



**RUBBER
FLOORING**

RUBBER FLOORING



Do not be afraid to fall anymore! The use of rubber flooring increases safety in playgrounds.

Isolgomma has been producing and distributing materials and solutions for sound insulation and vibration control for over 40 years in order to improve the quality of life.

Ever since its foundation in 1972, the launch of innovative products, covered by international patents, the expansion towards new markets and sectors and the achievement of quality certifications have made Isolgomma a well-known and appreciated brand all over the world, result of high experience and continuous research.

We use cutting-edge technologies to create high-performance products providing appropriate solutions for every customer need.

The study and creation of eco-compatible products and the creation of highly performing articles have made Isolgomma a company of excellence both for the Italian and foreign markets in the construction, industry, transport and safety flooring sectors.

The safety of playgrounds is of vital importance to the health of those who frequent them and is a very important factor in the design phase. The floors produced by Isolgomma are made from recycled materials that respect the environment and are certified according to the new EN 1176 standards to ensure maximum absorption of impacts and minimize risks of injuries.





Designing a safety flooring in a public playground

The European Standard EN 1176 defines the general safety requirements of the playground equipments and surfaces for public playground areas, specifying for example the quality of structures and materials, as well as the design criteria of spaces and equipments, with the target of minimizing the risks connected with the use of the playground area itself.

CRITICAL FALL HEIGHT AND HIC EVALUATION

The safety flooring tiles, when designed and installed correctly in the playground areas, can reduce the risk of severe injuries for the users, coming from movement and accidental falls. The performance of the safety flooring are measured in laboratory or directly in site, according to standard EN 1177. The standard gives the procedure for the evaluation of the critical fall height, with the HIC method (Head Injury Criteria). According to this experimental methodology, a spherical or hemispherical instrumented weight falls on the safety flooring on several points from different heights, while acceleration is measured during the impacts and the HIC value is calculated automatically by software. By interpolation of the results from different measurements, the critical fall height H_c is derived, which is relative to a specific HIC reference value. The HIC method has been chosen by normative, because it identifies the injuries to the head as the most dangerous on a statistic basis.

HOW TO CHOOSE THE SAFETY FLOORING: CRITICAL FALL HEIGHT AND FREE FALL HEIGHT

The critical fall height, in meters, is the main parameter used to choose a safety flooring for a playground area. In general, the critical fall height has to be always higher than the free fall height, typical for each specific equipment. This means that the choice of the safety flooring product is strictly connected to the design of the playground itself, because the free fall height depends on the equipments and their use.





CRITICAL FALL HEIGHT AS FUNCTION OF THICKNESS:

Product				
Thickness (mm)	30	40	45	65
Critical fall height H_c - Hic method (m \pm 7%)	0,96	1,35	1,49	1,92

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According to the indications of the EN 1176-1 standard, the free fall height must always be lower than 3 m for playground equipment. In addition, depending on the specific use, the following indications are given:

-  For playground equipment in which the user is standing (for example elevated platforms), the free fall height is measured from the feet bearing surface to the surface below.
-  For equipment in which the user is sitting (for example in swings), the free fall height is measured from the base of the seat to the surface below.
-  For equipment in which the user is hanging (for example hanging on his or her hands), the free fall height is measured from the height of the hands support.
-  For climbing equipment (ropes, rope nets, poles, ...) the free fall height is measured from the maximum feet support or the maximum hands support (in this case 1 m less is considered).



EXTENSION OF THE SAFETY FLOORING AREA

The extension of the impact area, which is the surface that has to be covered with the safety flooring tiles, depends on the free fall height of the equipment.

In general, the higher the free fall height, the bigger the flooring surface has to be, as shown in the picture.

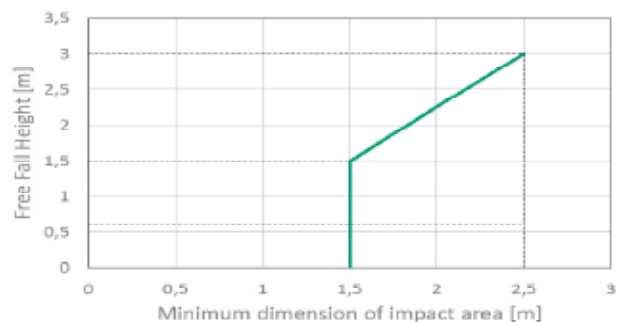
The minimum extension of the impact surface is 1,5 for equipments with free fall height up to 1,5 m.

