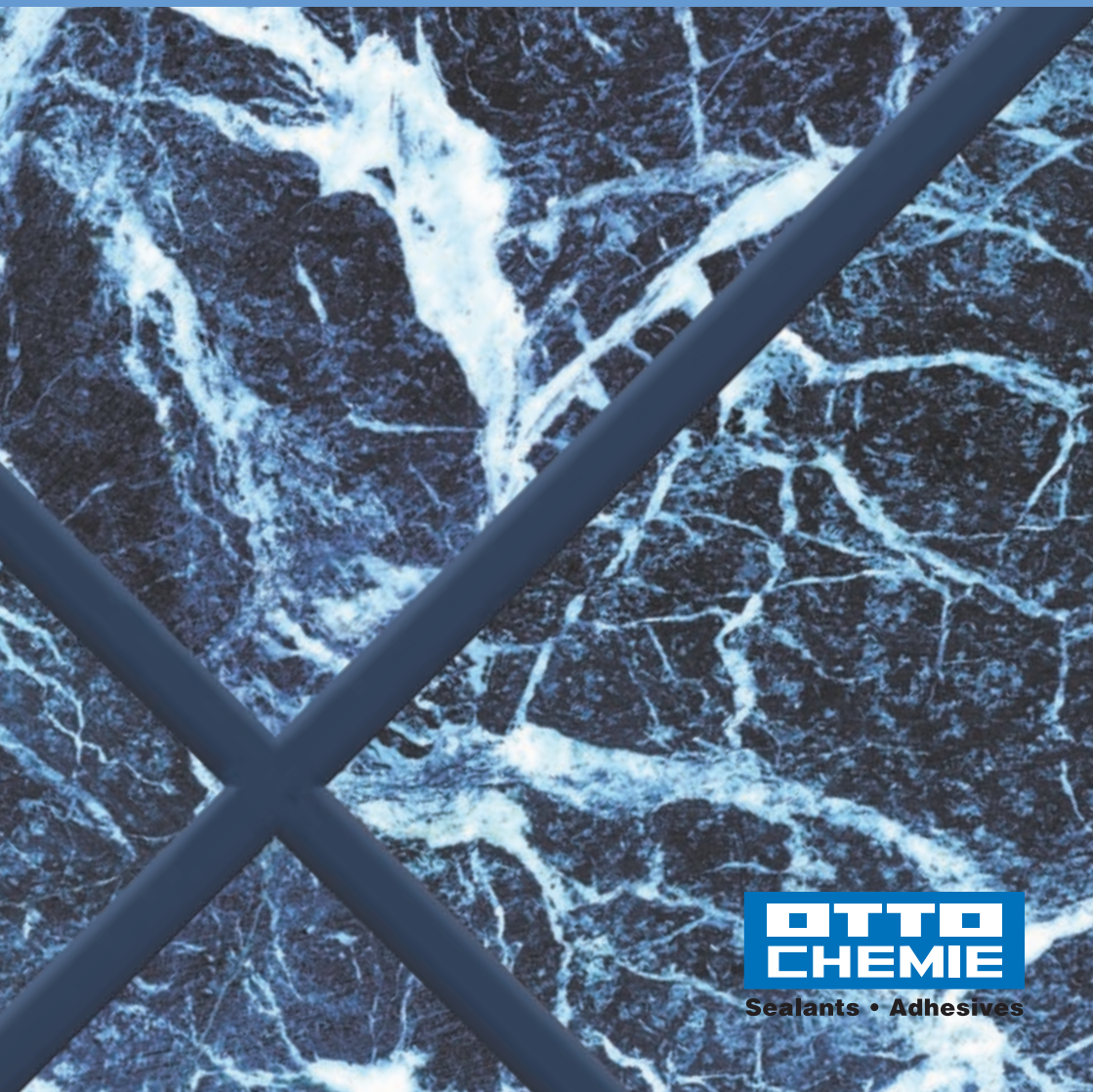
