

TECHNICAL SOLUTION FOR SPORTS FIELD



Tested following FIFA - LND - FIH - WORLD RUGBY - GAA manuals

Vertical and Horizontal
Drainage Systems





I prodotti della linea REFOSPORT, di assoluta qualità costruttiva, sono sottotappeti elastici per campi da gioco e presentano caratteristiche specifiche per ciascuna disciplina sportiva. Sui campi costruiti con REFOSPORT, sicurezza e comfort sono portati al massimo livello. Il sistema è ultraleggero, veloce e facile da installare e permette di soddisfare i requisiti delle associazioni sportive professionali come FIFA, FIH, GAA, WORLD RUGBY

Los productos de la línea REFOSPORT, de gran calidad para la construcción, son excelentes amortiguadores elásticos para campos de juego y tienen características específicas para cada disciplina deportiva. Los campos construidos con REFOSPORT, tienen el máximo nivel de seguridad y comodidad. El sistema es ultra-ligero, rápido y de fácil instalación y permite satisfacer los requisitos de las asociaciones deportivas profesionales como FIFA, FIH, GAA, WORLD RUGBY.

Les produits de la ligne de REFOSPORT, construite en qualité absolue, sont sous-couches élastiques pour aire de jeux et ont caractéristiques spécifiques pour chaque sport. Sur les terrains construits avec REFOSPORT, la sécurité et le confort sont apporté au niveau maximum. Le système est léger, rapide et facile à installer et permet de répondre aux exigences des clubs sportifs professionnels comme FIFA, FIH, GAA, WORLD RUGBY.

Die Produktlinie REFOSPORT ist eine Elastik Schicht von hoher Qualität, für Spielfelder für Sport und wird gefertigt und geliefert nach Bedarf der jeweiligen Sportarten. Spielfelder mit REFOSPORT werden qua Komfort und Sicherheit auf höchster Ebene gebracht. Die System sind leicht von Gewicht, schnell und einfach zu verlegen und werden geliefert gemäß der erforderlichen Vorschriften des jeweilige Sportes, FIFA FIH, GAA, WORLD RUGBY, usw.

• Soddisfa i criteri di assorbimento shock • Indicato per aree sportive professionali e non (MUGA = Multi Usage Game Areas) • Buone proprietà biomeccaniche: riduce il rischio di danni e lesioni • Prestazioni durature garantite 25 anni • Drenaggio eccellente grazie alla foratura e ai canali realizzati meccanicamente durante il processo produttivo, garantendo sempre elevati valori prestazionali. • Ecocompatibile, alta flessibilità, non gela in inverno • Ridotti tempi e costi di installazione

• Satisface los parámetros de absorción de impacto. • Adecuado tanto para zonas deportivas profesionales como no profesionales (MUGA= Multi Usage Game Areas) • Buenas propiedades biomecánicas: reduce el peligro de daños y lesiones • Prestaciones de larga duración. Garantizadas 25 años • Drenaje excelente gracias a que el material dispone de agujeros y canales efectuados mecánicamente en el proceso de producción, asegurando siempre altas prestaciones. • Eco compatible, alta flexibilidad, no se congela en invierno. • Tiempos y costes de instalación reducidos.

• Conforme aux critères d'absorption des chocs • Adapté aux terrains de sport professionnels mais pas pour MUGA (MUGA = zones à plusieurs sports) • Bonnes propriétés biomécaniques: réduit le risque de trauma (blessures et fractures des os) • Performances durables garantis 25 ans • Excellent drainage en raison de forage et des canaux, faites mécaniquement au cours du processus de fabrication, qui assurent toujours des valeurs de haute performance. • Écologique, flexibilité haute, ne gèle pas • Réduction du temps et le coût de l'installation

• Verfüllt die Vorschriften des Kraftabbau • Geeignet auch für Multisportanlagen • Sehr gute biochemischen Eigenschaften: es verringert die Risiken von Beschädigungen und Verletzungen • Langjähriger Leistungen mit eine Garantie von 25 Jahre • Vorzüglicher Drainage Kapazitäten, dank der gebohrten Löcher und gepressten extra Abfuhr Kanäle. Diese werden mechanisch angebracht während des Produktionsprozesses für eine sichere und konsistente hohe Leistung von den Drainagewerten. • REFOSPORT ist Umweltfreundlich, mit hoher Flexibilität, und wird auch im Winter seine Arbeit leisten weil es nicht erfriert. • Der sehr schnelle Einbau garantiert eine Senkung der Installationskosten.



