

Mosa. Tiles.

Slip Resistant Floor Tiles, unglazed

Product description

Unglazed, dry-pressed, single-fired, fully vitrified slip resistant floor tiles, manufactured with the Ultragres procedure, in accordance with EN 14411 Bla, with a water absorption of < 0.05% on the surface and ≤ 0.3% on the back. Dimensionally stable tiles in a range of sizes with various surface designs and textures offering various slip resistant properties.

Cradle to Cradle (C2C) Silver certified; designed for the technosphere and safe for the biosphere.

Product advantages

Appropriate slip resistant tiles for any situation requiring enhanced slip resistance. Tested according to the methods described in European Technical Specification CEN/TS 16165. Extremely wear resistant. Very high resistance to rupture and breaking. High resistance to chemicals. Frost-resistant. Very consistent sizing. Modular. Suitable for use with underfloor heating. For indoors and outdoors. For domestic, utility and commercial use.

The profiled surface of slip resistant tiles feature a dirt-repellent micro-seal which makes them very easy to clean. This treatment has no impact on the quality or appearance of the tile.

The Netherlands Organisation for Applied Scientific Research TNO has established a permanent anti-bacterial effect inhibiting the growth of the common bacterium *S. aureus*.

Our new MR structure offers the optimal balance between walking safety and cleanability and a guaranteed R10 slip resistance classification even after prolonged intensive use. Test certificate available on request.

With matching stair tiles and an extensive range of accessories.

Benefits of the Ultragres procedure

With the Ultragres procedure the surface and underside of the tile acquire optimal properties: the surface is highly wear resistant and easy to clean, while the underside ensures high strength, very good dimensional stability and good adhesion in cement mortar and tile adhesive.

Sustainability and Cradle to Cradle

Mosa slip resistant porcelain floor tiles are Cradle to Cradle (C2C) Silver certified. The composition of Mosa tiles is pure, clean and suitable for inclusion in the cradle-to-cradle cycle. This means that they do not release any hazardous substances during or after their long service life. Mosa tiles are produced in our own factories in Maastricht (NL), using renewable energy sources and local materials whenever possible, which results in a favourable CO₂ balance. Specific data about Mosa tiles are included in the National Environmental Database for calculation of the material-related environmental performance in conformance with the Dutch Building Decree. An Environmental Product Declaration (EPD type III) and MRPI sheet (containing environmentally-related product information) are available upon request via: info@mosa.nl/en.

Mosa's tiles are ideally suited for use in sustainable buildings and contribute to being awarded hallmarks or points from organisations such as LEED and BREEAM. For up to date information see www.mosa.nl/en under Sustainability.

NEN-EN-ISO 14001

Since 2007, Mosa has organized her environmental management system according to the international ISO 14001 standard.

Recycling

Mosa slip resistant floor tiles have up to 45% recycled content, depending on product type.

Soil Quality Decree

Mosa Ultragres unglazed slip resistant floor tiles are KOMO certified in compliance with the Dutch Soil Quality Decree (certificate no. IKB1466).

This means that Mosa Ultragres (slip resistant) floor tiles meet with all the environmental requirements of the Dutch assessment guidelines BRL1010 and are suitable for outdoor use including facades.

Application

Wet conditions or dirt may render floor tiles slippery, leading to an increased risk of slip accidents. This is why international requirements have been established concerning the slip resistance of tiles, both for residential and commercial/industrial installation. In general, the requirements of DIN 51130 are followed (ramp test; slip resistance with shoes, expressed in R ratings) and DIN 51097 (ramp test; slip resistance with bare feet, expressed in A, B or C rating).

In addition, publication issued by SBR/WTCB provides guidelines for use in the Netherlands and Belgium (guide for ceramic tiles: 468a.H.99-ISBN 90-5367-284-2).

These standards and guidelines prescribe the slip resistance rating required for each type of area.

Relevant test reports can be downloaded from the Downloadcenter on our website www.mosa.nl/en.

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R rating acc. DIN 51130

For shoe trafficked public and work areas with increased slip risk.

A minimum rating of R9 is required for commercial/industrial applications.

For public spaces (entrances, corridors, common areas, etc.) an R10 rating is recommended.

There is an extensive list of prescribed R and V ratings for each type of work area.

For your situation, please consult Mosa Sales Support: +31 (0)43 368 92 29 or info@mosa.nl.