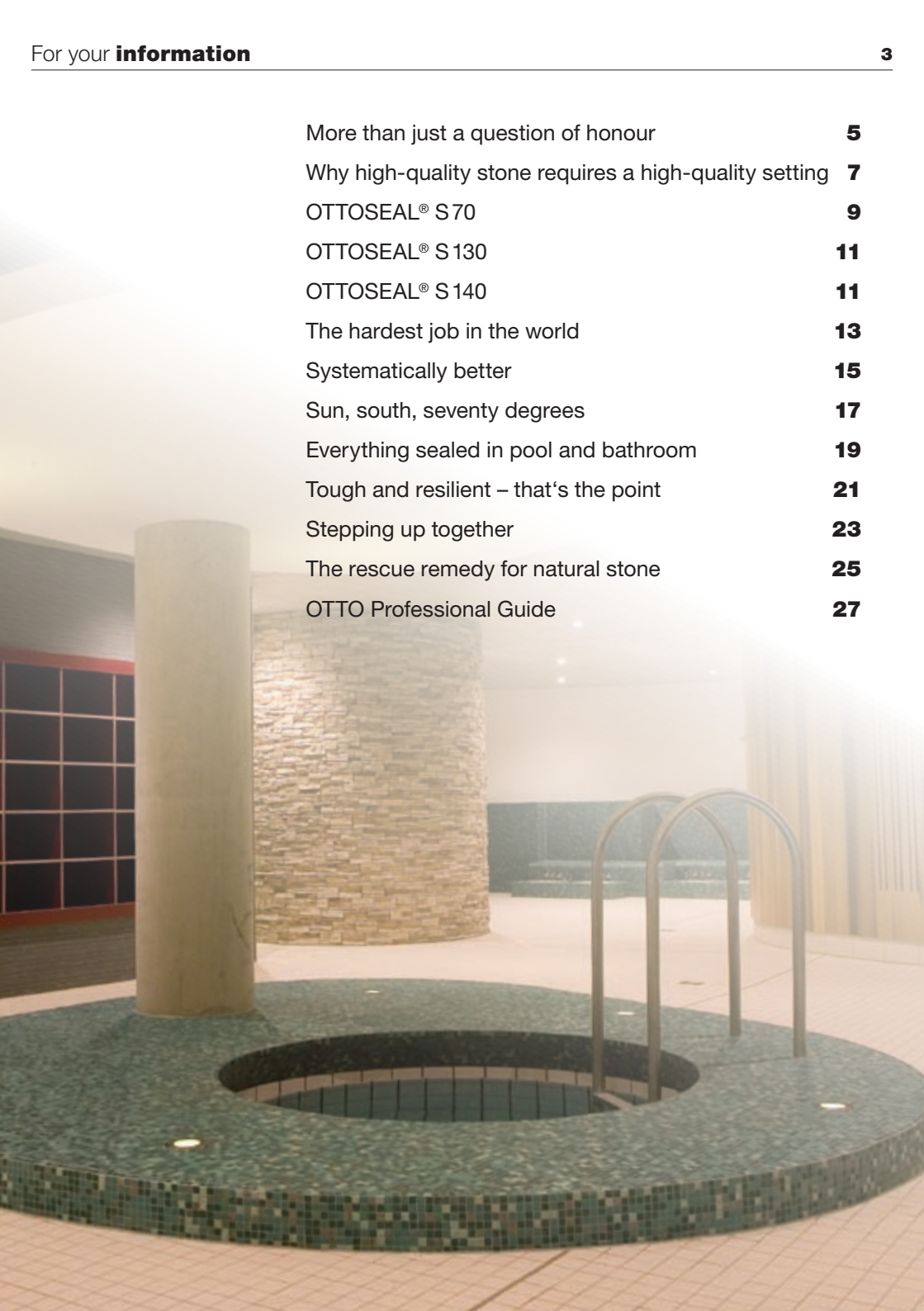
OTTO Professional Guide