R	Materiale fornito a Rotoli	Material suministrado en rollo	Matériau, fourni en rouleaux	Rollenware
C	Con presenza di canali per il drenaggio	Con presencia de canales para el drenaje	Avec la présence de canaux de drainage	Mit gepresste Kanäle für extra Drainage
S	Misura Speciale	Medida especial	Mesure spécial	Speziale Abmessunge
PE r	Polietilene espanso rigenerato	Polietileno expandido regenerado.	Mousse de polyéthylène, régénéré	Regenerierten Polyethylen Schaum
ND	Nessun drenaggio, solo dal perimetro esterno della lastra	sin drenaje, solo del perímetro exterior de la placa	régénéréePas de drainage, seulement à partir du périmètre extérieur du fouille	Nur Drainage entlang der Schnittflächen der Platten
HD	RISCALDATO e DRENANTE	CALENTADO y DRENAJE	CHAUFFGE et DRAINAGE	HEIZUNG und DRAINAGE
HHC	Alta capacità idraulica	Alta Capacidad Hidráulica	Capacité hydraulique élevée	Hohe hydraulische Kapazität
USA cu	Misure americane personalizzate	USA Medidas personalizadas	Mesures personnalisées aux États-Unis	Benutzerdefinierte Maße U.S.

FOOTBALL FIELD

The product line REFOSPORT, are regenerated PE foam pads with elastic properties for play areas and specific mechanical – hydraulic properties designed for each sport.

In the field constructed with REFOSPORT, safety and comfort are brought to the maximum level.

The system is lightweight, fast and easy to install and allows to meet the requirements of professional sports like FIFA, FIH, GAA, WORLD RUGBY.

- Meets the requirements of shock absorption
- Suitable for professional and non-sports areas (MUGA = Multi Usage Game Areas)
- Good biomechanical properties: it reduces the risk of damage and injuries
- Long-lasting performance guaranteed 25 years
- Drainage excellent thanks to drilling and channels made mechanically during the production process, ensuring consistently high performance values.
- Eco-friendly, highly flexible, does not freeze in winter
- Reduced time and cost of installation

Benefits

- R Material supplied in rolls
- C With presence of channels for drainage
- S Special measures (ex. REFO SPORT 12 C S)
- PE r Polyethylene foam regenerated
- ND No Drainage, only for the perimeter of the plate
- HD Heated and Drainage
- HHC High Hydraulic Capacity
- USA cu USA Customary Units

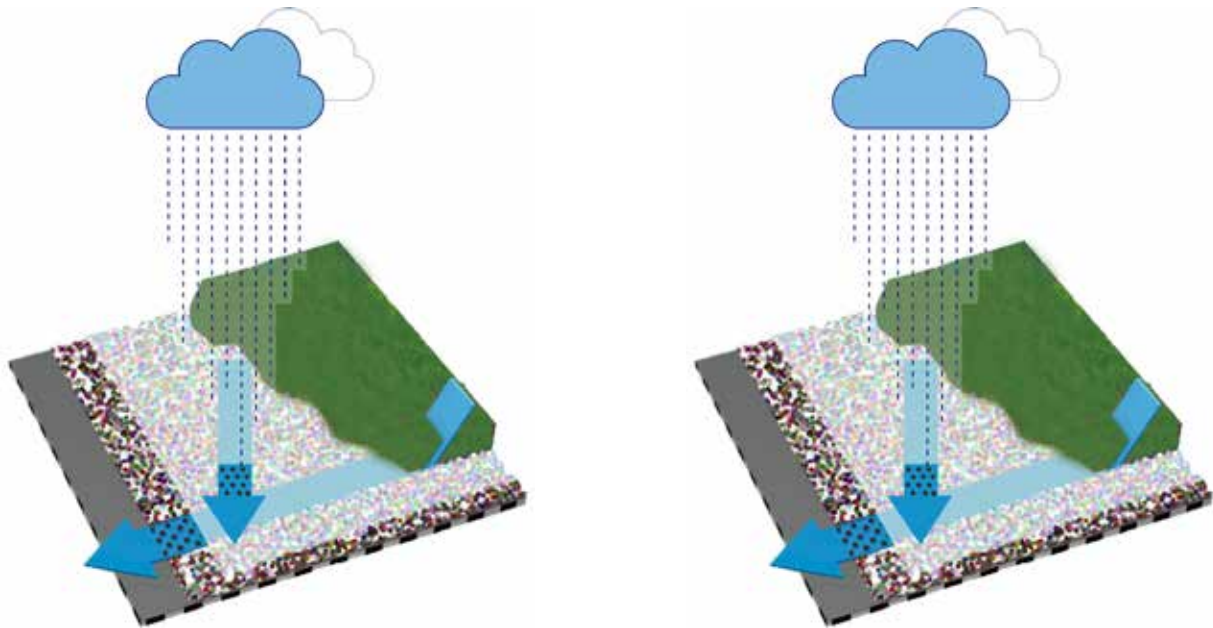
* yd² = m Yard quadrato (American measures)