Summary of most common situations:

Required R rating	Slope	Slipping risk by type of project floor	Several examples
R10	$10^\circ < n \leq 19^\circ$	Normal	Public spaces, sanitary areas in hospitals
R11	$19^\circ < n \leq 27^\circ$	Increased	Commercial kitchens, fresh produce shops
R12	$27^\circ < n \leq 35^\circ$	High	Commercial kitchens, very wet production areas
R13	$>35^\circ$	Very high	Very wet and greasy areas; meat, fish, canned goods processing

The V rating (volume displacement) establishes the extent to which the surface profile is able to contain liquid and solid contaminants (spills), expressed in cm^3 contaminant per dm^2 floor surface. This value is important in areas where larger quantities of substances that increase the risk of slipping are present, such as in meat or fish processing companies.

V4	at least $4 \text{ cm}^3 / \text{dm}^2$
V6	at least $6 \text{ cm}^3 / \text{dm}^2$
V8	at least $8 \text{ cm}^3 / \text{dm}^2$
V10	at least $10 \text{ cm}^3 / \text{dm}^2$

A/B/C values according to DIN 51097

For barefoot trafficked areas, foreseeably wet.

Value	Minimum incline	Suitable for
A	12°	Barefoot areas, mainly dry (changing rooms, aisles and walkways)
B	18°	Shower areas, wading pool floors < 80 cm deep
C	24°	Sloping pool edges and steps into pool

Dynamic coefficient of friction (μ)

Using a so-called 'tribometer' according to DIN 51131 (GMG200 method) walkable surfaces can be valued by their skid resistance (dynamic coefficient of friction μ) and assessed for suitability in conditions of increased slip potential; the higher their skid resistance, the lower the risk of slipping. Common guidelines for assessing slip potential are:

$\mu < 0.30$	unsafe	special measures necessary*
$0.30 \leq \mu < 0.45$	conditionally safe	Extra safety measures may be required**
$\mu \geq 0.45$	unconditionally safe	no extra safety measures required

* e.g. hand railing, safety footwear, surface treatment, replacement.

** e.g. entrance matting, enhanced cleaning regime, etc.

Tiling recommendations

Mosa floor tiles can be installed with any conventional tiling method, using any mortars, adhesives (EN 12004 type C2) and grout compounds (EN 13888) suitable for fully vitrified porcelain tiles.

For detailed installation recommendations see the Mosa documentation or www.mosa.nl.

Relevant technical product sheets

For other technical characteristics of slip resistant floor tiles, see the Technical Product Sheet 'Porcelain Floor Tiles, unglazed'.

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Maintenance

When installing slip resistant and textured tiles extra attention must be given to the removal of cement and grout residue from the recessed areas of the surface in order to bring out the colour and texture of the tiles to their best advantage and guarantee the functional characteristics of the tiles.

Textured or profiled floor tiles are more sensitive to dirt and generally require more intensive maintenance than flat tiles. Cleaning products and methods should be adjusted to meet the conditions on site. The choice of cleaning product and method must not have a negative effect on the floor tile's slip resistant properties. Choose a scrubbing pad that is sufficiently flexible (e.g. a white disc) or a brush which is capable of adjusting to the shape of the surface.

See www.mosa.nl/en for the latest maintenance recommendations.

Note: A slip resistance treatment applied to Mosa floor tiles by third parties after installation, such as a chemical or mechanical slip resistance treatment, can have a negative impact on the appearance and physical properties of the floor tiles. In that event, Mosa cannot be held liable.

Samples

showroomservice@mosa.nl; Tel.: +31 (0)43 368 93 23.

General questions

Sales Support: info@mosa.nl; Tel.: +31 (0)43 368 92 29; Fax: +31 (0)43 368 93 56.



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The text for this Technical product sheet replaces all preceding versions and has been composed with the utmost care and in cooperation with the leading mortar and adhesive producers. All recommendations are based on the latest research. This Technical Product Sheet contains information about Mosa products, properties and applications, and should not be construed as a guarantee based on the provided recommendations. Mosa accepts no liability based on the content of this document. For information concerning warranties and liability please refer to our General Terms and Conditions of Sale. No rights can be derived from the contents of this Technical Product Sheet. We take no responsibility for typographical errors. For the latest version, see www.mosa.nl.