How to make perfect joints in natural stone



OTTO CHEMIE

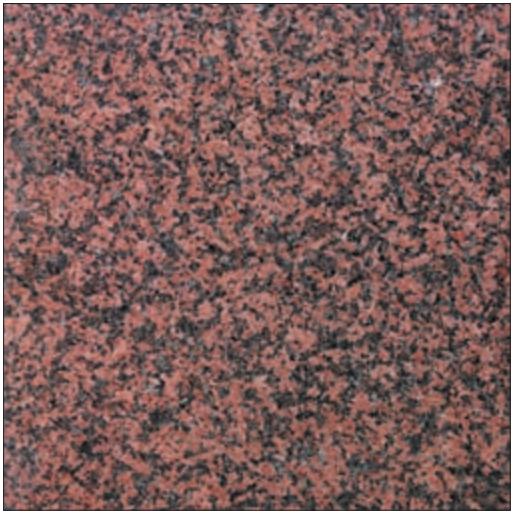
Sealants • Adhesives



Jointing natural stone – a small step with far-reaching consequences.

Information on natural stone is rarely found in the current specialist literature even though correct jointing is the final step, concluding the strenuous tiling or paving and assuring its quality. Imperfectly formed joints or joints made with the wrong materials do not only render the work worthless, but can also result in costs impossible to estimate arising from complaints, cleaning or even damages caused. Other possible consequences are legal disputes and their damage to the corporate image followed by the eventual loss of future orders.
A company that economises on sealants is not only endangering its good reputation but is also running the risk of serious economic consequences. As a leading manufacturer of sealants and adhesives, OTTO has created this jointing guide for builders and designers.

Its intention is to help avoid possible problem cases and taking wrong decisions when choosing the material for the jointing of natural stone. Further more, its intention is to sharpen the awareness on the type and extent of eventual problems caused by the wrong choice of materials and to highlight the importance of a high standard of quality, both on the customer's as on the contractor's side.



Natural stone has been created over a period of more than 50 million years. The wrong sealant can wipe out Nature's work in an instant.

Protection and good looks

Jointing natural stone is very different from other types of joint work. This is due to extreme conditions in the areas of application and to varied material properties that have to be taken into account. As well as meeting aesthetic conditions, a sealant used with natural stone has to protect the stone and its substructure reliably over many years from water or chemicals getting into or behind it.

Threat from oily plasticizers

A disadvantage of many traditional silicones is the proportion of oily plasticisers which under heat or pressure can migrate into the outer edges of the stone, leaving ugly, undesirable stains.

Exposure to physical and chemical agents

What remains are the purely technical demands a natural stone sealant has to fulfil permanently: these include high resistance to ultra-violet radiation, reliable adhesion to many different materials, flexibility under pressure and tension, and notch resistance.

Saturation with water

Being totally saturated with water is a special challenge for the sealant. In this case the fungicides in the sealant have to be extremely resistant to elution. Ionic silver, which is used in the **OTTO Fungitect® Silver Technology**, is especially suitable as a fungicide for continuously wet conditions.

Ugly “grease stains” on the edges caused by the wrong sealants which release plasticiser into the stone.


OTTO SEAL®
S70
IVD – Das Gütesiegel
Überwachungs-Vertrag Nr.:
Monitoring contract no.:
Contrat de surveillance no.:
Bewakingscontract nr.: 01.00.05
PREMIUM
Naturstein-Silicon
Natural stone silicone
Silicone pierre naturelle
Natuursteen silicone
OTTO CHEMIE
Dichtstoffe • Klebstoffe

Successfully discreet: OTTOSEAL® S 70

Do not attract attention. This sums up all the demands a perfect joint sealant for natural stone has to meet: it should not undergo any changes under physical and chemical stress, it must not get soiled and it should visually support the interesting product of nature called stone.

