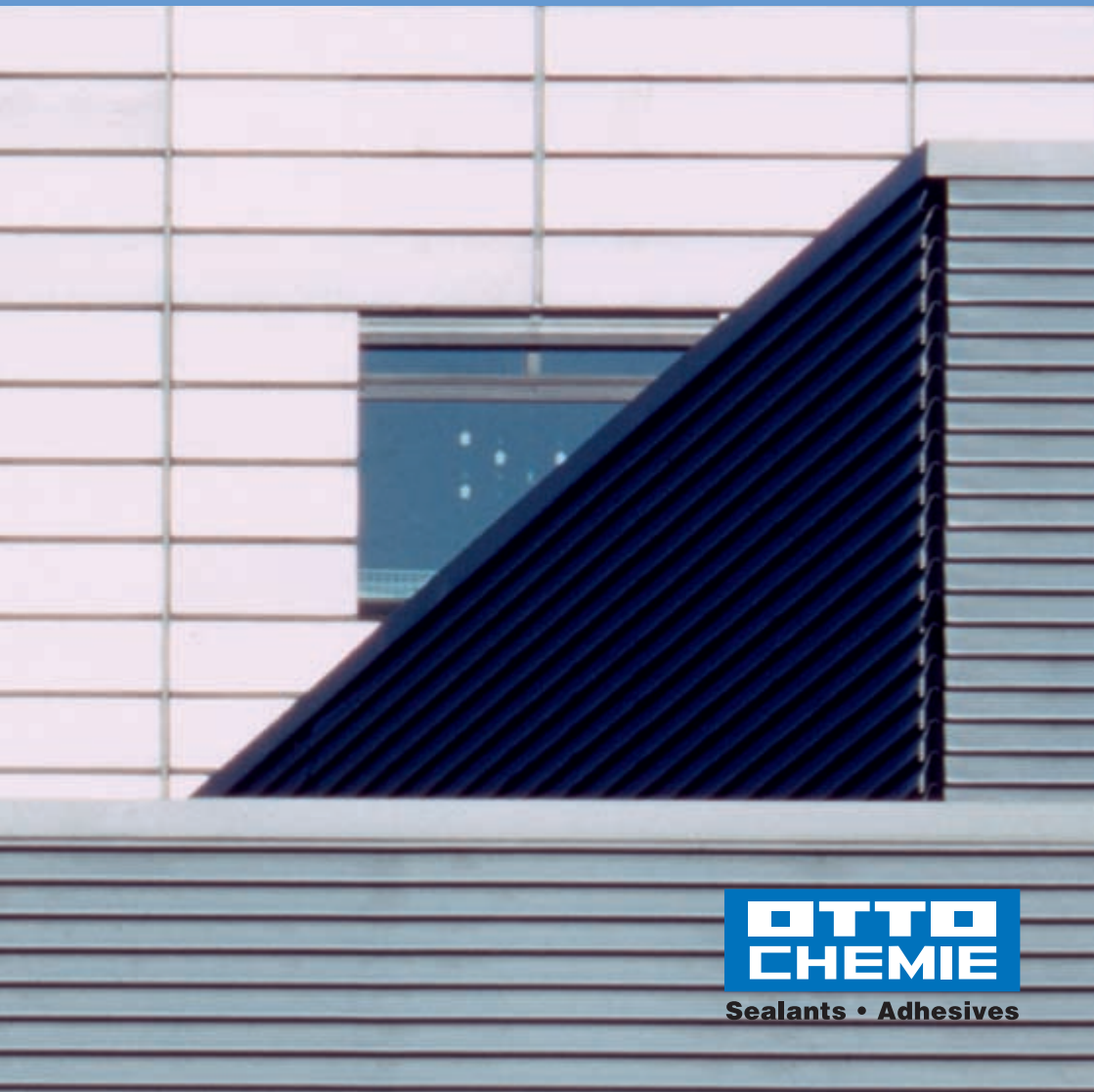
OTTO Professional Guide

In building and façade construction

perfect sealing and bonding



OTTO CHEMIE

Sealants • Adhesives

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Preface

The building shell on a new building has undergone a pronounced transformation in recent years, both in housing construction and non-residential building. The trend towards energy-efficient facades has been reinforced by the use of glass and elements with insulation and improved heat gain characteristics, and it is set to become of increasing importance in the future.

However, the major focus of the construction work is the renovation of old buildings. And one basic prerequisite for a functional façade is expansion joints which compensate the movements of the building and structural elements, as well as preventing damage from occurring due to the weather.

