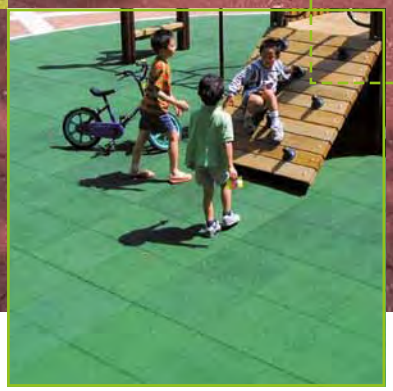
Impact Protection

Tested safety, proven durability.



BSW

Quality and Safety

Safety surfacing is essential on every children's playground. Planners and playground operators must decide which safety floor provides the most effective protection, whilst at the same time taking economic and design factors into account.

EN 1177:2008 tested and certified **Regupol®** impact protection surfaces and elastic floors from BSW guarantee reliable safety in this area. The price and durability of our products results in huge long term cost savings in the area of playground main-tenance. And finally, the various designs that characterise **Regupol®** impact protection offer every architect and landscape planner the right solution for every situation. Thousands of playgrounds, small playing fields and other recreational areas all over the world have been fitted with **Regupol®** impact protection products over the last 30 years.

BSW has always guaranteed the highest possible quality, because we manufacture exclusively at our site in Bad Berleburg in Germany, with highly qualified and motivated employees. BSW employs over 300 employees and 25 trainees in five qualified professions.

Original Regupol

Original Regupol®
On the underside of our **Regupol®** Safety and Elastic Tiles you will find this imprinted quality seal. **Regupol®** is the material from which we manufacture our impact protection and elastic products. **Regupol®** stands for decades of experience, tested quality, first-class raw materials, environmental friendliness and a long product life.

CHEMO-TEST GmbH
LABOR FÜR CHEMISCHE ANALYTIK

Tested for Heavy Metals
Using **Regupol®** safety surfacing and elastic products on children's playgrounds means that you do not need to worry about contamination from heavy metals and arsenic. This is guaranteed not just by ourselves, but more importantly by the independent Chemo-Test GmbH test institute.

TÜV SÜD Production monitored Safety tested

TÜV SÜD GS geprüfte Sicherheit

TÜV (Technical Inspection Association) – Fall Protection Test
Reliable impact protection values, independently assessed and confirmed in accordance with EN 1177. All guaranteed by the TÜV seal of approval. Therefore, you can see that we take safety seriously. We do not claim anything that we can not prove.

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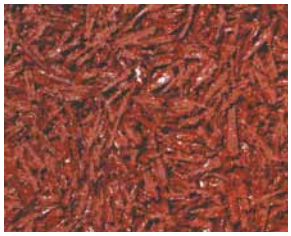
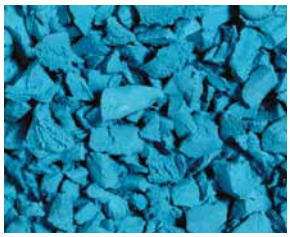
Jan Weber, Phone: +49 2751 803-144 • j.weber@berleburger.de • Downloads at
www.berleburger.com: Technical Data Sheets, Certificates

The Materials

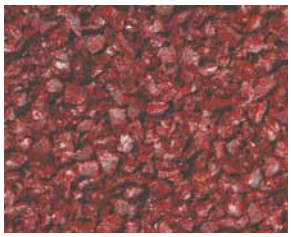
The materials from which we manufacture our safety surfacing and elastic products are subject to constant quality monitoring. The basic materials used in the majority of our products are rubber granules or fibres. In our factory in Bad Berleburg these rubber particles are bonded using the bonding agent polyurethane, compacted and then compressed into the familiar **Regupol®** tiles and tracks. The quality of the raw materials and purity of their elemental components, the special ratio of the rubber to the bonding agent, combined with the degree of compacting and subsequent compression are all significant factors which dictate the quality of the end product. Only many years of experience guarantee the requisite properties that put our products at the top end of the quality scale of comparable products manufactured by other suppliers. In our fall protection products this quality is reflected above all in their reliable impact protection values, their resistance and their durability.



Rubber Fibres
Crucial to our impact protection products are rubber fibres of a particular strength and length which guarantee high resilience and durability. This is because the fibres interlock during the mixing process, and through subsequent compression form a dense elastic body with excellent resistance to any kind of mechanical influences. This is why our impact protection products boast outstanding stability.



EPDM Granules
EPDM is synthetic rubber. It has the same functional characteristics as rubber-based granules but is solid-coloured. We use EPDM granules as decorative surfaces for our impact protection and elastic flooring. Our range comprises 25 colours and their combinations.



Rubber Granules
The lower-price products within our impact protection range are manufactured from rubber granules. These granules are also used by most other suppliers of similar products.

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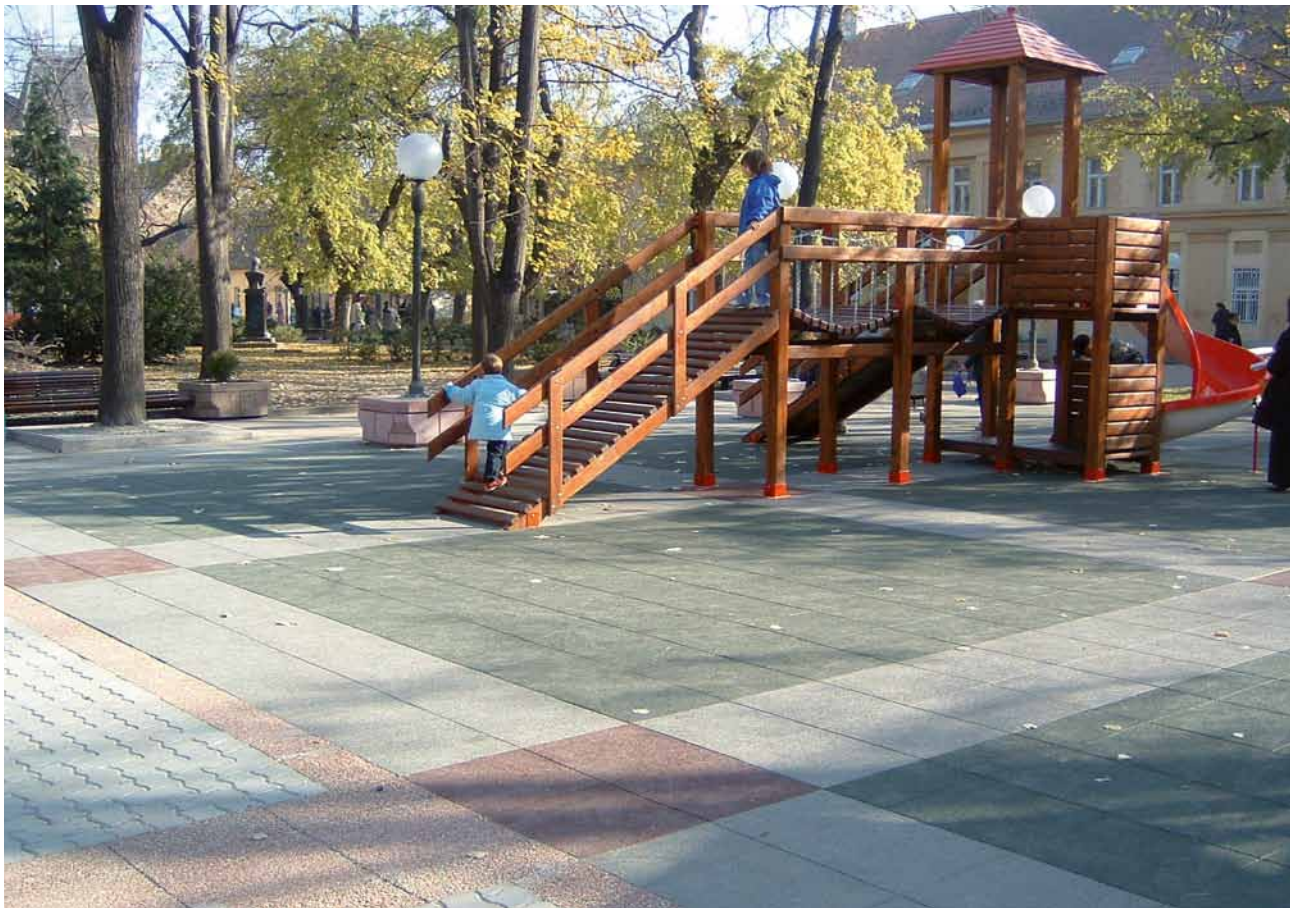
Regupol® Safety Tiles



Regupol® Safety Tiles fit perfectly into the environment – whether urban or nature-related.

