

Application &  
Usage of  
Ceramics

İG | KÜTAHYA  
SERAMİK



20MM

EXTRA  
THICK



# NG | KUTAHYA

SERAMIK



reddot design award  
best of the best



NG | **KUTAHYA**  
SERAMIK

**National Factory, National Pride**



## **NG Kütahya Seramik's sense of quality and philosophy of environment conscious production were officially registered with Double Star Certificate**

“Never compromising on quality in any phase of production, NG Kütahya Seramik achieved to go beyond standards in this respect. NG Kütahya Seramik officially registered its sense of quality by receiving Turkish Standards Institute (TSI)’s “Double Star Certificate”, given only to the brands exceeding TSI standards.

NG Kütahya Seramik, having fulfilled all the criteria for ceramics covered by the TS EN ISO 14411 standard, has successfully completed the integrated management system audit and passed the ISO 9001-2015 quality management system, the most used management standard in the world. The brand has also been awarded with ISO 14001 Environmental Management System, ISO 50001 Energy Management System and OHSAS 18001 Occupational Health and Safety Management System certificates.”

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## HOW TO CHOOSE A CERAMIC PRODUCT?

Floor and wall ceramics are products with different surface and technical properties. For this reason, it is important that technical features are taken into consideration in addition to aesthetic elements while choosing ceramic. The technical values that you should pay attention to when choosing are compiled in the titles specified in TSE EN 14411 (Ceramic tiles - tariff, classification, features, conformity assessment and marking).



In all our catalogs, you can see the average values given for the product groups we produce in tabular form. In addition, if you desire, you can request separate technical tables for each product through our business partners and sales managers.

The product selections made without considering the purpose of use cause problems after the application or in the following years, and lead to making repairs again. You can use our products for many years without any problem as long as you make a choice by considering the features of the area to be applied while choosing (such as usage, human density, waterproofing, terraces, pools) and paying attention to important matters during use.

*In this booklet, we will try to help you choose products with the technical information we provide in the following headings.*

- Product groups,  
(Floor - Wall - Glazed Porcelain - Technical Porcelain)
- Surface properties,
- Edge ends and size tolerance
- Surface wear value,
- Stain resistance,
- Anti-slip (Optional)

Apart from these values that directly affect the usage, other technical values are stated in our tables.

## PRODUCT GROUPS

The product groups are an indication of the type of space the products are suitable for. For this reason, the first step is to determine if the product group is going to be used indoors, outdoors or in the façade? Other steps should be to determine the type of surface and edge finish according to the intended use of the area.



### Wall Tiles

Water Absorption:  
Min 10%  
Can be used only on  
interior walls



### Floor Tiles

Water Absorption:  
Min 0,5% Max 0,5%  
Can be used for indoor  
floor and wall  
coverings.



## Glazed Porcelain Tiles

Water Absorption:

Max 0,5%

Can be used both indoor and outdoor as floor, wall and exterior cladding.



## Technical Porcelain Tiles

Water Absorption:

Min 0,5% Max 0,5%

Can be used in Airports, Terminals, Shopping Malls and for indoor and outdoor and facade cladding

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## DIFFERENT SURFACE EXAMPLES FOR FLOOR COVERINGS



### Products With Matt Surface

- This type of surface can be used indoors and outdoors. It is also suitable for wet spaces.
- It is easier to clean compared to other surfaces.



### Products With Lappato Surface

- High abrasion resistance.
- During application, joint residues and mortar residues should be cleaned before drying.



### Products With Polished Surface

- Can be applied for all areas in home usage.
- If it is to be used in apartment entrances, a toothed mat must be used
- Should not be used in areas with heavy human traffic.

## EDGE FINISH AND SIZE TOLERANCE

Each of our products is checked and boxed in our quality separation lines based on the values determined at the lower limit in issues such as deviation from the square, size difference, edge curvature and center curvature specified in NG Kütahya Seramik standards. Quality control is carried out by taking into consideration the surface properties specified in our quality separation procedure.

PRODUCT NAME	QUALITY	SHADE	CONTROL	PRODUCTION CODE
VISTA GREY[N]	1P	RT2F	76 88 J1	RRCR 13:40

SIZE <b>80*80</b>	KP ISO9001 S Y CS 10:09 <b>55011267RN</b>	SY: 948 PNO: 38956 <b>44,80 M<sup>2</sup></b>
<b>ROYAL PULPIS GREY RECT. POLISHED NANO</b>		
SO LGM PRS	QUALITY	1
	CALIBER	X
<b>G 3004223704</b>	COLOR TONE	1 S

The application of products of different colors and caliber in the same area and in a mixed manner is considered as application error.

## RECTIFIED CERAMICS

After the products are baked, they are brought to the same size by abrading the edges with abrasive stones. In this type of squared products, the size difference tolerance is maximum  $\pm 0.5$  mm. The edges are sharp and straight. (X caliber)

Although there is a common opinion that rectified products can be applied without joints, joint gap is not only a detail that should be considered as an image. If the joint gap is not made (with proper interval) and the gap is not filled with the appropriate material, water and dust will enter between resulting in a worse appearance over time. Joint thickness should be at least 2 mm. This thickness should be increased according to the application area and intended use.

In addition, depending on the movement of the building and the expansion of the products, it can cause the ceramics swell over time from the place they are attached in applications without joints.

## NON-RECTIFIED CALIBER CERAMICS

After the products are baked, the sizes close to each other are divided into calibers and boxed. For non-rectified products, 2 mm joint gap should be left. Joint tolerance must be used for symmetrical appearance. Size difference tolerance is  $\pm 1$  mm in this type of products. The edges are not sharp and straight, but radial.



Size tolerance for a calibrated product;  
 $\pm 1$  mm for 610 x 610 mm  
minimum 609 mm  
maximum 611 mm

Size differences up to 2 mm in different tiles of the same caliber are within the standard.

This difference is maximum 1,4 mm in the same tiles of the same caliber.

## **SURFACE QUALITY**

Surface quality is reported as 95% in all our product declarations.

## **WATER ABSORPTION VALUE %**

The maximum amount of water that the products can absorb under certain conditions is tested by the methods specified in the standard.



This value is the value used to classify product groups. If it is less than 0.05%, it is technical porcelain tile. (Full body, double charge, granite)

If it is less than 0.5%, the product is glazed porcelain tile.

If it is between 0.5% - 3% the product is floor tile.

If it is more than 10%, the product is wall tile.

## **V (1-2-3-4) STANDARD**

### **SAME APPEARANCE**

**V1**



Each tile has the same texture, color, tone and motif with little and insignificant differences from tile to tile.

**V2**



### **SLIGHT DIFFERENCE**

There may be differences between the same colors in texture and / or pattern. The overall appearance of the tiles is quite similar.

**V3**



### **IMPORTANT DIFFERENCE**

The colors in one tile provide information about the colors in the other tile, but differ significantly in color intensity. One color that appears to be insignificant on the tile may be the predominant color on another tile.

**V4**



### **RANDOM DIFFERENCE**

A tile can be of a completely different color than another tile. These tiles cannot be selected by the consumer to remove several pieces. Due to the color differences, the tiles have a natural appearance. Therefore, each tile has a unique structure.

In your product selections, you should make your choice by considering the code system provided hereinabove. Some facades can be seen as more stable and perceived as tone difference especially in mixed and movable patterned products.

