cersanit

TECHNICAL SPECIFICATION

AND INSTALLATION GUIDES FOR CERSANIT CERAMIC TILES

DEAR CUSTOMER!

Thank you for purchasing Cersanit products. We guarantee maintenance of technical and performance characteristic defined in PN-EN 14411. We inform that at least 95% of 1st grade tiles should be free of any visible defects affecting the appearance of the surface of the laid tiles. 2nd grade tiles may have visual / aesthetic defects described in the Appendix to this document. This document lists precise technical characteristics of Cersanit tiles together with their comprehensive explanation and provides tips for tiles installation, use and care.

TYPES OF TILES

- **DRY-PRESSED GLAZED WALL TILES** – having characteristics compliant with PN-EN 14411, Appendix K, Group BIII (water absorption E_b > 10%). They are designed for laying on interior walls in temperature conditions above 0°C (not frost-proof).

  NOTE: *for wall tiles, bulges of face surface are acceptable (in accordance with the standard, up to 0.5% of the side length, but not more than +/– 2 mm).*

- **DRY-PRESSED GLAZED GRES TILES, FROST- PROOF** – having characteristics compliant with PN-EN 14411, Appendix G, Group BIa (water absorption E ≤ 0.5%). They are designed for laying on interior and exterior walls and floors in residential and public utility buildings (where there is low and medium traffic). They are characterized by low water absorbency, high bending strength and high abrasion resistance (PEI parameter described below).

- **DRY-PRESSED NON-GLAZED GRES TILES, FROST-PROOF** – having characteristics compliant with PN-EN 14411, Appendix G, Group BIa (water absorption E_b ≤ 0.5%). Tiles manufactured using this technology are recommended for use in rooms of high traffic volume, in residential and public utility buildings, in entry zones of buildings, as claddings of interior and exterior stairs, on building facades. They are also recommended for use in stores, restaurants, offices, bus/railway stations, schools, pharmacies and other public utility buildings. They are highly resistant to abrasion and slip-resistant.

- **DRY-PRESSED POLISHED GLAZED AND NON-GLAZED GRES TILES, FROST-PROOF** – having characteristics compliant with PN-EN 14411, Appendix G, Group BIa (water absorption E ≤ 0.5%). Tiles designed for laying on walls, facades and floors in rooms of average traffic. It is recommended to preserve the polished non-glazed tiles with impregnates, to prevent them from dirt and scratching (just like natural stones – granites and marbles). Strictly follow the instructions of the manufacturer of the impregnate. The polished gres tiles are more slippery than other finishing materials. They are not recommend for flooring in areas having contact with precipitation. Do not draw on polished gres tiles with pens, markers, pencils, inks and other strongly penetrating coloring stuff. Grouting mortars of intensive contrast color should be tested on a piece of polished tile first. Floors covered with polished gres tiles should be protected against scratching by installing mats or shoe-scrapers. Polished tiles are not recommended for use in high traffic areas, as this can cause dulling and scratches.

- **DECORATIONS OF WALL TILES (INSERTO TILES)** – are manufacturedusing the standard and triple-firing method. Due to the production technology used, they may differ in shade/color from base tiles.

TECHNICAL CHARACTERISTICS OF CERSANIT CERAMIC TILES:

ABRASION CLASSES - PEI

Gres tiles must have technical properties and features adequate to the mechanical impacts they will be exposed to in specific rooms. As to glazed gres tiles, attention should be paid to the parameter which indicates the scope of application thereof – the surface abrasion class (PEI). The higher the abrasion class, the higher the resistance to abrasion.

- **TILES WITH ABRASION RESISTANCE CLASS II** (PEI II – number of revolutions: 600) are recommended for rooms of low traffic volume, where soft shoes are worn (e.g. bathrooms, bedrooms), with no direct access to outside entrances.

- **TILES WITH ABRASION RESISTANCE CLASS III** (PEI III – number of revolutions: 750, 1500) can be used in residential areas where shoes with normal soles are used. They must not be used in areas where untypical shoes are worn (with metal soles or hob-nailed ones) and they are not recommended for areas with direct access to outside entrances (this applies especially to polished tiles).

- **TILES WITH ABRASION RESISTANCE CLASS IV** (PEI IV – number of revolutions: 2100, 6000, 12,000) are recommended for use in rooms of average traffic volume where normal shoes are worn, in all rooms of residential buildings, e.g. kitchens, corridors, halls, as well as public utility rooms, except for areas of high or very high traffic volume.

