



CIRCULAR ECONOMIC CONCEPTS

BROCK POWERBASE™ IN CONCEPT WITH:
1. ARTIFICIAL TURF / 2. RUBBER (PUZZLE) TILES / 3. EPDM WET POURED FLOOR



SUSTAINABLE SAFETY CONCEPTS FOR PLAYGROUNDS AND SPORTS FIELDS

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WELCOME

Sustainability is the biggest social challenge. The subject is high on the agenda of governments and business, both nationally and internationally.

A circular economy or circular economy is an economic and industrial system in which no finite raw materials are exhausted and in which residues are fully reused in the system. The energy for a pure circular economy must come from renewable sources, especially solar and wind. This in imitation of the natural system. The opposite of the circular economy is the linear economy, in which finite raw materials are exhausted and, after use, end up in the environment as unusable waste. Since an ideal circular economy can not simply be achieved, it is also defined as a system that takes the reusability of products and raw materials and the restoring capacity of natural resources as a starting point, minimizes value destruction in the total system and creates value in every link of the system. system. (source: Wikipedia)

Technoah BV has been supplying the market for many years with sustainable and high quality products. Our expertise is the design and production of various durable quality rubber and plastic products. Technoah BV produces the products quickly on its own production lines in the Netherlands and Europe. We deliver locally, nationally or internationally from stock or according to customer-specific requirements in small or large series.

In this brochure we would like to introduce you to our latest (market tested and unique) safety concepts.

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BROCK PRODUCTS

BROCK is an American company with a European idea and production as origin. The idea for a safe underground system for synthetic turf started in 2004. It was discovered that synthetic turf pitches provided better performance and were safer for athletes when the shock pads of BROCK were installed. Nowadays the shockpads of BROCK are an international concept and hundreds of sports fields and playgrounds have been successfully provided in more than 20 countries! Shock pads from BROCK USA and BROCK EUROPE mean: safety, better drainage and a long service life. With this Technoah BV represents the most sustainable product and design on the market.



After years of research, experience with playing fields and through collaboration with experts from various professions, PowerBase/Play™ was introduced in 2009 by the BROCK team as the world's most advanced (fall) subsurface system for

playing fields in the world. It became part of the TISANOS concept, an environmentally friendly (sustainable) system for playgrounds for children. PowerBase/Play™ is made of 100% pure high-quality expanded polypropylene. This non-toxic and very durable material will not rot or diminish in quality. It is also resistant to bacteria, fungi and chemicals, is 100% recyclable, Cradle to Cradle™ certified and meets the most stringent environmental standards.

PowerBase/Pro™ is the only system specifically designed for professional athletes who play at top level. The shock pad takes the field to a new level of playability, safety and longevity. Through a one-off investment in the professional system, you save in many ways: it is a solidly supported base layer for various constructions / subbase, there is a 20-year insured product guarantee and it functions as a drainage system.



Cradle to Cradle™ ("up-cycling") is the unlimited reuse of products without loss of quality. PowerBase/Play™ is C2C™ certified, that is, the material can be completely reused without losing value. It is an interlocking panel system made from expanded polypropylene. This material is known for its longevity and environmental friendliness. After years of use, the panels can be easily removed, cleaned and prepared for the same application or another durable quality product with minimal use of extra energy or waste. The demand for new

fossil fuels is thus reduced. This in favor of our environment.

TISANOS concept is a completely eco-efficient, technologically advanced subsurface system with 1. synthetic turf, 2. rubber puzzle tiles and/or an EPDM wet poured floor that is often used for children's playgrounds and public areas. An outcome for excellent results over a long period in all weather conditions. The TISANOS concept has been specially developed to improve the performance and safety of playing and sports fields. The TISANOS constructions are designed to: optimize drainage; provide additional stabilization of the subbase; act as a thermal insulation layer. All designs/ thicknesses of the BROCK products include a vertical and horizontal drainage system. Installation can be on both permeable and opaque basic constructions. The TISANOS concept is therefore the best-proven system on the market.