## **FRACTURE STRENGTH AND BENDING STRENGTH**

It is the numerical expression of the durability of the products. The durability of our products is above the minimum values given in the standard. If high tonnage transportation will be done in the area where the product will be used, these values must be questioned without fail in places such as warehouses, parking lots and etc.

## **WEAR VALUE (Surface Or Deep Wear)**

This value is an indication of where the product can be used.

The deep wear value is only used for unglazed technical tiles. If there is a statement that it is appropriate, it can be used in areas such as shopping malls and terminals where human traffic is high.

The surface wear value (1-2-3-4-5) is classified according to different codes as specified below.

### **PEI I**

It can be used on floors where there are no abrasive materials where people will walk bare feet or shoes with soft soles.

### **PEI II**

It can be used on floors where there are small amounts of abrasive materials occasionally where people will walk with soft or normal soled shoes.

## **PEI III**

It can be used on floors with a small amount of abrasive materials and where people will walk with shoes with normal soles.

E.g.: All polished surface products. (Full lappato products with “RPN” code)

## **PEI IV**

It can be used on floors with abrasive materials and heavy human traffic.

E.g.: Products with matt surface with “N” codes, products with lappato surface with “RL” code, “LB” productions (such as Technoplus + products)

## **PEI V**

It can be used on floors where abrasive materials and pedestrian traffic are very heavy. (such as Airport, terminal, hospital, school entrance areas)

E.g.: Airport Series, Full Body unglazed \* productions

\* Deep wear value is taken as a basis for non-glazed products and when evaluated in glazed product category, it should be evaluated as PEI V as a group.

- Which product with which PEI value should you suggest are stated on the next page
- You have to make a product recommendation by taking into consideration these details and this will minimize the complaints that may occur after use.

# MINIMUM SURFACE WEAR VALUES TO BE OBSERVED WHEN CHOOSING A PRODUCT

## A. HOUSES

### 1. Inside the apartment

- Kitchen.....PEI 3\*
- Bathroom, WC.....PEI 3\*
- Entrance .....PEI 3\*
- Living room, hall, bedroom.....PEI 3\*
- Balcony.....PEI 3\*

(Full Lappato products with “RPN” code, all floor coverings with matt and natural surfaces)

### 2. Common spaces

- Elevator entrance areas in the apartment and ground floor.....PEI 4
- Stairs, story landings and elevator areas .....PEI 4
- Terraces.....PEI 4
- Vehicle circulation places.....PEI 5

## B. WORKPLACES, BUSINESS CENTERS, SHOPPING MALLS

### 1. Common spaces

- Entrance to the business centers and areas in front of the elevator (Anti-slip may be requested)...PEI 4
- Stairs, floor and elevator front areas.....PEI 4

### 2. Working spaces \*

- Personal office.....PEI 4
- Collective office.....PEI 4

- Meeting and conference hall..... PEI 4

(If PEI 3 is used, movable abrasive products can cause problems.  
As long as this usage is considered, PEI 3 can be recommended.)

## **C. SHOPPING PLACES**

- Supermarket, hypermarket, stores ..... PEI 4
- Boutiques ..... PEI 4
- Warehouses..... PEI 4

(Break resistance is important)

## **D. HOTEL AND RESTAURANTS**

- Hotel rooms..... PEI 3
- Hotel reception halls and entrance..... PEI 4
- Hotel and dining hall..... PEI 4
- Hotel kitchen and additional products ..... PEI 4  
(Anti-slip can be requested)
- Restaurant, bar, cafe..... PEI 4
- Wedding, conference hall etc. ..... PEI 4

## **E. SCHOOLS AND TEACHING INSTITUTIONS**

- Class rooms ..... PEI 4  
(Anti-slip can be requested)
- School entrance areas, stairs ..... PEI 5  
(Anti-slip can be requested)
- Laboratories..... PEI 4
- Offices..... PEI 4
- Lecture halls..... PEI 4
- Student dormitories..... PEI 4

## F. HOSPITALS

- In-hospital
  - (Places with continuous pedestrian traffic)..... PEI 5
- Emergency room, operating theaters ..... PEI 5
- Private laboratories and departments..... PEI 4

## G. MUSEUM, AIRPORT AND TRAIN STATION

- Passenger visitor entrance areas..... PEI 5
- Places such as waiting rooms ..... PEI 5

## STAIN RESISTANCE

Contrary to what is known, this standard is a standard built on cleanability.

**Class 5:** Stains on the tile surface can be cleaned with hot water.

**Class 4:** Stains can be cleaned with weak cleaners.

**Class 3:** Powerful cleaners can remove stains.

**Class 2:** Solvents (Acetone, diluted acid-containing cleaning agents) are needed to remove stains.

**Class 1:** Cannot be cleaned with acidic materials.

Said stains are stains specified in TSI standards. In some cases, it may be necessary to rub it with a stain remover. (Example: cellulosic paint, cellulosic thinner)

Especially easy to clean, flat (non-relief) surfaces should be preferred in very dirty areas with heavy traffic.

Abrasive cleaning agents and equipment such as abrasive metal brushes should not be used for cleaning shiny and polished product surfaces. The surface should be cleaned with the help of a cloth using neutral detergent.

## **CHEMICAL RESISTANCE**

- It can be defined as the standard that includes the letter representation of the resistance to house and pool chemicals. It is named as class (A-B-C).
- This standard, which contains a separate value for each of our products, has been determined as the minimum class B in all floor coverings.

Conditions to be considered in the use of chemicals can be listed as follows:

- Highly concentrated chemicals should not be used for cleaning the product surface. (such as hydrochloric acid, bleach, all acids with a concentration of more than 3%) If it will be used to remove a stain on the surface of the product, it must be rinsed with water without keeping it too long on the surface.
- Harmful chemicals and cleaners (residual cream cleaners, acidic house cleaners, etc.) that are not completely removed from the product surface may damage the product surface over time and cause the surface to change and stain more easily. For this reason, the surface of the products should be washed with plenty of water and completely removed from the chemical. If necessary, brushing should be done again.
- Chemicals that are kept on the surface cause the surface to become dull. For this reason, cleaning materials should be tested and used in a small area.

Fluoric acid and cleaning agents containing fluoric acid should never be used in glazed surface cleaning or as a stain remover due to its disintegrating effect.

## **ANTI-SLIP**

Floor tiles have different anti-slip values according to their surface properties. The anti-slip value is expressed in "R". Tiles with anti-slip values between "R9 and R13" should be selected according to the usage characteristics of the place to be laid.

### **Classification according to DIN 51130:**

**R9 :** Low static friction

(Entrance areas, bathrooms, kitchens)

**R10:** Normal static friction (Storage areas)

**R11 :** Raised static friction (Restaurants, dining halls)

**R12:** High static friction

(Industrial kitchens, fire stations)

**R13:** Very high static friction

(Leather - textile factories, oil production facilities)

If a anti-slip value is required, it must be notified to the seller before the product is purchased. The sign of "R9, R10,... R13" must be seen on the box of the delivered product without fail.

