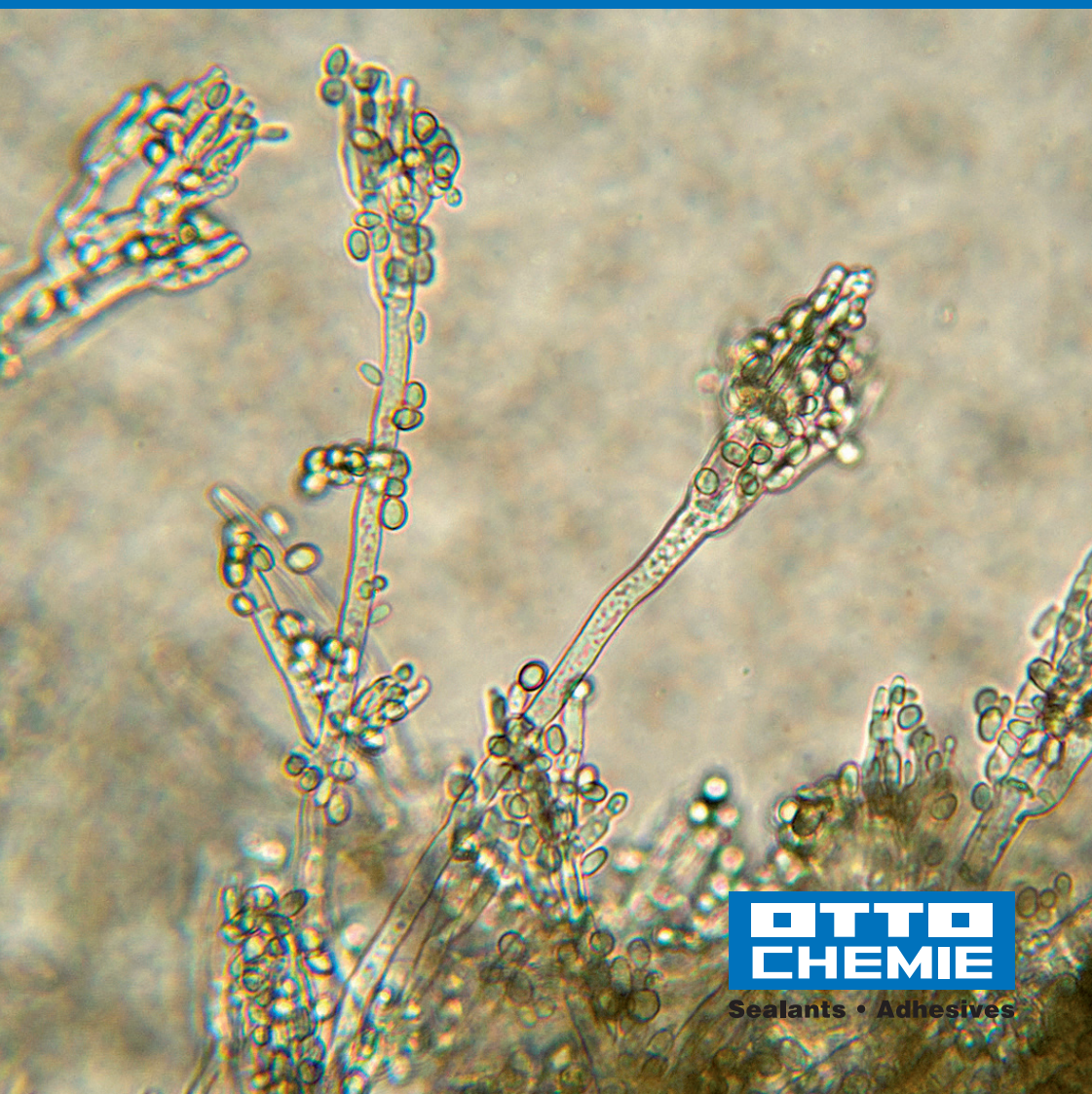