SYSTEM PROPERTIES

There are various designs / thicknesses of the BROCK products. This includes PowerBase / Pro TM F24HD for sports fields and PowerBase / Play TM F24LD; 38; 50LD and 50HD for the playing fields. The different types indicate the thicknesses and density of the panels for various drop heights / applications. LD stands for Low Density and HD stands for High Density. Below the main system properties:

- Clean: 100% non-toxic, 100% lead-free; resistant to bacteria, fungi and chemicals
- Durable and maximum safety
- Single layer system and light in weight
- Overlapping patented connection system
- Cradle to CradleTM certificate
- Drainage: horizontally and vertically
- No moisture absorption
- Thermal insulation
- Fast and easy installation
- Multifunctional use
- Consistent connection system
- Long lifespan
- Favorable HIC-values according to TUV and EN1177
- Pleasant to play and exercise
- Detailed datasheets available
- Production in an ISO-certified factory in the Netherlands
- Various (whether or not permeable) basic constructions of concrete, stone, asphalt, compact sand or gravel
- Decades long in optimal condition underground: do not move, move or deform in heat, moisture, cold or drought
- Conclusion: the best system in the market

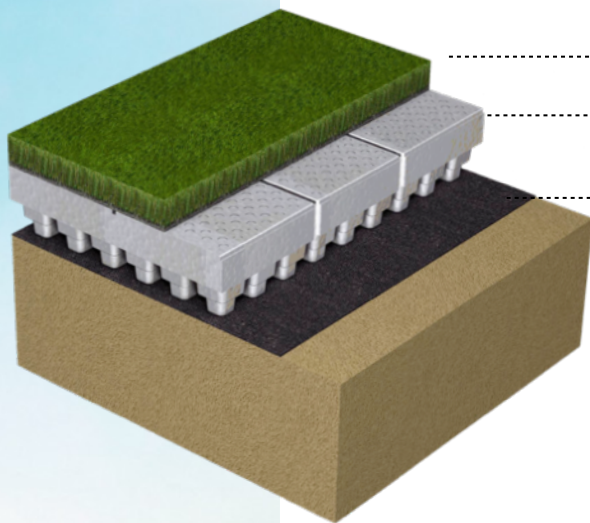
**Products should leave
a positive mark on
the world**

