



MAINTENANCE OF SYNTHETIC TURF FIELDS WITH RUBBER INFILL

This guide is for everyone involved with the process of ordering the installation of a synthetic turf field, as well as those who already have a synthetic turf field – and wish to prevent rubber granulate from spreading to its surroundings.

SYNTHETIC TURF FIELDS – FOR THE BENEFIT OF PUBLIC HEALTH AND THE ENVIRONMENT

Fact is that the existence of synthetic turf fields increases the number of hours of activity year-round. This benefits a lot of athletes as well as public health. You can play on synthetic turf fields all year round, and they withstand more frequent and intensive use than conventional grass fields – regardless of weather conditions.

The use of rubber granulate on synthetic turf fields helps ensure that the playing properties, such as resistance and shock-absorption, resemble those of natural grass as much as possible – and that the ball rolls and bounces naturally. Lying between the grass blades, rubber granules (infill material) support and protect blades from wear and tear – and at the same time, granules protect players from getting injured.

Synthetic turf fields with rubber granulate also have great positive impact on the environment; yet, as is also the case in many other contexts, e.g. in connection with the handling of batteries and household plastics, there may be environmentally negative effects, if rubber granulate is not handled correctly. With synthetic turf fields, it is thus important:

1. to ensure that fields are constructed to help prevent the spreading of rubber granules,
2. to insist that excessive refill and the spreading of rubber granulate be avoided in connection with field maintenance (which is indeed possible with simple measures), and
3. to dictate a code of conduct for users, so they e.g. brush granulate off their clothes and empty their shoes, when they have used the field.

Rubber granulate for synthetic turf fields has drawn attention due to instances where granulate has unintentionally spread to nature. At Genan, we are striving for a sustainable future. Our factories have the capacity to spare the environment several hundred thousand tons of CO₂ emission annually, when end-of-life tires are recycled into rubber granulate e.g. for the application in synthetic turf. If Genan's recommendations for the construction and maintenance of synthetic turf fields are followed, you can make sure granulate stays on the field and doesn't spread to nature.





GENAN

- is a Danish company, which is world leader in the recycling of end-of-life tires
- is a high-technology manufacturer, working with sustainability, the recycling of valuable resources as well as the responsible use of rubber granulate
- focuses on high quality and the manufacture of products with a high degree of purity

Genan has made three guides with recommendations for the construction, maintenance, and responsible conduct around synthetic turf fields.

These guides are based on:

- the results from a newly published, Swedish study
- a new and comprehensive, international literature review on the spreading of rubber granulate from synthetic turf fields, prepared by the Danish Technological Institute (Teknologisk Institut), as well as
- experience from both the Danish and the Norwegian football associations

Recent research shows that if the right measures are taken and fields are both used and maintained responsibly, the spreading of different types of microplastics from the fields to the environment can be reduced to approx. 3½ ounces a year. Approx. 10% of this amount is rubber granulate.

GENAN INSIDE - ENVIRONMENTALLY CORRECT MAINTENANCE OF SYNTHETIC TURF FIELDS

In relation to the environment and the surrounding nature, a synthetic turf field is best maintained as follows:

1. Field maintenance during summer

- » Avoid the use of herbicides on the field.
- » Rake/brush the field regularly to prevent compaction of the infill material.
As a rule of thumb, 1 hour should be spent on maintenance for each 10 hours of use.
- » Prevent excess consumption of granulate refill by optimizing regular maintenance.

2. Field maintenance during winter

- » Whenever possible, choose mechanical and manual snow removal instead of using road salt and/or other de-icing chemicals.
- » If de-icing agents are used, make sure to request documentation from the supplier or the manufacturer, proving compliance with current regulations for xenobiotics.
- » Avoid the use of snowblowers for snow removal, as this will increase the risk that rubber granulate is spread.
- » Snow removed from the field should ideally be deposited at a designated area, which may be a synthetic turf area or an area with a paved / tiled surface or where crop protection fleece is laid out at the bottom. Once the snow has melted, the remaining granulate must be collected for the purpose of being put back on the field.



- » If the field doesn't have an area designated for dumping the snow, consider temporarily reducing the size of the field's original design to create space for snow piles. Snow may then be deposited on the area from the solid fence demarcation, if any (or at least from the original sideline and / or goal line), to the temporary line marking (cf. Figure 1).

When the snow melts, the granulate can easily be reused.

