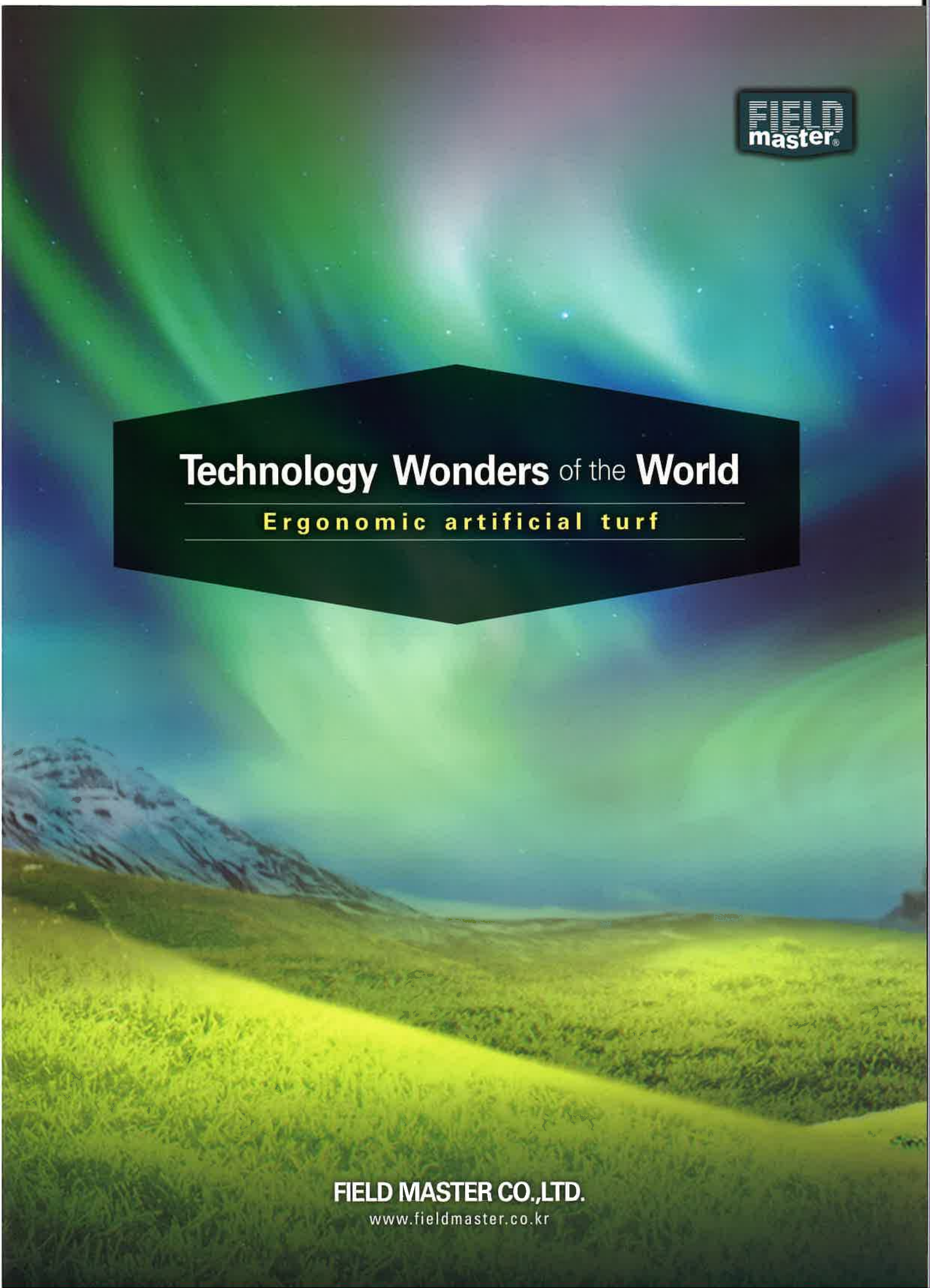
FIELD master®
Technology Wonders of the World
Ergonomic artificial turf
FIELD MASTER CO.,LTD.
www.fieldmaster.co.kr

