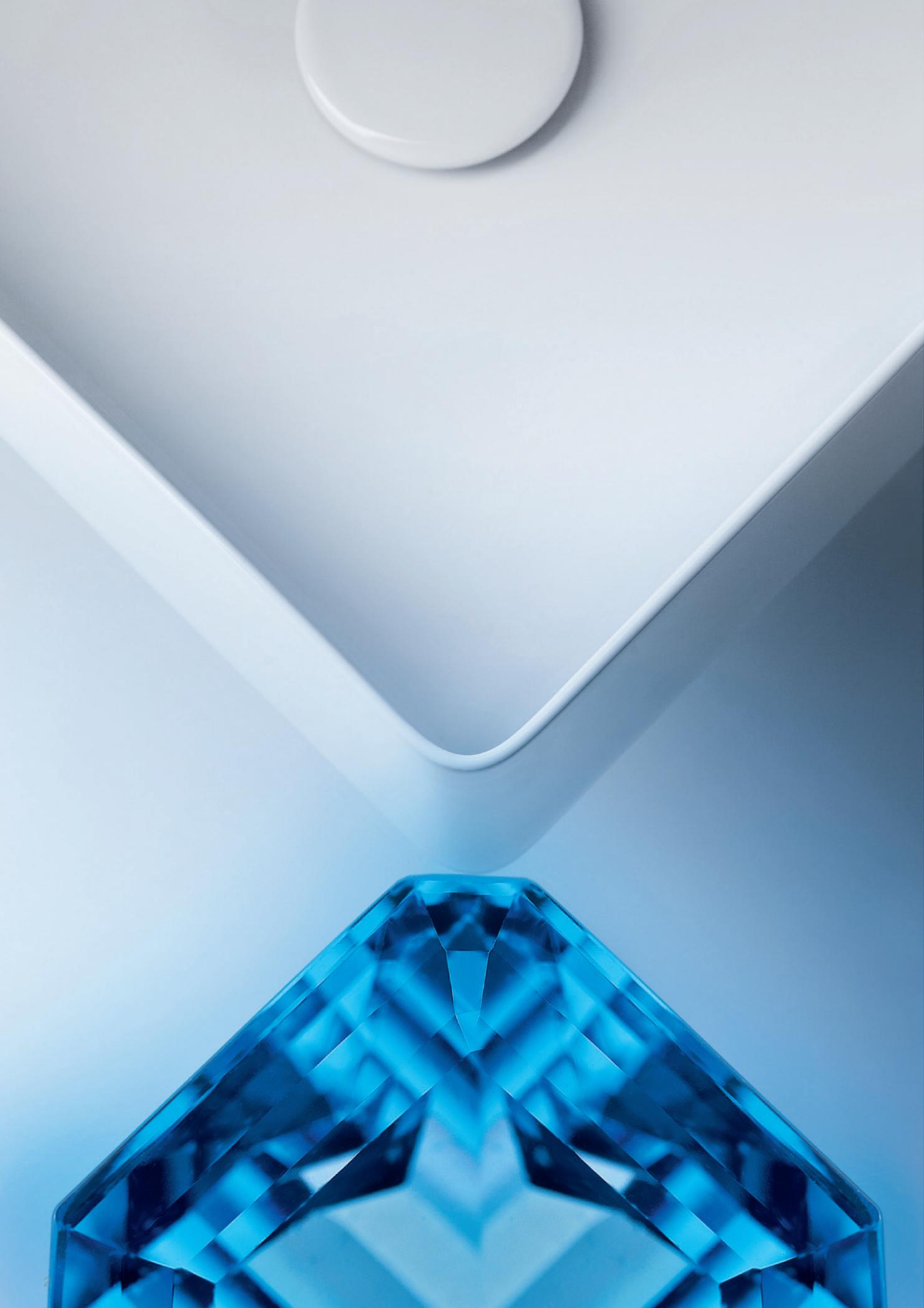


# LAUFEN

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SaphirKeramik™



# SaphirKeramik™

A high-tech material at the core of new design

## **A revolution in the design language of ceramic**

SaphirKeramik is used when a design includes very delicate, thin-walled shapes and tight radii, which in the past were generally realised using mineral casting, glass or enamelled steel. The innovative and valuable SaphirKeramik formulation gives the starting material unprecedented possibilities and scope in terms of material design.