- **TILES WITH ABRASION RESISTANCE CLASS V** (PEI V – number of revolutions >12 000 and meeting the required stain resistance) are recommended for covering the surfaces of floors exposed to increased, continuous pedestrian traffic, where particles of abrasive materials are brought inside, e.g. in public spaces, stores, halls, corridors, hotel halls. They are suitable for more severe conditions. The higher the number of revolutions, the higher the tile's resistance to surface abrasion.

- **DEEP ABRASION RESISTANCE**(mm^3) – is used for non-glazed tiles (gres, clinker tiles). Tiles classified to these group have no PEI abrasion class. According to PN – EN 14411, this parameter can be max. 175 mm^3. Cersanit non-glazed tiles achieve an average of 112 mm^3.

NOTE: *Floors covered with glazed tiles or polished gres tiles should be protected against scratching by installing mats or shoe-scrapers.*

SLIP RESISTANCE – R

As for slip resistance, the tiles are divided into groups determining their anti-slip performance:

Anti-slip pergormance classification group	Acceptable angle
R 9	> 6° - 10°
R 10	>10° - 19°
R 11	>19° - 27°
R 12	>27° - 35°
R 13	>35°

The **slip resistance** is determined by the acceptable angle obtained – this is the angle of inclination of the test surface at which the test person reaches the safe walking limit. The symbols R9-R13 are used to indicate the slip resistance of floor tiles (the higher the coefficient, the less slippery the tile). For some tiles, the slip resistance class is not specified because the angle is too low – "NPD" symbol is used in such a case.

BAREFOOT SLIP RESISTANCE

The barefoot parameter is used in places where users are supposed to walk barefoot. The adhesion of the barefoot to the floor is tested by checking the angle at which a person is no longer able to safely use the floor. The Standard (CEN/TS 16165) introduces a division into three groups of tiles:

Group A – slip angle 12–18° – tiles classified to this group can be laid in usually dry places, e.g. locker rooms, saunas, changing rooms.
Group B – slip angle 18–24° – tiles classified to this group can be laid e.g. in showers, shower trays, around swimming pools.
Group C – slip angle above 24° – tiles classified to this group can be laid e.g. on stairs leading to or under water, steep pool stairs.

TILE SHADES

- **SHADE** – a slight difference in the intensity of the color, pattern and gloss of individual applications on the tile, giving a slight change in the color of the entire tile pattern in relation to the adopted standard - Standard. For unglazed stoneware: a difference in the amount or intensity of the colored base, resulting in a color change of the entire tile surface compared to the standard - standard. Individual batches of tiles may slightly differ from the adopted standard, which is marked on the label / packaging with one of the following symbols:

  S – standard shade tiles,
  A, D, E, K, M, O – side shades of the tile

The standard does not include guidelines for color marking. The manufacturer uses its own nomenclature.

- **TONAL TILES**: Most Cersanit tiles are tonal. They are characterized by a variety of patterns and graphics to reproduce as accurately as possible: wood, stones and natural resources, concrete, steel, etc.

IMPORTANT: *Tonal tiles do not for uniform and repeatable patterns. Prior to installation, mix the tiles from different packages (you can also turn some of them by 180 degrees) to create as natural effect as possible.*

- **EXHIBITORS**: The tiles presented on sale displays constitute a demonstrative material. Due to the manufacturing technology of ceramic tiles, variations in the color intensity between tiles on displays and those on current sales offer may occur.

TILES SIZES AND SIZE GROUPS

The size group is the range of dimensional tolerances of the tiles – the difference between the acceptable limit sizes of the tiles. This parameter specifies whether and to what extent the actual size of the tiles deviates from the standard. Based on that, size groups, i.e. calibers of the tiles are determined. Size groups and tolerances are given on each tile packaging.

- **Wall tiles** have no size groups (calibers). The nominal size is equal to the working size that the actual sizes comply with, within the permissible tolerances and according to PN-EN 14411. Size tolerances may amount to +/- 0.5% at most in relation to the side length, but not more than +/- 2mm.
- **Glazed and non-glazed gres** tiles are available in four size groups, indicated on each packaging. Before installing gres tiles, check if they all belong to the same size group.
- **Rectification** – mechanical processing of tile sides, consisting in very precise cutting of their edges to the specified size, with accuracy to +/-0.5 mm.