FIELD master®

from Nature to Nature

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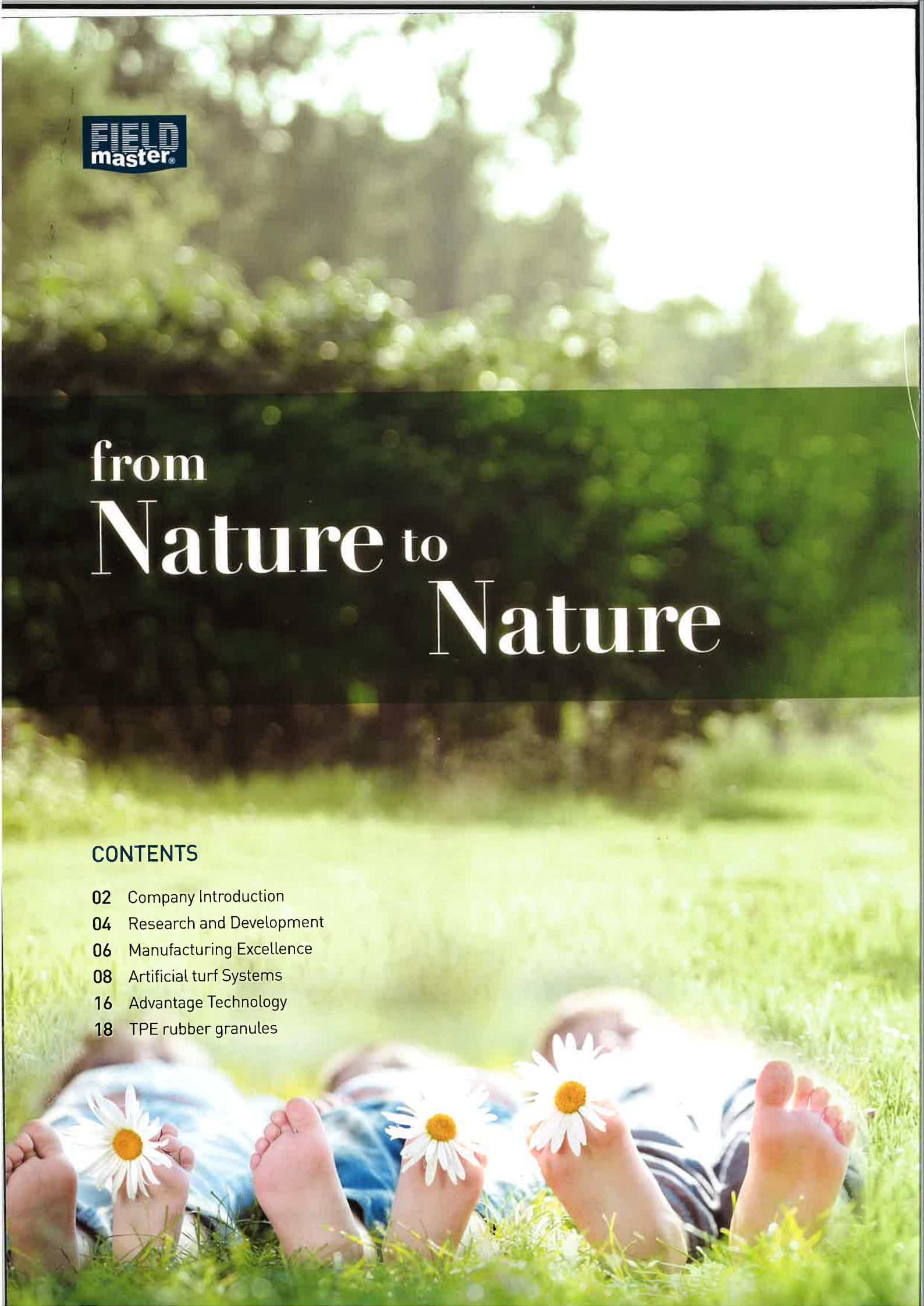


녹색기술 인증서

산 림 용 상 자 원 과 장 직

환경표지 인증서

한국환경산업기술원장

Certificates Eco-Friendly

Field Master is one of Korea's leading manufacturers of artificial turf.
We are able to offer a complete range of artificial grass for the sport & leisure industry meeting the highest standards and producing advanced technologies products, including various sized and characteristic grass yarns which can be manufactured to customers' requests.