This certifies it

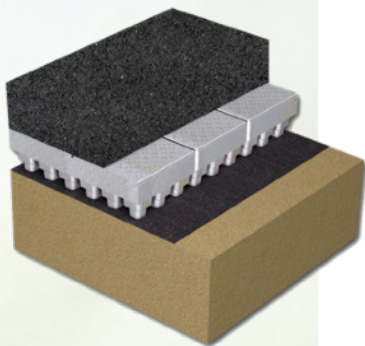




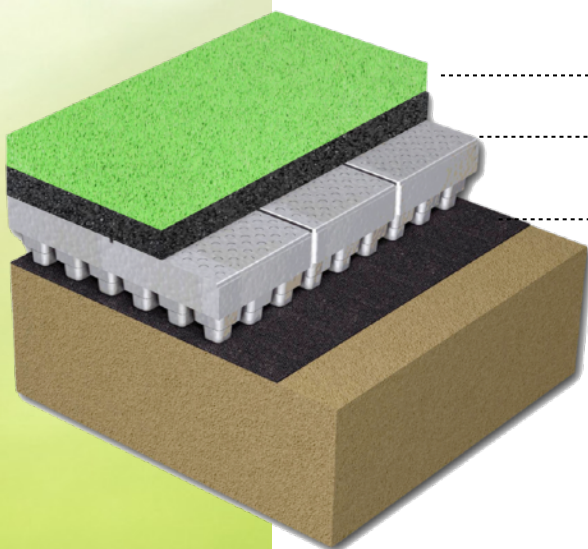
THE THREE BROCK CONCEPTS



- ARTIFICIAL TURF 22MM WITH QUARTZ SAND
- POWERBASE/PLAY™ 50 BY BROCK
- GEOTEXTILE
- SAND



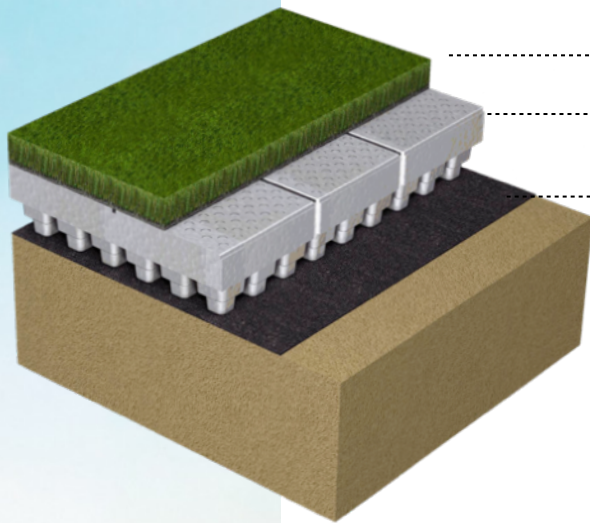
- SBR OR EPDM RUBBER (PUZZLE) TILES 45MM
- POWERBASE/PLAY™ 50 BY BROCK
- GEOTEXTILE
- ZANDBED



- SBR / EPDM WET POURED FLOOR
- POWERBASE/PLAY™ 50 BY BROCK
- GEOTEXTILE
- SAND

CONCEPT 1

TISANOS artificial turf



• ARTIFICIAL TURF 22MM WITH QUARTZ SAND

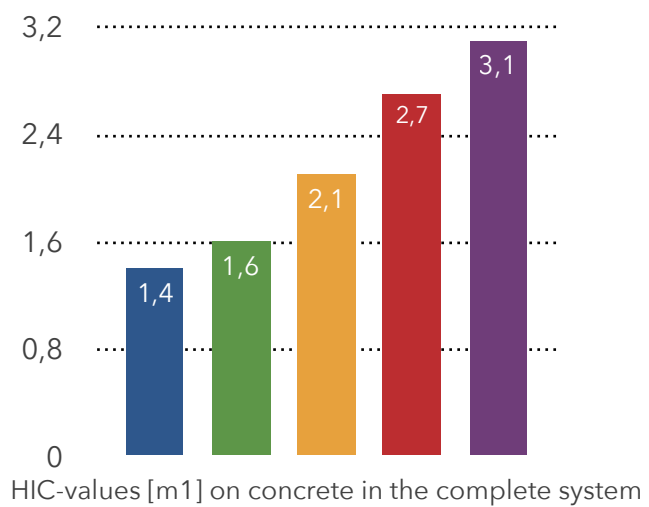
• POWERBASE/PLAY™ 50 BY BROCK

• GEOTEXTILE

• SAND



PB24LD PB24HD PB38LD
PB50LD PB50HD



BENEFITS

PLAYING CHILD/ ATHLETE M/V

- The playing characteristics feel like natural grass
- Sustainable safety, lasting favorable HIC-value
- Playable throughout the year
- Designed to play and exercise
- International recognition by FIFA and The World Rugby federation

INSTALLER / CONTRACTOR

- Fast to process / time-saving
- Single layer system
- Dimensional
- The material is easy to cut to size
- Easy to transport due to the low weight
- Low maintenance
- 20 year insured warranty period
- Directly over a sand bed installed
- Simplified base layer possible
- Hassle-free delivery