Ceramics to be applied on the edge of the pool should have a anti-slip degree (Antislip) (R10 - R11). When such products with hard surface are applied, joint application must be applied with a joint gun. When the joint residues on the product surface are dry, they are hardly cleaned from the surface. For this reason, rough cleaning should be

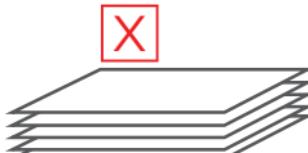
completed 20 minutes after grouting.

The values given in all these standards are valid for 1st class products.

## STORAGE AND TRANSPORTATION

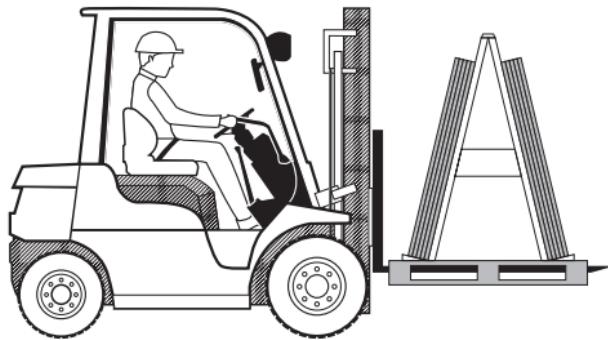
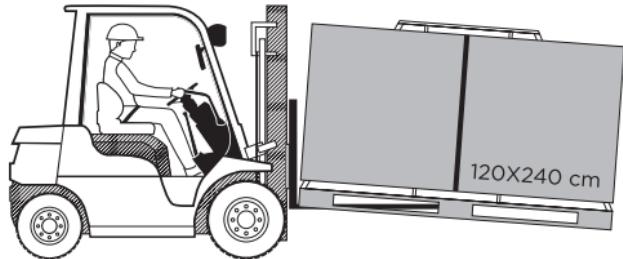


Recommended

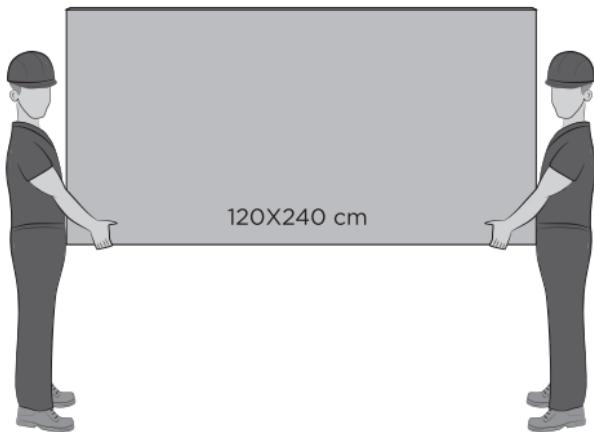
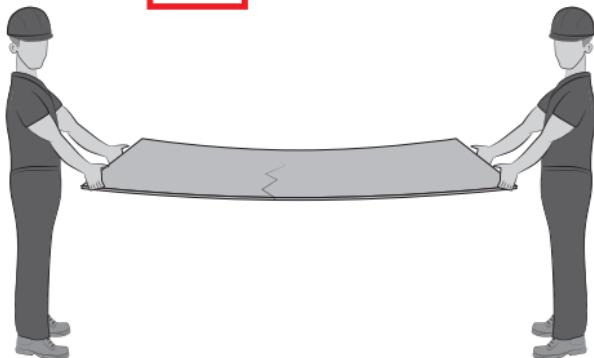


No Recommended

- When storing, it is recommended that the floor tile pallets should be stacked up to 4 layers in a row, and the wall tile pallets to be stacked no more than 3 layers.
- Particular attention should be paid to prevent the wall tiles from getting wet in the stock area. Application should not be done without completely removing the moisture in the wetted wall tiles.
- The direction of stacking of the free tiles should be in line with the stacking of the manufacturer. Tiles should be stacked vertically (as arranged on the pallet). Horizontal stacking of large size tiles is not particularly recommended. Otherwise, problems may occur on the product surface.
- When carrying large-sized products by hand and forklift, taking into account the situation in the images below will prevent unnecessary casualties. In addition, the products should be transported without shaking during the transportation process.



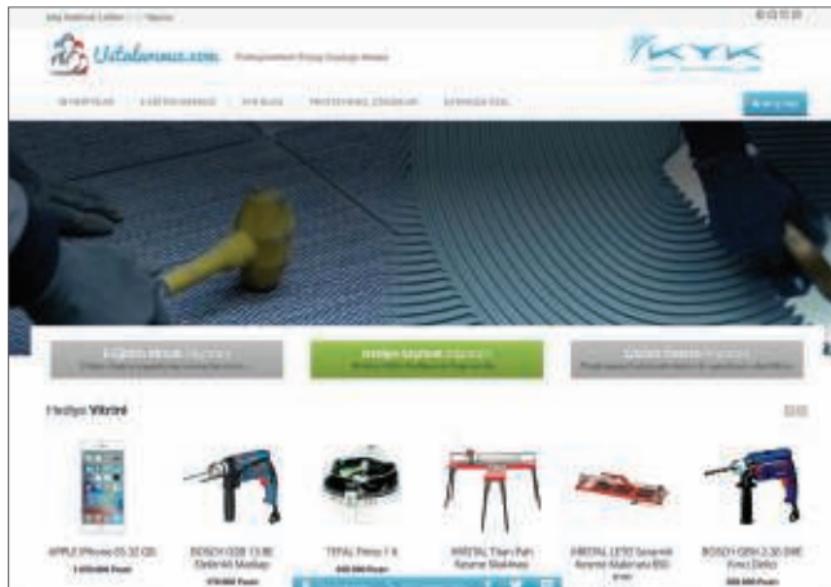
Transportation of large size (120 x 240 cm) tiles by **forklift**



Transportation of large size (120 x 240 cm) tiles by **hand**

The Correct Application Steps that we have prepared with the support of the KYK technical team describe in detail what should be considered while performing the application.

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In order for the ceramic treated areas to have a long life, the application must be done correctly in addition to the product quality.

In addition to choosing the right ceramic product, using the right construction chemical and performing it with experienced and certified craftsmen will allow long-lasting, smooth structures to be formed.

The information we have listed under the title of "Correct Application Steps" prepared in line with the recommendations of KYK Construction Chemicals Factory Technical Team clearly explains the situations that should be considered during application.



## **CORRECT APPLICATION STEPS**

Correct application in ceramic applications is made with the following 5 steps:

1. Preparation of Surface
2. Product Selection
3. Right Mix
4. Right Application
5. Cleaning and Protection

### **1. Preparation of Surface**

- The surface should be dry, clean, strong and free from dust, oil, dirt or anti-adhesion materials should be removed from the surface, and materials such as mortar and cement residues should be scraped.
- Surface and ambient temperature should be between +5° C and +35° C during application.
- After the surface cleaning, it should be primed with a suitable primer and left to dry in order to increase the adhesion strength and balance the surface absorbency.
- The dusty surface behind the ceramic should be moistened and cleaned.

## 2. Product Selection (Adhesive)

- It is recommended that light colored wall and floor ceramics are adhered with white colored ceramic adhesive mortar.
- For the bonding of existing ceramics, C2 class developed and S1 / S2 class flexible / very flexible class adhesive mortars should be used and CG2WA class improved joint filling materials reduced water absorption and high abrasion resistance should be used between the joints.