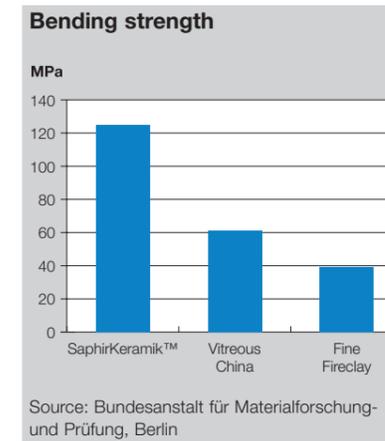
Edge radii of 1–2 mm are thus technically feasible – state-of-the-art technology values are currently a minimum of 7–8 mm. Dr. W. Fischer, Research Director of LAUFEN, states that there is now a whole new range of fashioning possibilities for ceramic, with far greater finesse than in the past while retaining the traditional production process.

The new design characteristics of this innovative material are rooted in its exceptional hardness and strength. When the mechanical properties, in particular the flexural strength of the three sanitary ceramic masses used by the LAUFEN Group – namely vitreous china, fine fire clay and SaphirKeramik – are compared, the performance of SaphirKeramik is unique even in international comparison. The comparative values measured by the Federal Institute for Materials Research and Testing in Berlin (BAM) for SaphirKeramik are, at an average of over 120 MPa, comparable with carbon steel and twice as high for vitreous china.

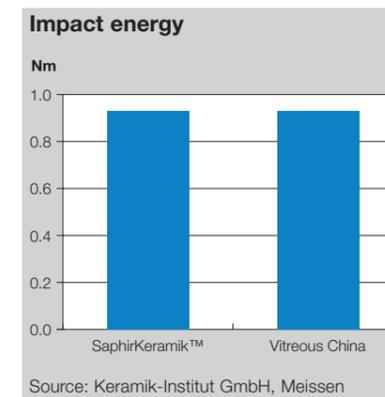
The hardness of the high-performance material is achieved by adding the mineral corundum ( $Al_2O_3$ ), which is colourless in its pure form and eponymous with this new clay ceramic. By mixing the clay with the silicate raw material, SaphirKeramik acquires a bright white colour. Sapphire as a special form of corundum is found in nature in various modifications. Low 'contamination' with iron, titanium and/or vanadium results in the blue, yellow to orange, green and purple variety that we evaluate as and call sapphire.

The new ceramic is perceptibly sturdier and has greater flexural strength. LAUFEN can use a thinner ceramic body and a simpler structure to reduce the weight compared with conventional ceramic. The benefits are manifold: lower raw material and energy consumption in production and transportation.

SaphirKeramik does not replace existing formulations; instead, it extends the range of material expressions.



The bending strength is determined in a four-point bending jig, where the samples are loaded to the point of fracture. The higher the measured value, the higher the force that needs to be applied to fracture the standard ceramic samples.



The edge strength of two different glazed sanitary ceramic materials is determined in a test: a steel ball weighing 190g is dropped on to the edge radius of a piece of sanitaryware from a height of half a metre. The unit of measure for edge strength is defined as the impact energy, which is calculated from the drop height, the mass of the ball and the acceleration under the force of gravity; this indicates the limiting value up to which the edge does not suffer damage. The test shows that SaphirKeramik and the tried and tested vitreous china exhibit the same value of edge strength.



LAUFEN is introducing the first wash-basins made from SaphirKeramik after a development period lasting more than five years. Dr. Werner Fischer, Research Director of LAUFEN, shows the new SaphirKeramik (right) in comparison to conventional ceramic (left).

# Traditional ceramic

## Vitreous China

Fired unglazed shards of vitreous china remain unbeaten when it comes to waterproofness (water absorption is virtually 0). Vitreous china meets the highest hygienic requirements as the only approved material for toilet and urinal production.

With arbitrary non-linear shrinkage of around 10% in the drying and firing process, vitreous china is the oldest and also the most difficult to control material.

On account of the material's own design language, soft, round, flowing shapes are best realised using vitreous china. Cross-generational experience and excellent material engineering mean that large level surfaces and precise edges can also be realised using this material. Washbasins up to one metre in length can be made of vitreous china. The material is primarily used, however, for the production of toilets, urinals, bidets, etc. Exemplary products include the Il Bagno Alessi One toilets.