Meanings



REFO SPORT 12 C

Vertical and Horizontal Drainage



TECHNICAL SPECIFICATIONS

Caratteristiche tecniche
Características técnicas
Caractéristiques techniques



REFO SPORT 12 C USA cu	REFO SPORT 12 C S
0,47 in	12mm
Polyethylene foam regenerated	Polyethylene foam regenerated
Plates	Plates
35,43 x 88,58 in	90 x 225 cm
1,20 yd²	2,025 sqm
80 Kg/m3	80 Kg/m3
Vertical and horizontal	Vertical and horizontal
46%	46%
0,35%	0,35%
0,315 in	8 mm
> 118,11 in/h	> 3000 mm/h
> 0,050 l/(m*s)	> 0,050 l/(m*s)
Football, Hockey, Roof Gardens	Football, Hockey, Roof Gardens
FIFA, MUGA e FIH, LND	FIFA, MUGA e FIH, LND

TECHNICAL SPECIFICATIONS

Caratteristiche tecniche
Características técnicas
Caractéristiques techniques



REFO SPORT 16 C USA cu	REFO SPORT 16 C S
0,63 in	16mm
Polyethylene foam regenerated	Polyethylene foam regenerated
Plates	Plates
35,43 x 88,58 in	90 x 225 cm
1,20 yd²	2,025 sqm
80 Kg/m3	120 Kg/m3
Vertical and horizontal	Vertical and horizontal
46%	55%
0,35%	0,47%
0,35 in	9 mm
> 118,11 in/h	> 3000 mm/h
0,283 l/(m*s)	0,283 l/(m*s)
Football	Football
FIFA, LND	FIFA, LND

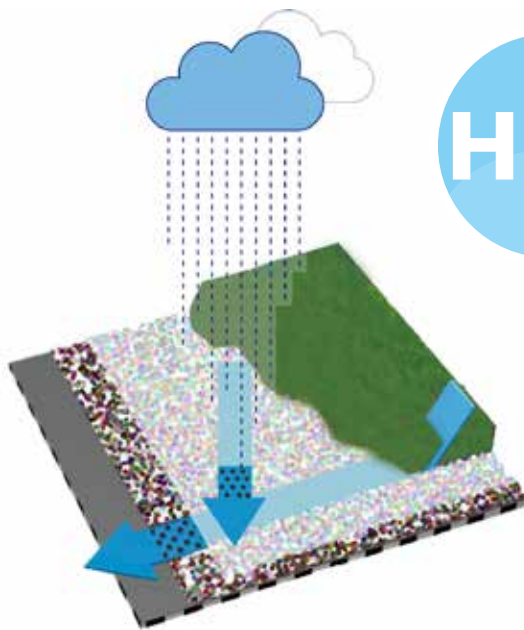
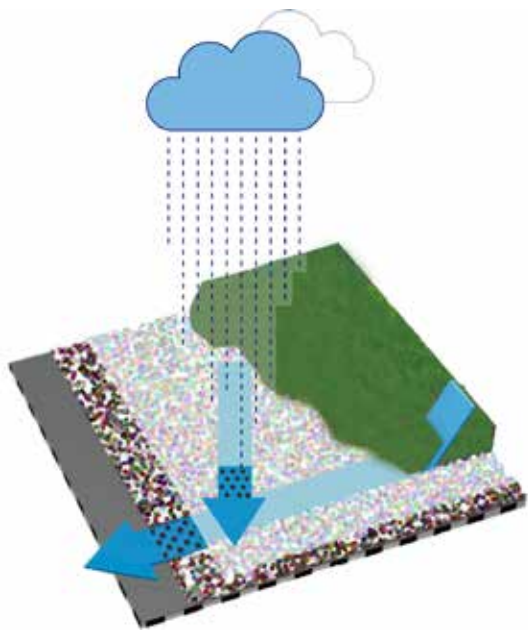
REFO SPORT 16 C