We produce TPE rubber granules and Natural granules, 02 Chip, which are durable, resilient, resistant, eco-friendly and elastic materials ideal for synthetic surfacing.
Our infill materials are highly color stable, elastic, long lasting materials that comply with FIFA standards.

The life span of a typical turf fields are around 8-10 years.
Our technology, artificial turf recycling can now be completely separated and cleaned, so that plastic, rubber granulate, and silica sands can be used again and again to install new pitches and fields, or regenerated as other useages like fuel of power plants.

Research & Development

Our Research and Development departments have studied the characteristics of artificial grass in collaboration with laboratories and sports associations.Player surface and ball surface interactions were analysed.

R&D Purpose

Our Research and Development conducted has made it possible to create a new and completely innovative artificial turf system that reproduces all the positive characteristics of a natural grass pitch in optimal conditions.

- Contribute to the development and delivery of appropriate KS objectives.
- Collaborate with other research groups in this artificial turf industry of Korea.
- Undertake such other duties as may be reasonably requested and that are commensurate with the nature and grade of the post.

Performance test at laboratory and fields

Manufacturing Excellence

We are Eco-Friendly certified for leadership in environment and safety systems.
We have invested heavily in modernizing our plants to ensure quality at the highest level.

Manufacturing Excellence

Tufting and Coating. What's important to know is that we control all two aspects of the value chain.

Grass Yarns

We use high quality and performance grass yarns from Bonar yarns and Korea.
The quality control process at the manufacturing facilities includes stringent testing of the yarn properties (Fire retardant, wear test, tensile strength, uniformity, color verification, and Non-hazardous materials tests).

Tufting and Coating

We use state-of-the-art artificial grass tufting machines and back coating line to manufacture our various types of artificial turfs. As the grass yarns are tufted, several employees monitor and inspect the turfs, looking for a list of quality checks – any loops, loose fibers, or knots are caught and repaired. After the artificial turf grass yarns are tufted into a primary backing, the backing is coated and the entire artificial grass system is heated to lock in the grass yarns and activate any resins in the yarn.

Quality Assurance

We are dedicated to quality. The QA staff is vital and one that sets Field Master apart from our competitors.

Advanced manufacturing

Advanced and Manufacturing is very important aspect to best and optimal products manufacturing that is often overlooked. We succeeded it to any type of assembly process performed in a controlled environment. We accomplished by carrying out all operations in controlled environments and with processes that do not cause degradation of the product performance or manufacturability.
The level of defects generated by the manufacturing processes and the rate at which these defects are reduced does affect production yield and quality of the product.
We know that manufacturing defects may be viewed as ineffective control of physical and environmental parameters, process-to-process interactions, and design-to-process interactions. So we strictly control environment contamination to remove manufacturing defects.

Field Master Production center, Artificial turf division

Creel

Creel

Tufting

Tufting

Back Coating

Manufacturing Facilities for TPE rubber granules

Artificial turf Systems

: Long Pile

Major Applications

- Soccer fields
- Baseball fields
- Football
- Rugby
- Futsal
- School playgrounds

Artificial turf Systems

Our long pile artificial turfs are specifically designed to set a new standard in sports fields. After much innovation work, Our R&D department has produced this next generation turf:

New raw material : Polyethylene is well-known raw material, but in a different blend the way for higher resilience and a softer touch. And also improved sports performances like ball roll, bound behaviour, more comfortable sliding tackles, speed, and etc.

Soft feeling, but strong : each grass yarn monofilament has a high density of more than 2.200 Dtex. The grass yarn is composed of six of those filaments, resulting in an overall density of 13.200 Dtex.
This further improves the product's life expectancy.