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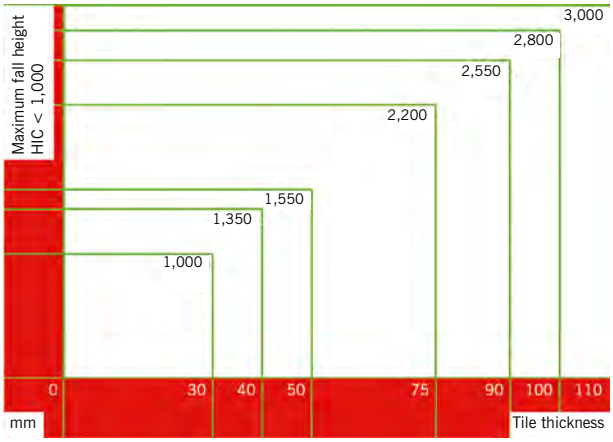
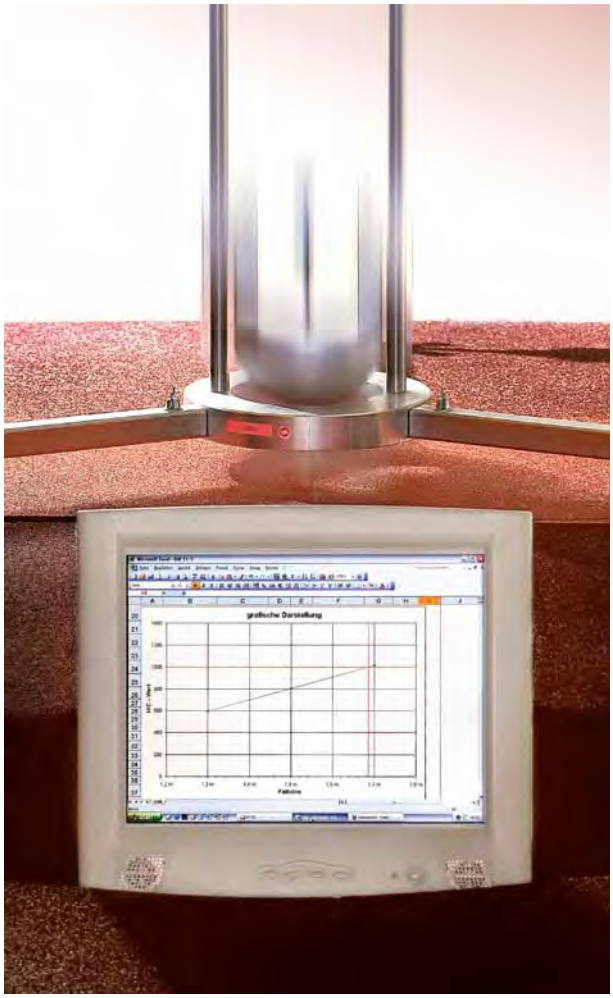
Tested Safety in Line with EN 1177:2008

The EN 1177:2008 standard defines the procedure for verifying the impact protection properties of a floor and stipulates the limit up to which no serious injuries might be expected upon impact. **Regupol®** fall protection surfaces are tested in accordance to these standards and meet their requirements. The value that determines the risk of injury is termed the Head Injury Criterion (HIC). It must not exceed 1,000. The impact protection values of our **Regupol® Safety Tiles** are certified according to TÜV (Technical Inspection Association) safety standards. In addition, our laboratory carries out regular checks to ensure that the quality remains consistent. At the same time we make sure that our laboratory tests exceed the required values so that potential anomalies do not lead to problems in situ. A point to note: BSW has one of the most modern testing facilities in the world.



The diagram shows the maximum fall height according to EN 1177 in relation to the thickness of our **Regupol® FX Safety Tiles**.



Tests on the **Regupol® Safety Tiles** relating to fall protection values are regularly carried out in our test laboratory.

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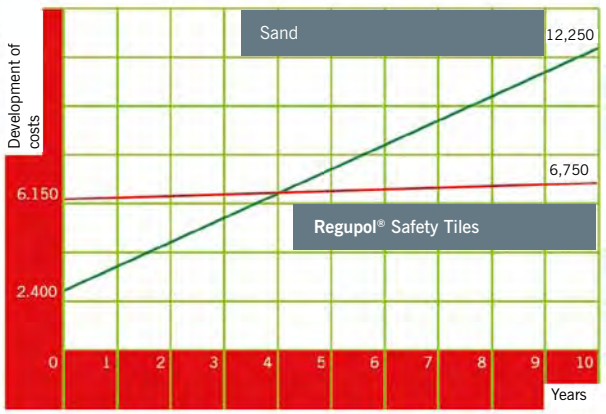
Safety Tiles or Sand – a Cost Comparison

Playground safety surfaces made of rubber are a versatile – and in the long term cost-effective – alternative to loose fill surfaces of sand, mulch, or wood chips. The economic viability of **Regupol®** safety surfaces in long term comparison with loose fill materials can be proven if over and above the costs of the initial purchase and installation, one also considers the ongoing costs for maintenance and upkeep. Because over a period of ten years the expensive maintenance and renewal measures required for loose fill materials generate costs up to two times higher than **Regupol®** impact protection. Even after four years the initial cost advantage of sand, for instance, has been exhausted, and thereafter the costs increase significantly. The following comparison is based on the assumption that the sand is properly cleaned and maintained.



The diagram shows the long term development of costs of **Regupol®** safety surfacing compared with sand. By year four the cost of sand exceeds that of **Regupol®**. After ten years the cost has risen to almost double. This is an example calculation that only gives a guideline indication. The individual prices are subject to fluctuation. The costs for sand and labour charges as listed only apply to German standards.

Regupol® Safety Tiles

Installation

100 m² **Regupol®** Safety Tiles, accessories, working time on a prepared surface

Costs 1 m² = €61.50
Costs 100 m² = €6,150.00

Maintenance

Cleaning 100 m² **Regupol®** Safety Tiles with high-pressure cleaner

Costs 2 hours/years at €30 = €60

Installation Costs	€6,150/10 years 1 year = €615
Maintenance Costs	€60 x 10 years €600
Total costs	€675/year

Sand

Installation

40 m³ sand on a prepared surface

Costs 1 m² = €24
Costs 100 m² = €2,400

Maintenance

Annual replacement of 10 m³ sand, annual cleaning of sand, loosening and spreading the surface to maintain the required depth

Costs to change old sand	10 m³ = €600
Cleaning costs	€385 calculated at €3.30/m² + travel costs

Installation Costs	€2,400/10 years 1 year = €240
Maintenance Costs	€985 x 10 years €9,850
Total costs	€1,225/year

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The Benefits

Reliable and Constant Impact Protection, Slip Resistance

Independently tested and certified impact protection values guarantee the required safety of the whole play area, even in sensitive places. The rough structure of **Regupol®** reduces the risk of slipping, even on damp surfaces.

Reasonably Priced, Economical

Prices on a sliding scale according to types of material (rubber fibres, rubber granules, EPDM granules) allow the customer to choose the right quality for every job. In the long term **Regupol®** fall protection is up to 50% cheaper in comparison with loose fill materials.

Long-Lasting, Hard-Wearing, Weatherproof

You can confidently assume a lifetime of ten years for our impact protection and elastic products, but frequently they perform their function for even longer – something hardly any other impact protection material can guarantee. Because **Regupol®** fall protection is extremely hard-wearing and resistant to mechanical impact. Plus **Regupol®** impact protection is weatherproof: it is completely impervious to moisture and sunlight, heat or frost.