Vertical and Horizontal Drainage



REFO SPORT 20 C

Vertical and Horizontal Drainage



REFO SPORT 23 C

Vertical and Horizontal Drainage



TECHNICAL SPECIFICATIONS

Caratteristiche tecniche
Características técnicas
Caractéristiques techniques



REFO SPORT 20 C USA cu	REFO SPORT 20 C S
0,79 in	20mm
Polyethylene foam regenerated	Polyethylene foam regenerated
Plates	Plates
35,43 x 88,58 in	90 x 225 cm
1,20 yd²	2,025 sqm
80 Kg/m3	120 Kg/m3
Vertical and horizontal	Vertical and horizontal
46%	58%
0,35%	0,39%
0,32 in	8,1 mm
> 118,11 in/h	> 3000 mm/h
0,354 l/(m*s)	0,354 l/(m*s)
Football, Rugby, MUGA	Football, Rugby, MUGA
FIFA, GAA, WORLD RUGBY	FIFA, GAA, WORLD RUGBY

TECHNICAL SPECIFICATIONS

Caratteristiche tecniche
Características técnicas
Caractéristiques techniques



REFO SPORT 23 C USA cu	REFO SPORT 23 C S
0,91 in	23mm
Polyethylene foam regenerated	Polyethylene foam regenerated
Plates	Plates
35,43 x 88,58 in	90 x 225 cm
1,20 yd²	2,025 sqm
120 Kg/m3	120 Kg/m3
Vertical and horizontal	Vertical and horizontal
64%	64%
0,36 in	9,1 mm
> 118,11 in/h	> 3000 mm/h
0,627 l/(m*s)	0,627 l/(m*s)
Rugby, Football, Roof Gardens, Playgrounds	Rugby, Football, Roof Gardens, Playgrounds
FIFA, GAA, American and Australian Football, WORLD RUGBY	FIFA, GAA, American and Australian Football, WORLD RUGBY

REFO SPORT 12 ND

Vertical Drainage



REFO SPORT 15

Vertical Drainage



TECHNICAL SPECIFICATIONS

Caratteristiche tecniche
Características técnicas
Caractéristiques techniques



REFO SPORT 12 USA cu

0,49 in
Polyethylene foam, regenerated Plates, without holes
Plates
35,43 x 88,58 in
1,20 yd²
100 Kg/m³
Vertical, from the perimeter of the plates, from puzzle form
46%
0,39%
0,25 in
> 7,09 in/h
On the surface
Recommended for INDOOR installations, Hockey and MUGA

REFO SPORT 12 ND

12,5mm
Polyethylene foam, regenerated Plates, without holes
Plates
90 x 225 cm
2,025 sqm
100 Kg/m³
Vertical, from the perimeter of the plates, from puzzle form
46%
0,39%
6,3mm
> 180 mm/h
On the surface
Recommended for INDOOR installations, Hockey and MUGA

TECHNICAL SPECIFICATIONS

Caratteristiche tecniche
Características técnicas
Caractéristiques techniques



REFO SPORT 15 USA cu

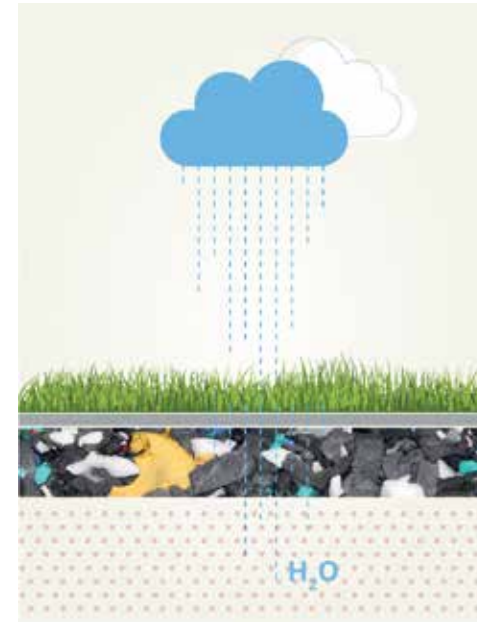
0,59 in
Polyethylene foam regenerated
Plates
35,43 x 88,58 in
1,20 yd²
80 Kg/m³
Vertical
45%
0,28 in
> 118,11 in/h
0,354 l/(m*s)
Football
FIFA, MUGA

REFO SPORT 15 S

15mm
Polyethylene foam regenerated
Plates
90 x 225 cm
2,025 sqm
80 Kg/m³
Vertical
45%
7,2 mm
> 3000 mm/h
0,354 l/(m*s)
Football
FIFA, MUGA