Specification

Type	Monofilament
Materials	PE
1st Yarn(Dtex)	13,200 -15,000
2nd Yarn	-
Shape	Oval, Diamond
Pile height(mm)	50 - 65

Yarn weight(g/m^2)	1,370 -1,650
Tufts/m^2	10,390 -11,500
Primary materials	PP
Coating materials	Latex
Permeability(mm/h)	≥180

Artificial turf Systems

: Dual Grass

Major Applications

- Playgrounds
- School
- Recreation
- Rooftop
- Indoor sports fields
- Multi purpose fields

Artificial turf Systems

Dual yarns, different materials and shapes(1st monofilament yarn + 2nd crimped yarn)
Our NF series are a dual grass yarns synthetic turf system designed to provide balanced performance for multiple sports. The crimped 2nd grass yarns create a stabilized zone, which provides cushioning for the athlete and support for the taller polyethylene grass yarns. The taller grass yarns give the surface its softness and grass-like appearance.

Production of two coloured yarns in one stage

Our monofilaments production system concepts allow for the production of two coloured yarns in one stage. The direct two-colour extrusion of artificial grass filaments has become well accepted to our clients due to specifically developedspin heads. The possibility of combining various colours, different monofilament cross-sections and filament thicknesses allows the production of turf carpets and fulfills the requirements that are made on the different artificial turf types.

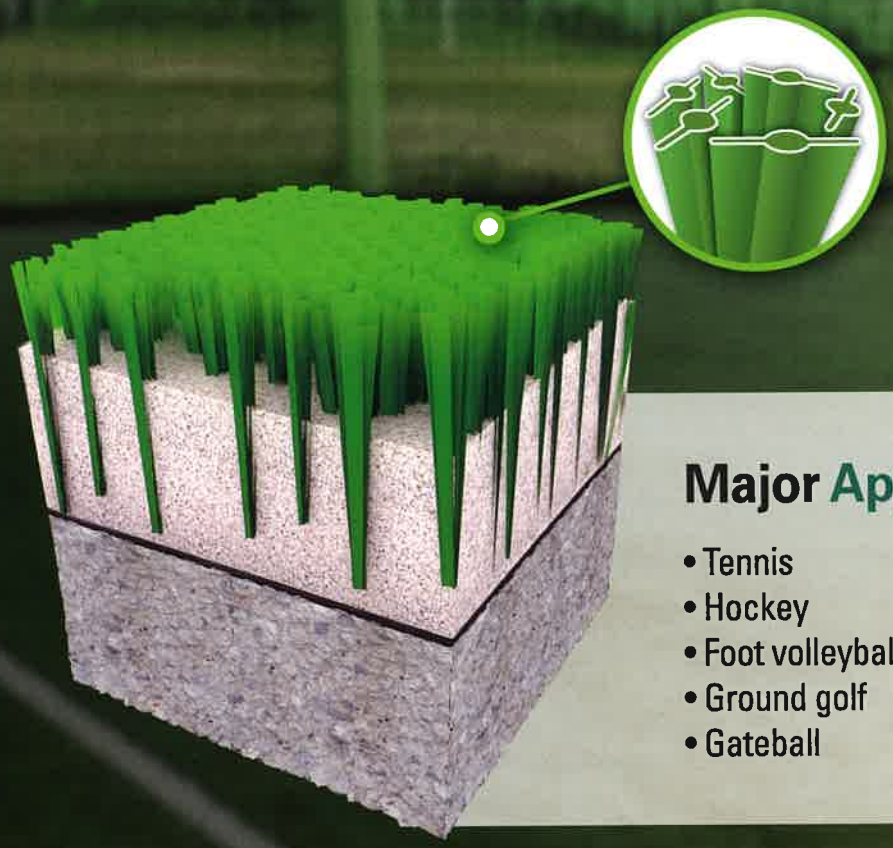
Specification

Type	Monofilament
Materials	PE + PP
1st Yarn(Dtex)	12,100 -15,000
2nd Yarn	3,960 - 4,400
Shape	Oval, Diamond
Pile height(mm)	30 – 35

Yarn weight(g/m^2)	1,520 - 1,750
Tufts/m^2	21,390 - 32,500
Primary materials	PP
Coating materials	Latex
Permeability(mm/h)	≥180