Hygienic, Low on Maintenance, Easy to Clean

Dirt and rubbish remain clearly visible on **Regupol®** safety surfaces and there is no chance of it getting buried. They can be cleaned quickly and easily, and there is no scope for unpleasant surprises. Loose-fill material will not get trailed across to other areas or indoors, and you won't end up with sand in shoes or pockets. **Regupol®** safety surfaces are easy to sweep up with a broom, and they appreciate an occasional clean with a pressure washer.

Quick Laying, Quick Removal

Regupol® fall protection and elastic floors are quick and easy to lay. Push fit fittings and adhesive bonding create reliable and durable solidity. If at any stage you decide that you do not need the surface any more, the **Regupol® Safety Tiles** and **Regupol® Moulded Rubber Parts** are easy to remove.

Sound-Absorbing

It is generally the use of small sports pitches with hard surfaces such as asphalt and concrete that time and again lead to noise disturbance. The elastic **Regupol®** surfaces provide effective help against this. They effectively deaden noise from balls, protect joints and bones because of their elasticity, and still allow the ball to rebound powerfully.

Water Permeable, Quick Drying

Even after a heavy downpour it is not long before children can go out to play again on **Regupol®** impact protection and elastic surfaces. This is due to the material's good water permeability and its quick-drying properties. Drainage channels on the underside of the tiles enable water to drain away quickly.

Versatile Designs and Applications

Versatility with regard to applications and designs sets **Regupol®** fall protection apart. Whether safety surfaces on playgrounds, small sports pitches for football or streetball, whether outside or indoor halls, we have the right solution for every need and can offer 25 colours and their combinations. This allows you to make a design statement or match a surface to its surroundings.

Environmentally Friendly

Our products are mainly manufactured from rubber, do not seal the ground, pose no health risks, and at the end of their life can be recycled.

Comprehensive Pre- and After-Sales Service

Personal consultation, individual production of material samples, special solutions, maintenance and extensions, and last but not least prompt and reliable delivery, as well as lots of other services, are all in a day's work.

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Regupol® Safety Tile FX

The **Regupol® Safety Tile FX**, in red brown, is one of the best-selling products in BSW's fall protection range. **Regupol® Safety Tile FX** is universal in use, reliable and indestructible. **Regupol® FX** is suitable for fall heights up to three metres. Due to its unique structure of rubber fibres and dual-layer construction, **Regupol® FX** guarantees the highest possible safety standard for safety tiles in combination with long lifetime. The coloured wear layer is manufactured from highly compacted rubber fibres, ensuring durability, slip-resistance and even reliable force reduction. The underlying elastic layer guarantees the exact fall protection values as the softer material possesses the required elasticity. Only a few suppliers offer this dual-layer construction, which involves an expensive production process. It is a definite quality characteristic.

Material
PUR-bonded rubber fibres, solid-coloured

Composition
Dual-layer construction with compacted, heavy-duty wear layer and soft base layer for fall protection; drainage grooves on underside, dowel holes at edges, dummy joint on top at 500 mm

Colours
Base layer: Black
Wear layer: Red Brown, Green, Black; other colours on request

Application Areas
Children's playgrounds, outdoor swimming pool surrounds, schoolyards, etc. and wherever there is an increased risk of injury through falling

Installation
On concrete, asphalt or compressed bed of gravel/crushed gravel

Dimensions [mm]	Weight [kg/m²]	Maximum Fall Height [m]
1,000 x 500 x 30	approx. 24	1.00
1,000 x 500 x 40	approx. 24	1.35
1,000 x 500 x 50	approx. 29	1.55
1,000 x 500 x 75	approx. 39	2.20
1,000 x 500 x 90	approx. 46	2.55
1,000 x 500 x 100	approx. 51	2.80
1,000 x 500 x 110	approx. 56	3.00

Dimensional Tolerances: Length/Width ±1%
Thickness ±2 mm

The cross section shows the dual-layer construction.

Our **Regupol® Safety** and **Elastic Tiles** are fitted with drainage grooves at the underside as standard.

Cost advantage

Regupol® Safety Tile FXG

Regupol® Safety Tile FXG is the lower cost version of our safety tiles. With reliable fall protection properties, the material composition is simpler. As it is made from rubber granules and constructed in one layer, it does not have the same toughness or resilience as our **Regupol® Safety Tile FX**. However, its durability will stand up to normal stress. It has already proved itself time and again. **Regupol® FXG** is a successful compromise between durability and cost efficiency. The maximum fall height of **Regupol® FXG** is two metres. Greater fall heights with single-layer tiles can only be achieved if you compromise on durability.

Material
PUR-bonded rubber granules, solid-coloured

Composition
Single-layer construction from homogeneous material; underside with knobs for drainage and elasticity, dowel holes at edges, dummy joint on top at 500 mm

Colours
Red Brown, Green, Black; other colours on request

Application Areas
Children's playgrounds, outdoor swimming pool surrounds, schoolyards, etc. and wherever there is an increased risk of injury through falling

Installation
On concrete, asphalt or compressed bed of gravel/crushed gravel

Dimensions [mm]	Weight [kg/m²]	Maximum Fall Height [m]
1,000 x 500 x 50	approx. 34	1.50
1,000 x 500 x 70	approx. 46	2.00

Dimensional Tolerances: Length/Width ±1%
Thickness ±2 mm

The cross section shows the homogeneous granular structure.

The knobs on the underside ensure elasticity and drainage.

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Regupol® Safety Tile EPDM

Our **Regupol® Safety Tile EPDM** combines reliable functionality with a high-quality appearance. It possesses the same fall protection values as **Regupol® Safety Tiles FX**. The **Regupol® Safety Tile EPDM** is available in 25 intensive colours. Exposure of the material to sunlight results in minimal fading of the colours as the tiles are manufactured using a special process.* The EPDM wear layer is characterised by high wear resistance, so there is no colour deterioration when subjected to intensive use.

Material
PUR-bonded rubber fibres, coloured EPDM granules, PUR-bonded

Composition
Dual-layer structure with approx. 11-mm-thick compacted, heavy-duty EPDM wear layer and soft sub-base guaranteed to cushion falls; underside with drainage grooves, dowel holes at edges, dummy joint on top at 500 mm

Colours
Selection of 25 colours; see BSW Design Center on page 235

Application Areas
Children's playgrounds, outdoor swimming pool surrounds, schoolyards, etc. and wherever there is an increased risk of injury through falling.

Installation
On concrete, asphalt or compressed bed of gravel/crushed gravel

Dimensions [mm]	Weight [kg/m²]	Maximum Fall Height [m]
1,000 x 500 x 30	approx. 24	
1,000 x 500 x 40	approx. 29	1.25
1,000 x 500 x 50	approx. 35	1.50
1,000 x 500 x 75	approx. 46	2.10
1,000 x 500 x 100	approx. 56	2.80
1,000 x 500 x 110	approx. 61	3.00

Dimensional Tolerances:
Length/Width ±1%, Thickness ±2 mm

The cross section shows the dual-layer construction with the solid-coloured EPDM layer.

The BSW Design Center creates individual design variations to customers' specifications.

See page 235 for more information.

*** Note regarding freshly laid tiles:**

When **Regupol® Safety Tiles EPDM** have just been laid, there may be slight temporary wax colouring, which will disappear as they weather. The wax is used in the manufacturing process and once it has disappeared the true colours will come through in their full intensity.

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Regupol® Elastic Tile E

Identical to the **Regupol® Safety Tile FX** as regards material composition, shape and colour, **Regupol® Elastic Tile** possesses the same high-quality without the tested impact protection properties. It is the perfect flooring surface for football or streetball pitches, table tennis tables and lots more. With good ball rebound characteristics **Regupol® Elastic Tile E** significantly reduces noise from bouncing and are robust as well as durable.

Regupol® Elastic Tile is supplied in two sizes: 1,000 x 500 mm and 2,000 x 1,000 mm. The larger of our **Regupol® Elastic Tile** is ideally suited for laying on unbound base courses. It reduces any surface irregularities that can result from the settling associated with heavy use. Lines, writing, symbols and pictures are easy to apply using our permanently stable PUR paints.

Elastic tiles made from a cheaper granules material are also available (**Regupol® EG**).