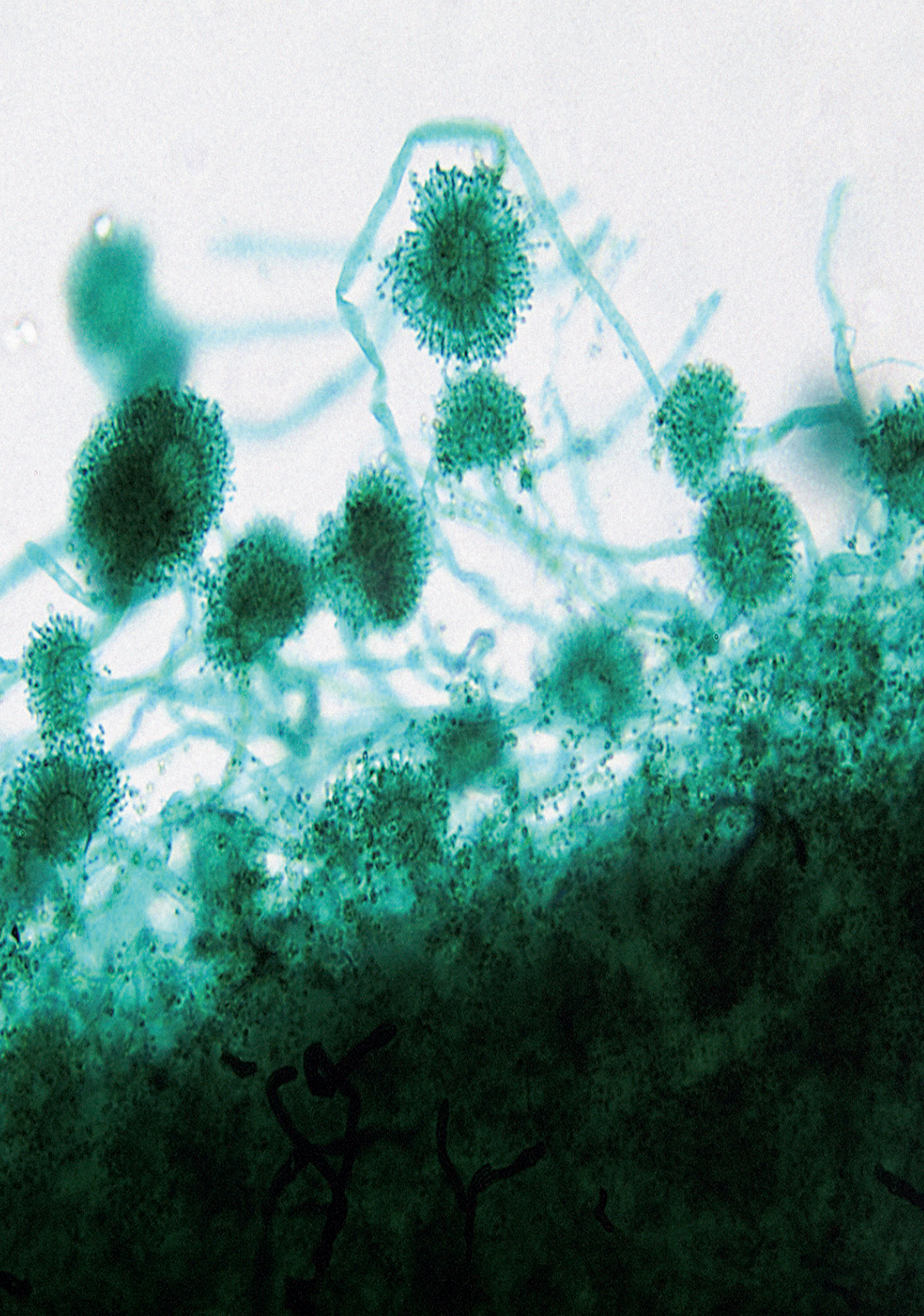


