Artificial Grass
YARN CHEMISTRY IS OUR FIELD
Total Polymers Europe, technological leader

A CUTTING-EDGE EXPERTISE IN POLYMERS

Polymers are used in a variety of products that enhance our daily lives. At Total, we have been working for more than half a century with our customers to develop innovative, high-performance polymers. Our product development focuses on making plastic solutions lighter, more durable and greener by exploring renewable feedstock sources.

POLYETHYLENE TECHNOLOGY DEVELOPMENT FOR ARTIFICIAL GRASS

Polyethylene monofilaments revolutionized artificial turf pitches by providing higher softness and a more natural look. Combined with Total’s Lumicene® and Lumicene Supertough® technology, it also provides fields with fibers of excellent resilience and unrivalled durability.

FROM NYLON TO LUMICENE®

2010
TOTAL LUMICENE® mPE
Softness Durability Processing Temperature resistance

1990s
LLDPE
Softness Natural feel Natural look Durability

1970s
PP
Durability Cost Injuries

1960s
NYLON (PA)
Durability Cost Injuries

ARTIFICIAL GRASS
Developing the best yarn for a given application means finding the optimal balance between durability, haptics, and resilience. Let us partner with you to create a yarn formulation to achieve this in perfect harmony with your machinery and shape design.

Unrivaled RESILIENCE performances

20% FASTER
A very high linear line speed

LOWER PRESSURE
build up

OUR RESINS ACHIEVEMENTS

Our solutions are 2x MORE DURABLE than other existing grades

Pioneer in technology for linear polyethylene

OUR EXPERTISE IN YARN DESIGN AND PERFORMANCE

Developing the best yarn for a given application means finding the optimal balance between durability, haptics, and resilience. Let us partner with you to create a yarn formulation to achieve this in perfect harmony with your machinery and shape design.

THE HAPTICS
provide a pleasant touch and prevent injuries

RESILIENCE
to prevent premature flattening of the field

DURABILITY
resistance to degradation under heavy use
The Padel Club Belgium

We developed a new surface for Padel, in collaboration with Beaulieu International Group. This emerging sport, combining aspects of tennis and squash, is extremely demanding on the yarn in terms of abrasion by the sand infill. The new yarn based on our Lumatic® PE enables our installation partner Padel Club Belgium to guarantee a surface that lasts two times longer than alternative ones, whilst pitch owners get a significantly higher return on investment.

ESTO membership

Total has been an associate member of ESTO and its technical committee since 2009 and is active in both yarn and sustainability technical working groups.
A complete portfolio

KEY PRODUCTS

Our extensive product portfolio allows yarn manufacturers to fine tune yarn performance for any application, be it football, rugby, golf or your backyard.

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<tr>
<th>CONTACT SPORTS</th>
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- Lumicene®
- Lumicene Supertough®
LUMICENE® POLYETHYLENE is made with Total’s proprietary metallocene catalyst technology. Compared to conventional metallocene PE, Lumicene® PE can be processed faster, provides higher durability and features improved resilience.

LUMICENE SUPERTOUGH® grades are based on the combination of the Lumicene® catalyst technology with Total’s proprietary production process. These high performance resins allow us to reach hitherto unknown levels of performance whilst allowing converters to reach maximum line speeds.
Beyond our primary role (supply of PE and PP raw materials), we regularly meet tufters, installers, pitch owners, sports associations, machine manufacturers, test labs and many others, to enable our products to contribute to this chain optimization.
A sustainable approach

Total is active throughout the sustainable development chain. As for our polymers activity, we focus on innovation to develop both recycling and renewable solutions.

**RAW MATERIAL**
We invest and innovate in our feedstock sourcing to produce either drop in polymers (PP, PE, PS) with less carbon emission impact through a mass balance approach, or full biopolymers.

**END OF LIFE**
**TOTAL’S INTERNAL RESOURCES TO DEVELOP RECYCLING SOLUTIONS**
As more and more artificial turf pitches reach their end of life, putting these used materials to good use is a high priority for Total. We have already demonstrated with our circular compounds for blow molded detergent bottles that post consumer recyclates (PCR) can be turned into a valuable resource. We are currently working with recycling companies to extend this approach to artificial turf pitches.

**PRODUCTION**
Total’s global petrochemical division, signatory to the Responsible Care® Charter, commits to implementing and promoting good management practices in hygiene, health, safety, environmental performance, stakeholder relations and security. We signed the Clean Sweep® pledge and have implemented measures to prevent plastic pellets from being released into the environment.

**PRODUCT USE**
**LABEL ECOSOLUTION:**
Leveraging innovation to serve continuous improvement, the Total Ecosolutions program involves developing products and services that enable our customers to improve their environmental footprint. Lumicene® M3427 provides artificial grass yarns with a lifetime of at least 50% longer.
Total is a major energy player committed to supplying affordable energy to a growing population, addressing climate change and meeting new customer expectations.

Those commitments guide what we do. With operations in more than 130 countries, we are a top-tier international oil and gas company and a global leader in solar energy through our affiliate SunPower. We discover, produce, transform, market and distribute energy in a variety of forms, to serve the end customer.

Demonstrating their commitment to better energy, our 100,000 employees help supply our customers worldwide with safer, cleaner, more efficient and more innovative products and services that are accessible to as many people as possible. Our ambition is to become the responsible energy major.