Artificial dowels are an optional feature of our **Regupol® Safety** and **Elastic Tiles**. They can be used to fix the tiles to each other.

Material
PUR-bonded rubber fibres or granules, solid-coloured

Composition
Single-layer construction consisting of compacted, heavy-duty material. Underside with drainage grooves, dowel holes on sides, dummy joint on top at 500 mm (only tile size 1,000 x 500 mm)

Colours
Red Brown, Green, Black; other colours on request.

Application Areas
Small playing pitches, streetball pitches, various sports and leisure areas

Installation
On concrete, asphalt or compressed bed of gravel/crushed gravel; 15 and 22 mm must be bonded on concrete or asphalt

Standard Dimensions [mm]	Weight [kg/m²]
2,000 x 1,000 x 43	approx. 35
1,000 x 500 x 43	approx. 35
1,000 x 500 x 30	approx. 24
1,000 x 500 x 22	approx. 18
1,000 x 500 x 15	approx. 12

Dimensional Tolerances:
Length/Width ±1%
Thickness ±2 mm

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Regupol®

Safety Tiles

Regupol® Safety Tile EPDM installed in a pedestrian zone (above), **Regupol® Safety Tile** FX in a playground (left) and in a housing estate (right).

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Regupol® Elastic Tile EL

Regupol® EL is our large-sized elastic tile and is as high-quality as **Regupol® E. Regupol® EL** combines a high-quality appearance with reliable elasticity and phenomenal durability. Besides its appearance, a further fundamental advantage is that it can be laid on all level surfaces without the need to make a special sub-base first. The surface is easy to clean. The **Regupol® Elastic Tile EL** is particularly suitable for use beneath swings and slides, preventing the formation of depressions that increase the risk of accidents and which attract an accumulation of dirt. However, you can also use them to create large elastic surfaces for both indoors and outside.

Material
PUR-bonded rubber fibres or rubber granules, solid-coloured

Composition
Single-layer construction of compacted, heavy-duty material

Colours
Red Brown, other colours on request

Application Areas
Beneath swings and slides, all small areas subject to heavy wear, decorative large areas

Installation
On concrete, asphalt, compressed bed of gravel/crushed gravel or simply on an even surface

The cross-section shows the homogeneous composition of compacted material.

Dimensions [mm]	Weight [kg/m²]
2,000 x 1,000 x 43	approx. 35

Dimensional Tolerances:
Length/Width ±1%
Thickness ±2 mm

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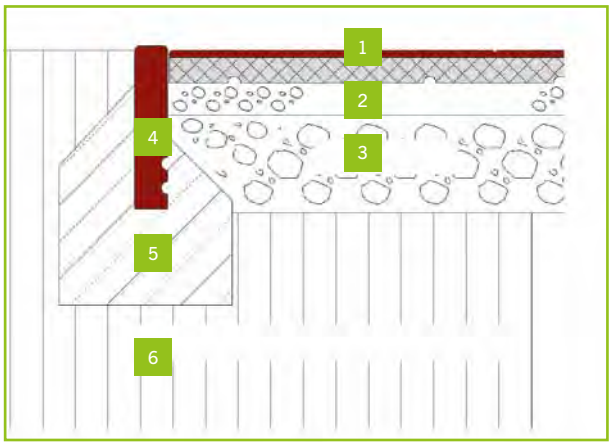
Installation Instructions for **Regupol®** Safety and Elastic Tiles

The Base Course

The sub-base should be constructed to be frost-proof in accordance with local practice. This involves digging out the area to the required depth, taking into account the installation depth of the **Regupol® Safety** or **Elastic Tiles**. It is important to ensure good drainage. The frost-proof base should consist of gravel with a granulation of 0–35 mm, minimum thickness 30 cm, which should be overlaid with a layer of fine aggregate with a grit 0–3 or 0–7 mm, thickness approx. 5 cm. The aggregate layers must be firmly compacted. Concrete or asphalt surfaces are subject to local regulations.



Installation on unbound sub-base: 1 **Regupol® Safety Tile** • 2 Bed of crushed gravel • 3 Gravel • 4 **Regupol® Edging Elements** • 5 Edge restraints on concrete base • 6 Natural subsoil

Laying the Tiles

Connecting the Tiles to Each Other

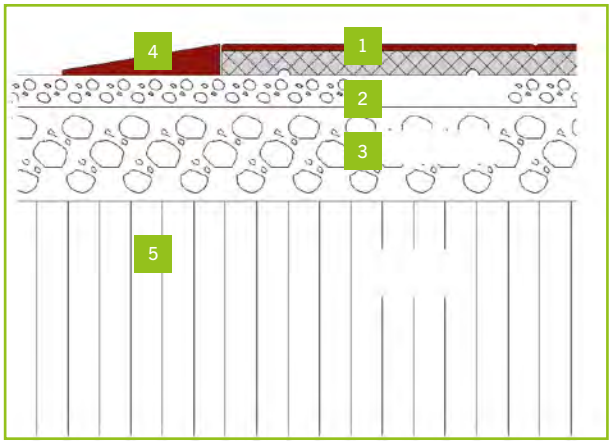
Regupol® Safety and **Elastic Tiles** can be joined to one another by means of dowels, and glued if required. In the majority of cases dowels will be sufficient, reducing the time needed for installation. The tiles must be glued one by one to the bound sub-base. This prevents deliberate levering out and displacement of the tiles.

Edge Restraints

Before laying the tiles on an unbound sub-base an edging should made to two sides of the area (at a corner) in order to facilitate seamless and precise positioning of the tiles. The **Regupol® Edging Elements** can be used for this purpose.

Laying the Tiles

You should begin laying the tiles in the corner bordered by the edge restraints. First lay a row of tiles from this corner to the opposite end, connecting them with dowels and gluing if necessary. Now lay the other tiles.



Installation on bound sub-base: 1 **Regupol® Safety Tile** • 2 Bound sub-base • 3 Gravel • 4 **Regupol® Anti-Stumble Edge** • 5 Natural subsoil

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Tips for Laying

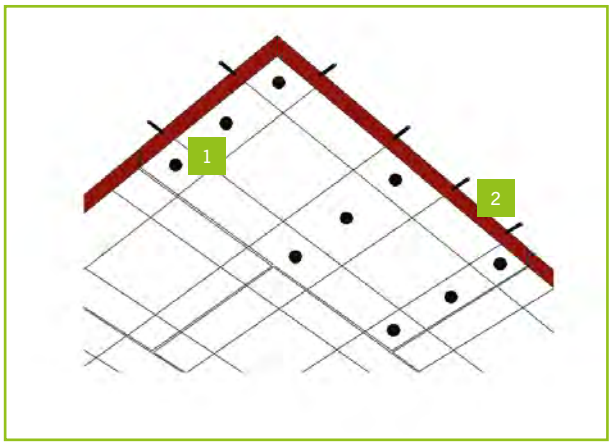
Laying Edge to Edge
As you lay the tiles make sure that they are perfectly aligned. There should be as little space as possible between the tiles, so it is recommended that you apply strong horizontal pressure as you position each tile. This will prevent subsequent gaps from developing, as the material may shrink over time.

Anti-Stumble Edging
When surrounding a tiled area with **Regupol® Anti-Stumble Edges**, they must be glued to the tiles. This gives added strength. The installation of anti-stumble edging is identical to that of tiles.

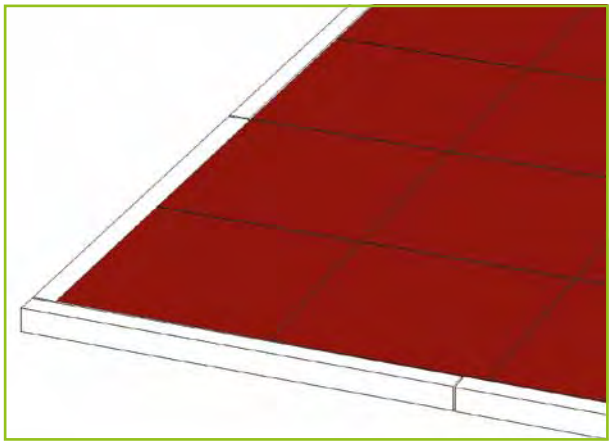
Cutting the Tiles
Cut the tiles using a good pendulum jigsaw (coarse wood saw blade or wave blade). This also applies to fittings at the base of equipment, conduit inlets, other floor surfaces, etc. The fittings should be fixed using adhesive.