Artificial turf Systems

: Short Pile



Major Applications

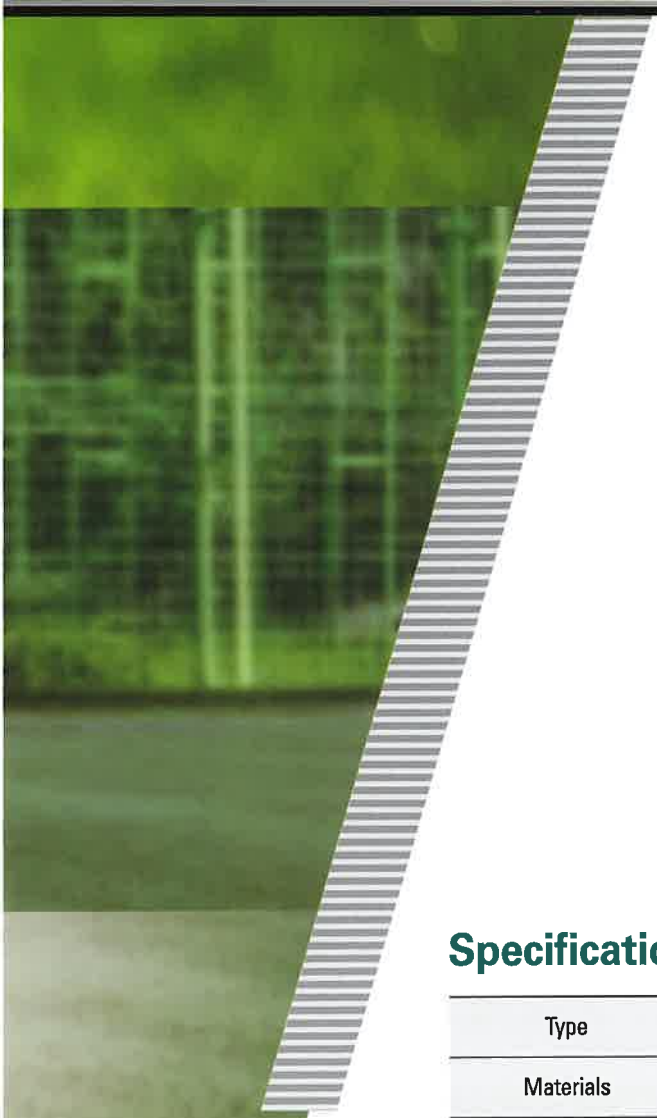
- Tennis
- Hockey
- Foot volleyball
- Ground golf
- Gateball

Artificial turf systems

Our artificial grass for short pile products are among the best on the markets.
Our products are subjected to various tests as specified by the International Tennis Federation (ITF) and Korean Standard (KS). The main ones are: surface pace rating(speed), slip resistance, traction coefficient, shock absorption, porosity and durability.

Advantages

- Our products hold the sand in place, preventing them from moving. The sand fill also keeps the artificial grass fibres nice and straight, thereby guaranteeing greater stability.
- After a heavy rain the court dries out in almost no time, allowing games to be continued straight away. The water drains excellently through the grass mat and the porous base.
- Our products have a high fibre density that creates an even playing. This guarantees a consistent, high bounce. Perfect for good topspin or slice.
- Our products do not need maintaining with rollers. Nor do they need to be watered, and the lines do not require touching up all the time.



Specification

Type	Monofilament
Materials	PE
1st Yarn(Dtex)	5,500 - 11,000
2nd Yarn	-
Shape	Core, Flat
Pile height(mm)	16 – 23

Yarn weight(g/m²)	690 - 1,150
Tufts/m²	19,300 - 35,700
Primary materials	PP
Coating materials	Latex
Permeability(mm/h)	-

Artificial turf Systems

: Landscape

Major Applications

- Terrace
- Gardens
- Balcony
- Rooftop
- Interiors
- City parks
- Swim pool surrounds
- Boundary line of road

Artificial turf systems

Our artificial turfs LandMaster series for landscaping are utilitarian grass that looks more appealing and has softer grass yarns than artificial grass used for sports fields.
These types of artificial turfs have dual grass yarns pile carpets to create a more natural effect. Sometimes a special fillers are used to prevent the grass yarns from flattening. When it comes to quality, it does not really matter if it is a sand-filled system or an unfilled system.