When the free fall height is higher than 1,5 m, the extension of the impact surface has to be higher and grows linearly up to a maximum of 2,5 m (for the maximum allowed free fall height of 3 m).

For equipments without movement and with a free fall height lower than 0,6 m, it is not necessary to test the impact surfaces.

But if the equipments have moving parts (for example carousels), the flooring tiles have to be tested in performance.

In the case of adjacent platforms at different height, it could be necessary to install safety flooring tiles on the lower platform, when the difference in height is higher than 1 m.





SWINGS

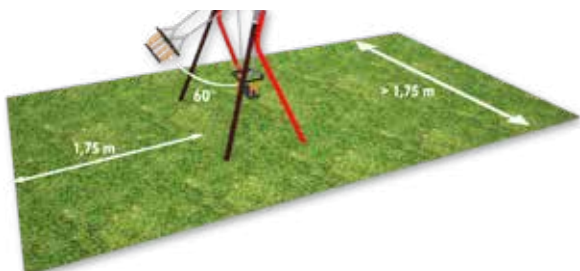
The swing is defined in the standard EN 1176-2 as a moving equipment where the weight of the user is supported below a pivot or universal joint.

Free Fall Height: is measured as the distance between the seat and the flooring, when the seat is positioned at an angle of 60° from the motionless position.

Extension of the impact area: along the direction of the swing's principal movement, the impact area has to be higher than what is prescribed in the general indications.

In particular, starting from the point in the ground relative to the position of the seat when it's at 60° (from the vertical axis passing through the pivot), the safety flooring has to be extended for at least 1,75 m and then the ground has to be left free from obstacles for at least 0,5 m.

The width of the impact area has to be at least 1,75 m, but it has to be increased if the width of the seat is higher than 500 mm: the total increase is the difference between the seat's width and 500 mm.



SLIDES

Slides are structures with inclined surfaces that contain and guide the user sliding in a defined track. In general the slides have a structure that permit to climb up to the starting elevated area, for example ladder, stairs or climbing sections.

Free Fall Height: is evaluated on the higher components of the slide (in general it's the height of the starting zone).

Extension of the impact area: for all the areas around the equipment, the indications of the standard EN 1176-1 have to be taken, with exceptions for the run-out section of the slide. In the run-out section must have an impact area with a distance of 2 m for type 1 (short run-out section with long impact area) or a distance of 1 m for type 2 (long run-out section and short impact area). The safety flooring surface around the run-out section must have a minimum critical fall height of 1 m.



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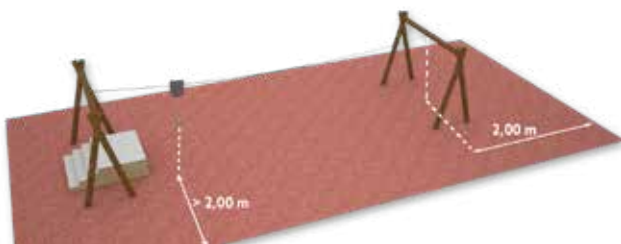
CABLEWAYS

Cableways are equipments whereby the users can travel along a cable under a force of gravity; cableways can be hanging type (equipped with suspension assemblies with a grip for hanging) or seating type.

Free Fall Height: is evaluated without applied loads for all types of cableways. For seating type cableways, the free fall height cannot be higher than 2 m, while for suspension type cableways can be 1,5 m maximum, measured starting from the handle position decreased by 1,5 m to the floor surface.

Extension of the impact area: in addition to the requirements of the standard EN 1176-1, the impact area for cableways must cover at least 2 m on each side of the equipment and at least 2 m beyond the end of the swinging position of the handle or seat. The impact area can be reduced symmetrically in width up to a minimum of 2 m, starting from the end position of the handle or seat.

The materials of the safety flooring must always have a critical fall height value higher than 1m, but if the free fall height is higher, then also the critical fall height of the flooring tiles must be higher proportionally.



