PFTTrDA)       | <5,0            | <5,0            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Perfluortridekansulfonsyre (PFTTrDS) | <5,0            | <5,0            |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Sum af PFOA, PFOS, PFNA og PFHxS     | <               | <               |  |  |  | ng udvasket/kg | beregning |  |                                                                   |
| Sum af PFAS                          | 9,0             | <               |  |  |  | ng udvasket/kg | beregning |  |                                                                   |

Betegnelser:

se sidste side

Godkendt af

*Helle Rasmussen*

Helle Rasmussen

Laborant



## Analyserapport

|                              |                                                                                |                |                                                                                   |
|------------------------------|--------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------|
| Rekvirent                    | <b>Trocellen GmbH</b><br><b>Mülheimer Strasse 26</b><br><b>53840 Troisdorf</b> | Identifikation | <b>Sagsnavn: Shockpad</b><br><b>Sagsnr.: -</b><br><b>Sagsbeh.: Bjorn Kuhlmeiy</b> |
| <b>Prøvetager: Rekvirent</b> |                                                                                |                |                                                                                   |
| Prøver modtaget den:         | 28-04-2023                                                                     | Rapport dato:  | 10-05-2023                                                                        |
| Analyse påbegyndt den:       | 01-05-2023                                                                     | Rapport nr.:   | <b>2318-001-002</b>                                                               |
| Opbevaring for analyse       | På køl                                                                         | Antal prøver:  | 1                                                                                 |
|                              |                                                                                | Bilag:         | 0 stk.                                                                            |

### Betegnelser fra rapporten:

✱ Ekspanderet usikkerhed, dækningsfaktor 2. Resultater på detektionsgrænseniveau er behæftet med en relativ større måleusikkerhed end generelt gældende.

#: Symboliserer at alle komponenter der indgår i den pågældende sum, har en konc. mindre end den enkelte komponents detektionsgrænse.

Emballage betegnelse: m (membranglas), r (rilsanpose), p (plastpose) s (staniol). \* Ikke akkrediteret.

### Afviselser/kommentar ved denne rapport:

Ingen.

Højvang Laboratorier A/S fraskriver sig ethvert ansvar i forbindelse med data oplyst af rekvirenten.

Analyseresultater anføres i rapporten med 2 betydende cifre medmindre andet er aftalt. Ved sammenligning med eventuelle grænse- og/eller kravværdi, anvendes analyseresultatet i rapporten.

Resultaterne gælder for prøven/prøverne som den/de er modtaget.

Med mindre andet er oplyst, fremsendes rapporten til den/de på rekvisitionen oplyste mailadresser.

Prøvningsresultaterne gælder kun for de prøvede emner/delmængder. Uden laboratoriets skriftlige tilladelse må rapporten kun gengives i sin helhed.

Godkendt af

Helle Rasmussen

Laborant

Lim



# Certificate

We hereby certify, that our products:

- ProFect® 41105
- ProFect® 41155
- ProFect® 41158
- ProFect® 91102

## Plastiziers

Is produced without the use of DEPH, DBP, DIBP and BBP. PKI Supply A/S also has no reason to suspect the presence of DEPH, DBP, DIBP and BBP in the mentioned products delivered to your company. These substances have not been intentionally added during the manufacturing process. As a consequence, PKI Supply A/S does not routinely test for their presence.

## REACH

Is a preparation and therefore, exempted from REACH registration. However, it is manufactured with REACH compliant (registered or preregistered) raw materials. It does not contain substances listed on the REACH Annex XXVII.

Fredericia 08.01.2018

  
Rasmus H. Nielsen  
Technical Manager

The stamp is a red circular seal. The outer ring contains the text "PKI Supply A/S - Vesterballevej 29" at the top and "Fredericia - Denmark" at the bottom. The center of the stamp features the PKI logo, the website "pki.dk", the email "info@pki.dk", and two phone numbers: "P +45 7624 0240" and "F +45 7594 1039".

**PKI SUPPLY A/S**

Backingtape



# Certificate

We hereby certify, that our products:

- PKI Tape 01
- PKI Tape 02

## Plastiziers

Is produced without the use of DEPH, DBP, DIBP and BBP. PKI Supply A/S also has no reason to suspect the presence of DEPH, DBP, DIBP and BBP in the mentioned products delivered to your company. These substances have not been intentionally added during the manufacturing process. As a consequence, PKI Supply A/S does not routinely test for their presence.

## REACH

Is a preparation and therefore, exempted from REACH registration. However, it is manufactured with REACH compliant (registered or preregistered) raw materials. It does not contain substances listed on the REACH Annex XXVII.

Fredericia 16.01.2018



H. Nielsen

## Bilag 5

## Jørgen Hegner

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**Fra:** Johnni Mosevang Christensen <JOCH@rudersdal.dk>  
**Sendt:** 12. marts 2025 08:16  
**Til:** Jørgen Hegner  
**Emne:** Fuldmagt

**Kategorier:** Orbit-Archived  
**orbit-archived:** 25053 - Kunstgræsbane Rundforbi Stadion, Nærum

Til Dines Jørgensen & Co. A/S

Jeg giver herved fuldmagt til, at Dines Jørgensen & Co. A/S på vegne af Rudersdal Kommune kan ansøge om tilladelse til anlæggelse af en kunstgræsbane på Rundforbi Idrætsanlæg.

Venlig hilsen

**Johnni Mosevang Christensen**  
Idrætsfaglig ledelseskoordinator



**RUDERSDAL**  
KOMMUNE

Kultur | Kultursekretariatet | Øverødvej 2 | 2840 Holte  
Tlf. 46 11 56 16 | Mobil 72 68 56 16  
[JOCH@rudersdal.dk](mailto:JOCH@rudersdal.dk) | [www.rudersdal.dk](http://www.rudersdal.dk)

Læs om dine rettigheder og behandling af dine personoplysninger:  
[Sådan behandler vi dine data](#)