Strong features

Our artificial turfs for landscaping requires little to no maintenance.
It can be keeped residence looking pristine with our artificial turfs landscaping.
It is similar to natural grass in fields of soft, even, and green.
LandMaster series are all made using UV stabilised yarns to create grass blades that actually feel like natural grass and achieve more long life.

Specification

Type	Monofilament
Materials	PE + PP
1st Yarn(Dtex)	5,500 - 7,500
2nd Yarn	2,460 - 4,400
Shape	Flat, Oval
Pile height(mm)	10 – 40

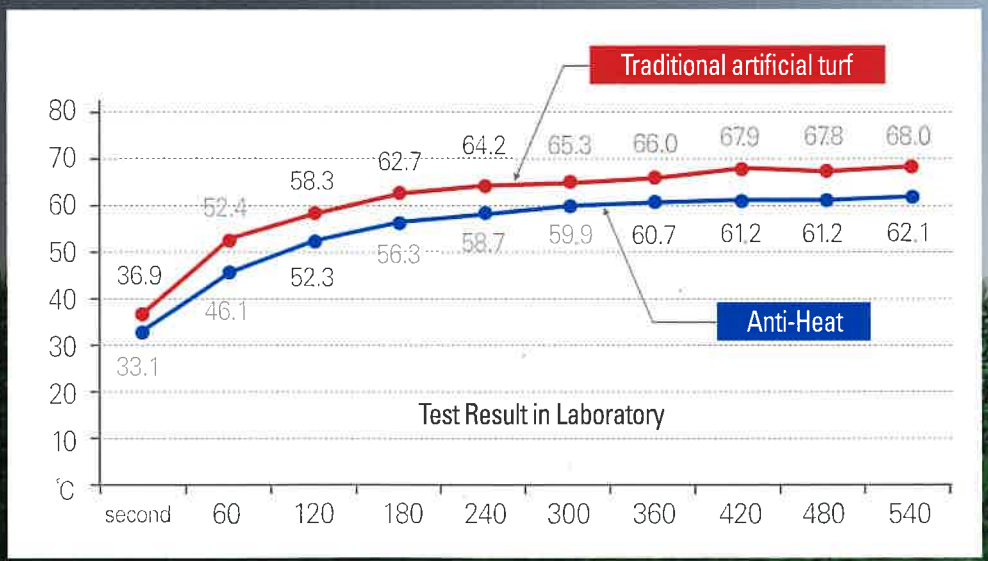
Yarn weight(g/m^2)	720 - 3,850
Tufts/m^2	39,500 - 100,500
Primary materials	PP
Coating materials	Latex
Permeability(mm/h)	180

Advantage Technology

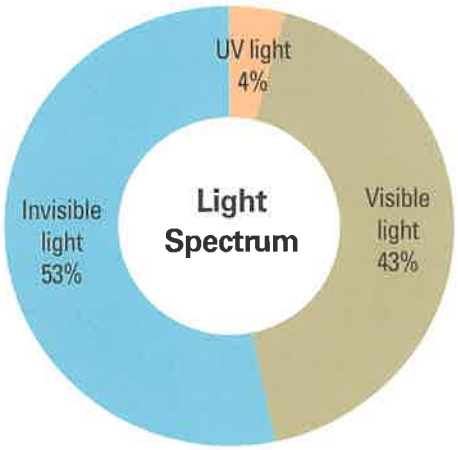
Infrared(IR) heat reflective technology for the artificial turf systems is an important technological breakthrough. These advanced technology offer new advantages and opportunities in artificial turf systems.

What is a "Cool artificial turf"?
A "Cool artificial turf" is a artificial turf that reflects and emits heat from the sun back into the atmosphere instead of absorbing it into the artificial turf surface.
The amount of "coolness"is measured by both reflection coefficient(albedo) and thermal emittance.

What is an "IR Heat reflective artificial turfs"?
Infrared(IR) Heat reflective artificial turfs (here in after "MasterCool") are revolutionary spinning formulated with a special heat reflective components that reflects infrared heat back into the atmosphere and can greatly increase the albedo values of artificial turf systems in all colors.



Much of the light spectrum consists of visible light the light we can actually see. But a large portion of it is invisible to the eye the near infrared light. MasterCool reduce the effect of this largest portion of the light spectrum.