REFO SPORT 18

Vertical Drainage



REFO SPORT 20

Vertical Drainage



TECHNICAL SPECIFICATIONS

Caratteristiche tecniche
Características técnicas
Caractéristiques techniques



REFO SPORT 18 USA cu

0,71 in
Polyethylene foam
regenerated
Plates
35,43 x 88,58 in
1,20 yd²
90 Kg/m³
Vertical
57%
0,23 in
> 118,11 in/h
0,283 l/(m*s)
Football
FIFA, MUGA

REFO SPORT 18

18 mm
Polyethylene foam
regenerated
Plates
90 x 225 cm
2,025 sqm
90 Kg/m³
Vertical
57%
5,9mm
> 3000 mm/h
0,283 l/(m*s)
Football
FIFA, MUGA

TECHNICAL SPECIFICATIONS

Caratteristiche tecniche
Características técnicas
Caractéristiques techniques



REFO SPORT 20 USA cu

0,79 in
Polyethylene foam
regenerated
Plates
35,43 x 88,58 in
1,20 yd²
80 Kg/m³
Vertical
58%
0,39%
0,32 in
> 118,11 in/h
0,354 l/(m*s)
Football, Rugby, MUGA
FIFA, GAA

REFO SPORT 20 S

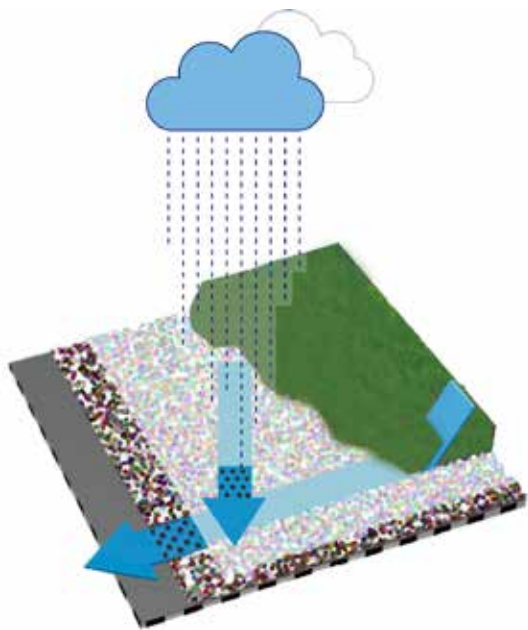
20mm
Polyethylene foam
regenerated
Plates
90 x 225 cm
2,025 sqm
80 Kg/m³
Vertical
58%
0,39%
8,1 mm
> 3000 mm/h
0,354 l/(m*s)
Football, Rugby, MUGA
FIFA, GAA

Tests made according to the annex "D" of esto performance guide.

SPECIAL APPLICATIONS

REFO SPORT 23HD

INTEGRATED SYSTEMS FOR HEATING OR COOLING



Thermal Properties according to EN 12667:2001 and EN 12664:2001	d 10 ⁻³ m	t _t °C	t ₂ °C	t _m °C	R m ² K W ⁻¹	∫ W m ⁻¹ K ⁻¹
Test	11,92	+14,998	+5,000	+10,00	0,258	0,046

TECHNICAL SPECIFICATIONS

Caratteristiche tecniche
Características técnicas
Caractéristiques techniques



23 mm



Polyethylene foam regenerated



Rolls



1x30 2x30



30mq 60mq



Vertical and Horizontal



62%



9,1mm



> 3000 mm/h



0,627 l/(m*s)



Football, Rugby, MUGA



FIFA, GAA, WORLD RUGBY



SPECIAL APPLICATIONS

REFO PROTECT GREEN

INTEGRATED SYSTEM FOR PROTECTIVE ANGLE



HIC

1177:2018

800mm

TECHNICAL SPECIFICATIONS

Caratteristiche tecniche
Características técnicas
Caractéristiques techniques



REFO PROTECT GREEN



18mm



Polyethylene foam regenerated



Plates



On request (max 200cm)