Mould

prevention & treatment





Preface	3
Procedures against mould	5
Silicones in sanitary areas	6
OTTO Fungitect® Silver-Technology	7
Practical tips for prevention of mould	8-9
Correct ventilation	10-11
Product overview	12-13
Recommended OTTO products	14-15

Preface

From a biological point of view, mould belongs to the fungus family. There are approx. 250,000 species of fungus, 50,000 of which belong to the subspecies of mould.

Fungal spores are part of our habitat, just like bacteria, and are extremely frugal. They thrive in humid conditions and find sufficient nourishment in organic materials such as soap remains and skin flakes.

A so-called biofilm, a thin, slimy coating comprising of fungal spores, bacteria, soap residue and skin particles, builds up easily on expansion and connection joints in sanitary areas,,thus providing an ideal breeding ground for mould.

Regular cleaning of the joints is vital and, in addition, a joint sealant that is correctly applied (without concave dips) and equipped with a high-quality fungicide.

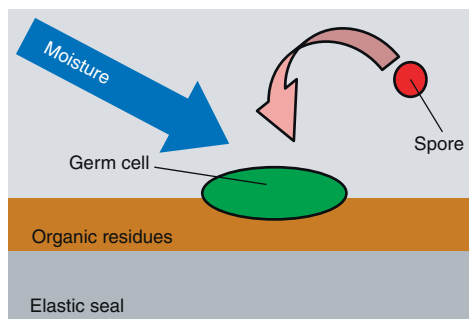
However, in the long run, sustaining a relative humidity level of under 70% is the key to preventing mould and this can only be achieved with adequate ventilation.



Causes of mildew

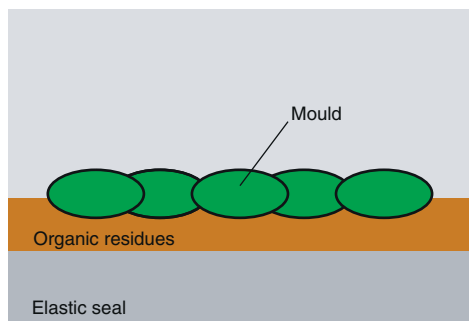
Continuous relative humidity levels of over 70%.

Breeding grounds for moulds, e. g. organic deposits in the form of hygiene articles, soap residue and skin particles.



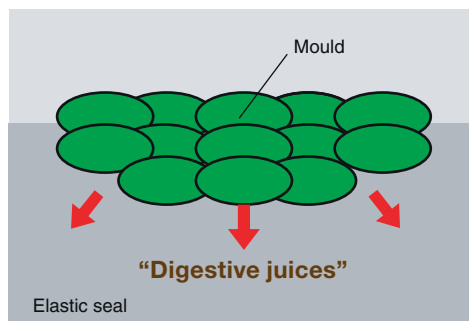
Primary attack

At this stage mould only grows in the organic deposits on the surface of the sealant and can be combated with [an anti-mould product](#).



Secondary attack

At this stage the mould grows into the sealant. In this case the sealant must first be cut out and then removed completely with OTTO SilOut silicone remover. Before resealing the joint, the affected area should be thoroughly cleaned and then treated with an anti-mould product in order to kill any still existing fungal spores.



Silicone sealants for sanitary areas are normally equipped with fungicides that are able to kill mould spores or at least inhibit their growth. These fungicides are only added in small amounts to ensure that they do not become harmful to health. As time passes, they wash out and lose their effectiveness.

In spite of the fungicide content of sealants, mould is always a long-term problem in wet rooms.

Benefit from our specialised OTTO anti-mould products with the OTTO Fungitect® Silver Technology, a risk to neither health nor the environment!



In contrast to conventional fungicides, OTTO Fungitect® Silver Technology will not wash out from the sealant, even under high water loads, and can thus retain its protective effect over a longer period of time.

The benefits of **OTTO Fungitect® Silver Technology**:

- Silver has been a well-known antimicrobial agent for centuries and is used nowadays in a number of ways in ointments and creams for healing wounds as well as in eye drops.
- Silver is safe to use and environmentally friendly.
- It is well known that microorganisms are unable to build up any resistance to silver, which means they are unable to 'accustom' themselves to the active agent - it remains effective.
- In contrast to conventional fungicides, **OTTO Fungitect® Silver Technology** does not wash out of the sealant, even with high exposure to water, and therefore remains effective for a longer period of time.
- The intervals for maintaining and replacing the elastic seals are considerably longer.

