



Elastic fantastic: Rubber's best properties preserved by cryogenic technology

Recipneu uses cryogenic technology to produce rubber powders and very small rubber granules (SBR elastomers) from end-of-life tyres. These are mainly used as infill material on artificial turf, as they boast excellent elasticity, resilience and energy restitution properties. The cryogenic process is employed as it preserves these properties.

The process begins with shredding the raw material into small chips. The chips are then dropped into a long cryogenic tunnel, and cooled by liquid nitrogen to -80°C, which is the glass transition point for the rubber polymers from the tyre – meaning that this rubber now behaves like glass. After cryogenic grinding, impurities such as steel and dust are removed, and the rubber is dried and sieved into different standard sizes.

At the end of the process, each granule has a cuboid form, with a smooth face, very small pore density, and glossy appearance. The process doesn't degrade the rubber polymers' molecular chains, as it avoids side

reactions such as oxidation, devulcanisation, and scission. Very little is wasted, and the finished granules have negligible steel or textile contamination.

Protective agents

One of the company's products is Cryoflex, an elastomeric granulate. As the cryogenic process doesn't degrade the rubber, protective agents – including oxidation inhibitors and stabilisers against UV radiation – remain effective, resulting in a high degree of resistance to atmospheric ageing.

When tested in comparison with other elastomers available for infilling artificial turf, Cryoflex showed excellent mechanical performance and the best reaction to aging. All tests were developed by independent and accredited entities, in accordance with parameters and criteria set by FIFA and UEFA.

The product is compliant with DIN V 18035-7 regarding the emission of leachates for heavy metals and organic pollutants,

passes the PAHs test, and is harmless to health, as per OSHA OMB No. 1218-0072. It is resistant to abrasion, compaction, UV radiation, and passes thermal resistance tests. As it is resistant to compaction, rain water drainage is not a problem. It also produces practically no rubber smell, doesn't release abraded carbon black (so does not dirty the skin or clothes), and eliminates or reduces floating. Other benefits include good stability on site and over time, and very good elastic response per unit mass.

The product is supplied as a dry, uniform, black granulate, and in three standard sizes – 0.6-1.4mm, 1-2mm, or 1-2.4mm. Premier league football teams including Manchester United, Chelsea, and Arsenal practise on pitches filled with the company's products. Main pitches that use the infill include Luzhnik Stadium in Russia, and Issa Town Stadium in Bahrain. Recipneu's products are also used regularly by FieldTurf Tarket.

Recipneu is certified according to the NP EN ISO 9001:2000 for quality, NP EN ISO 14001:2004 for environment and OHSAS 18001:1999 for safety and health. These certifications assure that granulates are produced to a good and consistent standard, using safe and reliable technology, and that the company works with an environmentally friendly ethos.

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