

HISTORY

LUCCON is engaged in the development and further development of translucent concrete since 2004. Until today, LUCCON is market leader in case of production of translucent concrete.

Translucent concrete was used for the first time, for the construction of the New York subway, in 1904. Thereafter experiments are known in USA, Japan, Germany and Hungary.



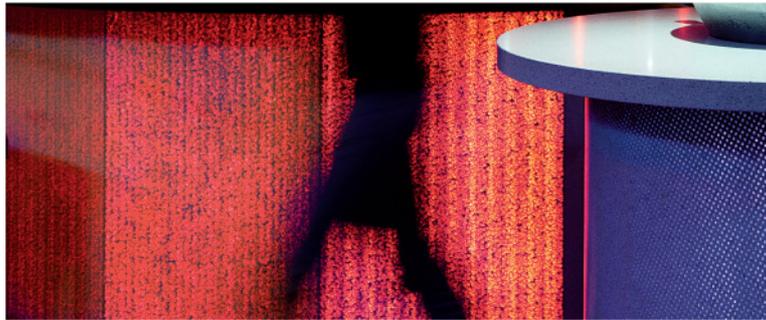
The first presentation of translucent concrete took place at the university Aachen in 1994. This kind of production as well as the previous developments never got in serial production because of the costs.

LUCCON managed to produce in serial in 2004. This was the breakthrough. From now on translucent concrete could be used commercially and is used in lots of countries today.

THEORY OF OPERATION

Optical fibers incorporated into concrete let the stone appear massive and transparent equally, making light, shadows and colours visible. The optical fibers can consist of glass or PMMA (Polymer).

LEDs can be placed on a contact bridge behind the concrete slab. Therefor a distance of 4-6 cm is enough to let shine the slabs equal. A Diffusor foil supports an equal shining of the slabs.



The artificial light sources can also be provided with differend colours, which can be changed with a control system. The angle of radiation is circa 60 degree for polished slabs, circa 65 degree for brushed slabs and ca 70 degree for blasted slabs.

360.000 fibers can be incorporated per square meter. Normally 300.000 fibers are enough to let the slabs shine.

CONCRETE

The concrete mix, which is used for LUCCON, consists out of 10 different elements. The granularity is an important factor.

On the one hand the granularity defines the characteristic of the mixture, on the other hand it gives the surface its unique visual appearance.

We can offer almost each visual appearance of the stone by addition of granularity, e.g. granite combined with colours.

Translucent concrete belongs to the category of cast stones. Cast stones have a polished, brushed,... surface. For translucent concrete counts the same norms EU/int. These norms contain for example compressive strength, bending tensile strength, frost and thaw resistance, tolerances for cuts, ect.



It is possible to go below the length-, width- and angle tolerances if needed. These cuts are made with CNC machines.

The essential difference to conventional concrete based stones is, beside the translucence, the increased stability and a surface, free of pores. The concrete mixture, which is used for LUCCON, is a high performance concrete "HPC" or ultra high performance concrete "UHPC".

The abrasion of LUCCON is higher if we use marble than if crystal or granite are used. For steps and floor elements this is an essential factor, it also concerns the durability. The high density of the surface prevents the dirt absorption. Especially outside (facades,...) this is very important. (See "Care instructions")

LUCCONdesign is weather resistant and can be used outside, as well in extreme areas like deserts or Nordic situated areas. LUCCONdesign is frost and thaw resistance like EU norm. (see "data sheet")



OPTICAL FIBERS

Optical fibers incorporated into concrete let the stone appear massive and transparent equally, making light, shadows and colours visible. The inserted fibers are 100% UV resistant, which enables the usage of LUCCON products outside.

The facades can stand a temperature until 125 degree Celsius at the surface without getting a damage. The diameter of these fibers is between 0,4 to 0,7mm. LUCCONdesign slabs have a diameter of 0,4mm.