Guaranteed no migratory staining

OTTOSEAL® S 70 is a neutrally cross linking silicone sealant which is suitable even for extremely demanding areas of application. It is very resistant to compression, tension and ultraviolet light; withstands wear and ageing and exhibits excellent adhesive properties even when applied in extremely demanding applications.

Even under high pressure the dreaded migratory staining has no chance to happen when OTTOSEAL® S 70 is used.
This has been proven and certified in tests according to rigorous US standards.
OTTO even guarantees this property to reassure the user as OTTOSEAL® S 70 contains no plasticisers. Its high content of silicone makes the sealant easy to be worked with and smoothed. The slow skin formation means that long lengths of joints can be made in one pass. Nevertheless, OTTOSEAL® S 70 vulcanises quickly after jointing.

OTTOSEAL® S 70 is available in many different colours and various surface textures; it can be produced in any colour to match natural stone on request.


OTTO SEAL® S 130
IVD – Das Gütesiegel
Überwachungs-Vertrag Nr.:
Monitoring contract no.:
Contrat de surveillance no.:
Bewakingscontract nr.: 01.00.12
FUNGITECT® INSIDE
Sanitär- und Naturstein-Silicon
mit verlängertem Schimmelschutz
Bathroom and natural stone silicone
with prolonged mould protection
Silicone sanitaire et pour pierres naturelles
avec protection contre les moisissures plus durable
Sanitair en natuursteen silicone
met langere bescherming tegen schimmels
OTTO CHEMIE
Dichtstoffe • Klebstoffe


OTTO SEAL® S 140
IVD – Das Gütesiegel
Überwachungs-Vertrag Nr.:
Monitoring contract no.:
Contrat de surveillance no.:
Bewakingscontract nr.: 01.00.12
FUNGITECT® INSIDE
Schwimmbad- und Naturstein-Silicon
mit verlängertem Schimmelschutz
Swimming pool and natural stone silicone
with prolonged mould protection
Silicone pour piscines et pierres naturelles
avec protection contre les moisissures plus durable
Zwembad en natuursteen silicone
met langere bescherming tegen schimmels
OTTO CHEMIE
Dichtstoffe • Klebstoffe

OTTOSEAL® S 130

Wellness areas in hotels and swimming baths are especially exposed to harsh climate conditions for sealants. The heat and constant moisture offer good conditions for growth of mould. The new OTTOSEAL® S 130 sealant is a silicone which is optimally suitable for both, tiles and natural stone in constantly wet areas. The **OTTO Fungitect® Silver Technology**, which is harmless-to-health and environmentally benign, provides OTTOSEAL® S 130 with a fungicide which prolongs the mould protection of the sealant because it is not eluted even when saturated with water. The low-odour silicone is absolutely compatible with natural stone and is guaranteed not to cause any migratory staining.

OTTOSEAL® S 140

OTTOSEAL® S 140 is optimally suitable for use in wet rooms, public showers and bathing areas or fitness studios. This highly-resilient sealant is designed especially for underwater applications in swimming pools made of tiles or natural stone. The ionic silver, which is used here as a fungicide, is called **OTTO Fungitect® Silver Technology** and, by not eluting itself out of the sealant, it allows longer maintenance intervals for maintenance of joints.

OTTOSEAL® S 140 possesses high notch resistance and is therefore also appropriate to be used for floor joints. The sealant is absolutely compatible with natural stone and causes no migratory staining.

The daily challenge

Sealant in a natural stone joint is constantly exposed to compression, tensile, shear and peel forces. In order to let the sealed joint function perfectly even under these circumstances, the joint must be constructed correctly. The sealant can only move freely and compensate movements without tearing if a three sided adhesion is avoided.

Use back up material to avoid three-sided adhesion

Filling up the joint with an appropriately sized OTTO PE foam rod prevents contact with the third side. Before the PE foam rod is positioned, the sides of the joint must be cleaned and if necessary pretreated with the correct primer to obtain an optimal adhesion.