Key benefits

- **Reflects radiation, lessens heat**

  Traditional artificial turfs absorb large amounts of solar radiation which can in-turn transmit heat into occupancy zones. MasterCool reflect light energy in the first instance - before heat is absorbed.

- **Can improve sports activities comfort**

  In lower temperatured sports fields such as soccer and baseball, MasterCool can translate to cooler sports playing and recreation facilities.

- **Can help reduce cooling costs**

  Less heat penetration can lower water and cooling energy demands. Comparative studies identify significant cooling energy savings are possible using MasterCool.

- **Heat island reduction**

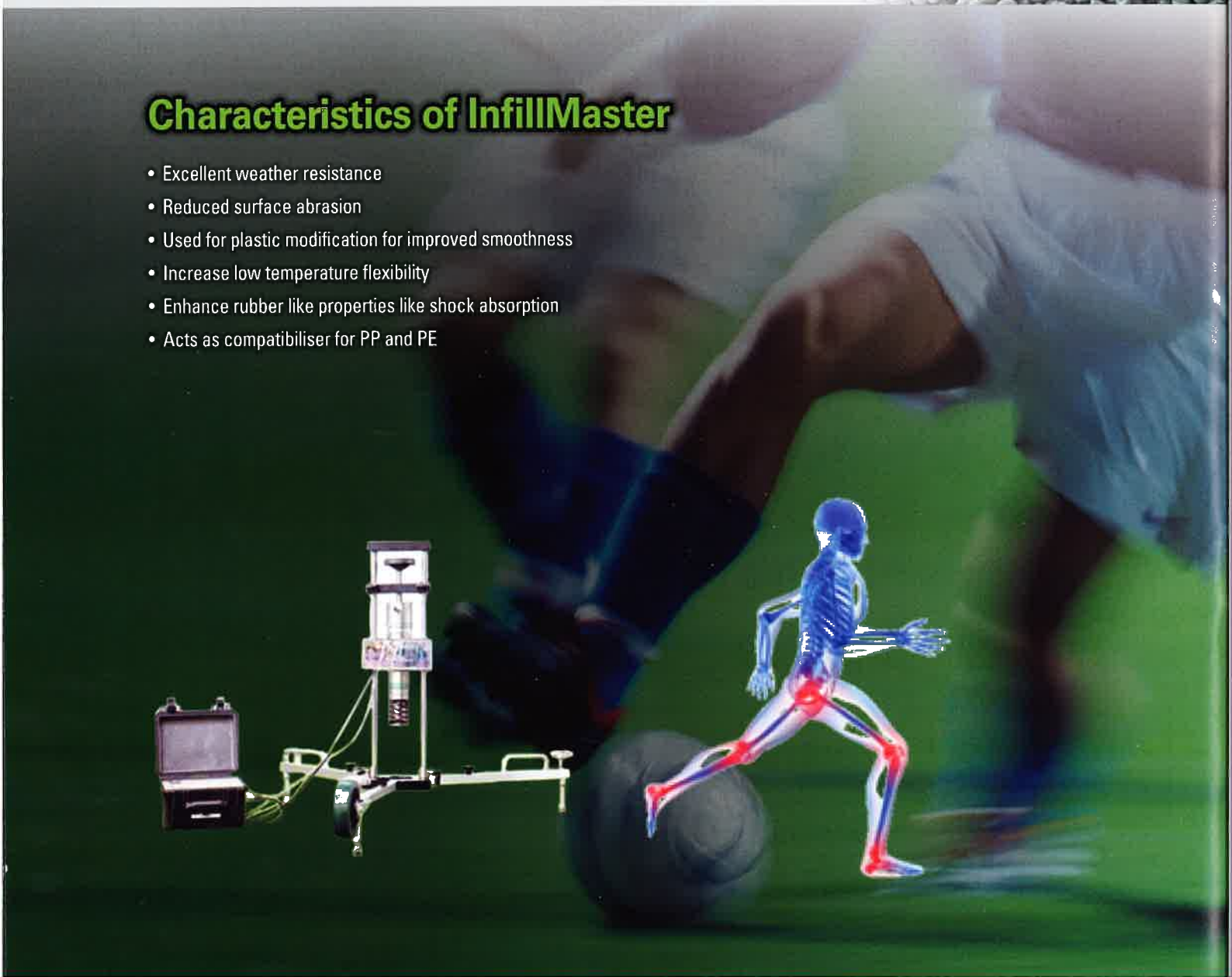
  Heat island effect refers to artificial turf pitchs areas that have higher temperatures than their surroundings largely due to the concentration of heat absorbing chemical materials. MasterCool can help reduce the negative effects of heat islands.