Adhesion to a Bound Sub-Base
The adhesive required for gluing the tiles to a bound sub-base is available at BSW. It is a two-component PU adhesive. The tiles should be glued to the bound sub-base at the nine glue spots on the underside of the tile. You must ensure that the base is dry and clean, the outside temperature should be at least 10 °C. Adhesive consumption: approx. 1 kg/m^2, subject to the base course.

Laying on an Unbound Sub-Base
When laying on an unbound sub-base, the tiles can be glued together using a single-component PU mastic besides connecting with dowels. The component adhesive is also available at BSW. This adhesive has the advantage that it retains a certain degree of elasticity between the gaps, which accommodates the fall protection properties of the tiles.
You should observe the above diagram when applying the adhesive. The process can be carried out between outside temperatures of +5 and +35 °C. One cartridge is sufficient for approx. 4 m^2. The bead diameter of the mastic adhesive should be 5–7 mm.



Tile with gluing points and dowels: 1 Gluing points • 2 Dowels


Tiled surface with edging element

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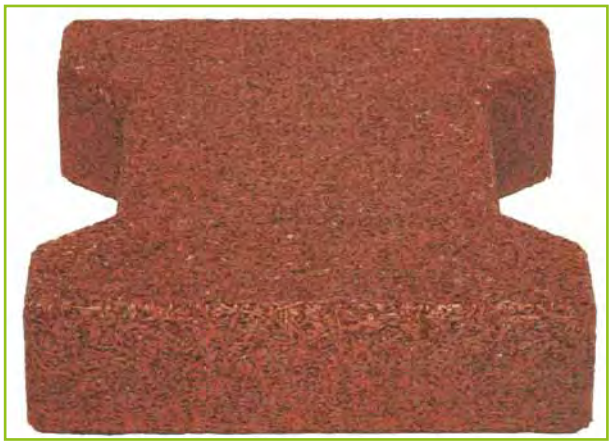
Regupol® Interlocking Pavers VB and VBFG

The particular benefit of surfaces constructed from the durable, elastic interlocking pavers is their versatility. **Regupol® Interlocking Pavers** are always the best choice where walking and playing comfort, reduced stress on joints, spike resistance, sound absorption and frost resistance are required. **Regupol® Interlocking Pavers** combine perfectly with common Behaton interlocking pavers and are laid in exactly the same way. The ball rebound characteristics of **Regupol® Interlocking Pavers** are as good as those of **Regupol® Elastic Tiles**. They are also available in rubber fibre construction or in rubber fibres and granules (**Regupol® VBFG**) and are supplied in various colours.



Material
PUR-bonded rubber fibres/rubber fibres and granules, solid-coloured

Composition
Single-layer construction of homogeneous material, “double T shapes”, “starters” and “half pavers” are also available

Colours
Red Brown, Green, Black

Application Areas
On small playing pitches, all elastic sports and play areas, footpaths and corridors in hospitals, sanatoriums in clinics and rehabilitation centres, golf courses, walkways at ice rinks, etc.

Installation
As common concrete pavers on concrete or asphalt.
Note: 21 mm must be glued onto a sub-base.

Dimensions [mm]	Weight [kg/m²] VB fibres	Weight [kg/m²] VBFG granules
200 x 160 x 43	approx. 37	approx. 37
200 x 160 x 21	approx. 18.5	approx. 18.5

Dimensional Tolerances:
Length/Width ±1%
Thickness ±2 mm

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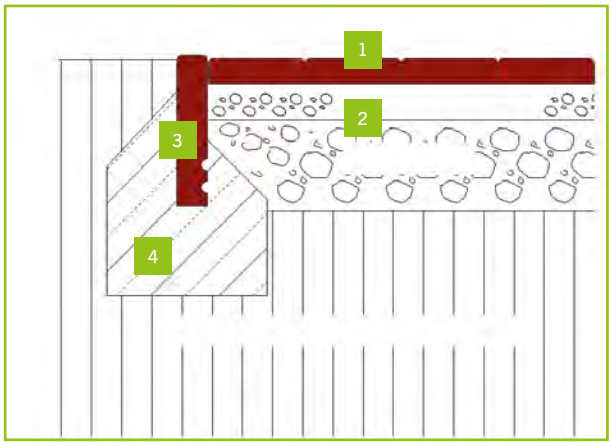
Installation Instructions **Regupol®** Interlocking Pavers

The Base Course

The unbound and bound sub-bases for the elastic **Regupol® Interlocking Pavers** are the same as those required for the **Regupol®** safety and elastic tiles. Note that the 21-mm-thick **Regupol®** pavers may only be glued to a concrete or asphalt sub-base. 43 mm **Regupol® Interlocking Pavers** can be laid on any sub-base.



Installation on unbound sub-base: 1 **Regupol®** Pavers area • 2 Gravel/fine level • 3 **Regupol®** Edging Elements • 4 Concrete base

Laying the Pavers

Laying on an Unbound Sub-Base

Regupol® Interlocking Pavers are laid like common concrete paving stones. Their double T-shape resembles the Behaton concrete paving. The paving slabs are laid hard up against each other starting from one corner, then compacted with a plate vibrator and the joints filled with sand.

Laying on an Bound Sub-Base

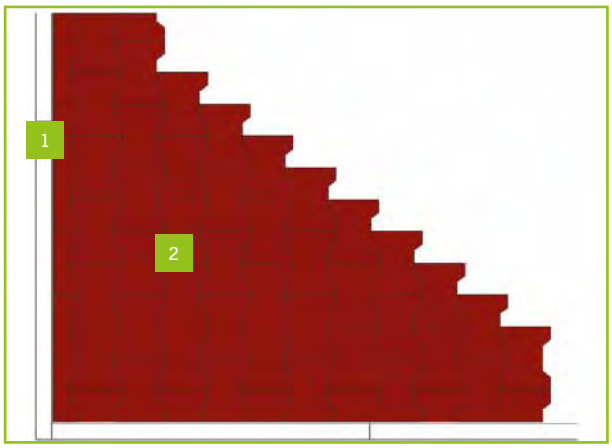
Depending upon the application, the pavers can be laid on a concrete or asphalt base with an edge restraint in place either loose or using adhesive. When laying the slabs you should ensure that the underlying base must have a slope of at least 1–2% for optimum drainage.

Edge Restraints

As with conventional pavers, edge restraints are required. We recommend the elastic **Regupol® Edging Elements**, which resemble the **Regupol® Interlocking Pavers** in quality and appearance. To increase stability you can stick starters, half pavers and whole stones to the edge restraint.

Cutting the Pavers

Cut the pavers using a good pendulum jigsaw (coarse wood saw blade or wave blade). This also applies to fittings at the base of equipment, conduit inlets, other floor surfaces, etc. The fittings should be fixed by gluing.