In the case of major building projects it is sometimes necessary to erect parts of buildings separately for structural reasons. The joints between these buildings must then be classified as joints that separate buildings and it is their function to compensate the movements of the parts of the building. Joints of this type can be sealed by means of elastomer tapes. Injectable sealants are not suitable in this case.

By contrast, façade sealing comes under the scope of DIN 18540 or DIN EN ISO 11600. Such joints in concrete façades, unplasteredbrickwork and/or natural stone do not function as compensation between parts of buildings; they have a sealing function within the façades.

Standards and guidelines for expansion joints in building construction

The relevant standards for expansion joints in building construction are the DIN 18540 “Sealing of exterior wall joints in building using joint sealants” and DIN EN ISO 11600, “Building construction – joint-sealing products – Classification and requirements of sealants”.

In DIN 18540 the classification “F” (= fast stability) is important for the optimal suitability of the sealant for use in outdoor joints susceptible to the weather. In DIN EN ISO 11600 the highest classification, “25 LM”, means 25 % elasticity and a sealing compound which displays good recovery with little strain (= Low Modulus). This characteristic is also important for use in façades owing to temperature fluctuations and the impact of the weather because it affects the thermal length variation of façade elements.

Maximum joint width between concrete façade sections in building construction

The maximum recommended joint width for joints in building construction is 35 mm. Correct joint dimensions are calculated according to the table below:

Joint dimensions table

	Joint width		Depth of joint sealant[3]	
Distance between joints in m	**Nominal dimension**[1] **bF** in mm	**Minimum dimension**[2] in mm	**tD** in mm	**Limiting dimensions** in mm
up to 2	15	10	8	± 2
above 2 to 3.5	20	15	10	± 2
above 3.5 to 5	25	20	12	± 2
above 5 to 6.5	30	25	15	± 3
above 6.5 to 8	35[4]	30	15	± 3

1) Nominal dimensions for the planning
2) Minimum dimension at the time a joint is sealed
3) The stated values apply to the final state, whereby the change in volume of the joint sealant must be borne in mind
4) For larger joint widths attention must be paid to the instructions of the sealant manufacturer

Fire protection in building construction

According to DIN 4102 – this is the standard pertaining to the fire behaviour of building materials and building components – building materials are classified either as building material class A or B.

Non-combustible building materials belong in building material class A. Class A is subdivided again. The composition of A1 building materials must be entirely non-combustible, while A2 building materials are permitted to contain a small amount of combustible constituents. The combustible building materials belong in class B. Class B for combustible building materials is divided into difficult to ignite (B1), normally combustible (B2) and easily ignited (B3).

In building construction building materials must at least conform to class B2 for building materials. Our sealants, OTTOSEAL® M 360, OTTOSEAL® P 305 and OTTOSEAL® S 110 are classified as B2, normally combustible building materials in compliance with the definitions in DIN 4102 Part 4.

The following **OTTO silicones** belong in **building material class B1 (difficult to ignite):**

- **OTTOSEAL® S 94** – The fire protection silicone – if fire behaviour requirements are higher, e. g. for fire-retardant components
- **OTTOSEAL® S 42** – The 2-component laminated glass edge bond – as the secondary edge bond for the production of UV-resistant insulated glass units
- **OTTOSEAL® S 54** – The special B1 silicone – e. g. for connection joints for mastic asphalt screeds or difficult adhesive bases, such as asphalt, bitumen etc. and for the equalising bonding of materials such as glass, stainless steel, aluminium and some plastics

Compatibility of sealants with coatings in compliance with DIN 5242

If façades are made from materials other than natural stone and/or glass, as a rule they are given an exterior coating. Walls inside buildings are also normally given a coat of paint. Therefore sealants which are compatible with coats of paint are needed for both indoor and outdoor joints.

Definition of compatibility with coatings

Compatibility with coatings means that the paint can overlap with the joint sealant by approximately 1 mm without any negative reactions taking place between the two materials. As a rule it is not possible to paint over the sealant because the (rigid) coating would crack owing to the expanding movements of the (elastic) sealant.

The OTTO products **OTTOSEAL® M 350, OTTOSEAL® P 305** and **OTTOSEAL® S 110** are very compatible with coatings in compliance with DIN 52452.

IVD leaflets

The OTTO sealants for use in building construction and façades are also suitable for applications in accordance with the following IVD leaflets.