Not all silver is the same – why OTTO does not contain nano silver particles.

The ionic silver in OTTO Fungitect® Silver technology has nothing to do with nano silver particles which are suspected of being harmful to health.

These are the most important differences:



Silver nano particles		OTTO Fungitect® Silver Technology
Up to 300 nm	Particle size	> 600 nm to 20 µm
Cell permeability according to Federal Environmental Agency, waste water contamination	Health and environmental risks	No cell permeability; less waste water contamination
Metallic	Chemical form of silver	Ionic
1.000 to 10.000 ppm; high concentration necessary	Required silver concentration	25 bis 300 ppm; low concentration sufficient

Professional repair of joints to eliminate mildew

The first step should be analysing the cause of the mould: building materials, underlying surface, condition of the rooms, ventilation, temperature, or the maintenance and care – was the cleaning schedule adapted to the requirements and carried out regularly with alkaling cleaners? The repairs will only be successful and have a lasting effect if the source of the problem is discovered and appropriate measures taken

To repair the joint, the old sealant and the old back-up rod must be removed entirely. It is important to dispose of the old sealing materials as quickly as possible in a suitable container so that adjoining structures are not contaminated with mould spores.

The next step is to treat the affected area of the joint, the underlying surface, the flanks of the joint, adjoining structural surfaces and hard joints with OTTO Anti-Mildew Spray. The adjoining surfaces should be cleaned after 10 minutes with clear water.

If these measures are not carried out meticulously, mould spores can get trapped underneath the new joint sealant and, despite the sealant being well armed with fungicides, mildew could form again.



Please refer to the technical data sheet of the OTTO Anti-Mildew Spray.



Further information on sealing joints can be found in the professional guide „Joints perfectly sealed“ and „Sanitary Facilities, the perfect seal for perfect care“

Correct sealing of sanitary joints

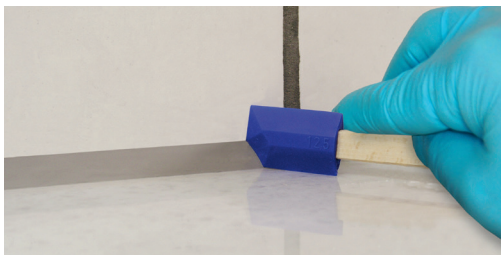
Correct sealing of sanitary joints is immensely important for avoiding mildew.

Correct finish:



Smoothing agents should be used sparingly in order to leave as little residue on the sealant as possible. Detergents, which are often used as cheap smoothing agents, are especially unsuitable in sanitary areas because they contain organic residues which function as breeding grounds for mildew!

Correct geometry of joint:



The joint should be formed in such a way that moisture can not accumulate and remain there. (Avoid forming hollows!)

Maintenance and care of joints

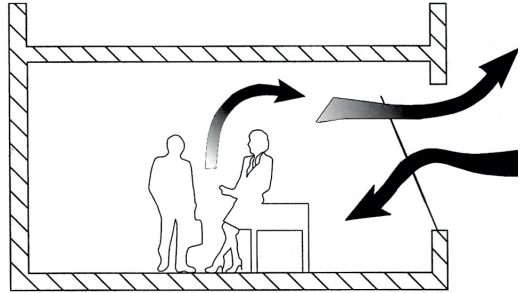
Elastic seals in sanitary facilities should be cleaned regularly using standard commercial neutral aqueous cleaning agents or alkaline cleaners. Acidic cleaning agents (such as lemon or vinegar-based cleaners) are not to be recommended because microorganisms thrive in an acid environment, they will multiply and can turn into patches of mould. The cleaning agents should neither be strongly coloured, nor should they contain substances such as iodine, bromine or aldehyde because these tend to discolour the sealant. If the joint sealant becomes badly soiled, we recommend the use of OTTO Cleaner T or a suitable alcohol-based cleaner. The elastic seals should be kept clean and dry during the periods when the wet cell is not being used. The best preventive measure is to rinse the joints with clear water after using the bath or the shower and to dry them immediately. In this way, any residues of soap or hygiene articles will be removed, followed by the moisture, leaving no opportunity for microorganisms to accumulate and multiply on the seals, causing mildew. A good precaution is to keep sanitary facilities well ventilated. In addition to cleaning the joints regularly, we recommend the use of OTTO Anti Mildew Spray at regular intervals (depending on how often the facility is used and the surrounding conditions). This helps to protect the joints against mildew for a longer time, there are longer intervals between maintenance and mould can be dealt with efficiently at an early stage.