Paving with edge restraints: 1 **Regupol®** Edging Elements • 2 **Regupol® Interlocking Pavers**

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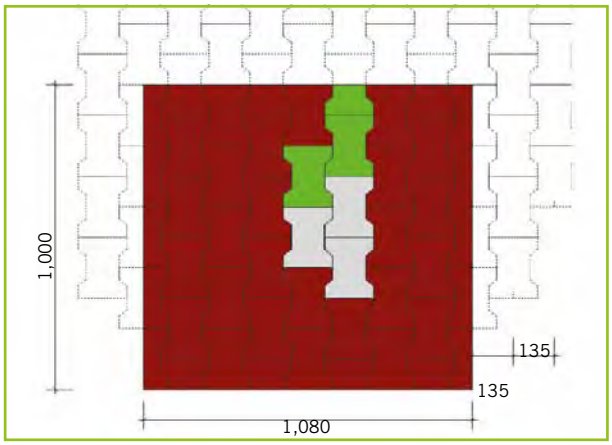
Tips for Laying

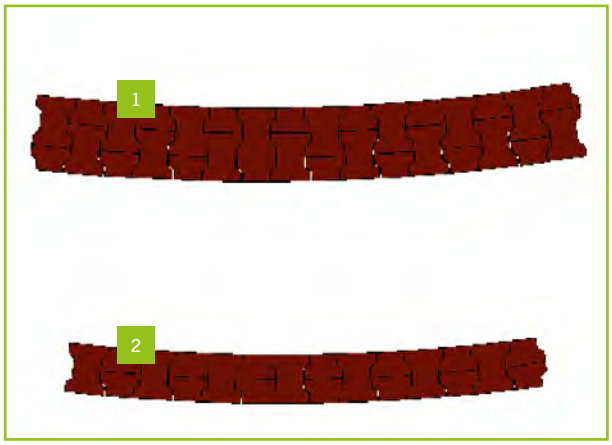
Adhesion to a Bound Sub-Base
The glue required for sticking the pavers to a bound sub-base is available at BSW. It is a two-component PU adhesive. The adhesive must be applied to sub-base by means of a notched trowel. Laying should be carried out in a primed adhesive bed. The sub-base must be dry and clean. The outside temperature should be at least 10 °C. Adhesive consumption: approx. 1 kg/m² depending upon the surface.

Adhesion to an Unbound Sub-Base
When laying pavers on an unbound sub-base you can increase stability by gluing starters, halves and whole stones to the edge restraints using a single-component mastic adhesive. This single-component adhesive is also available at BSW. The process can be carried out between outside temperatures of +10 and +35 °C. One cartridge is sufficient for approx. 4 - 6 r. m.. The bead diameter of the mastic adhesive should be 5-7 mm.

Laying in Curves
When laying the pavers in a curve the stones are not interlinked and half-stones are used to create several narrow strips with gaps of a variable thickness. This procedure can be followed for a radius from approximately eight metres, where the thickness of the strip should not exceed two normal stones and one half paver (approx. 50 cm). Curves with a radius of 4-8 metres are laid in strips with two half pavers.



Regupol® Interlocking Pavers



1 Radius from eight metres • 2 Radius of 4–8 metres

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Regupol® Anti-Stumble Edge

Regupol® Anti-Stumble Edges are used to create a safe edging to areas fitted with **Regupol® Safety** or **Elastic Tiles**. Their bevelled edge prevents any stumbling accidents at the edge of the safety surface. The **Regupol® Anti-Stumble Edges** are available in different heights which correspond to the various heights of our tiles. The **Regupol® Anti-Stumble Edges** also helps in the construction of accessible playgrounds. Besides the rubber-based elements, anti-stumble edges are also available in EPDM in our full range of colours.

Material
PUR-bonded rubber fibres, solid-coloured or PUR-bonded solid-coloured EPDM granules

Colours
Rubber fibres in Redbrown, Green, Black. EPDM granules available in many colours (see page 237)

Application Areas
Enclosure of impact protection surfaces, providing a bevelled edging to other surfaces and shallow steps for preventing accidents, and as a wheelchair ramp.

Installation
As **Regupol® Safety and Elastic Tiles**

Regupol® Anti-Stumble Edges and **Regupol® Triangular Corner Pieces** match exactly to various heights of tiles.

Dimensions [mm] Anti-Stumble Edge	Weight [kg/unit]
1,000 x 250 x 30/8	approx. 4
1,000 x 250 x 40/8	approx. 5
1,000 x 250 x 43/8	approx. 6
1,000 x 250 x 50/8	approx. 10,5
1,000 x 300 x 70/8	approx. 8.5
1,000 x 300 x 75/8	approx. 10.5
1,000 x 300 x 90/8	approx. 12.5
1,000 x 300 x 100/8	approx. 13.5
1,000 x 300 x 110/8	approx. 14.5

Triangular Corner Pieces	Weight [kg/unit]
250 x 250 x 30/8	approx. 0.4
250 x 250 x 40/8	approx. 0.5
250 x 250 x 50/8	approx. 0.6

Dimensional Tolerances:
Length/Width ±1%
Thickness ±2 mm

Regupol® Edging Elements

Regupol® Edging Elements should be used instead of concrete kerbs anywhere where there is a risk of falling and injuries. Besides its elastic properties **Regupol® Edging Elements** possess other benefits to help prevent injuries: it can be cut and bent to ensure a smooth surface at corners and bends. Despite its elasticity it is stable enough to form a sturdy enclosure and can be bedded into a concrete base. It provides an ideal edging material for play and sports surfaces and can be used to safely segregate different surfaces made from different materials.

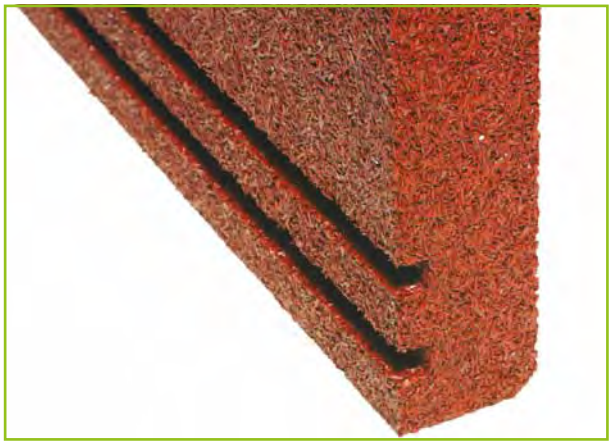
Material
Rubber fibres, PUR-bonded, solid-coloured

Composition
Longitudinal grooves on one side provide secure mounting in a concrete base

Colours
Red Brown, Green, Black

Application Areas
As edging for play areas, lawns, sand pits, beach volleyball courts, artificial turf pitches, small pitches, paths, etc.

Installation
In ready-mixed concrete wedge



The longitudinal grooves are essential to ensure a fixed and permanent connection in a concrete base.

Dimensions [mm]	Weight [kg/unit]
1,000 x 250 x 50	approx. 10

Dimensional Tolerances:
Length/Width ±1%
Thickness ±2 mm

Regupol® Edging Elements provides the perfect border for fall protection and play areas. In addition they are identical in material and colour.

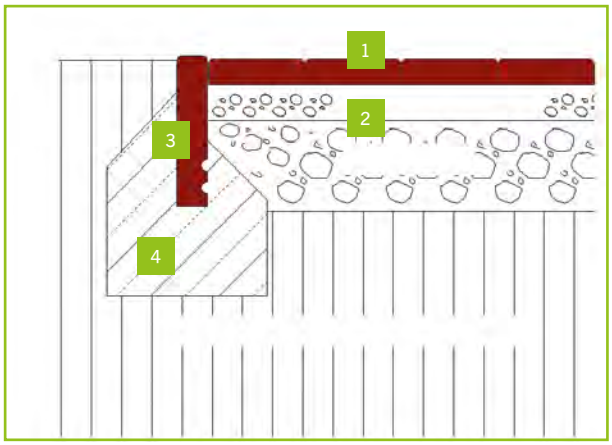
Laying **Regupol®** Edging Elements

Preparing the Sub-Base
Make a concrete bed (C30/37, XF4 or in accordance with local requirements) on a frost-proof and even surface.

Dimensions of the Concrete Bed
Height approx. 10 cm, width approx. 20 cm

Enclosure
After inserting the **Regupol® Edging Elements** heap the concrete into a double-sided wedge and compact it, ensuring that the concrete penetrates into the grooves of the **Regupol® Edging Elements** creating the necessary anchoring for the moulded parts.

Dimensions of the Complete Concrete Bed Heaped up into the Wedge:
Height 20 cm, width 20 cm



Position of the edge restraints: 1 **Regupol® Safety Tile** • 2 Unbound sub-base 3 **Regupol® Edging Elements** • 4 Concrete wedge

Installation

The **Regupol® Edging Elements** should be set firmly into the concrete bed approximately 5 cm deep to their actual height and perpendicular to the ground. If required the adjoining edges of the restraints can be glued together using a single-component PU adhesive. Then the double-sided concrete wedge is heaped up until the restraint protrudes from the concrete by approx. 10 cm. The concrete is compacted.
Regupol® Edging Elements can also be bent into position. To do this the bent moulding has to be held using reinforced steel or wooden laths until the concrete has set. Finally the steel or laths are removed.