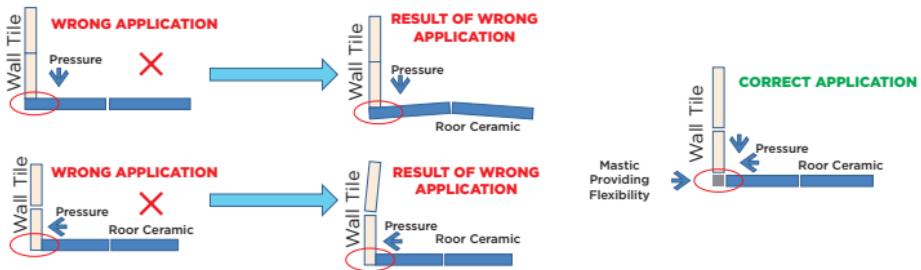


### 3. Proper Mix

- Adhesive mortar should be mixed with water or second component at the rate specified in the “Technical Information Document” with a low speed mixer (400 rpm) so that there is no dry dust and lumps. After the mortar is rested for 5 - 10 minutes, it should be mixed again for 1 - 2 minutes before application and should be made ready for use.

### 4. Proper Application

- In ceramic bonding, the application should be started from the walls first, and the lowest row wall ceramics should be applied after the floor ceramics are laid.
- Polyurethane mastic, which provides flexibility by leaving a 1 cm gap at the intersection of wall ceramics and floor ceramics, should be used.



- In all ceramic applications, the adhesive mortar should be applied with a notched trowel determined according to the ceramic size and the structural condition of the surface.



- When applying on large-sized ceramics, there should be no gap between the ceramic and the application surface. In these applications, double-sided (combined) method should be used.
- The ceramics to be used in the application should be prevented from being exposed to direct sunlight and it should be ensured to be kept in closed areas the day before the application.



- Ceramic Leveling System consisting of, holder and pliers should be used or proper bonding of large size ceramics (120 x 240 cm - 80 x 240 cm 60 x 120 cm - 60 x 160 cm - 80 x 80 cm - 60 x 60 cm 18 x 118 cm) at the same level with certain joint gaps.
- For large area applications, a minimum 1 cm wide expansion joint gap should be left once in average 40 m<sup>2</sup>.



## **Cutting and Punching Porcelain Tiles**

- The experience of the master making the application, the cutting tool, and the selection of equipment suitable for the tile to be cut can be counted as issues that are important for undecided cutting. Diamond bits used in wall tiles and glazed porcelain tiles are different. A diamond bit which can cut the wall tile may not cut the glazed porcelain tile. The diamond tips' being new, the width of the part to be cut allows the cutting to be done properly.



- Porcelain tiles are ceramic tiles that are difficult to cut due to their superior technical characteristics. Especially in large-sized tiles, slower and more careful cutting reduces the loss and burrs. Especially in hard surface ceramics, special equipment (cutting stone) must be used and cutting must be done slowly in order to cut without cracking.
- Although many applicators do not prefer, the wet cutting method is the best cutting method that reduces the losses to minimum, especially for porcelain tiles.
- The different materials and methods used for cutting vary according to the applicator's choice. If a warning is required in this regard, it will be the best warning to perform the cutting process slowly and carefully, depending on the product surface.
- For drilling, vacuum fastening and rigid aid should be used. Equipments which are suitable for glazed porcelains should be used.

In general, an average of 4 - 5 holes can be drilled by one drill bit. Drilling process by cooling with water is also a condition which has to be used. It should be acted in accordance with the recommendations of the diamond tip manufacturer. Drilling more holes can cause damage to the product.



- Cracking of the products in the applied area creates an irreversible situation. Therefore, making the bonding process depending on the weight or function of the accessory you want to hang, should be considered as an alternative.

## 5. Cleaning and Protection

- In cement based joint filling material application, the excess of the mortar can be peeled off with a soft-tip spatula / squeegee or moistened sponge-tip spatula. After waiting for about 20 minutes according to the ambient temperature, the thin joint layer that can remain on the surface should be cleaned by wiping with a damp sponge. Cleaning water should be changed

frequently. Residues that remain like blurred water traces on the surface are hardly cleaned by adhering to the surface after drying. More attention should be paid to this situation on relief and textured surfaces.

- Surface smoothing and cleaning should be done with a dry cloth before the cement based joint filling material dries completely.
- Joint and surface protective material should be used for preserving the color of the joint fillers used on frequently cleaned surfaces and floors such as kitchen benches and wet areas and for their longevity.
- In order not to damage joint fillers, cleaning materials such as bleach, salt spirit, and lime remover should not be used. Joint and surface cleaner material should be used to clean joint fillings.
- Before the cleaning process with the machine, the time to complete the curing of the joint fillers (minimum 28 days) should be waited. When the joint filling material is cleaned with the machine before it is fully cured, the chemical cleaning materials used may cause abrasion and discoloration of the joint filling material. For this reason, it is necessary to show maximum sensitivity to the subject, especially in areas that are reconstructed and opened to traffic in a short time.
- While cleaning is done before grouting, care should be taken to avoid damaging the ceramics. Edge and corner fractures that occur after the application is completely an application error. Special equipment prepared to clean the

joints should be used.

- While removing the level fixing wedges, the product should be removed by hitting gently without damaging the edges. Otherwise there will be breaks at the edges.



- The covered area should be wiped with a damp cloth or sponge, and mortar and foreign matter should not be left on the surface. Depending on the surface properties of the product, mortar and joint residues that dry and remain on the surface can turn into a stain which is difficult to remove.
- Polished products have low scratch resistance. The surface should be covered with a hard cardboard to protect it from being scratched in other construction processes to be made after the application.
- The ceramic areas should be cleaned at least once a month with liquid household cleaning materials in accordance with the user manual. Cleaning water should be changed frequently during cleaning and should not be cleaned with dirty water.

<b>Daily Cleaning</b>	Liquid Surface Cleaner, Granule or Cream Type Cleaner
<b>Machine Oil Stain</b>	Pure Alcohol, Carbonated Water
<b>Synthetic Oil Stain</b>	Liquid Detergents, Solvent
<b>Tire, Rubber Track</b>	Acetone, Organic Solvents
<b>Plastic Paint, Whitewash</b>	Rubbing with Brush, Hot Water, Granule or Cream Type Cleaner
<b>Candle Stain</b>	Solvent , Thinner, Turpentine
<b>Pen, Ink</b>	Alcohol, Solvent , Low Concentration
<b>Grout Removal, Mortar</b>	Lime Remover Effective Cleaner, Low Concentration Hydrochloric Acid
<b>Oil Stain</b>	Liquid Detergents, Oil Remover, Caustic Soda
<b>Rust, Oxidation, Lime</b>	Lime Remover Effective Cleaner, Rubbing With Low Concentration Hydrochloric Acid, Granule or Cream Type Cleaner
<b>Cellulosic, Synthetic Oil Paint</b>	Cellulosic Thinner, Synthetic Thinner
<b>Beer, Cola, Wine, Coffee, Tea</b>	Hot Water, Bleach
<b>Vegetable Oil Stain</b>	Alkaline Liquid Detergents
<b>Metal Print Stain</b>	Acid or Alkali Based Detergents Should be Removed by Sponge

\* In low concentrations of acid use, the acid content should not exceed 3%.