ARCHITECT

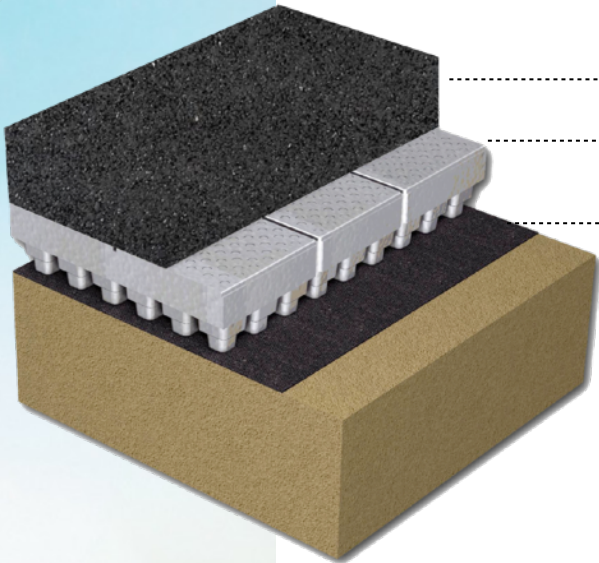
- The concept fits into a circular economy
- Cradle to Cradle™ certification
- Sustainable
- Thermal insulation
- Representative
- Practically to install over each layer
- 20 year insured warranty period
- Horizontal and vertical drainage
- BROCK products are Food Grade (Swiss ESSM environmental standards)
- HIC-value tested according to EN1177 and TUV
- Guaranteed consistent quality (ISO 14001)
- Different colors of artificial turf available
- Produced in the Netherlands
- Sublime product characteristics
- Specifications available
- Meets international and national safety requirements
- The best system in the world

INVESTOR

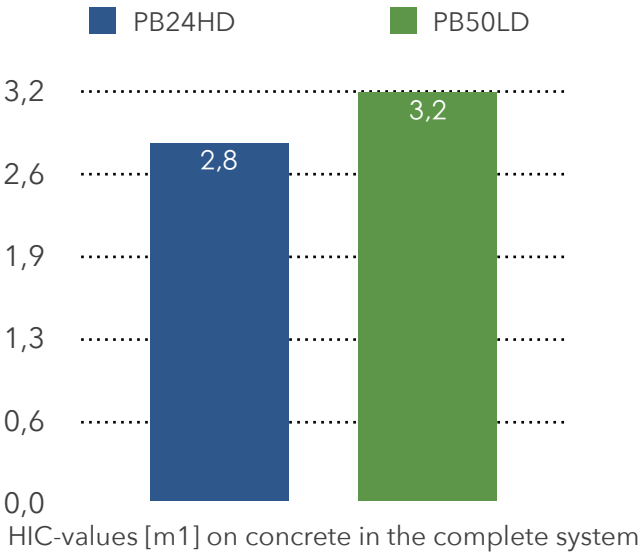
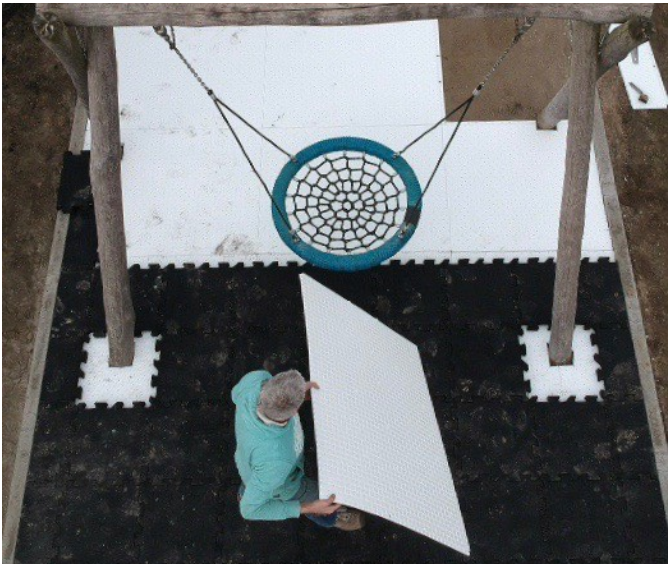
- The concept fits into a circular economy
- Cradle to Cradle™ certification
- Sustainable safety, lasting favorable HIC-value
- Playable throughout the year
- Designed to play and exercise
- International recognition by FIFA and The World Rugby federation
- Playable throughout the year
- Low depreciation
- After the life of the top layer, the BROCK products can be used again
- Long lifespan
- Very good value for money
- The best system in the world

CONCEPT 2

TISANOS rubber tiles



- SBR OR EPDM RUBBER (PUZZLE) TILES 45MM
- POWERBASE/PLAY™ 50 BY BROCK
- GEOTEXTILE
- ZANDBED



BENEFITS

PLAYING CHILD/ ATHLETE M/V

- Sustainable safety, lasting favorable HIC-value
- Playable throughout the year
- Clean
- Designed to play on