120 Kg/m³



Vertical and Horizontal



800mm



0,35%



8mm



Protective angle for Football field

REFO SPORT 50



REFO SPORT 55

TECHNICAL SPECIFICATIONS

Caratteristiche tecniche
Características técnicas
Caractéristiques techniques



	REFO SPORT 50 USA cu	REFO SPORT 50
	1,97 in (shock pad + synthetic grass)	50mm (shock pad + synthetic grass)
	Polyethylene foam regenerated, grooved and drilled coupled with synthetic grass	Polyethylene foam regenerated, grooved and drilled coupled with synthetic grass
	Plates	Plates
	90,59 x 36,97 in	2301 x 939mm
	2,31 yd²	1,93 sqm
	120 Kg/m3	120 Kg/m3
	Vertical and Horizontal	Vertical and Horizontal
	0,453 l/(m*s)	0,453 l/(m*s)
	Silica sand, grade 0.5-1.0 mm, min. 80% of cylindrical shape	Silica sand, grade 0.5-1.0 mm, min. 80% of cylindrical shape
	Certification report: 13/17	Certification report: 13/17
	65% - Test report LSIT.12-0577 - EN 1177 (2008)	65% - Test report LSIT.12-0577 - EN 1177 (2008)
	0,35 in	9mm
	> 0,79 in/h	> 180 mm/h
	Playgrounds, football fields, Green areas, fields removable, MUGA	Playgrounds, football fields, Green areas, fields removable, MUGA
	LaboSport	LaboSport

TECHNICAL SPECIFICATIONS

Caratteristiche tecniche
Características técnicas
Caractéristiques techniques



	REFO SPORT 55 USA cu	REFO SPORT 55
	2,17 in (shock pad + synthetic grass)	55mm (shock pad + synthetic grass)
	Polyethylene foam regenerated, grooved and drilled coupled with synthetic grass	Polyethylene foam regenerated, grooved and drilled coupled with synthetic grass
	Plates	Plates
	90,59 x 36,97 in	2301 x 939mm
	2,31 yd²	1,93 sqm
	120 Kg/m3	120 Kg/m3
	Vertical and Horizontal	Vertical and Horizontal
	0,945 l/(m*s)	0,945 l/(m*s)
	Silica sand, grade 0.5-1.0 mm, min. 80% of cylindrical shape	Silica sand, grade 0.5-1.0 mm, min. 80% of cylindrical shape
	Certification report: 13/17	Certification report: 13/17
	62%	62%
	0,35 in	8mm
	> 0,79 in/h	> 180 mm/h
	Playgrounds, football fields, Green areas, fields removable, MUGA	Playgrounds, football fields, Green areas, fields removable, MUGA
	LaboSport	LaboSport