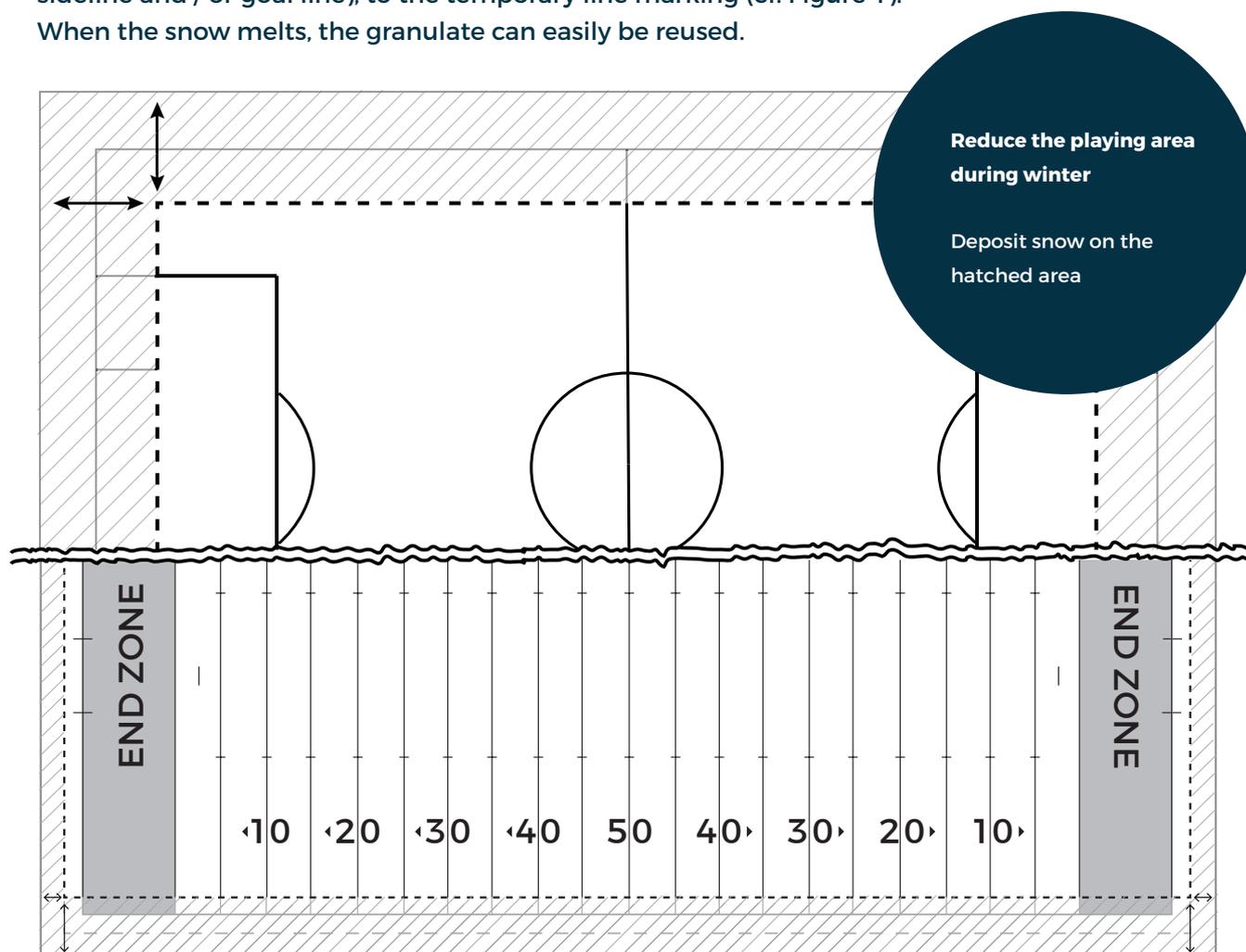


Figure 1

3. Field maintenance year-round

a. The paved / tiled area around the field

- » Sweep up granulate from the paved / tiled area around the field (if such area exists) and put granules back onto the field with granulate refill.
- » Remove granulate deposited along the field demarcation panel, if such exists – and put it back onto the field.
- » Keep rubber granulate separate from other waste so it can be reused on the field. We recommend keeping granulate in a closed container, so it's not contaminated and unsuitable for reuse.

b. Granulate traps

- » We recommend avoiding open wells for rainwater in connection with the field system – and instead let rainwater percolate to a drainage system. If open wells exist, a filter should be mounted to retain granulate, i.e. a kind of granulate trap.

Granulate traps around fields and in changing rooms must be emptied regularly. Collected material must be disposed of as solid waste for incineration.



c. Clean-down exit area or brushes at field access points

- » The ground surface at the field access point – ideally a specially designed clean-down exit area, where players brush granulate off their clothes and socks and empty their shoes – must be cleaned regularly, so collected granules can be put back onto the field with refill.

d. Operation of machinery

- » Machines operating on field must either be swept clean of granulate on the field before exiting – or at a designated area with a paved / tiled surface.

FIND OUT MORE

To facilitate responsible, correct maintenance of synthetic turf fields, the right measures to ensure that granules stay on the field should ideally be considered already during the installation planning phase. Consult the field installation guide “Construction of Synthetic Turf Pitches – Genan Inside”, which may be downloaded on www.genan.eu.

If you wish to read more about the knowledge and documentation, on which Genan’s recommendations are based, we make reference to the following:

- *“Dispersal of microplastic from a modern artificial turf pitch with preventive measures – Case study Bergaviks IP, Kalmar,” by Fredrick Regnell, Ecoloop, October 2019*
- *“Utforming av miljøvennlige kunstgressbaner”, Norges Fotballforbund (“Designing environmentally friendly synthetic turf pitches”, by the Norwegian Football Federation)*
- *“Etablér en miljøvenlig kunstgræsbane”, DBU.dk (“How to construct an environmentally friendly synthetic turf pitch”, by the Danish Football Association)*
- *“Vejledning om kunstgræsbaner”, Miljøstyrelsen, 2018 (“Guide on Synthetic Turf Pitches”, by the Danish Environmental Protection Agency, 2018)*
- *“Mass balances of rubber granulate disappearing from artificial turf pitches with focus on discharge to the water environment”, by the Danish Technological Institute, December 2018 / revised May 2019*
- *“Fact sheet – Rubber Granulate for Synthetic Turf Pitches in Denmark”, by Genan, August 2019*



GENAN Inc. | 18038 Beaumont Hwy. | Houston TX77229
genan@genan.us | www.genan.com