

Instructions for the Construction of Plastic Covered Jumping Hills

**These instructions are valid for new jumping hill projects as from 2022.
For existing hill constructions a re-evaluation is required for a valid homologation**

The construction requirements in respect to longitude and latitude profiles are the same for plastic covered jumping hills as for normal snow covered hills.
The plastic surfaces and the support for these surfaces must be equally constructed from the foot of the take-off to the end of the plastic covered surface in the outrun. Subconstruction can be different in upper part and lower part of landing area, but must have same stability. The following is valid as guidelines for length of mats requirement in the outrun from the U-point and outwards.

Hill size HS: up to 49 m = 10 meters
50 m to 84 m = 15 meters
more than 85 m = 20 meters

An approval from the Sub-Committee for Jumping Hills is required for all types of plastic mats /in-run-tracks to be used.

The following instructions for plastic mats, base construction, as well as construction of supports in inrun, outrun, and landing area must be satisfied.
The plastic mats used must have a similar level of gliding properties as a ski jump with good snow cover.
The plastic mats must withstand the weather. There must be no deformation of the joints or fibres within the mats due to solar radiation or frost.
Optimum tracking of the ski must be guaranteed.

Mat waistband:

The plastic fibres must not be longer than 48 cm, measured from the fibre joint.
The separated fibres must have a slightly wavy shape in the longitudinal direction.
The maximum fibre width must not exceed 3.0mm and the corresponding thickness must not be more than 2.0mm.
A plastic mat element must have a thickness of at least 10 mm, measured directly at the welded fibre bundle.
The minimum weight of the fibre bundles per square meter of laid area is determined as follows:

- Including fibre overlap of 17cm
- Without safety plate
- The minimum weight of the fibre bundles is 7.250 g/m²

Safety plate:

The safety plate must not protrude from the mat package at the mat joint.
The safety plate must not have any sharp corners or edges. The mounting holes in the safety plate must match the mounting holes in the mat pack to ensure a homogeneous, level installation.
The mounted system of mat bundles and locking plate must ensure that the overlap closes any gap to the underlying substructure.

System:

The system weight consisting of mat bundle + safety plate is at least 9.000 g/m²
The fastening material for the mat system must be resistant to corrosion and rotting.

Certification:

Before the ski jumps are covered with matting, the matting manufacturer must provide the customer with a sample showing proof of weight, confirmation of the overall structure and confirmation of compliance with the FIS standard.

The voucher copy and the confirmations must be available for each examination.

Laying of mats:

The substructure and the attachment of plastic elements to this structure must be mounted on a safety plate along the entire stretch from the take-off to the end of the plastic surface area in the outrun.

The top fibre joints of a mat must have an overlap of at least 17 cm to the next mat above. In the landing area from K minus 20% to K plus 20% on normal and large hills, the corresponding overlap must be 22 cm.

Substructure:

An elastic, moisture-resistant and non-rotting damping material must be installed between the substrate and the plastic mat construction. The thickness of this damper material must be at least 20 mm.

The plastic mat attachments must be stable and resistant to corrosion.

The substructure for attaching the mats must be corrosion-resistant.

The suggestion is to use an elastic but strong mesh with square masks made of nylon or equivalent material. This net on the elastic dampening material must be firmly connected to the basic structure. All fasteners such as screws, hooks, etc. must be corrosion resistant.

The fastening elements must not protrude from the cushioning in order to prevent possible damage and/or injuries. It must be ensured that the mat attachments are wear and rot-free.

Underground:

The stability of the basic structure of the ski jump, on which the entire system is mounted, must be such that frost, frequent stress, falls, preparation, etc. have no influence on the ski jump profile.

It is proposed to construct the basic profile from concrete, geo-gravel or stable, impregnated wood. This entire substructure must be securely anchored to the ground. The underground is not subject to FIS regulations and its function is not checked during hill inspections. The ski jump operator is responsible for the condition and function of the subsoil.

Snow covering of plastic ski jumps:

A snow holding net is recommended for covering jump hills covered with mats. The snow retaining net is not subject to FIS regulations and its function is not checked during hill inspections. The ski jump operator is responsible for the function of the snow retention system.

Inrun

Irrespective of what type of material applied in the inrun track, it must have a gliding surface corresponding to a normal snow track.

Each individual in-run track incl. sidewise tracking guidance, can be made of ice, ceramics, steel, artificial material, glass, etc. The width of track have for normal- and large hills has to be at least 13 cm, but not exceed 13,5 cm.

Distance between both centre of tracks for Jumping hills with w over 75 m: 30 – 33 cm

Width of track: 13.0 – 13.5 cm

Depth of track: at least 3 cm for normal, large and flying hills.

The guidance surfaces must be smooth and must not in any way protrude into the track. Due to the safety of the jumpers it is necessary to secure sufficient drainage of sprinkle water in the transition profile and on the take-off table.

The track - elements must in the entire length be mounted straight with left and right track elements at the same elevation and must exact correspond to approved in-run transition profile.

For jumping hills with HS larger than 85 m, the distance between left and right track centre-axis must not be less than 30 cm and no more than 33 cm. There must be a safety zone of damping mats, short-cut grass / artificial grass or carpet on both sides of the track as well as between more tracks at the same level. The width of these safety zones are governed by the minimum requirements for artificial surfacing stated in ICR 411.4

For jumping in summertime, irrigation of the artificial in-run tracks is done with water.

The irrigation elements, such as tubing and sprinklers, have to be installed in a concealed way so that safety is not exposed.

Artificial tracks which are used in during winter must be heated.

Homologation of plastic hills

Jumping hills with plastic mats being used for international competitions are required to have, in addition to the normal profile certificate, also a certificate for the artificial surfacing.

The owner of jumping hills must prior to the installation of artificial surfacing, through their respective National Ski Association, issue plans for the mat installation, sub-construction, and working procedures to the chairman for FIS Sub-Committee for Jumping Hills.

The working descriptions must contain information on type of plastic mats, type of anchoring of these mats, sub-construction, the base construction, and inrun tracks.

The proposed mat- and in-run material, as well as the sub-construction, must have a prior acceptance from the FIS Sub-Committee for Jumping Hills before the intended work can begin.

When more than one inrun track is installed, the space between the respective centre axes must be indicated as well as the distance from the outer track axis to the side boards.

The working plans must be issued in the scale 1: 500. The measurements of the mat coverage, widths and lengths, must be clearly indicated. The plans must be issued in 3 copies.

The Sub-Committee chairman can in his own power approve the plans when working procedures and construction requirements for artificial surfacing are fulfilled.

In cases where deviations from stated construction requirements are requested, the decision has to be decided by the Sub-Committee in a formal meeting.

The hill owner should apply to the Sub-Committee chairman for a formal acceptance when the construction work is completed. The chairman will then appoint a member of the Sub-Committee to perform the actual inspection.

The chairman will issue a certificate when the inspection is successful and the construction works are in accordance with the required directions and accepted working plans. This certificate has normally a validity of 5 years. The hill has to be inspected again when the certificate expires. This inspection will decide if the mats and sub-construction satisfy the requirements and a new certificate can be issued.