INSTALLER/ CONTRACTOR

- By practically every contractor (fast) to apply
- No sunken paving stone needed
- No thick rubber tile needed to create a high HIC-value

ARCHITECT

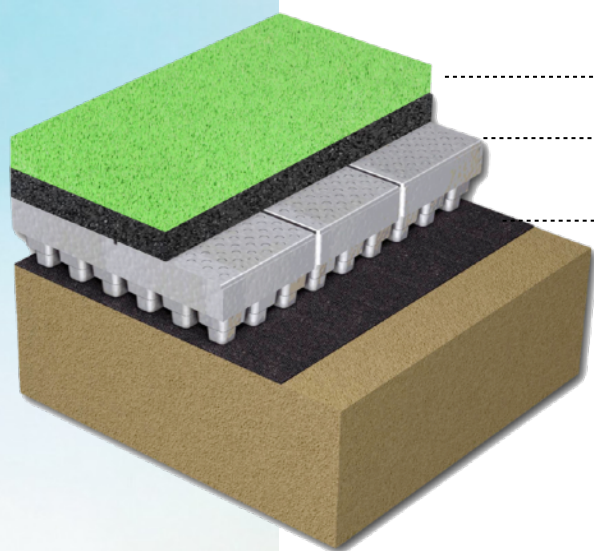
- The concept fits into a circular economy
- Cradle to Cradle™ certification
- Sustainable concept
- Thermal insulation
- Practically to install over each layer
- Limited color combinations possible
- 5 years warranty period
- Horizontal and vertical drainage
- BROCK products are Food Grade (Swiss ESSM environmental standards)
- HIC-value tested according to EN1177 and TUV
- Guaranteed consistent quality (ISO 14001)
- Produced in the Netherlands
- Sublime product characteristics

INVESTOR

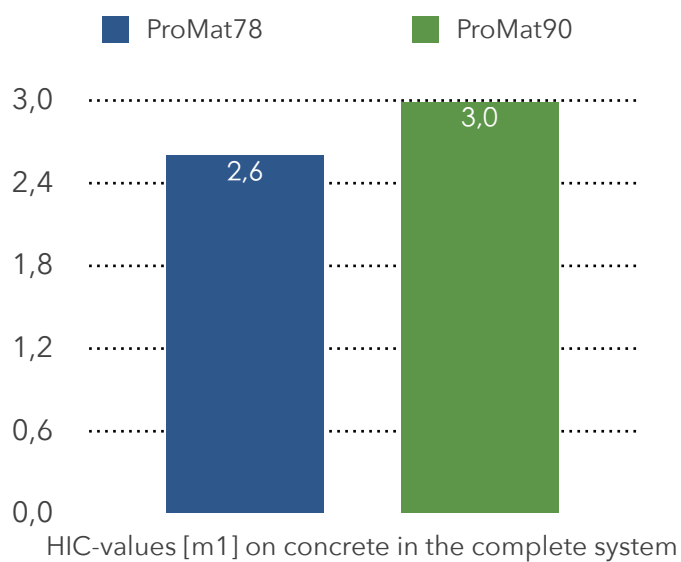
- The concept fits into a circular economy
- Cradle to Cradle™ certification
- Playable throughout the year
- Low depreciation
- After the life of the top layer the BROCK products can be used again
- Long lifespan
- Sustainable safety
- Very favorable price

CONCEPT 3

TISANOS wet poured floor



- SBR / EPDM WET POURED FLOOR
- POWERBASE/PLAY™ 50 BY BROCK
- GEOTEXTILE
- SAND



BENEFITS

PLAYING CHILD/ ATHLETE M/V

- Sustainable safety, lasting favorable HIC-value
- Playable throughout the year
- Clean
- Designed to play on

INSTALLER/ CONTRACTOR

- Only companies accredited by Technoah BV may install this system

ARCHITECT

- The concept fits into a circular economy
- Cradle to Cradle™ certification
- Sustainable concept
- Thermal insulation
- Practically to install over each layer
- Seamless surface
- Many color combinations possible
- 7 years warranty period
- Horizontal and vertical drainage
- BROCK products are Food Grade (Swiss ESSM environmental standards)
- HIC-value tested according to EN1177 and TUV
- Guaranteed consistent quality (ISO 14001)
- Produced in the Netherlands
- Sublime product characteristics