NOTE: *It is not recommended to combine different shades and size groups on one surface*

INSTALLATION GUIDES FOR CERSANIT CERAMIC TILES

- **TRANSPORT** – tiles should be transported by means of transport, with freight units placed next to one another in one layer. Free spaces should be secured, preventing the load from sliding during transport. Packages should be arranged in such a way, so as the tiles inside them are in vertical position. This prevents tiles from breaking during transport. Only for large-format tiles, it is allowed to lay the tiles horizontally on a pallet. Ceramic and glass decorations are more susceptible to various types of damage than ceramic tiles, and should therefore be stored and transported with special care. This type of products must not be stacked, exposed to excessive compression, and cardboard boxes with decorations must not be dropped even from a small height. Decorations should be transported in horizontal position. Decorations must not be allowed to move freely inside the vehicle. Free spaces should be secured with lightweight materials, e.g. polystyrene foam.

- **STORAGE** – tiles should be stored in rooms providing protection against moisture; not frost-proof tiles should be additionally protected against temperature t≤0°C. Defects caused by storage of not frost-proof tiles at temperatures below 0°C shall not be deemed manufacturing defects.

- **PRIOR TO THE INSTALLATION OF TILES**, inspect the entire purchased batch, checking the quality, shade and size, to make sure that no errors during issuance of goods took place. For this purpose compare the tiles from different packages and check if the marking of the size group, shade, sort and date of manufacturing in the "product characteristics" table are the same on all packages. We recommend to lay out mixed tiles from various packages before installing them. This is particularly important in the case of tiles in which tone variations are the intended effect, e.g. inspired by wood,

precious stones, concrete. Keep the labels/packages for future product identification. Once the tiles have been laid, complaints relating to these items will be rejected. Tiling works should be performed by a specialized company.

NOTE: *Cardboard boxes with tiles are heavy, therefore they should be carried by at least two people, observing due care and personal protection.*

- **TILES INSTALLATION AND GROUTING** – ceramic tiles are made of natural raw materials, therefore they may be slightly curved. It is especially visible in the case of long and thin products. Installation using a 1/3 offset pattern will eliminate possible slight deviations and provide a smooth and straight surface similar to floor panels. It is not recommended to install tiles using a 1/2 offset pattern, the so-called running bond pattern. While tiling, follow the recommendations included in construction guides and professional literature. Bear in mind some basic principles:
  - It is recommended to lay tiles with grouting, as "butt jointed" tiles form a tight cladding, which is extremely sensitive to all kinds of stresses.
  - Installation without grouting is contrary to the principles of the art.
  - Ceramic materials show linear expansion caused by water penetration.
  - The recommended width of the grout joint according to the "Technical conditions for the execution and acceptance of construction works" of the Building Research Institute for tiles with side length:

up to 100 mm	ca. 2 mm
100–200 mm	ca. 3 mm
200–600 mm	ca. 4 mm
above 600 mm	ca. 5–20 mm

  - Rectified tiles should be installed with at least 2 mm wide joint. When using underfloor heating, the width of the joint must be increased.
  - Expansion gaps in a layer of tiles should be consistent with the existing expansion joints in the substrate.
  - Use adhesives and grouting mortars holding the certificates of the Building Research Institute, as well as attestations and warranties issued by the manufacturers.
  - Prepare the substrate properly. It must be firm; level out any unevenness; clean the substrate of dust, soil, lime, grease, as well as oil or emulsion paints.
  - Poorly prepared substrate is the most frequent cause of loosening of tiles and forming of hair cracks in glazing.
  - Prepare adhesive (for ceramic tiles) following instructions and spread it using a toothed float onto previously prepared substrate; spread it in one direction if possible.
  - For large-format tiles (where at least one side > 60 cm, we recommend using gel adhesives with a high-deformation class - S2, with a low drainage time - T, especially when mounting them on the wall
  - Do not use adhesive mortar to level out substrate unevenness.
  - The maximum thickness of the adhesive layer for wall tiles should be 5 mm.
  - Spot gluing is not allowed. The adhesive must completely fill the space under the tile. Press down and gently slide the glued tiles – this will make them "suck" onto the substrate.
  - Always install the tiles with adhesive spread over the entire installation surface.
  - Do not fill joints with adhesive.
  - Start grouting only when the tiles are completely bonded with the substrate.
  - Prior to grouting, test the grout on a tile to check if it does not leave soil. This is particularly important when using contrasting grouts. Strictly follow the recommendations of the Manufacturer of the grout.
  - Grouting mortars are designed for filling the joints between the tiles. Grouting should be started after at least 24 hours from tiling or when the adhesive or cement mortar is hardened.
  - The joints should be adequately deep, clean and slightly damped with water. To achieve proper effect of grouting and optimum bonding conditions, strictly follow the instructions given on the grout packaging.
  - Clean the tile surface with a damp sponge. Then insert the mortar deep into the joints using a rubber trowel or a smooth float. Do not grout the joints at corners, floors, door and window frames, pipe outlets.
  - All contact points of tiles and sanitary equipment, as well as corners, wall-floor and wall-jamb joints should be sealed with special flexible grouts, e.g. silicone. To avoid soiling of tiles, apply tape on both sides. Inject the grout mass.
  - To achieve smooth and clean surface, drag your index finger, previously dipped in soap and water solution, across the joint. Remove the tape before the mass hardens completely.
  - Gently remove excess of adhesive mortar and grout from the floor area of the tile immediately after installation; be careful not to wash out the fresh grout or scratch the surface.
  - Remove soil on glazed and non-glazed tiles caused by different kinds of mortars using appropriate commercial cleaning agents or a 5% hydrochloric acid solution, and then flush with water.
  - Do not draw on the polished gres tiles with pens, markers and other strongly penetrating coloring stuff.