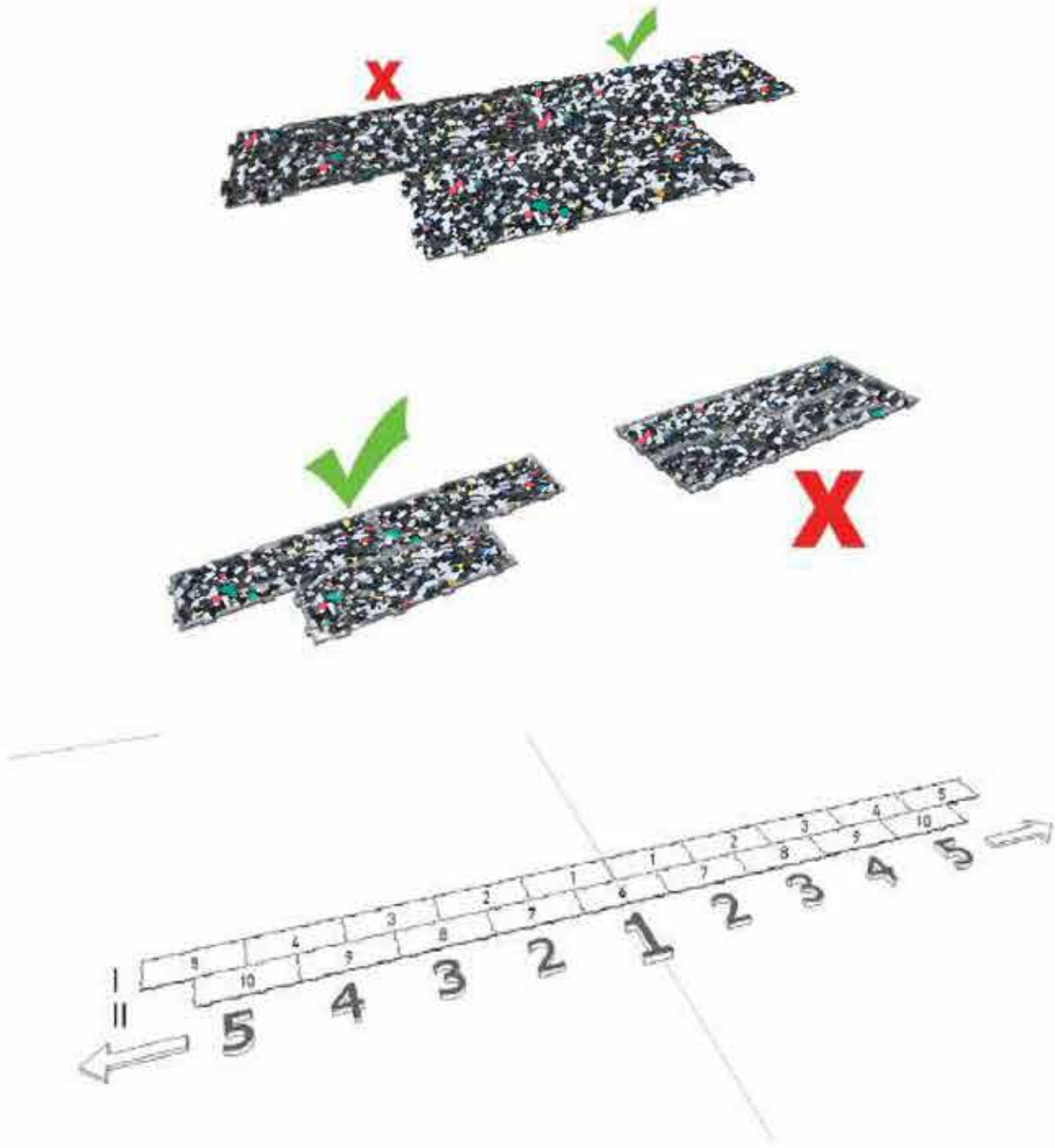
REFERENCES



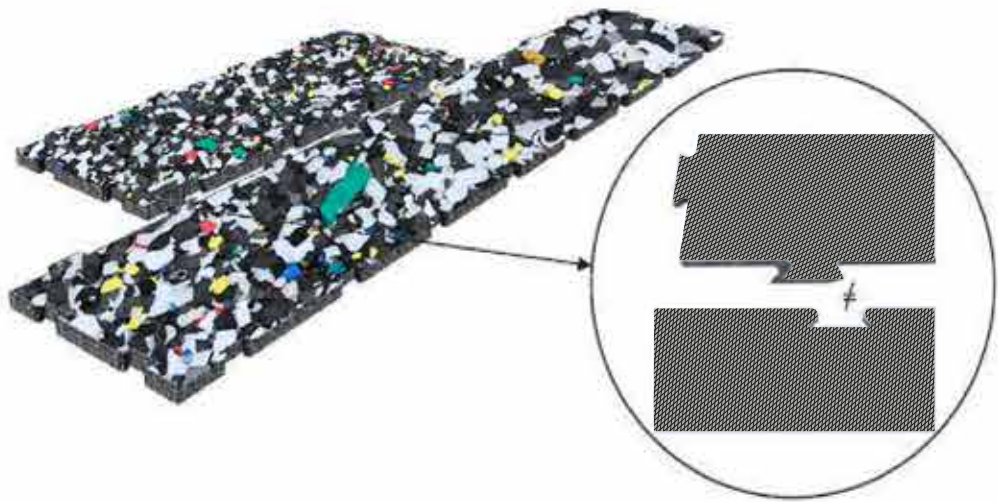
REFERENCES



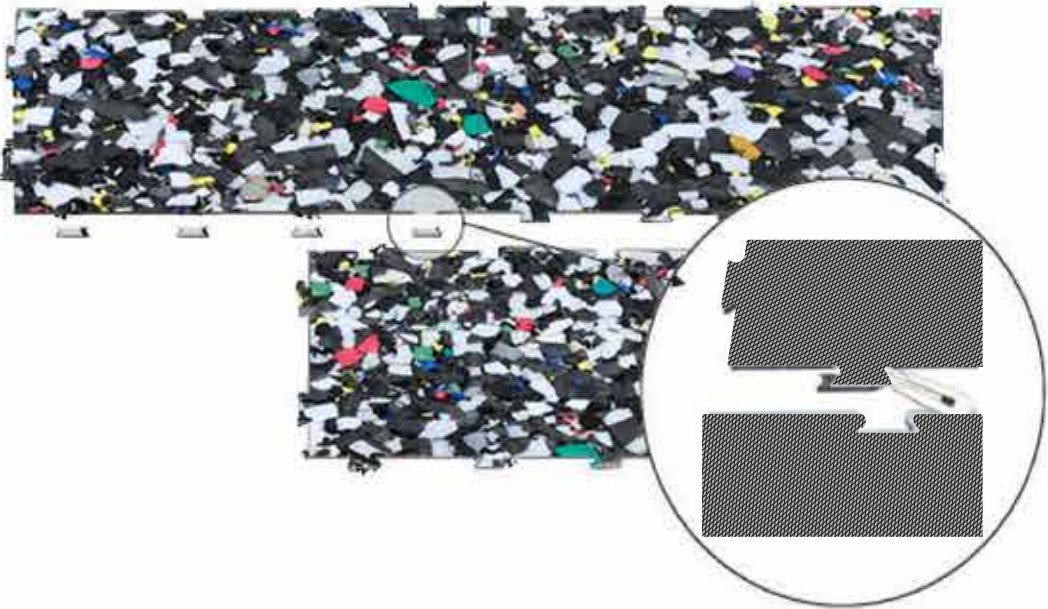
Installation Guide
for all models



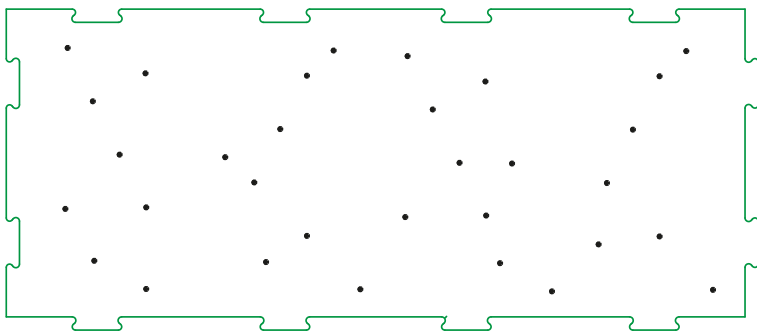
1.



2.



Model "S"



NOTE / Nota / Remarque

NOTE / Nota / Remarque

Iconography

	Thickness	Spessore	Espesor	Epaisseur	Dicke
	Type of material	Tipo di materiale	Tipo de material	Type de matériel	Art der Ausrüstung
	Material supplied	Materiale fornito	Material proporcionado	Matériel fourni en	Materialien zur Verfügung gestellt
	Measures plates/rolls	Misura lastre/rotoli	Medidas placa/rollo	Mesures plaques/rouleaux	Messplatten / Rollen
	Profit plates/rolls	Utile lastra/rotoli	Util placa/rollo	Profit feuilles/rouleaux	Profitblätter / Rollen
	Density m3	Densità	Densidad	Densité	Dichte
	Type of drainage	Tipo di drenaggio	Tipo de drenaje	Type de drainage	Art der Entwässerung
	Shock absorption	Assorbimento allo shock	Absorción impacto	Absorption au choc	Schockabsorption
	Dimensional stability	Stabilità dimensionale	Estabilidad dimensional	Stabilité dimensionnelle	Dimensionsstabilität
	Permeability	Perm. dello shock pad	Perm. del material	Perm. Du choc pad	Perm. Schock-Pad