SEE-SAWS AND OTHER ROCKING EQUIPMENT

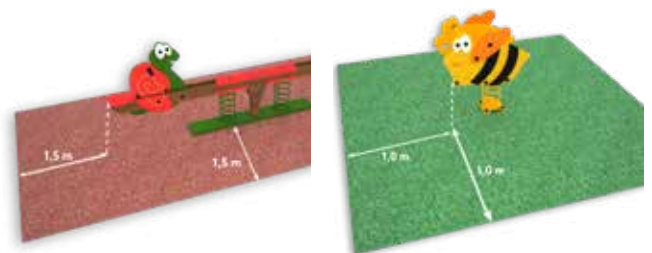
See-saws are playground equipments that can be set in motion by the user, characterized by a rigid element that rocks around a central support.

See-saws can be of the following types:

- 1 - axial
- 2A, 2B - single-point supporting component
- 3A, 3B - multi-point
- 4 - rocking
- 5 - sweeping see-saw supported above
- 6 - overhead single axis.

Free Fall Height: is 1,5 m for see-saws of type 1, it's 1 m for see-saws of type 2, 3 and 4 and it's 2 m for see-saws of type 5 and 6.

Extension of the impact area: the impact area must have a minimum distance of 1 m, evaluated from the edges of the equipment, for see-saws of type 1, 2, 3 and 4. For see-saws of type 5 and 6, the indications of EN 1176-1 should be taken.





CAROUSELS AND OTHER ROTATING EQUIPMENTS

Carousels are playground equipments intended for more than one user at the same time, that can rotate around a central axis without oscillation.

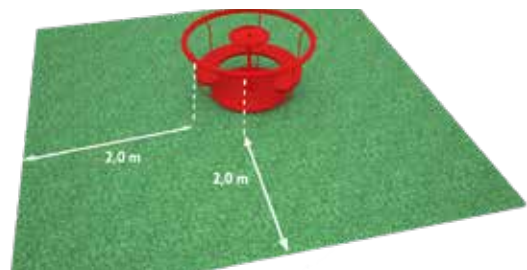
The carousels can be of different types:

- A - rotating chairs
- B - closed rotating platform
- C - spinning mushrooms
- D - track driven carousels
- E - giant revolving disks.

Free Fall Height: is evaluated for carousels of type C and it has always to be lower than 1 m, when measured from the height of the handle decreased by 1,5 m up to the surface below. The impact area surrounding the carousel must have a minimum critical fall height of 1 m.

Extension of the impact area: must have a minimum distance of 2 m on the sides of the carousel, to compensate the acceleration of the user while rotating. It is also very important that the free fall space is not overlapping with other equipments' free fall spaces.

For type C carousels with hanging user, the impact area has to be calculated starting from the suspended user station inclined at 30° from the vertical and an additional distance of 1 m without obstacles should be considered beyond the impact area. For type E carousels the lateral extension of the impact area should not be less than 3 m.



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MEGASAFE



Safety floorings

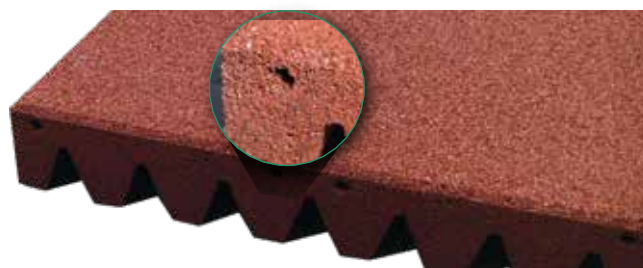
MEGASAFE is a product range developed for all types of safety flooring such as playgrounds and public areas.

These floors effectively protect people from falls by cushioning the impact on the ground, reducing the risk of slipping and representing a cleaner and safer solution than concrete, sand, gravel and other materials usually used for playground surfaces. Thanks to the special shaped structure of the bottom of the tile, Megasafe is able to provide an elevated anti-shock (HIC) performance as well as an easy drainage action.

The Megasafe line is made from 100% recycled SBR rubber granules and is agglomerated with polyurethane resins; the standard colors available are red and green.