NOTE: *Polished tiles should be coated with an impregnate prior to grouting. This will protect them against soil and dulling. When impregnating, strictly follow the recommendations of the Manufacturer of the impregnate.*

- **TERRACES AND BALCONIES** The surface of the substrate, on which tiles will be installed must be firm, even, thoroughly cleaned and resistant to deformations. To reduce the substrate absorption, a primer should be used. Prior to installing the tiles, it is necessary to prepare base and isolation layers and execute expansion joints. Make slopes in each layer, starting from the base layer, maintaining at least 2% slope in the water outflow direction. All the materials intended for installation of frostproof tiles outdoor must be frost-proof and water-proof.

- **FLOOR HEATING** Activate heating before laying the floor. We recommend to turn it on 24 hours before the works starting date. Underlayment for floor heating must be primed with a priming emulsion. Next turning on should take place no sooner than 28 days after tiling.

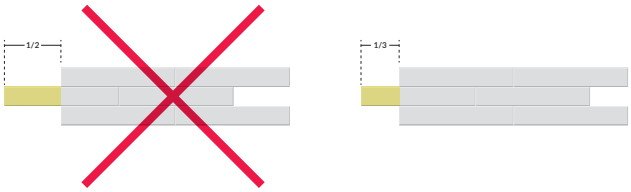
- **TILES CUTTING**
  - Tiles should be cut using tile cutters (guillotine tile cutter/tile breaker machine) or mechanically with a diamond wheel grinder (for gres tiles).
  - Use proper diamond drill or hole saw designed for gres tiles to cut round openings in the tile.
  - We recommend using water jet cutter to cut mosaic of unusual shapes.

NOTE: *Take special care and wear appropriate personal protective equipment when cutting tiles. Always cut tiles and decorations wearing safety glasses and protective masks, especially when using electrical equipment. Beware of possible sharp edges of cut tiles and decorations.*

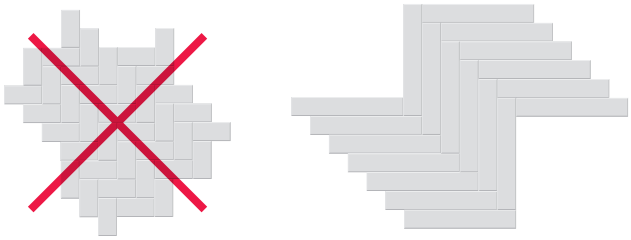
- **INSTALLATION OF DECORATIONS** Special care is recommended when bonding and grouting decorations. Do not allow soiling or scratching of the face. Install glass decorations using transparent, universal, acetone free silicone. Perform grout test before grouting. Decorative elements are susceptible to abrasion, e.g. with grouts. Use paint tape to protect decorations prior to installation or use a grout applicator. Silicone or acrylic joints are recommended. Contrasting grouts can change the shade of the decoration. Use waterproof flexible grouts for joints with glass decorations. Strictly follow the instructions of the Manufacturer of the grout. We do not recommend installing decorations with crystals and precious materials in places exposed to chlorine or high humidity. When installing conglomerate decorative elements use flexible adhesive

with increased adhesion. Spread the adhesive over the entire surface of the decoration. Apply silicone on glass decorations using silicone gun, in parallel strips spaced every 5 cm. Spot gluing is not allowed.