\* Stain removal by rubbing with abrasive cleaning material on Polish surface products is not suitable as it will cause scratches.

\* Cleaning agents containing fluoric acid and fluoric acid should never be used as glazed surface cleaning or stain removers due to their disintegrating effect.

## **SPECIAL APPLICATION NOTICES: APPLICATION OF SAME-NAME PRODUCTS IN DIFFERENT DIMENSIONS TOGETHER**

There may be a ton difference between products that do not have a set product phrase and are given the same names in different sizes. Productions close to the light and dark colored targets in production can create different product images for different sizes. Therefore, if products of the same color and pattern are to be applied on the floor and the wall, it must be stated when buying.

## **APPLICATION OF DECORS AND BACKGROUND TOGETHER**

It is important to note that the calibration codes of the products are the same. Products with different caliber codes cannot be applied together. The same applies to wall tiles, which we call decor and background. The caliber of the decorative product you will apply must be the same as what the caliber of the product you have purchased.

## **USE OF COATING PRODUCTS**

- Phosphoric acid and fluoric acid containing cleaners should not be used. It should not be left in interaction with chemical materials for a long time. After cleaning, rinse with clear water.
- Coating products; It should be used as indoor (Wall) decor. It should not be used on floors, exterior facades and pools.
- The factory must be contacted for different usage areas.

## **FEATURES AND USE OF FULL LAPPATO (RPN) PRODUCTS**

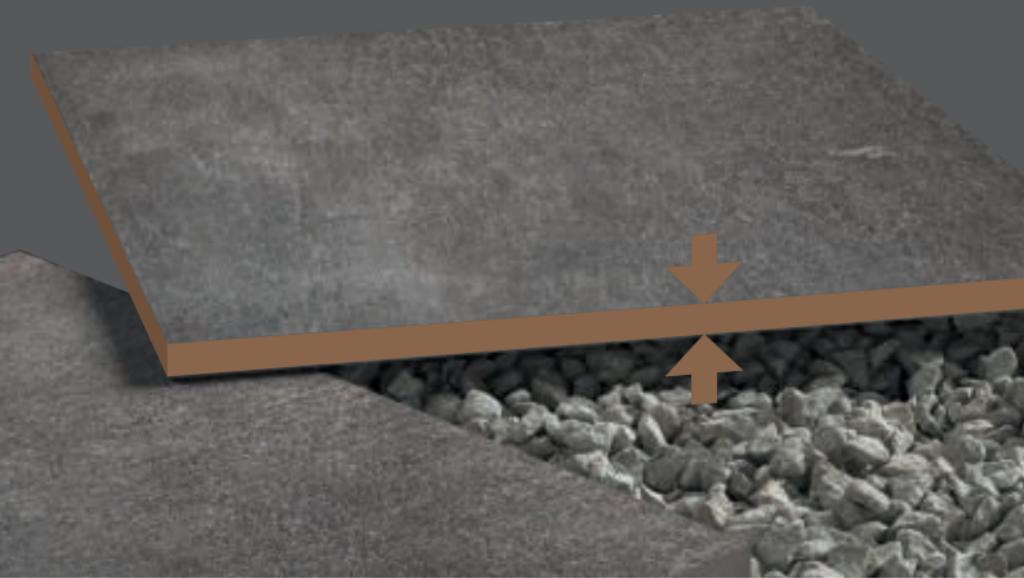
- Polished surface products produced with RPN code in NG Kütahya Seramik factories are more sensitive to scratch than other matt surface products depending on the production technology and product surface properties.
- If cleaning products with Polished surfaces will be cleaned by the machine, white non-abrasive soft floor cleaning pads should be used. Pads in red or black should never be used.
- Although it has high stain and acid resistance, scratch resistance is lower than products with a matt surface. Attention to the following items while using products with this surface will allow the product to be used for many years without any problem.
- Products with shiny surfaces should not be used in areas with high people traffic. Depending on the scratches on the surface, the situations occurring until matting can be seen as time passes. It should be ensured that the sand in your shoes is completely cleaned.
- After the product application processes are completely finished, the surface of the product should be cleaned and then be protected with a hard cardboard. Cardboards should not be removed until they are placed in the apartment. Scratches may also occur during moving.
- While applying the product, the L cuts should be cut by applying the correct cutting method shown in the photos below.



A hole with 8-10 mm diameter is opened at the center of cutting



- In the floors where 120 x 240 cm is applied, the stretches due to the sitting of the building cause the micro cracks formed in the cutting center to proceed towards the middle of the product. For this reason, performing the cutting process is a mandatory application especially for 120 x 240 cm (RPN) glossy products after drilling the appropriate diameter hole during the application.
- If shifting will be made in the application form, the shifting ratio should not exceed 30% of the entire product. Even if the deformation of the product is within the standard, the formation of the is observed in the shiftings made in the middle.



## WHY NG PERFORMA20?

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### **RESISTANT TO LOAD**



It is fully resistant in areas with high traffic and pedestrian traffic. (It can withstand a load of more than 1,300 kg per square centimeter.)



### **FIRE RESISTANT**

No expansion and discoloration.



### **FROST RESISTANT**

Deformations and mass losses due to freezing are not experienced



## NOT AFFECTED BY WEATHER CONDITIONS

It is resistant to temperature differences in nature.



## EASY TO CLEAN

It can be easily cleaned with water and washed with pressurized water.

**NACL**

## SALT RESISTANT

It is resistant to salt water, acid and alkali.



## MOISTURE RESISTANT

% Water absorption value is <0.05.



## NON-SLIP SURFACE

Optionally, it can be produced as anti-slip (R10, R11, R12)



## QUICK AND EASY APPLICATION

The spaces are ready to be used immediately after application.



## REUSABLE

Can be dismantled, renewed and reused.



## SOUND AND HEAT INSULATION

Contributes to sound and heat insulation.



## MOLD AND MOSS RESISTANT

It is resistant to mold and moss growth



## LONG LASTING

It has high abrasion resistance and does not change over time..



## CHEMICAL RESISTANT

Not affected by chemicals



NG | PERFORMA20

# NG PERFORMA20? WHERE TO USE?

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## **TERRACE, VERANDA, BALCONY**

It is used in areas of the houses that are constantly exposed to external factors.



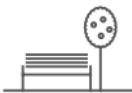
## **PARKING, GARAGE, GARAGE ROAD**

It is the right choice for durability and reliability thanks to its load resistance above average.



## **POOL ENVIRONMENT, FOUNTAIN**

Since it is resistant to moisture, it is suitable for wet areas when it is produced with antislip feature.



## **PARK, GARDEN, RECREATION AREAS**

It is fast and practical to apply to green areas and recreation areas.



## **FACTORY, AIRPORT, STATION**

It can be used safely in commercial and public areas where high durability is required and where pedestrian and freight traffic are intense.



## **HOLIDAY CENTER, BEACH, COAST**

It is suitable for all kinds of soft surfaces. It is easily laid on sandy and stony beaches by dry application method.



**Aspen Beige**  
60 x 60 cm



NG Performa20 performs remarkably in living spaces with the most challenging conditions with high fracture strength. The series, which consists of products belonging to the color body, glazed porcelain tiles, can be used safely indoors and outdoors.