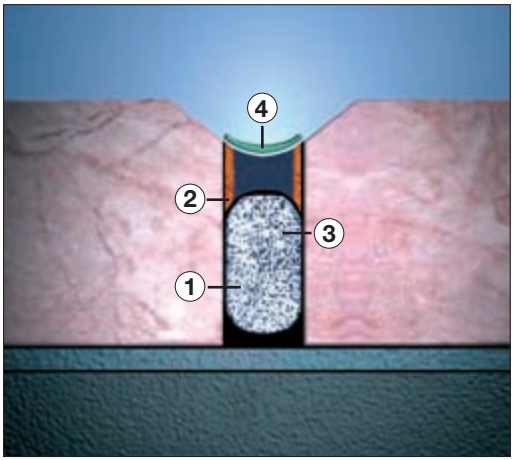
Commercial washing up liquid instead of a specialised smoothing agent is frequently used as for smoothing the sealnts.

As a matter of fact, washing up liquids can cause stains on natural stone.

OTTO marble silicone smoothing agent avoids staining to a large extent and is also kind to your skin. Please pay attention to the technical data sheet of OTTOSEAL® S 70 (www.otto-chemie.de) for details on the use of cleaners and primers.

Typical structure of a facade joint.

1. **OTTO PE Foam Rod**
2. **OTTO Primer**
3. **OTTOSEAL® S 70**
4. **OTTO Marble Silicone Smoothing Agent**



Tip:
With sandstone, mask off the edges of the joint before applying the sealant, as it is difficult to remove stray spots from the surface of the stone. Only use suitable masking tape that does not mark the stone.


OTTO SEAL StainEx
OTTO SEAL SilOut
OTTO Primer 1216
Anti Schimmel Spray
Gegen Schimmel, Algen, Moder
OTTO Cleaner T
OTTO Fugenboy
klein - small - petit - klein
OTTO CHEMIE

Complete programme for the sealing of natural stone joints

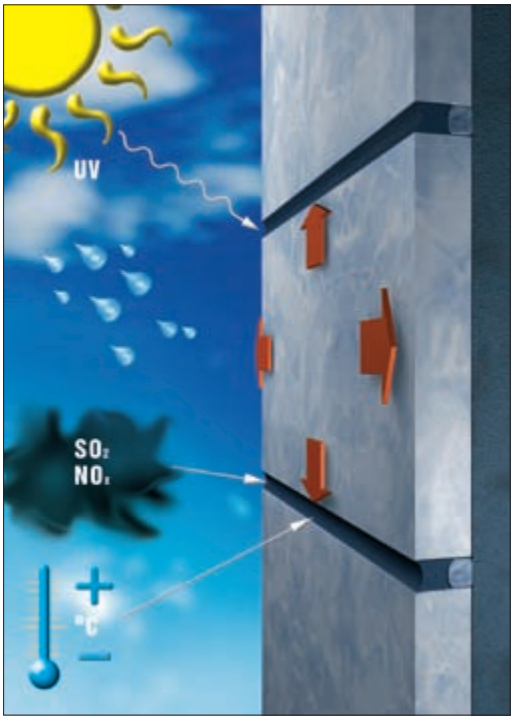
OTTO offers a complete programme for sealing joints in combination with OTTOSEAL® S 70 natural stone sealant to the professional user. The individual components work together ensuring the desired result is achieved – a well-executed joint. Along with suitable cleaners and primers for any surface and PE foam rod for all standard joint widths, OTTO also supplies a smoothing agent. It contains dermatologically tested ingredients, is kind to the skin and minimises staining on the stone and the joint, it is specially formulated for delicate marble and natural stone. Using an OTTO spatula (OTTO Fugenboy) gives the joint the optimum shape.