OTTOSEAL® P 305 and OTTOSEAL® M 360:

No.7 (10/06 issue) – Elastic joint seal on façades made from cemented-on ceramic tiles

No.9 (02/08 issue) – Injectable sealants in the connection joint for windows and exterior doors

Apart from nos. 7 and 9, **OTTOSEAL® S 110** also complies with the following leaflets:

No.10 (02/08 issue): Sealing glass on wooden windows by means of sealants

No.13 (02/08 issue): Sealing glass on wood-aluminium windows by means of sealants

Compatibility with natural stone

Soiling of natural stones because of the migration of material out of the joint-sealing compound into the stone is an aesthetically undesirable occurrence. The risk of contamination by the joint sealant material is tested in compliance with the ASTM C 1248 standard of the American National Standards Institute, ANSI. We have therefore had our premium natural stone silicone, **OTTOSEAL® S 70**, tested by DL Laboratories, New York in compliance with ASTM C 1248. We can guarantee that **OTTOSEAL® S 70** is compatible with natural stone.

Prevention of contamination and damage from moisture on façades

Hydrophobicity of façades causes a great reduction in the absorption of water, good UV resistance and very good running-off characteristics. The ready-to-use **OTTO Siloxan 290L** solution can be applied directly by spraying or brushing it on. The substrate should be more or less dry and free of moss, mould or algae for processing.

The differences in the water absorption capacity of building materials are significant.

	Water absorption **untreated** (approximate average, depending on material quality)	Water absorption **hydrophobised with OTTO Siloxan 290L** (approximate averages depending on material quality)
Concrete	3 %	0.8 %
Sandstone	5 %	0.2 %
Lime sand brick	13 %	0.8 %
Limestone	12 %	1.1 %
Clinker	3 %	0.1 %
Brick	18 %	0.1 %
Tuff	18 %	1.1 %
Mortar	7 %	1.2 %

Weathered surfaces with blooming should be pretreated by sand or steam blasting or washing them off using suitable cleaning agents. Neighbouring components such as windows, doors, roof gutters etc. must be covered over. The two applications are carried out from top to bottom, wet on wet.

The hydrophobic façade is rainproof after approximately 24 hours. The hydrophobic effect prevents moisture from entering the interior from the outside, but allows interior moisture to escape to the outside. The hydrophobic effect lasts several years; however it depends on the state of the façade, the cardinal direction and hence the intensity of the weathering.

Glass rebate sealing on wooden windows

Optimal sealing of the glass rebates on wooden windows is subject to some important factors:

The fast stability of the sealant is important for avoiding cracks in the sealing. These can arise if, for example, sealing is carried out in direct sunlight and at a high temperature and the temperature drops thereafter and the sealant then has to follow the movements of the components although it is not yet fully cured.

OTTOSEAL® S 110 and S 120 form a firm surface skin very fast and can therefore follow the movements on the building after only a short time. Furthermore, compatibility with the building materials within the contact range of the sealant (e.g. varnishes or stains) is extremely important.

They must not damage or stain the sealant. According to the relevant standards and recommended practice it is not possible to completely coat the sealant (refer to section: Compatibility of sealants with coatings in compliance with DIN 5242).

Abrasion resistance must comply with DIN 18545, part 2. **OTTOSEAL® S 110 and S 120** meet the requirements of group E sealants. After the sealant has been smoothed, the residual smoothing agent must be removed immediately. Otherwise streaks may remain.

The sealant must cure for three days before it is cleaned for the first time in order to prevent the seal from being damaged. The surface of the sealant should be cleaned with a moist, soft textile cloth using normal commercial window-cleaning agents.

OTTOSEAL® S 110 and OTTOSEAL® S 120 meet the maximum requirements of ISO 11600, i.e. they conform to the 25 LM classification. Furthermore, they also comply with the French CTBA L 114 standard (Suitability of sealants for sealing glass rebates on wooden windows).

Standards for adhesives in wood construction

DIN EN 204 – D4

This European standard specifies the assessment of adhesives for bonding wood and wood materials in the case of non-structural components. Categorisation in class D4 is equivalent to the highest class for adhesives. **OTTOCOLL® P 84, P 85 and P 86, and OTTOCOLL® Rapid, P 410 and P 520** comply with said class D4.

DIN EN 14257 (formerly WATT 91)

This standard pertains to wood adhesives and the determination of tensile strength of lap joints in a tensile test at elevated temperatures. This evidence of conformity is particularly important in the weathered area in order to keep bonds functional in the long term.