	Vertical deformation	Deformazione verticale	Deformación vertical	Déformation verticale	Vertikale Verformung
	Hydraulic Capacity	Capacità Idraulica	Capacidad hidráulica	Capacité hydraulique	Hydraulische Kapazität
	Field of application	Campi di applicazione	Campos de aplicación	Applications	Anwendungen
	Certifications	Certificazioni	Certificaciones	Certifications	Zertifizierungen
	Energy Restitution	Energia di restituzione	Retorno de energia	Retour énergie	Energie zurückgeben
	Value HIC	Valore HIC	Valor HIC	Valeur HIC	HIC-Wert
	Measures Angle	Misura angoli	Medidas angulares	Angle de mesure	Misst Winkel
	Infill	Intaso	Relleno	Remplissage	Füllung
	Fire Classification	Certificazione al fuoco	Clasificación al fuego	Classification au feu	Feuerklassifizierung
	Synthetic grass	Erba sintetica	Hierba sintética	Herbe synthétique	Synthetisches gras
	Right Angle	Angolo retto	Ángulo recto	Angle droit	Rechter Winkel



REOclick

easy installing sportgrounds

REOplay

protective playgrounds

REOtarget

easy target solutions

REOprotect

protective grounds



APETEK SRL - Corso Italia, 19 24040 Osio Sopra (BG) - P.IVA 02984790168- info@apetek.net