# DRY APPLICATION ON GRASS

Pedestrian paths in green spaces can be formed easily and quickly thanks to NG Performa20. The product is practical, economic and environmentally friendly inasmuch as adhesive, joint and laying work is not required during the dry application thereof.

## 1 PREPARATION

The tile pattern to be applied on grass is decided. The area is excavated through virtue of a shovel according to the size of tiles. The ground is made ready by digging at a depth of about 5-6 cm.

## 2 BALANCING LAYER

Pebbles are fixed in order to adjust height by pouring them into the pit with the help of gauge. Preparation of at least a 3 cm-thickness pebble layer is recommended below the application area.

## 3 APPLYING TILES

Tiles are applied approximately 1 cm under the grass level.

## 4 LEVEL ADJUSTMENT

Rubber mallet is utilized in order to align the lawns with the tiles.

**Terra Stone Grey**  
60 x 60 cm



# DRY APPLICATION ON PEBBLE

NG Performa20 is a practical and a versatile solution in both residential and public areas. The application on pebbles ensures drainage of rainwater in a correct way.

1

## PREPARING THE AREA

A pebble mixture which has different particle sizes (16-35 mm) is poured into the application area. A pebble layer in 10-20 cm thickness is formed.

2

## SURFACE LEVELING

Minimum of 2% slope in the flow direction of water should be given to the application area.

3

## PLACING TILES

The pebble layer is leveled by virtue of a floating rule. Standard gaps are provided when tiles are applied and surface flatness is checked every 5 meters for ideal application.

4

## FINISHING

The gaps between the tiles are filled by fine sand or pebble and the tiles are fully placed on the ground by virtue of a rubber mallet.

**Aspen Beige**  
60 x 60 cm



# **DRY APPLICATION ON SAND**

Pedestrian paths or seating areas are formed on the beaches and coasts by virtue NG Performa20. It is recommended using tiles in light colors in order to prevent overheating of the surface in applications made on sand.

## **1 PREPARATION**

There should be at least 5-10 cm thickness sand layer in the application area.

## **2 STABILIZER LAYER**

The surface is leveled by virtue of a floating rule before the tiles are applied.

## **3 PLACING TILES**

Application is made subsequent to determination of appropriate gaps between the tiles.

## **4 FINISHING**

The gaps between the tiles can be filled again by sand or used without the application of filling.

**Aspen Beige**  
60 x 60 cm



# APPLICATION OF RAISED GROUND

NG Performa20 provides numerous advantages when applied with ground elevating apparatus to be placed at the corners and center. Ground roughness and collapse issues are solved in a practical way thanks to this application method.

1

## PREPARATION OF THE AREA

Tiles are applied on concrete screed or on ceramic floor without leveling through utilization of suitable height apparatus.

2

## CONTROL OF TILES

20 mm tiles are manufactured in a rectified and their size tolerances are  $\pm 0.5$  mm.

3

## APPLICATION

It is recommended for high traffic areas to place an apparatus in the middle part of the tile in addition to the apparatus placed on the tile corners. Installations (water, electricity, lighting, etc.) can be easily placed thanks to ground elevating apparatus.

4

## LEVEL

Adjustable tools ensure laying evenly in cases when the ground is not smooth. The tiles can be easily changed in the event of a failure subsequent to completion of the application.



**Silver Stone**  
60 x 60 cm



# **APPLICATION WITH MORTAR**

NG Performa20 is applied by usual technique in high traffic areas. Thanks to its durable structure, it is the perfect solution for public areas and industrial facilities.

## **1 PREPARATION OF ADHESIVE MORTAR**

Adhesive mortar is made ready prior to placing the tiles. Cement based, high performance and super flexible bonding mortars have to be utilized.

## **2 APPLICATION OF ADHESIVE MORTAR TO THE GROUND**

Application should be made by applying the adhesive on both to the surface and back of the tile. It should be let to dry for at least 24 hours after apply the adhesive mortar and then the joint application should be proceeded.

## **3 JOINT APPLICATION**

It is recommended to leave a joint gap of at least 5 mm. the joint gap must be at least 1 cm in soft grounds. Usage of KYK Megafuge Flex joint is recommended in high traffic areas.

## **4 THE LAST STEP**

The joints must be removed before it dries. Recommended chemicals for cleaning should be utilized and the surface should be rinsed by plenty of water.

# SYMBOLS

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	Wall Tile		Rectified		Glazed Porcelain		Colored Body
	Floor Tile		Satinato		Technical Porcelain Ceramic		

---

## PEI

**PEI 1** Suitable for walls, bathroom and bedroom floor.

**PEI 2** Suitable for floors with low pedestrian traffic, such as residences.

**PEI 3** Suitable for floors with high entrance and exit, such as entry and corridors.

**PEI 4** Suitable for floors that will be exposed more to pedestrian traffic such as stores, restaurants.

**PEI 5** Suitable for indoor and outdoor floors where pedestrian traffic is very busy.

<b>R9</b>	$\geq 6^\circ - 10^\circ$ LOW STATIC FRICTION		<b>R11</b>	$\geq 19^\circ 27^\circ$ INCREASED STATIC FRICTION	
<b>R10</b>	$\geq 10^\circ - 19^\circ$ NORMAL STATIC FRICTION		<b>R12</b>	$\geq 27^\circ 35^\circ$ HIGH STATIC FRICTION	

\*It is stated as "Industrial Areas Test (Classification Group R9-R13)" according to DIN 51130.

PACKAGING		BOX		PALLET		
Size	Body	Box Pieces	Box M <sup>2</sup>	Boxes in	Pallet	Pallet M <sup>2</sup>
Pallet Dimensions 60x60 cm / 24x24"	Rectified Glazed Porcelain	2	0,72	30	21,6	80 x 120 x 75

## TECHNICAL DETAILS

## TECHNICAL DETAILS

TILE SIZE		BOX		PALLET		
cm	Product	Qty (pc/box)	Box m <sup>2</sup>	No. Of boxes per pallet	Pallet m <sup>2</sup>	Dimensions of Pallet
120x240 Rectified	Glazed Porcelain	0	0	16	46,08	133x247x45
120x120 Rectified	Glazed Porcelain	2	2,88	20	57,6	120x140x65
120x120 Rectified	Technical Granite Ceramic (Magnum Series)	2	2,87	16	45,85	123x140x65
60x160 Rectified	Glazed Porcelain	2	1,92	32	61,44	92x170x75
60x120 Rectified	Glazed Porcelain	2	1,44	32	46,08	90x130x75
60x120 Rectified	Technical Granite Ceramic (Logan Series)	2	1,44	32	46,08	90x130x75
20x120 Rectified	Glazed Porcelain	7	1,61	36	57,96	92x130x75
18x118	Glazed Porcelain	6	1,27	36	45,72	80x120x70
80x80 Rectified	Glazed Porcelain	2	1,28	35	44,8	80x120x95
60x60	Glazed Porcelain	4	1,49	30	44,65	80x120x75
60x60 Rectified	Glazed Porcelain	4	1,44	32	46,08	80x120x75
33x66	Glazed Porcelain	6	1,31	40	52,27	80x120x81
33x66 Rectified	Glazed Porcelain	6	1,31	40	52,27	80x120x82
31,5x61,5	Glazed Porcelain	6	1,162	48	55,79	80x120x78
31,5x61,5 Rectified	Glazed Porcelain	6	1,107	48	53,14	80x120x75
16,5x49,5	Glazed Porcelain	10	0,82	90	73,53	80x120x80
42,5x42,5	Floor Tile	9	1,63	50	81,28	80x120x100
20x20 Antacid	Glazed Porcelain	15	0,6	96	57,6	80x120x95
30x90 Rectified	Wall Ceramic	5	1,35	36	48,6	92x120x75
30x75 Rectified	Wall Ceramic	6	1,35	32	43,2	80x120x75
30x75	Wall Ceramic	6	1,35	32	43,2	80x120x75
30x60	Wall Ceramic	9	1,62	32	51,84	80x120x75