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Regupol® Palisades

Regupol® Palisades are used to border versatile areas, whilst also combining play with safety. The palisades can be used to enclose sandpits, trees and other areas, and can be sat on or used to practise one's balancing skills. They can be interlinked to form curves, making them the ideal material for creating a play area with scope for a whole variety of designs and shapes. In contrast to concrete, plastic or wooden palisades, their elasticity reduces the risk of injury. They are available in two different heights, enabling structures to be constructed that encourage balancing and jumping. **Regupol® Palisades** are supplied with a steel anchor which guarantees secure mounting in a concrete foundation. The superb quality of **Regupol® Palisades** means that they are durable and robust.

Material
PUR-bonded rubber granules, solid-coloured

Colours
Red Brown

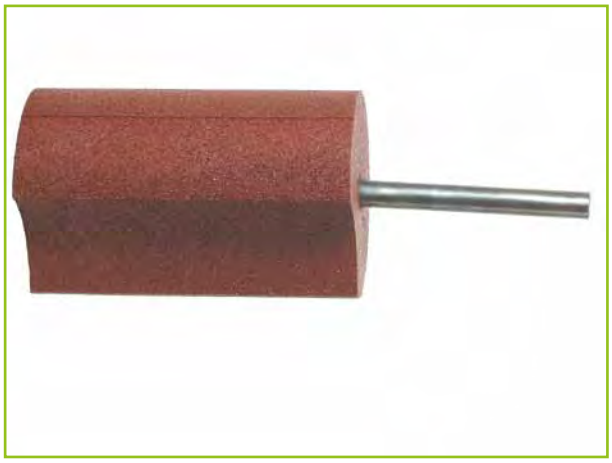
Application Areas
Enclosure of safety surfaces, sport and play areas, trees and bushes, balancing walkways, for sitting on, steps on slopes for children's play

Installation
Mounting in a ready-mixed concrete foundation by means of the integrated anchor tube

Dimensions [mm height x mm Ø]	Weight [kg/unit]
400 x 250/200	approx. 17
600 x 250/200	approx. 24.5

Total length steel anchor tube: approx. 280 mm
Five palisades are needed per running metre.

Dimensional Tolerances:
Length/Width ±1%
Thickness ±2 mm



The steel anchor tube ensures secure and durable mounting in a concrete foundation.

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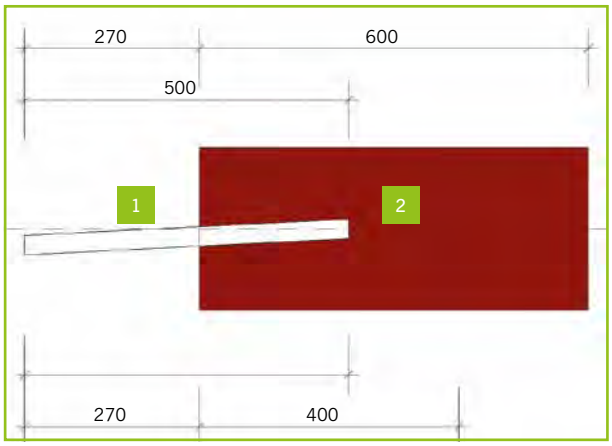
Installation **Regupol®** Palisades

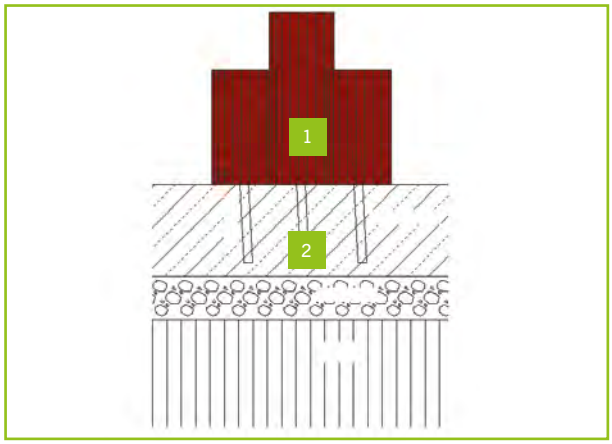
Regupol® Palisades are anchored into a concrete base (C30/37, XF4 or in accordance with local requirements).

Dimensions of the Concrete Base
Height 50 cm
Width 30 cm

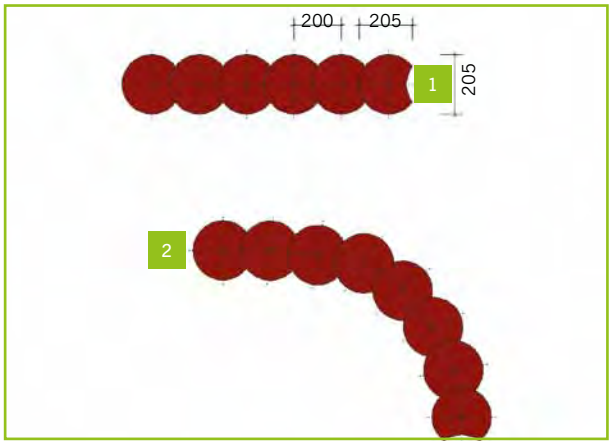
The **Regupol® Palisades** are set into the ready-mixed concrete perpendicular to the ground and at the right height using the slightly bevelled ground anchor. The concrete is then compacted.



1 Bevelled ground anchor • 2 **Regupol® Palisade**



Regupol® Palisades on a concrete base: 1 palisades in different heights • 2 concrete base



Regupol® Palisades formed into shapes: 1 concave fillet • 2 Convexity

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Regupol® Sandpit Safety Surrounds

The **Regupol® Sandpit Safety Surrounds** provide a versatile material for creating borders, combining functionality with safety. Straight blocks and curved pieces (eight units form a full circle) offer numerous permutations for differently shaped sand play areas. Like the other **Regupol® Moulded Parts** their quality structure offers a consistent balance between elasticity and rigidity. This ensures stability combined with accident prevention. **Regupol® Sandpit Safety Surrounds** can be installed securely and permanently by gluing or screwing. You can use the curved blocks to create areas of almost any shape.

Material
Rubber granules, PUR-bonded, solid-coloured

Composition
Straight and curved blocks (eight form a full circle), rounded-off edges, screw holes can be sealed with bungs

Colour
Red Brown, Black, Green

Application fields
For enclosing sand play areas and other sports and leisure areas, as planter walls, for sitting on, steps on slopes for children's play, stairs, plant surrounds, seating elements, etc.

Installation
By gluing or screwing onto concrete base

Straight and curved blocks can be used to create various kinds of borders.

Dimensions [mm]	Weight [kg/piece]
Straight Block	
1,000 x 300 x 150	approx. 40
Curved Block	
1,021/785 x 300 x 150	approx. 37
Diameter of Circle (inside) 2,000	
Dimensional Tolerances: Length/Width ±1% Thickness ±2 mm	

Bungs are used to blank for a permanent and safe sealing of screw holes (on the underside).

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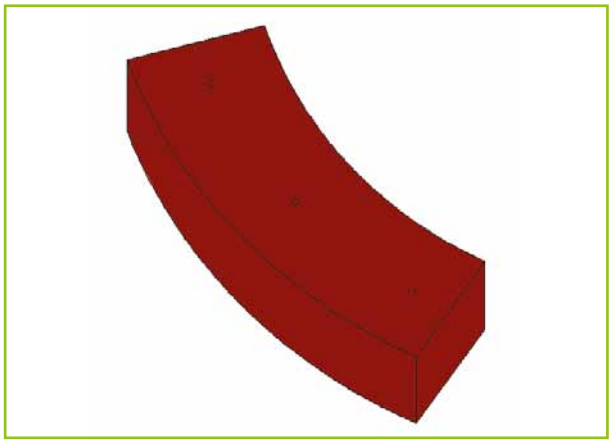
Installation **Regupol®** Sandpit Safety Surrounds

The Base Course

Regupol® Sandpit Safety Surrounds are glued or screwed onto a concrete base (C30/37, XF4 or in accordance with local requirements).