INVESTOR

- The concept fits into a circular economy
- Cradle to Cradle™ certification
- Playable throughout the year
- Low depreciation
- After the life of the top layer the BROCK products can be used again
- Long lifespan
- Sustainable safety

PACKING INFORMATION

Dimensions and weights transport

Product	L * B * H [mm]	Effective surface panel [m2]	Panels per pallet [piece]	Weight per panel in kg	Pallet quantity [m2]	Total weight per pallet [kg]	Pallets per truck
PowerBase/Pro™ F20HD	1.470 * 1.155 * 20	1,6	50	1,56	80,0	88,0	34,0
PowerBase/Pro™ F24PB24HD	1.470 * 1.155 * 20	1,6	42	1,88	67,2	89,0	34,0
PowerBase/Play™ PB24LD	1.470 * 1.155 * 20	1,6	42	1,25	67,2	62,5	34,0
PowerBase/Play™ PB38LD	2.000 * 950 * 38	1,8	28	1,86	50,4	62,0	26,0
PowerBase/Play™ PB50LD	2.000 * 950 * 50	1,8	21	2,06	37,8	53,2	26,0
PowerBase/Play™ PB50HD	2.000 * 950 * 50	1,8	21	2,70	37,8	66,7	26,0

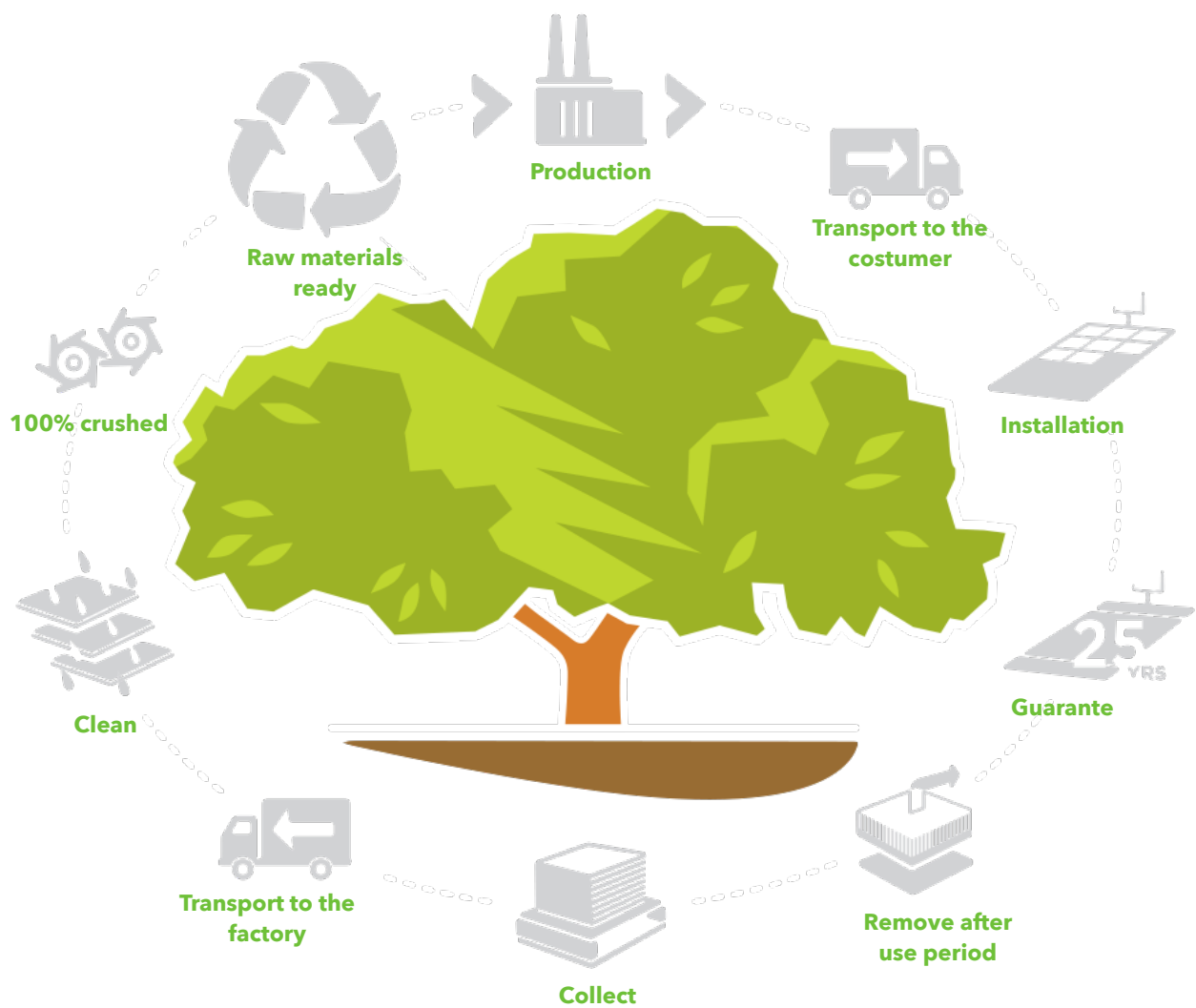
Dimensions and weights container transport