LAUFEN II Bagno Alessi One WC made of vitreous china, photographed by Zsigmond Toth and Gunnar Meier

## Fine fireclay

Following the development of fine fireclay in the 80s, washbasin applications with a height greater than one metre can now be realised more easily. LAUFEN is gaining a reputation as a specialist for flawless large ceramic items that exceed 180cm in length and 70kg in weight.

The addition of chamottes (fired clay) enables non-linear shrinkage in the drying and firing process to be reduced to less than 10%. This makes it easier to control the behaviour of the ceramic and also facilitates the production of such sizes.

Fine fireclay is mainly used for the production of washbasins. The best examples are the 160cm O1 washbasin from the Palomba Collection with its soft organic curves, smooth flat surfaces and precise edges, and the 180cm double washbasin living square with its architectural lines.



LAUFEN Palomba Collection washbasin and Living City washbasin made of fine fireclay, photographed by Zsigmond Toth and Gunnar Meier

**Ceramic material**

Ceramic is one of the oldest man-made materials around, and consists entirely of naturally-occurring raw materials. Ceramic is 100% recyclable and can be added as ground material to the production process or used in other industries as a valuable raw material. The longevity and recyclability of materials is of critical importance for our environment.

The ceramic base-compound has always been made from naturally-occurring raw materials, with kaolin, clay, feldspar and

quartz sand forming the basis for ceramic's extreme toughness and hardness. Extreme temperatures during the firing process ensure that LAUFEN's high-quality products are both extremely hard and highly wear-resistant. The smooth, easy-clean surface of the glaze means that ceramic meets the highest hygiene requirements, with chemical acids and abrasive cleaners unable to harm it. Lightfastness, sustainability and a pleasant feel make ceramic the most popular choice for high-quality sanitary items.

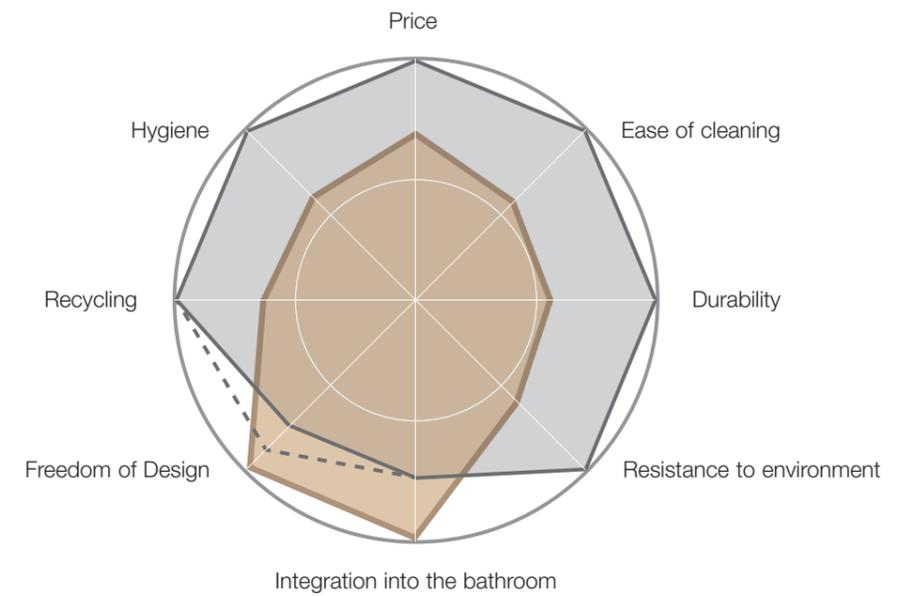
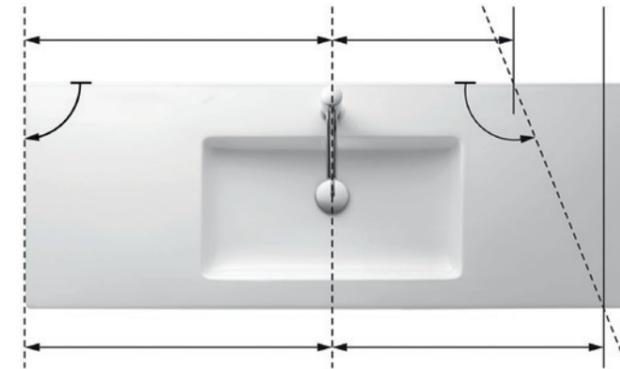


**Ceramic or synthetic materials**

Washbasins made of plastics and mineral-based cast materials are also available on the market, which present a design challenge to producers of sanitaryware.