Ventilation through one window

When rooms are ventilated through one window the fresh air and the stale air flow in and out through the same window. This is the usual way to ventilate and the most generally practiced.

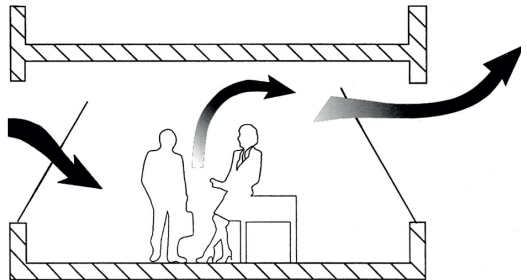
The air flow through the window depends on the free cross section, the difference in temperature and the wind speed. For brief and intensive airing the casement is opened wide.

Airing through tilted windows requires much longer for the same exchange of air and it can lead to high energy loss.



Transverse ventilation

Transverse ventilation makes use of the differences in pressure between the side of the building facing the wind and that facing away from the wind. The fresh air flows in on one side of the building and out on the other. Transverse ventilation is the fastest and most effective method of exchanging the air in the rooms.

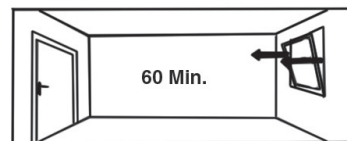
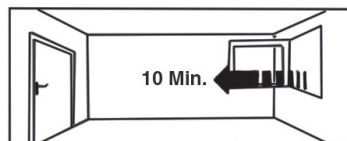
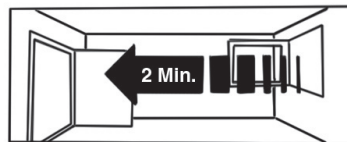


Duration of ventilation

The optimal length of time for ventilation depends on the season of the year. Cooler air outside contains less moisture than air in a warm room. If external air warms up in the room it can absorb additional moisture. Owing to the big difference in temperature in winter between the air outside and inside, the exchange of air is very effective and fast, i.e. the greater the difference in temperature, the higher the capacity of the air flowing in from outside to absorb the moisture. The values specified below provide a guide to the time needed for ventilation from one side only:

December to February	5 minutes
March + November	10 minutes
April, May + September, October	15 minutes
June, July, August	25 minutes

To get rid of moisture in living quarters it is necessary to open the windows several times a day, depending on how the respective room is used.



Supplementary ventilation

In comparison with other rooms, bedrooms show the highest relative air humidity. This means there is a higher risk of mould. A reasonable ventilation option is to keep the window tilted at night. However, this has the disadvantage of energy loss and the surrounding conditions frequently do not allow it. Basically it is also possible to ventilate adequately the next day to prevent mould from forming.

Early in the morning the window should be fully opened for a period of approx. 30 minutes. If supplementary ventilation is not possible before the evening, double the amount of time is required.

Correct ventilation: Source:

VFF (Association of window and façade manufacturers leaflet ES.05,
January 2004
Ventilation of residential buildings – health,
Damage prevention and energy conservation;
Association of window and façade manufacturers, Frankfurt/Main.

OTTOSEAL® S 130

The alkoxy sanitary silicone with ecologically harmless OTTO Fungitect® Silver Technology

The alkoxy-based silicone with OTTO Fungitect® Silver Technology offers protection against mould in regulated areas of application.