Dimensions of the Concrete Base
Height 35 cm
Width 25 cm
The surface of the concrete must be skimmed smooth.



Regupol® Sandpit Safety Surrounds (curved)

Installation

Installation by Gluing
Regupol® Sandpit Safety Surrounds modules should be glued hard up against each other in a vertical position using two-component PU adhesive onto a dry, smooth, dust- and dirt-free concrete base. The outside temperature must be at least 10 °C. The bungs supplied should be glued into place to seal the unused screw holes on the surface of the sandpit edging.

Installation by Screwing
Screws should be used to fix **Regupol® Sandpit Safety Surrounds** onto the concrete base perpendicular to the ground and hard up against each other. Each module has three screw holes. Before installing the **Regupol® Sandpit Safety Surrounds** the following dowels must be set into the concrete in the appropriate positions: S12, D: 12 mm with washer. The edging pieces are then fixed onto the concrete base using galvanised wood screws (8 x 180 mm). The bungs supplied should be glued into position to seal the screw holes on the surface of the **Regupol® Sandpit Safety Surrounds**. Screws and dowels are not included, adhesive and bungs are supplied. Modules can be cut to the correct length and corners mitred using a chainsaw.

1 **Regupol® Sandpit Safety Surrounds** • 2 Gluing • 3 Screw connection/ fixing with dowels • 4 Concrete base

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Regupol® Block Steps

Regupol® Block Steps are versatile moulded blocks for sports and play areas. They combine functionality with safety due to their elasticity, like all **Regupol®** products, and help to prevent injuries. **Regupol® Block Steps** are ideal for edging sports and play areas as well as for designing and stabilising slopes. **Regupol® Block Steps** can be easily laid and cut. They are the safe alternative to wood and stone and are durable and weather-resistant.

Material
PUR-bonded rubber granules, solid-coloured

Colours
Red Brown

Application Areas
For enclosing sports and play areas, landscaping of slopes to create standing or seating terraces or stairs

Installation
By gluing to concrete base

Dimensions [mm]	Weight [kg/unit]
1,000 x 300 x 300	approx. 80.5

Dimensional Tolerances:
Length/Width ±1%
Thickness ±2 mm

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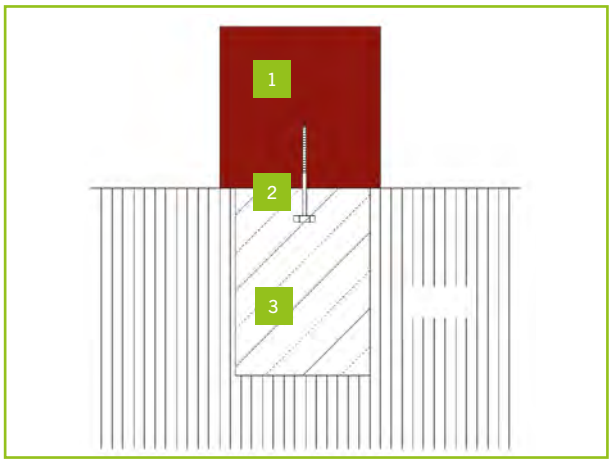
Installation **Regupol®** Step Blocks

The Base Course

Regupol® Block Steps can be laid on bound or unbound sub-bases or on ready-mixed concrete. All sub-bases require a foundation of loose gravel with a granulation of 0–35 mm, thickness approx. 30 cm. An additional layer of fine grit 0–3 or 0–7 mm to a thickness of 5 cm should be laid on top. Level this gravel and grit layer so there are no cavities and the gravel is firmly compacted.

For adhesion and installation in a ready-mixed concrete the concrete foundation must have the following dimensions:
Height 35 cm
Width 25 cm
The surface of the concrete must be skimmed smooth.



1 **Regupol®** Step Blocks • 2 Screwing • 3 Concrete foundation

Installation

Mounting by Gluing

Regupol® Block Steps should be glued hard up to each other and perpendicular to the ground onto the dry, smooth, dust- and dirt-free concrete base using two-component PU glue. The outside temperature should be at least 10 °C. Modules can be cut to the correct length and corners mitred using a chainsaw. Especially cut blocks can be supplied ex-works upon request.

Mounting by Anchoring

To mount on concrete using screws, screw galvanised hexagonal screws (10 x 200 mm) or anchors into the underside of the block. Position the block with the protruding screws into the fresh concrete. Glue the blocks together using single-component PU adhesive for a better connection.

Mounting on an Unbound Sub-Base

Lay the blocks on the fine grit and glue the blocks together using single-component PU adhesive to hold them better together. Their own weight ensures that the blocks will not slip. However, heavy use will require the blocks to be laid on concrete.

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Regupol® Bollards

Regupol® Bollards are designed as vehicle barriers. Due to their elasticity they reduce the damage caused to vehicles resulting from a slight impact. The elastic rubber granules composition of the **Regupol® Bollards** provides perfect shock absorption. At the same time the **Regupol® Bollards** themselves are not easily damaged, as **Regupol®** is largely impact- and abrasion-resistant. **Regupol® Bollards** possess no hard edges and corners, and due to their elasticity they reduce the risk of injury should a cyclist hit them. In the event of a major impact with a vehicle the material does not splinter. **Regupol® Bollards** are supplied in two heights.

Material
Rubber granules, PUR-bonded, solid-coloured

Colour
Red Brown

Composition
Post available in two lengths, circular seat is mounted by gluing onto the mounted post

Application Areas
As a barrier for vehicles, speed reducer for bicycles, zoning different areas in a public area, as a seat in playgrounds

Installation
Setting into a natural base or ready-mixed concrete foundation

Dimensions [mm]	Weight [kg/unit]
Post diameter 200 Seat diameter 400 Seat height 100 Total height 1,250 (post 1,150)	approx. 40.2
Total height 650 (post 550)	approx. 24.5

Dimensional Tolerances:
Length/Width ±1%, Thickness ±2 mm

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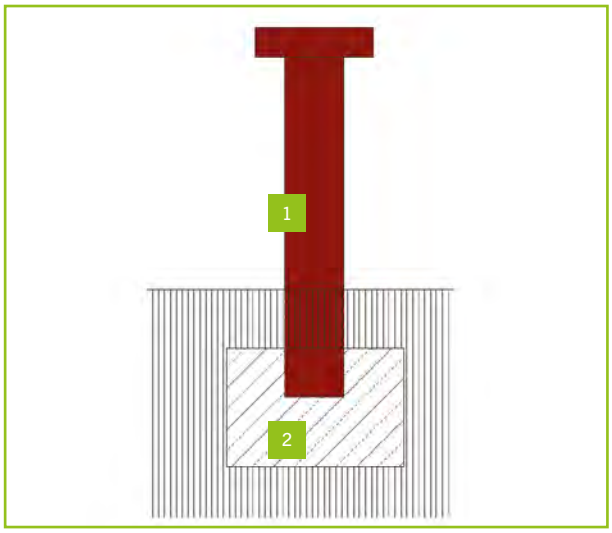
Installation **Regupol®** Bollards

The Base Course

Under normal conditions **Regupol® Bollards** can be embedded straight into the ground. Set the post of the bollard about 30 cm deep from the top edge of the wear layer into the ground. The ground must be compacted after the hole has been filled. If the **Regupol® Bollards** are to be subjected to excessive stress they can also be set into a ready-mixed concrete bed (C30/37, XF4 or in accordance with local requirements). The concrete bed should measure 40 cm in height with a 30 cm diameter. After the post has been set into the concrete (also 30 cm deep from the top of the wear layer), the concrete must be compacted.



1 **Regupol® Bollards** • 2 Concrete base

The Installation

Installation by Gluing

The posts must be installed vertically, perpendicular to the ground and at the same height. Stretch a guide line across if necessary to ensure correct positioning. The top edges of the long posts (total height of post 1,150 mm) should lie 85 cm above the level of the ground, and the shorter posts (total height of post 650 mm) 35 cm above the ground. After the posts have been installed the round seats should be fixed to the post using two-component PU glue. The outside temperature should be at least 10 °C. Attachment of the seats after the posts have been installed is optional. If you require heights other than those stated, the posts can be cut to the right height before installation using a chainsaw.

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Printed December 2012