LAUFEN has always had a reputation as an innovator in the sanitary sector and is always striving to improve the materials

and production techniques it uses. In the last decades LAUFEN's know-how to produce very big and very flat work-pieces of fine fireclay matured. As a result of these efforts, new ceramic composition SaphirKeramik has been developed that allows smaller tolerances and even more precise corner radii.



Made to measure washbasin solutions ensure that ceramic sanitaryware can be fitted with millimetre precision into bathroom floor plans. Ceramics therefore deliver outstanding performance in all respects.

- Mineral/Synthetic Material
- Sanitary Ceramics
- SaphirKeramik

New possibilities regarding the modelling of ceramic can be seen in the delicate, thin-walled shapes and narrow radii of the new living square basins.



DESIGN PLUS





Kartell and LAUFEN are together launching a codesigned and complete bathroom project with a series of thin-walled washbasins made of SaphirKeramik.

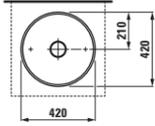
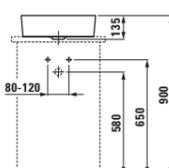
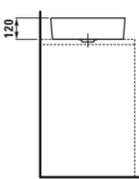




81233.1  
Washbasin bowl

Colours:  
.400

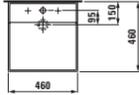
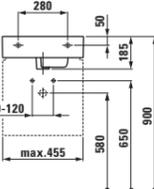
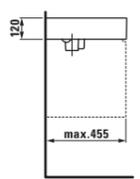
Options:  
.112


81533.1  
Small washbasin,  
with special hidden outlet

Colours:  
.400

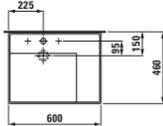
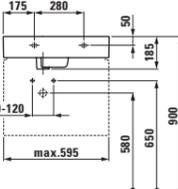
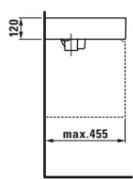
Options:  
.111 .112


81033.4  
Washbasin, shelf right,  
with special hidden outlet

Colours:  
.400

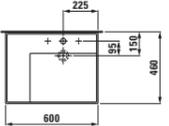
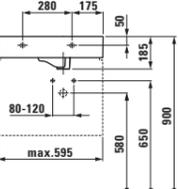
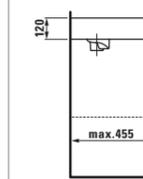
Options:  
.111 .112


81033.5  
Washbasin, shelf left,  
with special hidden outlet

Colours:  
.400

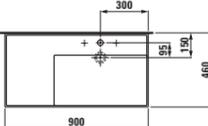
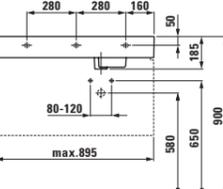
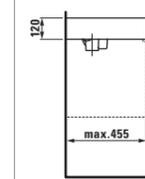
Options:  
.111 .112


81033.9  
Washbasin, shelf left,  
with special hidden outlet

Colours:  
.400

Options:  
.111 .112

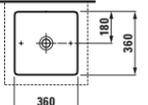
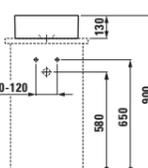
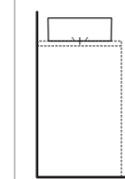





81143.3  
Washbasin bowl

Waste valve, always open,  
with ceramic valve cover plate  
89818.8 recommended

Colours:  
.400

Options:  
.112

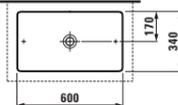
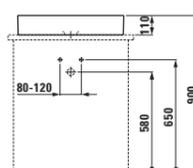
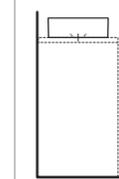





81143.4  
Washbasin bowl

Waste valve, always open,  
with ceramic valve cover plate  
89818.8 recommended

Colours:  
.400

Options:  
.112


Kartell by LAUFEN accessories,  
basins, baths, furniture and toilets  
enjoy a 15 year product warranty.  
For full warranty details visit  
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