Product	L * B * H [mm]	Effective surface panel [m2]	Panels per pallet [piece]	Weight per panel in kg	Pallet quantity [m2]	Total weight per pallet [kg]	Pallets per container
PowerBase/Pro™ F20HD	1.470 * 1.155 * 20	1,6	104	1,56	166,4	172,2	15,0
PowerBase/Pro™ F24PB24HD	1.470 * 1.155 * 20	1,6	88	1,88	140,8	175,4	15,0
PowerBase/Play™ PB24LD	1.470 * 1.155 * 20	1,6	88	1,25	140,8	120,0	15,0

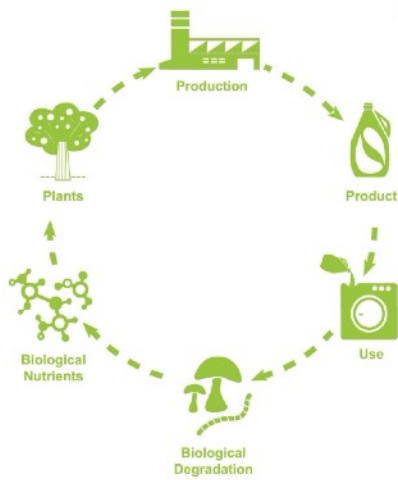
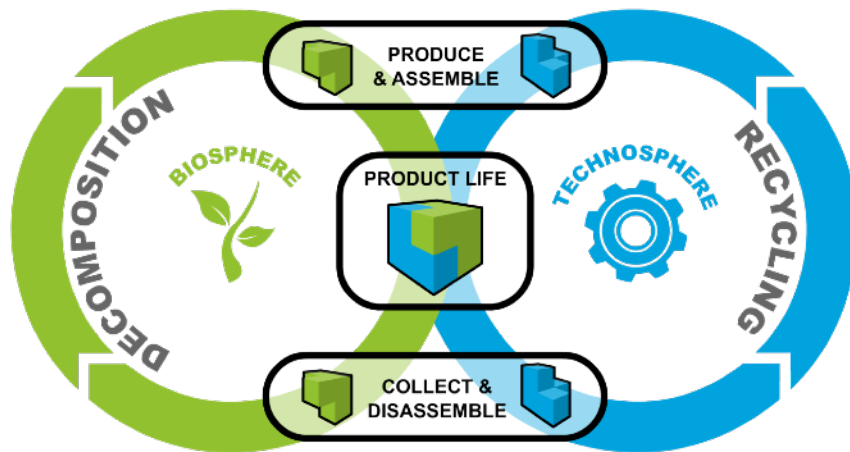
USP'S BROCK SHOCKPADS

