

Minimum requirements for surfacing materials, impact absorption and fall protection

For safety reasons, equipment that has a greater fall height than 600 mm must be installed on surfaces with specific impact-absorbing properties.

As the fall height increases, so must also the impact-absorbing qualities of the designated surface types (see following diagram) i.e. greater fall height requires "softer" ground.

When selecting the type of surfacing, not only safety requirements have to be taken into consideration, but also whether this type of surfacing meets requirements regarding the desired play function and the intended play value.

For example, very low equipment (fall height < 60 cm) for sand play equipment, such as excavators, sand hoists, cranes, etc. must also be installed in sand for play value and functional reasons, even though i.e. asphalt or concrete may be sufficient for safety reasons.

The fall height of each piece of equipment is indicated in the price list. However the actual height of fall may differ depending on the structure of the ground. The diagram offers support for selecting the right surfacing taking into consideration the following criteria

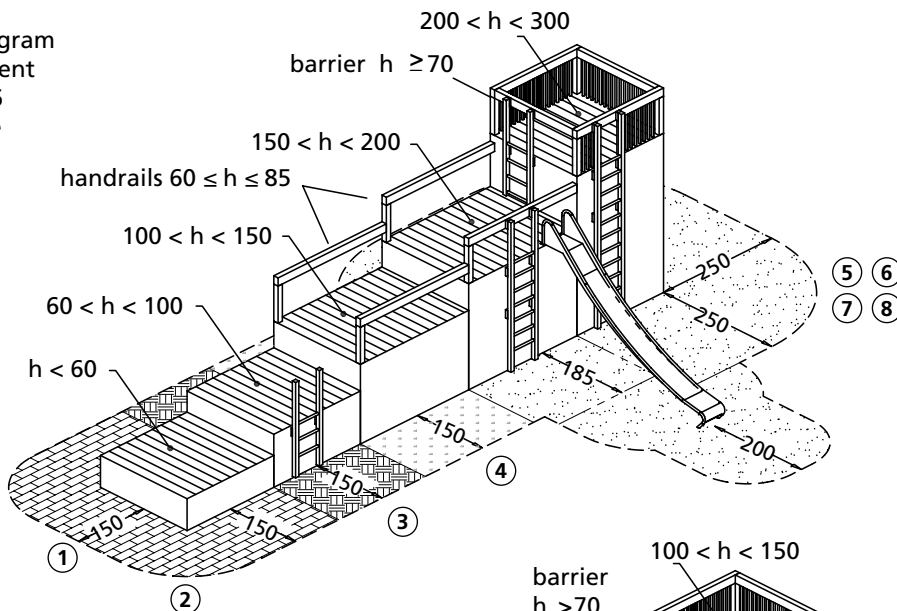
- Play value
- Safety (impact absorption)
- Easy maintenance
- Costs

For reasons of safety, it is especially important to choose surfacing that has impact-absorbing properties corresponding to the existing fall height.

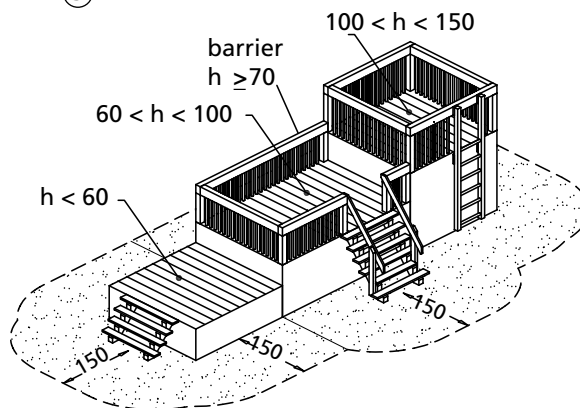
What we mean when we say "fall height < 600 mm" is that the fall height does not exceed 600 mm. "No fall height" for us means that use is intended exclusively from the playground level.

In individual cases, e.g. for certain equipment such as the Rotating Beam, Belt Path, Balance Blocks or Jumping Disc, we recommend the surfacing has impact absorption better than concrete/stone in spite of a fall height of < 600 mm.

Rough schematic diagram of a piece of equipment according to EN 1176 - not easily accessible



Rough schematic diagram of a piece of equipment according to EN 1176 recommendation – easily accessible



- 1 Concrete/stone
- 2 Bituminous surfacing materials, refer to DIN 18 317, DIN 18 354 and DIN 18 560 part 1 (asphalt).
- 3 Topsoil (previously termed natural material), refer to DIN 18 915, DIN citation:
The topsoil is the topmost layer of ground surfacing formed through physical, chemical or biological processes. It is especially well suited for vegetation and serves to accommodate the roots and seed of plants that are typical for the location or trodden-on grass."
- 4 Grass, refer to DIN EN 1176, 4.2.8.5.2. Note 1, citation:
"In addition to its aesthetic effect, grass also has useful impact-absorbing properties. Experience has shown that if it is well maintained it is generally effective for free fall heights of up to 1 m and can be used without the necessity of carrying out tests. For fall heights above 1 m, the property of the grass as an impact-absorbing surface depends on the local climatic conditions."
For information on the construction of grass surfacing, refer to DIN 18 917 (refer to DIN EN 1176, Appendix I.3.2 impact-absorbing surfacing).
- 5 Bark mulch consists of broken bark of conifers, grain size 20 mm to 80 mm
- 6 Wood chip is mechanically broken wood (no wood-based materials) without bark and leaf components, grain size 5 mm to 30 mm
- 7/8 Sand and fine gravel must have the following properties:
 - Grain size for sand, minimum of 0.2 mm and maximum 2 mm, for fine gravel, a minimum of 2 mm and maximum 8 mm (refer to EN 933 1)
 - Without silt or clay parts (refer to DIN 18 196)
 - Ratio of uneven grain size $U < 5$ (refer to DIN 18 196)
- 9 Other materials or other thicknesses are possible if the corresponding HIC testing in accordance with EN 1177 is carried out.

The following minimum requirements apply:

0 – 60 cm	Without forced movement: concrete, stone, bituminous surfacing materials
60 – 100 cm	Topsoil
100 – 150 cm	Grass
above 150 cm	Sand, gravel, wood chips, bark and synthetic fall protection with the appropriate impact-absorbing property