Use the right primer with the right stone

OTTOSEAL® S 70 has excellent adhesive properties on most natural stone types, even when applied without primer. As the properties as well as the denomination of the different sorts of stone can vary, we recommend to consult our technical department or, in the case of a uncommon sort of stone, to test the adhesion yourself.

Extreme exposure on façades

With temperatures possibly ranging from -40 °C to +100 °C, exhaust fumes, precipitation and constant exposure to UV rays, sealants for façades need to be of a very high quality indeed.
To stop water or emissions getting in behind the stone, the sealant must offer permanent resistance to these extreme conditions and absorb any movement of the façade caused by fluctuations in temperature.
With its outstanding chemical and physical properties, OTTOSEAL® S 70 meets these challenges superbly. Its high resistance to UV and ageing make it a natural stone sealant which will maintain the value of a façade over many decades and helps to avoid costly maintenance and renovation work. Additional assurance is given by the OTTO guarantee against migratory staining.



Next to UV radiation, precipitation, chemical emissions and fluctuations in temperature the sealant is exposed to various other forces that it has to withstand without undergoing any changes.

Despite water, chemicals and cleaners

Using natural stone in wet areas or under water such as bathrooms or swimming pools requires a sealant with special properties.

In areas of great heat, high air humidity or in underwater areas, mould formation is the no. 1 issue.

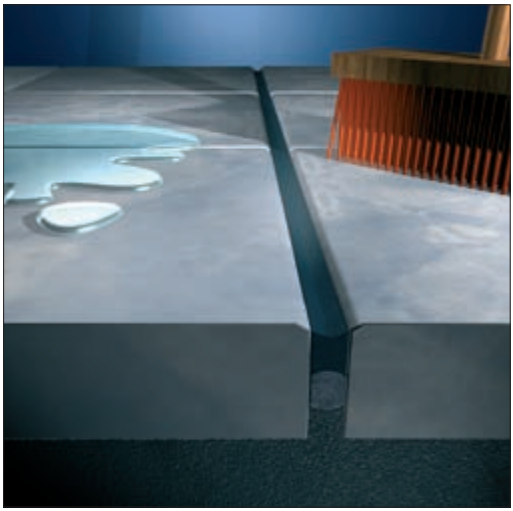
The new **OTTO Fungitect® Silver Technology** provides prolonged mould protection for these applications. Contrary to conventional fungicides, Fungitect is not eluted from the sealant even under heavy saturation with water and can therefore develop its effect over a longer period. This means that it protects elastic joints in bathroom areas which are exposed to heat and water as well as to mechanical strain and chemical attack, e. g. in public shower and bathing areas, sports facilities, hospitals, spas and wellness areas from mould formation. Therefore the maintenance interval for the joints can be extended significantly, a factor which has a considerable impact on the running costs.

Furthermore the OTTO Fungitect® Silver Technology is harmless-to-health and environmentally benign!

OTTO SILVER TECHNOLOGY FUNGITECT® INSIDE

OTTOSEAL® S 130 with **OTTO Fungitect® Silver Technology** is particularly suitable for jointing on ceramic tiles and natural stone in constantly wet areas. Also, the sealant is especially odourless.

OTTOSEAL® S 140 with **OTTO Fungitect® Silver Technology** is especially suitable for underwater joints in swimming pools and because of its high notch resistance it is also very suitable for floor joints in constantly wet areas.