# T TECHNICAL SPECIFICATIONS OF UNGLAZED TECHNICAL PORCELAIN CERAMICS

Standards	Technical Specifications		Standard Values	NG Kütahya Seramik "Unglazed Product Test Values"
EN ISO 10545-2	Size and surface quality	Length and width	± % 0.6 (± 2.0 mm)	±%0.4
		Thickness	± % 5 (±0,5 mm)	±%4
		Edge smoothness	±%0.5 (±1.5 mm)	±%0.3
		Deviation from the square	± % 0,5 (± 2,0 mm)	±%0,3
		Center-edge curvature-roll	± % 0.5 (± 2.0 mm)	±%0.2
		Surface quality	%95	%95
EN ISO 10545-3	Water absorption %		≤%0,5 (h(max. 0.6% for each tile)	S % 0,05
EN ISO 10545-4	Breaking strength (N)	thickness ≥7,50 mm	min. 1300 N	min. 2300 N
		thickness < 7,50 mm	min. 700 N	
	Flexural strength (N/mm <sup>2</sup> )		min. 35 N/mm <sup>2</sup>	min. 45 N/mm <sup>2</sup>
EN ISO 10545-5	Bounce coefficient, impact strength		manufacturer declares	It is appropriate
EN ISO 10545-7	Deep abrasion resistance (unglazed tiles)		≤ 175 mm <sup>3</sup>	≤139 mm <sup>3</sup>
EN ISO 10545-8	Linear thermal expansion coefficient (100° C)		manufacturer declares	It is appropriate
EN ISO 10545-9	Thermal shock resistance		Should be resistant	It is resistant
EN ISO 10545-10	Moisture expansion		manufacturer declares	0,01%
EN ISO 10545-11	Cracking resistance		manufacturer declares	It is resistant
EN ISO 10545-12	Frost resistance		manufacturer declares	It is resistant
EN ISO 10545-13	Low concentration acid and base		manufacturer declares	LA/LB
	Highly concentrated acid and base		manufacturer declares	HA/HB
	Household chemicals and swimming pool salts		min. B	A/B
EN ISO 10545-14	Stain resistant		min. Class 3	min. Class 3
EN ISO 10545-15	Hazardous substances released Lead - Cadmium		manufacturer declares	Pb<0,1 Cd<0,02
EN 101	Surface hardness (Mohs)			min. 6
DIN 51130-51097 CEN/ TS 16165	Slipperiness (ramp determination)		manufacturer declares	R=09-10-11-12-13 CLASS=A-B-C
EN 12004:2007+A1:2012,4,1	Bond strength for adhesion	Cement adhesives	manufacturer declares	≥1 N/mm <sup>2</sup> Tip C2
EN 12004:2007+A1:2012,4,2		Scatter adhesives	manufacturer declares	
EN 12004:2007+A1:2012,4,3		Resin reaction adhesives	manufacturer declares	
	Mortar		manufacturer declares	
	Reaction to fire		A1 or A1 <sub>FL</sub>	A1 or A1 <sub>FL</sub>
CEN/TS 5209	Palpability		Surface description is declared	Surface description is declared

Notes

- EN 14411 Dry pressed ceramic tiles with low water absorption Annex G (GrupBis) E <0,5%
- The above test results are valid only for 1st quality products. Accessories are valued outside the classification. Values are average production values.
- NG Kütahya Seramik reserves the right to change the technical values of all products in this catalog



# TECHNICAL SPECIFICATIONS OF GLAZED TECHNICAL PORCELAIN CERAMICS

Standards	Technical Specifications		Standard Values	NG Kütahya Seramik "Unglazed Product Test Values"
EN ISO 10545-2	Size and surface quality	Length and width	± % 0.6 (± 2.0 mm)	±%0.4
		Thickness	± % 5 (±0,5 mm)	±%4
		Edge smoothness	±%0.5 (±1.5 mm)	±%0.3
		Deviation from the square	± % 0,5 (± 2,0 mm)	±%0,3
		Center-edge curvature-roll	± % 0.5 (± 2.0 mm)	±%0.2
		Surface quality	%95	%95
EN ISO 10545-3	Water absorption %		≤%0,5(h(max. 0,6% for each tile)	S % 0,3
EN ISO 10545-4	Breaking strength (N)	thickness ≥7,50mm	min. 1300 N	min. 1800 N
		thickness < 7,50mm	min. 700 N	min. 750 N
Flexural strength (N/mm <sup>2</sup> )			min. 35 N/mm <sup>2</sup>	min. 40 N/mm <sup>2</sup>
EN ISO 10545-5	Bounce coefficient, impact strength		manufacturer declares	It is resistant
EN ISO 10545-7	Deep abrasion resistance (unglazed tiles)		Wear class and speed to be declared	Class 2-3-4-5
EN ISO 10545-8	Linear thermal expansion coefficient (100° C)		manufacturer declares	6,00x10-6-7,50x10-6
EN ISO 10545-9	Thermal shock resistance		Should be resistant	It is resistant
EN ISO 10545-10	Moisture expansion		manufacturer declares	0,01%
EN ISO 10545-11	Cracking resistance		manufacturer declares	It is resistant
EN ISO 10545-12	Frost resistance		manufacturer declares	It is resistant
EN ISO 10545-13	Low concentration acid and base		manufacturer declares	LA/LB
	Highly concentrated acid and base		manufacturer declares	HA/HB
	Household chemicals and swimming pool salts		min. B	A/B
EN ISO 10545-14	Stain resistant		min. Class 3	min. Class 3
EN ISO 10545-15	Hazardous substances released Lead - Cadmium		manufacturer declares	Pb<0,1 Cd<0,01
EN 101	Surface hardness (Mohs)			min. Class 3
DIN 51130-51097 CEN/ TS 16165	Slipperiness (ramp determination)		manufacturer declares	R=09-10-11-12 CLASS=A-B-C
EN 12004:2007+A1:2012,4,1	Bond strength for adhesion	Cement adhesives	manufacturer declares	≥1 N/mm <sup>2</sup> Tip C2
EN 12004:2007+A1:2012,4,2		Scatter adhesives	manufacturer declares	
EN 12004:2007+A1:2012,4,3		Resin reaction adhesives	manufacturer declares	
		Mortar	manufacturer declares	
	Reaction to fire		A1 or A1 <sub>FL</sub>	A1 or A1 <sub>FL</sub>
CEN/TS 5209	Palpability		Surface description is declared	Surface description is declared

Notes

\* EN 14411 Dry pressed ceramic tiles with low water absorption Annex G (GrupBla) E <0.5%

\* The above test results are valid only for 1st quality products. Accessories are valued outside the classification. Values are average production values.