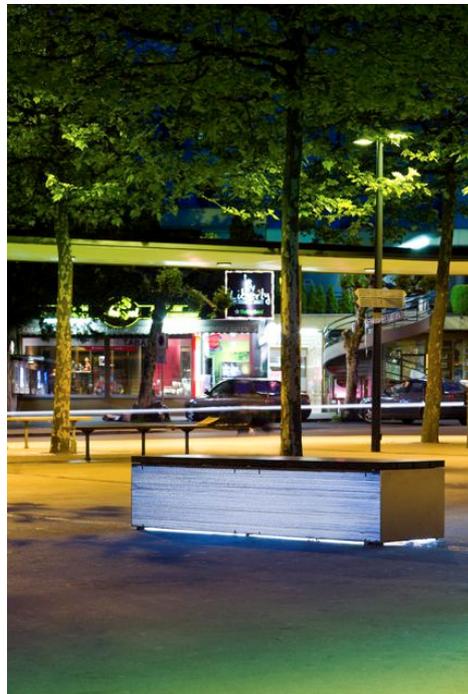


LUCCONdesign offers two different visual variants. Back bundled or front diversified fiber-respectively light emission. Both surfaces can be installed, depending on favour of the clients.

SURFACES

Normally we offer two kinds of surfaces for our LUCCON slabs. The polished surface and the brushed one. Have a look at the samples.

For customer request the surface can be polished matt (not glossy) or very glossy. LUCCON slabs can be hydrophobized ex works. The slabs keep breathable, but are water repellent. Beside of the hydrophobizing we also offer a water repellent polish. This polish prevents the dirt and water absorption.



The time for renewal of the hydrophobizing/polish depends on the degree of utilization.
(see “care instructions”)

COLOURS

For customers request it's possible to produce different colours of the concrete due the addition of pigments. This effect gets intensified due the usage of different grain sizes and colours, for example: white marble, grey or black granit.

Procedure:

The client orders his preferred colour with a int. RAL color chart or provides samples like tiles or painted surfaces. The production costs for a colour sample are € 1000,-

The customer gets a sample (size 9x9x2 cm), without optical fibers. Samples with incorporated fibers have to be requested.

Because of the experience of our staff it is possible to reach the requested colour nearly exact. Please do not forget, that it is a polished concrete product.

The clients, most of them are architects or developer, can be offered regional aggregates.



LIGHTING

The light source can be natural light or artificial light.

Artificial light sources are:

- LED's with or without colour control
- LED's on adhesive tapes
- LED's molded in panels
- Neon tubes
- Halogen spotlights
- Conventional light like bulbs

Often there is less space for fitting light, so LEDs are the best product. The advantages of LEDs are: low voltage, little mounting depth, low energy input and durability.

To get an effektiv result, you have to plan the positioning of the LEDs. We do not offer such planning – please contact a lighting engineer in your country.

If you use LEDs, you have to keep a minimum distance of 6 cm. If LED tapes are used, the tapes have to be attached within a distance of 3 cm. Keep 4-5 cm distance to the concrete. We recommend to make a test.

If there is low space, we recommend to use a diffusor foil. This foil is translucent, weather resistant and adhesive. Please make sure, that the surface is free of dust and dirt when you apply the foil.

MOUNTING:

The mounting is the same as if you use concrete artificial stone, concerning handling, stability and tolerances.

Cuts should be done “wet” and drills without percussion. You can also cut some small things “dry” at the building site. Please make sure that there is a good ventilation.

When you fix the LUCCON slabs, you have always to keep the light source in your mind. In upright format and by using daylight, for example the shade of the mechanic elements can be seen through the stone.



A mounting without shades is desirable to let big areas shine. For free-standing systems you can use for example metal frames. If you use the slabs for facings, you can take anchors (as used for facades). Ground systems you can lay down on a substructure. It is important to adapt the light system to the mounting system.

Normally an LED system is used, which enables a flat installing situation.

Make sure, that you only use the hydrophobizing, which is used for LUCCON. It is possible that you have to re-coat the slabs.

Basically you can use all mounting systems which also are used for natural stone or unreinforced concrete stone. You only have to keep in mind the extra element of the light source.