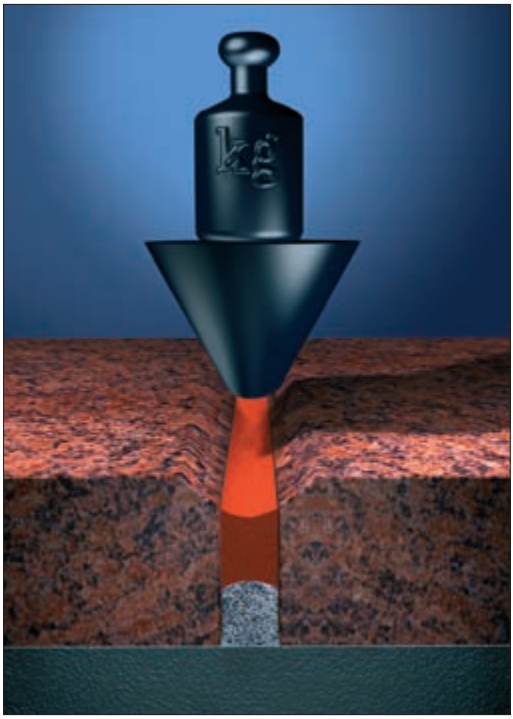
Joints in bathrooms and other wet areas should be equipped with a fungicidal agent and should be able to withstand wear from cleaning procedures and visitors.

High notch resistance against point loading

Sealants used in floors are particularly exposed to mechanical stresses.
Strain from heavy loads, rubbing and scraping from cleaning machines and the combination of many different kinds of materials of with the natural stone result in very high demands which a sealant has to meet.

Maintenance of the value of natural stone finishes

One important criterion for a natural stone sealant used in floor areas is notch resistance. A sealant scores well if it has this characteristic which protects against harm from high point loading. Due to their characteristics OTTOSEAL® S 70 and OTTOSEAL® S 140 fully meet this requirement and thus contribute towards conserving the value and beauty of natural stone finishes. Their high resistance to ageing and the OTTO guarantee against migratory staining also assist in this. After curing these two products for natural stone floor joints remain tack-free. This prevents soiling of the sealant surface.



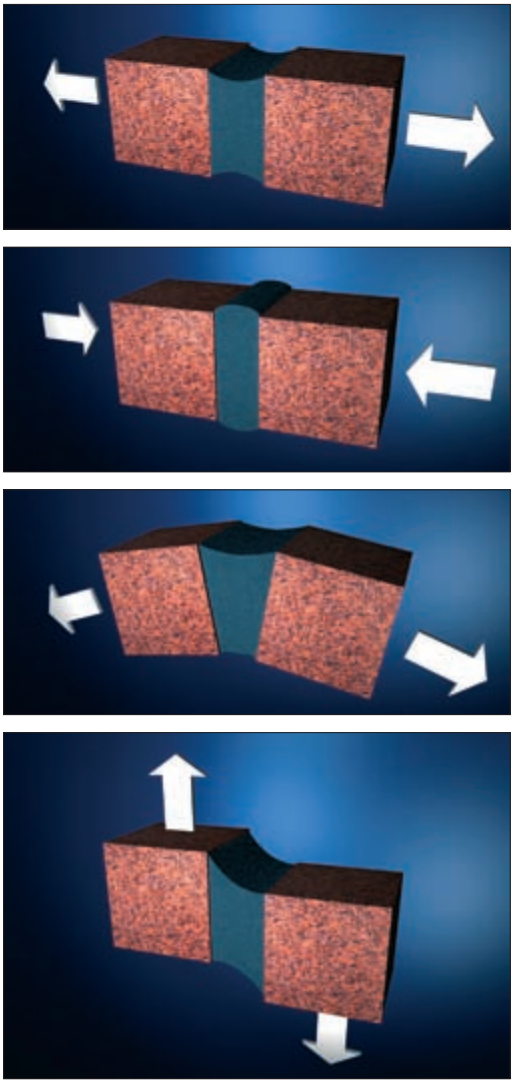
Its high notch resistance protects the sealant even from being damaged by high point loading.

Joint sealants in movement

Natural stone surfaces on metal substructures have especially high demands on the elasticity of a joint sealant. Considerable vibration is particularly generated in freestanding staircases. This means that the sealant has to “work with” the movement, absorbing it and compensating it. With its non-corrosive properties, OTTOSEAL® S 70 is particularly suitable for metal staircases covered with natural stone.