**OTTOSEAL® S 140**

The hotel and spa silicone with double protection against mould

Highly-active fungicide combined with OTTO Fungitect® Silver Technology offers high-quality and long-lasting protection against mould for silicone joints under very high stress.

**OTTOSEAL® S 70**

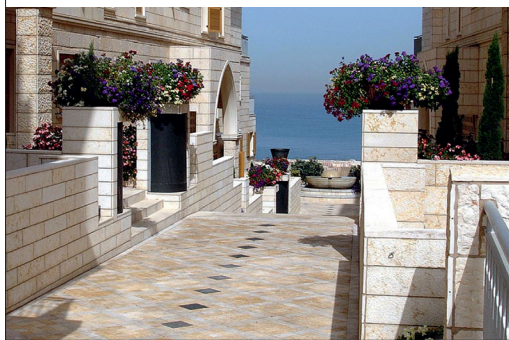
The premium natural stone silicone

With a guarantee against migratory staining in natural stone, it is available in many glossy and matt colours as well as stonelike appearances.

**OTTOSEAL® S 80**

The premium alkoxy natural stone silicone

The low-odour natural stone silicone with guarantee against migratory staining.



OTTOSEAL® S 100



The premium bathroom silicone

Unsurpassed processing characteristics for classic sanitary applications in a unique range of colours.



OTTOSEAL® S 121



The low odour premium bathroom silicone

For use in odour-sensitive areas.



OTTOSEAL® S 18

The swimming pool silicone

For underwater joints – extremely resistant against continuous moisture and chlorine.



Anti-Mildew-Spray

Anti-Mildew-Spray



OTTO SilOut

The silicone remover





OTTOSEAL® S 130

The alkoxy bathroom silicone with ecologically harmless Fungitect® Silver Technology

1-component silicone sealant based on alkoxy, neutral cross-linking

For indoor and outdoor application



OTTOSEAL® S 140

The hotel and spa silicone with double protection against mould

1-component silicone sealant based on oxime, neutral cross-linking, MEKO-free

For indoor and outdoor application



OTTOSEAL® S 100



The premium bathroom silicone

1-component silicone sealant based on acetate

For indoor and outdoor application



OTTOSEAL® S 121



The low odour premium bathroom silicone

1-component silicone sealant based on alkoxy, neutral cross-linking

For indoor and outdoor application



OTTOSEAL® S 70



The premium natural stone silicone

1-component silicone sealant based on oxime, neutral cross-linking, MEKO-free

For indoor and outdoor application



OTTOSEAL® S 80



The premium alkoxy natural stone silicone

1-component silicone sealant based on alkoxy, neutral cross-linking

For indoor and outdoor application



OTTOSEAL® S 18

The swimming pool silicone

1-component silicone sealant based on oxime, neutral cross-linking, MEKO-free

For indoor and outdoor application



OTTO Anti-Mildew Spray

Removes mildew, fungus, algae and moss reliably and permanently



OTTO SilOut

The silicone remover

Thixotropic paste for removing of cured silicone sealants and adhesives

OTTO Head office

Tel.: 0049-8684-908-540

Fax: 0049-8684-908-549

E-mail: info@otto-chemie.com

From UK: 0800-783 60 53

OTTO Technical Service

Tel.: 0049-8684-908-460

Fax: 0049-8684-908-469

E-mail: tae@otto-chemie.de

OTTO Order processing

Tel.: 0049-8684-908-310

Fax: 0049-8684-908-319

E-mail: mab@otto-chemie.de

Your specialised dealer:

For information relating to certification marks, please see www.otto-chemie.de under the heading „Information on Certification Marks“. The requirements and test criteria of the DGNB and LEED can be found on www.dgnb.de and www.german-gba.org. Please note that these companies do not evaluate our individual products, but the sustainability as a whole of each complete building project.

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.



Sealants • Adhesives

Hermann Otto GmbH · Krankenhausstr. 14 · 83413 Fridolfing, GERMANY

Tel.: 0049-8684-908-0 · Fax: 0049-8684-1260

E-mail: info@otto-chemie.com · Internet: www.otto-chemie.com