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# TECHNICAL SPECIFICATIONS OF WALL CERAMICS

Standards	Technical Specifications		Standard Values	NG Kütahya Seramik "Un glazed Product Test Values"
EN ISO 10545-2	Size and surface quality	Length and width	± % 0.6 (± 2.0 mm)	± %0.4
		Thickness	± % 5 (±0,5 mm)	±%4
		Edge smoothness	±%0.5 (±1.5 mm)	±%0.3
		Deviation from the square	± % 0,5 (± 2,0 mm)	±%0,3
		Center-edge curvature-roll	± % 0.5 (± 2.0 mm)	±%0.2
		Surface quality	%95	%95
EN ISO 10545-3	Water absorption %		≤%0,5 (h(max. 0.6% for each tile)	S % 0,05
EN ISO 10545-4	Breaking strength (N)	thickness ≥ 7,50mm	min. 600 N	min. 900 N
		thickness < 7,50mm	min. 200 N	min. 350 N
	Flexural strength (N/mm <sup>2</sup> )	thickness ≥ 7,50mm	min. 12 N/mm <sup>2</sup>	min. 15 N/mm <sup>2</sup>
		thickness < 7,50mm	min. 15 N/mm <sup>2</sup>	min. 18 N/mm <sup>2</sup>
EN ISO 10545-5	Bounce coefficient, impact strength		NOT APPLICABLE	min. 18 N/mm <sup>2</sup>
EN ISO 10545-7	Deep abrasion resistance (un glazed tiles)		NOT APPLICABLE	≤139 mm <sup>3</sup>
EN ISO 10545-8	Linear thermal expansion coefficient (100° C)		manufacturer declares	It is appropriate
EN ISO 10545-9	Thermal shock resistance		Should be resistant	It is resistant
EN ISO 10545-10	Moisture expansion		manufacturer declares	0,01%
EN ISO 10545-11	Cracking resistance		manufacturer declares	It is resistant
EN ISO 10545-12	Frost resistance		manufacturer declares	It is resistant
EN ISO 10545-13	Low concentration acid and base		manufacturer declares	LA/LB
	Highly concentrated acid and base		manufacturer declares	HA/HB
	Household chemicals and swimming pool salts		min. B	A/B
EN ISO 10545-14	Stain resistant		min. Class 3	min. Class 3
EN ISO 10545-15	Hazardous substances released Lead - Cadmium		manufacturer declares	Pb<0,1 Cd<0,02
EN 101	Surface hardness (Mohs)		NOT APPLICABLE	min. 6
DIN 51130-51097 CEN/ TS 16165	Slipperiness (ramp determination)		manufacturer declares	R=09-10-11-12-13 CLASS=A-B-C
EN 12004:2007+A1:2012,4,1	Bond strength for adhesion	Cement adhesives	manufacturer declares	≥1 N/mm <sup>2</sup> Tip C2
EN 12004:2007+A1:2012,4,2		Scatter adhesives	manufacturer declares	
EN 12004:2007+A1:2012,4,3		Resin reaction adhesives	manufacturer declares	
		Mortar	manufacturer declares	
	Reaction to fire		A1 or A1 <sub>FL</sub>	A1 or A1 <sub>FL</sub>
CEN/TS 5209	Palpability		Surface description is declared	Surface description is declared

Notes

\* EN 14411 Dry pressed ceramic tiles with low water absorption Annex G (GrupBis) E <0,5%

\* The above test results are valid only for 1st quality products. Accessories are valued outside the classification. Values are average production values.

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# TECHNICAL SPECIFICATIONS OF FLOOR CERAMICS

Standards	Technical Specifications		Standard Values	NG Kütahya Seramik "Unglazed Product Test Values"
EN ISO 10545-2	Size and surface quality	Length and width	± % 6 (± 2.0 mm)	±%0.4
		Thickness	± % 5 (±0.5 mm) mm)	±%4
		Edge smoothness	±%0.5 (±1.5 mm)	±%0.3
		Deviation from the square	± % 0,5 (± 2,0 mm)	±%0,3
		Center-edge curvature-roll	± % 0,5 (± 2,0 mm)	±%0,2-%0,1
		Surface quality	%95	%95
EN ISO 10545-3	Water absorption %		≤%0,3 (h(max. 0.6% for each tile)	≤% 0,3
EN ISO 10545-4	Breaking strength (N)	thickness ≥7,50mm	min. 1100 N	min. 1500 N
		thickness < 7,50mm	min. 700 N	min. 900 N
Flexural strength (N/mm <sup>2</sup> )			min. 35 N/mm <sup>2</sup>	min. 40 N/mm <sup>2</sup>
EN ISO 10545-5	Bounce coefficient, impact strength		manufacturer declares	It is resistant
EN ISO 10545-7	Deep abrasion resistance (unglazed tiles)		Wear class and speed to be declared	Class 2-3-4-5
EN ISO 10545-8	Linear thermal expansion coefficient (100° C)		manufacturer declares	6,00x10-6-7,50x10-6
EN ISO 10545-9	Thermal shock resistance		Should be resistant	It is resistant
EN ISO 10545-10	Moisture expansion		manufacturer declares	0,01%
EN ISO 10545-11	Cracking resistance		manufacturer declares	It is resistant
EN ISO 10545-12	Frost resistance		manufacturer declares	It is resistant
EN ISO 10545-13	Low concentration acid and base		manufacturer declares	LA/LB
	Highly concentrated acid and base		manufacturer declares	HA/HB
	Household chemicals and swimming pool salts		min. B	A/B
EN ISO 10545-14	Stain resistant		min. Class 3	min. Class 3
EN ISO 10545-15	Hazardous substances released Lead - Cadmium		manufacturer declares	Pb<0,1 Cd<0,01
EN 101	Surface hardness (Mohs)			min. Class 3
DIN 51130-51097 CEN/ TS 16165	Slipperiness (ramp determination)		manufacturer declares	R=09-10-11-12 CLASS=A-B-C
EN 12004:2007+A1:2012,4,1	Bond strength for adhesion	Cement adhesives	manufacturer declares	≥1 N/mm <sup>2</sup> Tip C2
EN 12004:2007+A1:2012,4,2		Scatter adhesives	manufacturer declares	
EN 12004:2007+A1:2012,4,3		Resin reaction adhesives	manufacturer declares	
		Mortar	manufacturer declares	
	Reaction to fire		A1 or A1 <sub>FL</sub>	A1 or A1 <sub>FL</sub>
CEN/TS 5209	Palpability		Surface description is declared	Surface description is declared

Notes

\* EN 14411 Dry pressed ceramic tiles with low water absorption Annex G (GrupBla) E <0.5%

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\* NG Kütahya Seramik reserves the right to change the technical values of all products in this catalog

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İZMİR SHOWROOM**

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**CORPORATE SALES AND MASS  
WORKS ETİLER SHOWROOM**

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**SOUTH MARMARA AND WEST  
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# The One & Only

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— 120 X 240 CM —



NG | KUTAHYA  
SERAMIK

NG | KUTAHYA  
SERAMIK

[ngkutahyaseramik.com.tr](http://ngkutahyaseramik.com.tr)