Strong, firm, flexible bonding: OTTOSEAL® S 70 as an adhesive

OTTOSEAL® S 70 joint silicone is strong, but at the same time elastic, making it an excellent medium for absorbing movement without losing its adhesive properties, without tearing under tensile stress or hardening and getting brittle under compression.
With its excellent adhesive properties, OTTOSEAL® S 70 is used at the same time for bonding natural stone to metal, as well as it is working as a sealant.



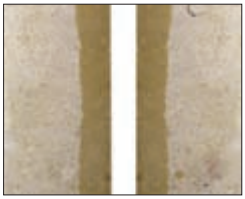
Adhesives and sealants on natural stone steps have to absorb all kinds of stresses and movement without being damaged.


OTTO SEAL®
StainEx
Die Marmor- und Natursteinentfettungspaste
The marble and natural stone degreasing paste
Pâte dégraissant pour marbre et pierre naturelle
De marmer en natuursteen ontvettingspasta
OTTO CHEMIE
Dichtstoffe • Klebstoffe

OTTOSEAL® StainEx – the degreasing paste for marble and natural stone

Unsuitable sealants can cause migratory staining around the edges of natural stones. Reason for this is that plasticisers migrate into the porous structure of the stone. For these cases, there is always OTTOSEAL® StainEx, the paste made by OTTO to remove migratory staining from the edges of marble and natural stone.

Due to the wide variety of natural stone types, it is advisable to make a preliminary test on a concealed part. For the same reason a guarantee cannot be given.



Mechanically remove the sealant completely from the joint.

Apply OTTOSEAL® StainEx to the surface that has to be cleaned.

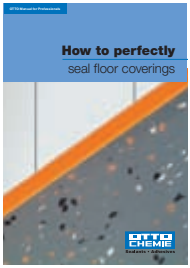
Brush the paste into the surface. Then apply OTTOSEAL® StainEx again.

Use a putty knife spreading the paste evenly, creating a layer of min 5 mm.

When the paste has dried completely (approx. 12 hours), sweep clean or vacuum the remaining solid residues.

After cleaning no dark stains should be visible any more.
Remove deep-lying stains with a second or third application.

All reference objects shown in this brochure are sealed with OTTOSEAL® S 70.
We would like to thank the company Gerloff & Söhne, Eschwege, for allowing us to print the photograph on page 6. Photo Page 16: Getty Images



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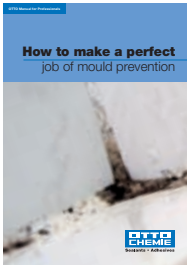

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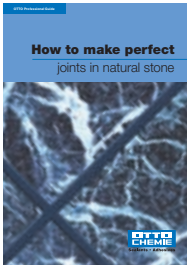

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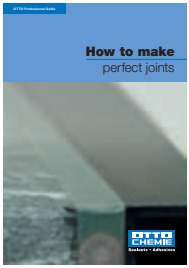

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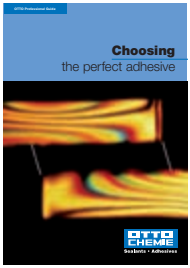

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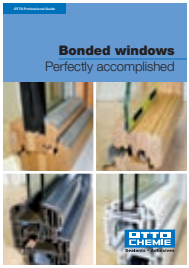

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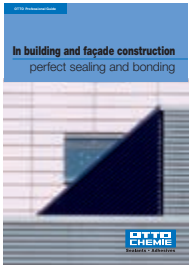

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Notes:
The information in the present document corresponds to the status quo on going to print, refer to the index. With a new edition this edition becomes invalid. Due to the many possible influences during and after application, the customer always has to carry out trials first. Please observe the respective technical data sheet! This information is available on the Internet at www.otto-chemie.com. Errors and typographical errors are excepted.

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Sealants • Adhesives

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