APPLICATION FIELDS

- Playgrounds
- Recreation and relax areas



Hole for a connection with pins

COMPLEMENTARY ACCESSORIES



PINS



JOINTS



GLUE
ADESILEX G19



EXAMPLES OF APPLICATIONS

The use of Isolgomma safety flooring to complete the playground area allows the creation of structures in accordance with safety measures. Depending on the type of game it is possible to use adequate flooring which, in addition to guaranteeing the user's safety, enable the creation of a dedicated area with different and very pleasant colors. The great variety of accessories also makes

it possible to complete the flooring with access ramps for the management of architectural barriers and other aesthetic ornaments for the subdivision of the various areas.



MEGASAFE

2008

Playground,
Municipality of
Villasimius (CA)



MEGASAFE

2018

Play area
flooring
Gardaland
Brescia

Technical characteristics					
		30	40	45	65
Thickness	mm	30	40	45	65
Shaping height	m	15	28	28	50
Weight	kg/m ²	19,5	20,0	24,3	30,2
Critical fall height Hc - Hic method (m ± 7%)	m	0,96	1,35	1,49	1,92

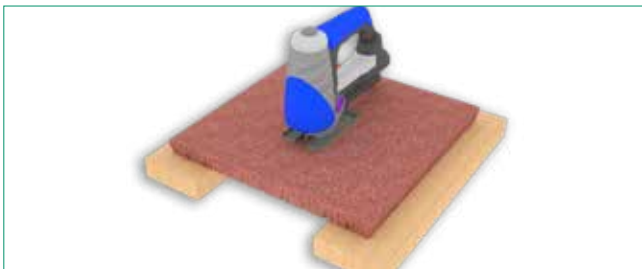
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LAYING INSTRUCTIONS



WARNINGS AND PREPARATION OF THE SUBSTRATE

- The plates can be cut using a low-speed jigsaw (medium-sized blade). During the cutting, keep the plate raised to a suitable height with thickness on the two opposite sides of the cutting line.



- The best foundations are beds of levelled gravel (grain size: 0-7 mm, permeable to water) or concrete. The laying on gravel is dry only; on a rigid surface (asphalt, concrete ...) it can be laid dry or using glue.



- The laying surface must be flat, stable and protected from frost.
- If the need arises to restore the color of the tiles, we recommend using the Mapei PU 200 FINISH polyurethane varnish.

- To contain the flooring it is necessary to make a concrete edge or use the appropriate accessory.



- Laying without edges may result in plate movement and leakage.
- If the sub-structure is an existing paved surface (es. concrete or asphalt), level the irregularities (using gravel with a grain size of 0-3 mm or with appropriate levelling products).
- Take care to give slope to the substrate and/or sufficient water permeability to ensure drainage. If the substrate is not permeable to water, a 2% slope is recommended to ensure adequate water flow.
- During the laying, compact the plates to avoid the formation of possible leaks.



DRY APPLICATION MEGASAFE



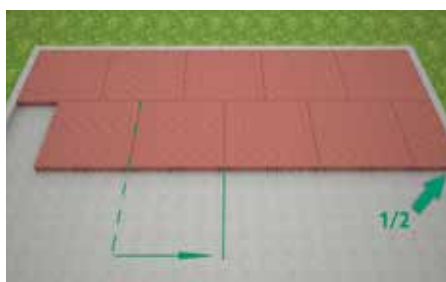
Start the installation from a corner of the surface, leaving the sides free for the connectors



Install the first row of tiles up to the edge on the other side, checking for correct alignment and perpendicularity



Insert the connectors for the entire row of tiles, 2 per tile



Install the second row shifting it of half a tile compared with the first row. Continue in this way with the other rows to complete the surface

GLUE APPLICATION MEGASAFE



Apply the appropriate adhesive on the concrete surface with a 3mm notched trowel



Install the first row of tiles up to the edge on the other side, checking for correct alignment and perpendicularity



Continue laying the other rows of tiles to complete the surface

ACCESSORIES QUANTITIES

- Pins 8 x m²
- Glue MAPEI Adesilex G19 0.4 - 1.0 kg/m²

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isolgomma.com



ISOLGOMMA SRL
Via dell'Artigianato, 24
36020 Albettono (VI) Italy
Tel. +39 0444 790781
Fax +39 0444 790784
info@isolgomma.com

Distributor