- **Reduced artificial turf maintenance**

  Extreme daily cycles of ultraviolet (UV) radiation, infrared (IR) radiation, and moisture penetration tend to wear out materials. MasterCool slow down the rate of degradation by reflecting the UV and IR radiation. Extending artificial turf life helps cut maintenance costs and reduces the creation of unnecessary waste.

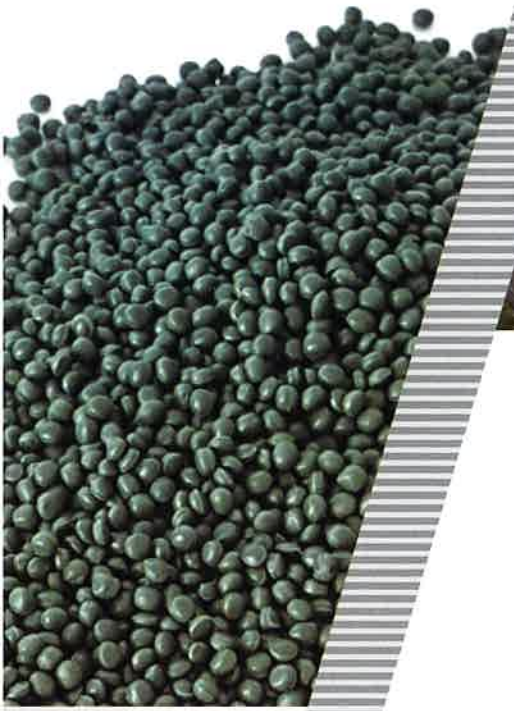
TPE rubber granules

The infill materials for artificial turf require high shock absorption property for safety of players. Our TPE granules (here in after "Infill Master") are used as an infill material higher cushioning effect can be obtained.
Infill Master is prepared in granules form by mixing high proportion of paraffinic oil in SEBS. Infill Master is non-toxic. So allergic effects of crumb rubber infill can be avoided. Due to higher shock absorption of Infill Master knee and ligament problems can be minimized.



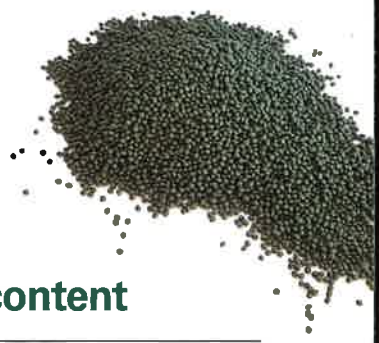
Characteristics of InfillMaster

- Excellent weather resistance
- Reduced surface abrasion
- Used for plastic modification for improved smoothness
- Increase low temperature flexibility
- Enhance rubber like properties like shock absorption
- Acts as compatibiliser for PP and PE



Products specification

Particle size(mm)	1.5 - 3.3
Specific gravity(g/cm^3)	1.35 ±5%
Materials	Thermo Plastic Elastomer



Heavy metal, PAHs content, and TVOCs content

Item	Test Result
Pb	No detection
Cd	No detection
Cr^{6+}	No detection
Hg	No detection
Benzene	No detection
Toluene	No detection
Ethyl benzen	No detection
Xylene	No detection
Total amount	No detection

Item	Test Result
BENZO(a)PYRENE	No detection
BENZO(a)ANTHRACENE	No detection
BENZO(b)FLUORANTHENE	No detection
BENZO(k)FLUORANTHENE	No detection
BENZO(e)PYRENE	No detection
CHRYSENE	No detection
BENZO(j)FLUORANTHENE	No detection
DIBENZO(a,h)ANTHRACENE	No detection
Total amount	No detection

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