- **MODULAR TILE LAYING SYSTEMS BRICK** - In order to highlight and maintain the proper visual qualities of the rectangular tiles, we recommend to lay them using max a 1/3 offset pattern, due to the permissible surface flatness tolerance provided for in PN–EN 14411.



CHEVRON TILE PATTERN– We recommend this pattern for tiles with side length ratio not less than 1:3 (e.g. 15 x 45, 15 x 60). We do not recommend this pattern for tiles with side length ratio of 1:2 (e.g. 30 x 60).

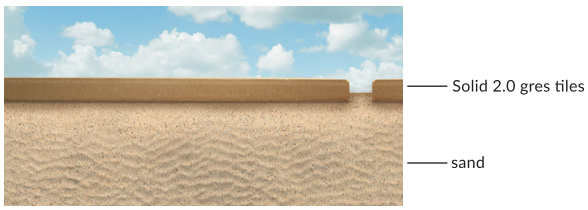


- **INSTALLATION OF Solid 2.0 TILES**
  Solid 2.0 tiles can be installed in various ways, depending on the location:

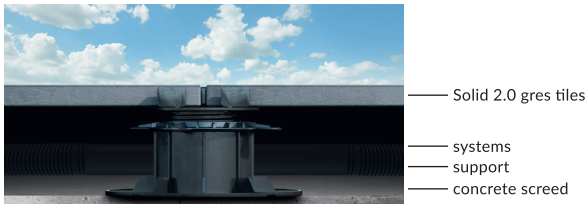
LAYING ON THE GRASS
(recommended for gardens, terraces, outside areas)

LAYING ON THE GRAVEL
(recommended for garden paths, sidewalks, courtyards).

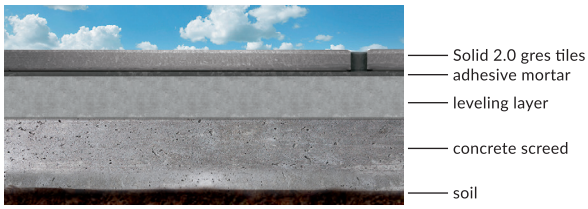
LAYING ON THE SAND
(recommended for recreation areas, beaches, swimming pools),



INSTALLATION ON SUPPORTS
(recommended for terraces, verandas, summer gardens),



INSTALLATION ON ADHESIVE MORTAR
(recommended for terraces, verandas, gardens)



The detailed information on the installation of Solid 2.0 gres tiles can be found in a special catalog, which can be found at www.cersanit.com in "Catalogs" section

GENERAL CONDITIONS FOR INSTALLATION OF GRES TILES 600 × 600 × 20 mm ON BRACKETS:

- Intended for pedestrian traffic
- Use at least 4 pieces of brackets
- The brackets must meet the requirements of relevant Standard Specifications or Technical Approvals.
- Diameter of upper and lower bracket flange – minimum 13 cm
- Recommended height of brackets – maximum 30 cm
- The substrate for the installation of the system must be load-bearing, hard and ensure stability of setting of supports and the entire system.
- In the event of mechanical damage/cracking of a tile, it should be replaced immediately to prevent spreading of the structure

Conditions for installation on brackets	Use at least 4 pieces of brackets
Ø ≥ 13 cm H ≤ 30 cm	

NOTE: *Ceramic tiles installed on supports are exposed to wind and can be lifted. An incorrectly installed plate may break when hit hard by heavy objects falling from a height. The manufacturer therefore recommends to seek for the assistance of a qualified specialist when installing the tiles on brackets. Installation should be performed in accordance with the principles set forth by the bracket manufacturer and the general provisions of the building law. Failure to do so may result in serious injury or property damage.*

GENERAL GUIDES FOR TILE CARE

- Clean ceramic tiles using commercially available cleaning agents for such products.(recommended for garden paths, sidewalks, courtyards).
- Glazed tiles are produced in a way that allows the use of the tiles without additional protection, therefore the use of impregnates is not recommended. The impregnate that covers the glaze layer will lead to surface changes that occur during the operation of the tiled floor, especially those related to abrasion (tile surface dulling) and staining.
- Do not use strong acid-based detergents for cleaning glazed tiles.
- When it comes to preserving gres tiles, we should distinguish between natural gres tiles and polished gres tiles. Polishing gives the tile high aesthetic qualities and color intensity, while increasing microporosity and thus making it more prone to soiling and scratching.
- Use only products intended for gres tiles for their regular maintenance, observing the instructions attached to such products. Floors finished with gres tiles can be cleaned using any commercially available in Poland agents intended for such surfaces. However, remember to clean adhesive remains, as well as remains of mortar, lime, immediately after laying the tiles – preferably with special agents intended for such use. Slightly acidic agents are used to remove such residues, which are then washed away with clean water. When applying, be careful not to apply them on the grout, to avoid washing it out. Cleangres tile floors systematically, avoiding heavy soiling. In the case of large areas (storage rooms, large shop floors), the possibility of machine cleaning should be considered. It is also acceptable to use microfiber mops with appropriate chemicals diluted as recommended by the Manufacturer.