Subject	PowerBase/Play™ & PowerBase/Pro™
Format	Three-dimensional cast panels with vertical and horizontal connections.
Composition	100% ARPRO® expanded polypropylene.
Applications	Can be used as a basic system under artificial turf, rubber (puzzle) tiles and EPDM wet poured floor. Many constructions are possible for various applications.
Environment	100% recyclable 'closed cycle' - Cradle to Cradle™ certified product. The world's best proven and most sustainable system.
Critical fall height (HIC)	Patented impact-absorbing design to achieve various critical drop heights with a one-layer system. There are different designs / thicknesses (20, 24, 38 and 50 mm, in low and high density) for drop heights between 1.4 and 3.1 m1. All are tested according to the Head Injury Criterion (HIC) value in accordance with European standards (EN 1177: 2008).
Safety and performance	Consistent safety over the entire surface, including the area where the panels overlap. Optimum performance in all weather conditions.
20 year warranty	Insured product warranty of 20 years. The quality and performance of PowerBase/Play™ remain optimal for many years. BROCK Europe guarantees a durable and safe surface.
Production	Each panel is cast (individually) from high-quality virgin new material and is manufactured in an ISO 14001 certified factory in the Netherlands. Constant quality is guaranteed.
Installation	PowerBase/Play™ contains the patented connection system for stability and precision during installation. No glue or tape is needed. It is a simple one-layer system that can be installed in virtually any environment. The shock pad is between 1.20 and 2.77 kg for efficient installation.
Drainage	All designs/ thicknesses of PowerBase/Play™ include a vertical and horizontal drainage system. Installation can be on both permeable and non-permeable basic constructions. This results in a reliable, efficient water drainage of sports and playing fields. As a result, expensive drainage systems are not required.

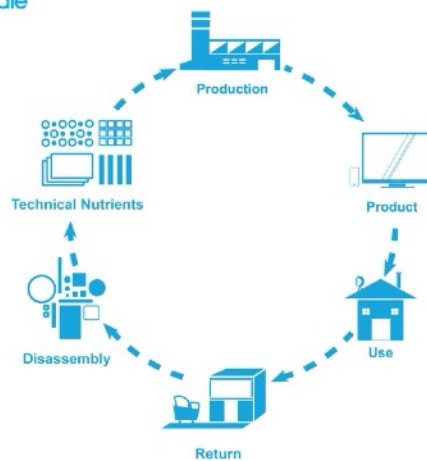
RECYCLING PROGRAM



CRADLE TO CRADLE™



Biological Cycle
for Products for consumption



Technical Cycle
for Products for Service

EASY INSTALLATION

"Flexible system for quick and easy installation"



20-YEAR INSURED PRODUCT WARRANTY

"Best proven system on the market"



MULTIFUNCTIONAL APPLICABLE

"Children's playgrounds, sports and playing fields, play hills, stair fields, recreation parks & landscaping and architecture"



CONSISTENT CONNECTION SYSTEM

"Patented (overlapping) connection system"



FAVORABLE HIC-VALUES

"Applications i.c.m. artificial turf, rubber (puzzle) tiles and EPDM wet poured floor"



HIGHLY ACHIEVABLE QUALITY

"Production in an iso-certified factory in the Netherlands"



CRADLE TO CRADLE™

"100% closed-loop recycling, without quality loss"



POWERBASE/PRO™ FOR SPORTS FIELDS

"PowerBase/Pro™ is suitable as a (fall) surface for tennis, football, rugby and other (multifunctional) sports fields"



WORLD RUGBY-CERTIFICATE (ENI4809)

"PowerBase/Pro™ is the only shock pad that meets the new World-Rugby safety standard"



NO WASTE COSTS & LESS CO2 EMISSIONS

"No harmful consequences for the environment & less transport needed"



COST EFFECTIVE

"After replacing the artificial turf, the PowerBase™ system can be left and used again"



FIFA STAR 1 AND FIFA STAR 2 APPROVED

"Mimics the feeling of natural grass"



EVEN PRESSURE DISTRIBUTION

"Optimum sport performance"



TESTED ACCORDING ENI 177:2008

"DIN V 18035-7 environmental compatibility, EN 1177:2008 and ESSM 105d"

