

Wear resistance / PEI ratings

Wear-resistance properties of glazed vitreous and porcelain stoneware tiles in accordance with EN ISO 10545-7

All floor coverings are exposed to wear. The extent of wear is primarily dependent on the following factors:

- Frequency of use
- Degree of soiling and cleaning conditions
- Type of mechanical stress through manner in which the floor is walked, driven upon
- The hardness of the glaze
- The thickness of the glaze layer
- The glaze finish (matt, semi-matt, gloss)
- The colour and brightness of the glaze

As a rule, floor covering material is worn down by sand and dirt particles that adhere to the soles of shoes and act like sandpaper under high pressure.

Glazed vitreous and porcelain stoneware tiles are characterised by a particularly easy-care finish. Glazed vitreous and porcelain tiles which are selected according to the areas of application concerned and cleaned on a regular basis are highly durable.

If abrasive materials, such as dirt contained in quartz sand, are allowed to act on the glaze for long periods of time, a loss of gloss and gradual increase in roughness of the surface may result. However, as the serviceability of the floor covering remains unimpaired, this does not constitute a justifiable ground for complaints.

Scratches in the glaze are caused by materials of at least equal hardness, such as quartz grains, sand, dirt or similar in conjunction with a load and movements over the covering. They can, for example, be caused when carrying out work or moving pieces of furniture. The best protection is afforded by providing large door mats of other suitable dirt-catchers at all entrances.

Wear resistance / PEI ratings

- 0** Wear-resistance: **0 Lightest stress**
Unsuitable for the floor area
- I** Wear-resistance: **I Very light stress**
For floors in areas subject to very infrequent use, (soft-soled shoes) and no abrasive contamination.
Examples: bedrooms and bathrooms in private homes.
- II** Wear-resistance: **II Light stress**
For floors in areas subject to infrequent use, (normal street shoes) and small amounts of abrasive contamination. Examples: Private homes, with the exception of kitchens, stairs, terraces, loggias.
- III** Wear-resistance: **III Medium stress**
For floors in areas subject to frequent use, (normal street shoes) and abrasive contamination.
Examples: all rooms in the home, including bathrooms, hallways, corridors, balconies, loggias, apart from kitchens; hotel rooms and bathrooms; sanitary and therapy rooms in hospitals.
- IV** Wear-resistance: **IV Medium-heavy stress**
For floors in areas subject to frequent use (normal street shoes) and frequent, intense soiling.
Examples: private entrances and kitchens, terraces, sales rooms and utility rooms, offices, hotels etc.; floors in schools, administration buildings, hospitals etc.
- V** Wear-resistance: **V Heavy stress**
The tiles of the wear-resistance group V, which provide a very high wear resistance, are available for areas subject to intense public use. Examples: bakeries, snack bars, entrance halls of hotels and banks, restaurants.

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Maximum stress

For heavily frequented application areas or those subjected to extreme surface wear, for example, in the areas surrounding cash tills or entrance areas to passage ways, we recommend the use of unglazed porcelain stoneware, which has an unusually high degree of wear resistance.

At points that are subjected to extreme wear- and this applies to all areas of application- deviations from the overall appearance of the surface are possible. In borderline cases, it is therefore recommendable to choose the next-higher wear resistance group.

Tiles belonging to higher wear-resistance groups can, of course, be used in areas subject to lower requirements.

Wear-resistance properties of unglazed porcelain stoneware tiles

Unglazed porcelain stoneware tiles, as described in standard DIN EN 14411, Group B1a water absorption $E < 0.5\%$, are considered to have some of the highest wear-resistance properties (deep abrasion) of all floor covering materials. This homogeneous material reveals virtually no signs of wear, even after decades of intensive use.

Deep abrasion is the name for the wear of unglazed porcelain stoneware tiles as a result of grinding and abrasive stress. The permissible tolerance are specified as minimum requirements in the relevant standard (DIN EN ISO 10545-6- resistance to the deep abrasion of unglazed tiles and slabs, volume loss- max 175mm³).

At points that are subject to extreme wear- and this applies to all areas of application- deviation from the overall appearance of the surface are possible.