GENERAL GUIDES FOR DECORATION CARE

Clean the decorations with a cloth gently moistened with water. Clean glass decorations and the ones with crystals, decorated with precious materials with antistatic cloth. Do not use pastes or lotions, liquids containing granular materials or agents containing alcohol, solvents or corrosive substances. Strictly follow the instructions of the Manufacturer of the product.

NOTE: *If you are not sure how to clean the tiles and decorations, contact the tiles Manufacturer. The Manufacturer shall not be held liable for any damage to tiles and decorations resulting from the use of an inappropriate agent or agent containing corrosive substances. Use all the products in accordance with their intended use and the instructions/ indications attached to the purchased product. If you have any questions, contact the Distributor/ Manufacturer of the product.*

APPENDIX:
QUALITY REQUIREMENTS FOR 2ND GRADE TILE

Defect type	Defect specification	GRADE II
Difference of shades	Slight differences in color intensity on the tile surface	Acceptable
Holes	Minor holes in the glazing surface	Acceptable
Scorches	Minor concentrated blisters on the glazing surface, closed or open, may be squashed under pressure	Dispersed acceptable
Punctures	Point, small indentations violating the evenness of the glazing surface	Acceptable
Pits	Point indentations in the glazing	Acceptable
Insufficient glazing	Places on the glazed surface not covered with glazing, glaze falling off of the edges	Acceptable dispersed with total surface of no more than 100 mm^2
Glazing thickening and waviness	Glazing unevenness in the form of waves or thickening, dripping on the tile edges	Acceptable
Foreign grains	Foreign grains settled and partially embedded in the glazing layer	Acceptable up to 3 pcs. dispersed with diameter up to 1 mm and height of 0,5 mm
Corner splintering on the front side	Damages / bluntness to gres corners	Acceptable 2 pcs. with depth up to 1/3 of tile thickness, with surface up to 5 mm^2
Chips	Deficiencies on tile edges	Acceptable 2 pcs. with width up to 1 mm
Cracks	Cracks passing through part or the whole thickness of the tile	Not striking, max. 5 mm length acceptable
Cracks – type crow's feet	Cracks in the surface of glaze, moving radially from edges of tiles	Acceptable 1 pcs. with length up to 5 mm
Hole-cracks	Cracks in hollow of glaze, up to biscuit	Acceptable 1 pcs. with length up to 5 mm
Exfoliations/	Warstwowe oddzielenie szkliwa od czerepu, warstwowe rozdzielanie się czerepu na grubości	Niedopuszczalne
Pattern defects	Deviations from the adopted pattern, interruption of the patterns continuity, shifts of the overprint and margins, lack of overprint, smudges, margins, lines from digital printer etc.	Acceptable
Dots; stains	Small, stained specks/areas which are an unintended effect of a pattern	Acceptable
Edge sharpness	Sharp tabs on the side of the tile or no bluntness in the rectified tile	Acceptable on two edges
Scratches	Scratches of the tile face surface	Acceptable
Creases of glaze	Unintentional patchiness surface of glaze (f.e. orange peel)	Acceptable
Surface matt	Non-uniform shiny spots of the gres surface	Acceptable
Foreign mass inclusion	Foreign grains of a different color melted into the surface layer of gres	Acceptable
Unevenness of the phase on the edge of a rectified tile	Unevenness, shift of the beveled edge, phase non-uniformity	Acceptable on two edges
Chipping of the corners and edges from the installation side	Mechanical damage to tile corners and edges	Acceptable up to 3/4 of the tiles thickness
Insufficient polishing	Unpolished areas on the tile surface	Not striking acceptable
Excessive polishing	surface fragments polished too deeply (wiped out print or exposed body)	Not striking acceptable
Acceptable number of defects per single tile [pcs.]		Maximum 3 types defects, but no more than 5