OTTOSEAL® M 360 LEED®

The hybrid sealant for expansion joints

Characteristics:

- 1-component sealant based on silane-terminated polymers (hybrid)
- Compatible with coatings according to DIN 52452
- Good weathering and ageing resistance
- Cures without bubble formation
- Low odour
- Free of isocyanates
- Silicone-free
- Stress expansion modulus at 100 % (DIN 53 504, S3A): 0,4 N/mm²

Fields of application:

- External joints according to DIN 18540-F
- Sealing of joints on façades, metal constructions
- Expansion joints on prefabricated concrete and cellular concrete units
- Bonding of OTTO Window Tapes BAB/A and BAB/I on masonry, concrete, cellular concrete etc.

Standards and tests:

- Tested according to DIN EN ISO 11600 F 25 LM (ift Rosenheim, Germany)
- Suitable for applications according to IVD instruction sheet no. 7+9+19-1+20+22+24+27+29 (IVD = German industry association sealants)
- Quality seal of the IVD (Industrial association for sealants, registered society), tested by the ift Rosenheim (Institute of window engineering, registered society)
- According to regulation (EG) Nr. 1907/2006 (REACH)
- Conform to LEED® IEQ-credits 4.1 (Indoor Environmental Quality) adhesives and sealants
- Fulfills DGNB-characteristics 06 (DGNB e.V. = German Organisation for sustainable building)
- French VOC-emission class A+
- Certified according to GOS
- Declaration in “baubook” Austria

OTTOSEAL® M 365

The hybrid adhesive and sealant

Characteristics:

- 1-component adhesive and sealant based on silane-terminated polymers (hybrid)
- Compatible with coatings according to DIN 52452
- Good weathering and ageing resistance
- Very good adhesion on many types of materials such as plastics, metals, wood and derrived timber products, concrete
- Cures without bubble formation
- Low odour
- Free of isocyanates
- Silicone-free

Fields of application:

- For application in interior and exterior areas
- External joints according to DIN 18540-F
- Sealing of joints on façades, metal constructions
- Sealing of joints on windows and doors made of wood, metal and plastic
- Elastic bonding and mounting of various materials such as wood, derived wood products, glass, metals (e. g. aluminium, stainless steel, anodising aluminium, brass, copper), plastics (e. g. unplasticised PVC, fibrereinforced plastics etc.), mineral substrates (e. g. brick, tile, ceramic), fireproof building panels (gypsum board etc.)
- For the bodywork and vehicle construction, waggon and container construction, metal construction and apparatus engineering, ship building

Standards and tests:

- According to the requirements of ISO 11600 F 25 LM
- Suitable for applications according to IVD instruction sheet no. 7+9-19-1+20+22+24+27+29+30 (IVD = German industry association sealants)
- French VOC-emission class A+
- Certified according to GOS
- Declaration in “baubook” Austria

OTTOSEAL® P 305

The premium PU sealant

Characteristics:

- 1-component sealant based on polyurethane
- Cures without bubble formation
- Good weathering and ageing resistance
- Compatible with coatings according to DIN 52452
- Silicone-free
- Stress expansion modulus at 100 % (DIN 53 504, S3A): 0,3 N/mm²

Fields of application:

- External joints according to DIN 18540-F
- Expansion joints on prefabricated concrete and cellular concrete units
- Sealing of façades, metal constructions, window and door connections, flat roof parapets

Standards and tests:

- Tested and monitored according to DIN 18540-F (Süddeutsches Kunststoff-Zentrum, Würzburg, Germany)
- Suitable for applications according to IVD instruction sheet no. 7+9+20+22+24+27+29 (IVD = German industry association sealants)
- Quality seal of the IVD (Industrial association for sealants, registered society), tested by the ift Rosenheim (Institute of window engineering, registered society)
- According to regulation (EG) Nr. 1907/2006 (REACH)
- French VOC-emission class A+
- Certified according to GOS

OTTOSEAL® S 7 LEED®

The weather sealing silicone

Characteristics:

- Neutral-curing 1-component silicone sealant
- Excellent weathering, ageing and UV-resistance
- Long skin-formation
- User-friendly matt surface
- High resistance to notches, tension and tearing
- Excellent adhesion on many substrates, partly in combination with primer
- Compatible with PVB-foils according to the criteria of the ift-guideline DI-02/1
- Compatible with insulating glass edge bond sealing based on silicone
- Non-corrosive

Fields of application:

- Specially developed for the weather sealing of structural glazing, angled glazing, wood-glass-composite units, roof glazing and conservatories
- Suitable for sealing glazing units
- Suitable for joints on insulating glass units

Standards and tests:

- According to the requirements of DIN 18540-F
- According to the requirements of ISO 11600 F 25 LM
- Suitable for applications according to IVD instruction sheet no. 22 (IVD = German industry association sealants)
- Conform to LEED® IEQ-credits 4.1 (Indoor Environmental Quality) adhesives and sealants
- Fulfills DGNB-characteristics 06 (DGNB e.V. = German Organisation for sustainable building)
- French VOC-emission class A+
- Certified according to GOS

OTTOSEAL® S 10 LEED®

The sealant for glass constructions

Characteristics:

- Neutral-curing 1-component silicone sealant
- Excellent weathering, ageing and UV-resistance
- Excellent adhesion on many substrates, partly in combination with primer
- Non-corrosive
- High resistance to notches, tension and tearing
- Compatible with PVB-foils according to the criteria of the ift-guideline DI-02/1

Fields of application:

- Sealing of expansion joints in building construction
- Also suitable for weather sealing of structural glazing, angled glazing, timber-glass-composite elements, roof glazing and conservatories
- Suitable for sealing glazing units
- Installation of X-ray protective glass
- Elastic sealing in the electric industry, mechanical engineering, automotive and shipbuilding
- Not suitable for the structural bonding of structural glazing units

Standards and tests:

- The manufacturer has tested and confirmed the compatibility to strainless Plexiglas®. Test report on the compatibility with Plexiglas®-XT is available
- Tested and recommended by Schott Desag AG Deutsches Spezialglas, D-31073 Grünenplan, for the installation of RD 50 and RD 30 X-ray protective glass
- UL 94 Flame Classification HB, RTI 105 °C, File No. E 176319
- Suitable for applications according to IVD instruction sheet no. 22+30 (IVD = German industry association sealants)
- Conform to LEED® IEQ-credits 4.1 (Indoor Environmental Quality) adhesives and sealants
- Fulfills DGNB-characteristics 06 (DGNB e.V. = German Organisation for sustainable building)
- French VOC-emission class A+
- Certified according to GOS

OTTOSEAL® S 70 LEED®

The premium natural stone silicone

PREMIUM

Characteristics:

- Neutral-curing 1-component silicone sealant
- Guarantee – does not cause any migratory staining on natural stone
- High resistance to notches, tension and tearing
- Excellent weathering, ageing and UV-resistance
- Non-corrosive
- Contains fungicides
- Also in “structure” colours with a stonelike surface
- Also available in “matt finished” colours
- Matt colours are only to be smoothed off dryStress expansion modulus at 100 % (DIN 53 504, S3A): 0,5 N/mm²

Fields of application:

- Sealing and jointing on marble and all natural stones, e. g. sandstone, quartzite, granite, gneiss, porphyry etc. in interior and exterior areas
- Sealing of expansion joints in wall and façade areas
- Movement-compensating bonding of natural stone on metal, e. g. stairs on a metal construction
- Sealing and jointing of marble / natural stone swimming pools, also underwater joints
- Sealing of lacquered and enamelled glass
- For the external sealing of mirrors in connection with natural stone

Standards and tests:

- Tested according to ISO 16938-1 of SKZ Würzburg (Testing for migratory staining of sealants on natural stone)
- Tested according to ASTM C 1248 by DL Laboratories, New York (Testing for migratory staning of sealants on natural stone)
- “Highly recommendable non-hazardous building product” according to building material list (TOXPROOF) of the TÜV Rheinland, Germany
- Suitable for applications according to IVD instruction sheet no. 14+23+25+27+30 (IVD = German industry association sealants)
- Quality seal of the IVD (Industrial association for sealants, registered society), tested by the ift Rosenheim (Institute of window engineering, registered society)
- According to regulation (EG) Nr. 1907/2006 (REACH)
- Conform to LEED® IEQ-credits 4.1 (Indoor Environmental Quality) adhesives and sealants
- Fulfills DGNB-characteristics 06 (DGNB e.V. = German Organisation for sustainable building)
- French VOC-emission class A+
- Certified according to GOS
- Declaration in “baubook” Austria

OTTOSEAL® S 110 LEED®

The premium neutral silicone

PREMIUM

Characteristics:

- Neutral-curing 1-component silicone sealant
- Excellent weathering, ageing and UV-resistance
- Excellent early resistance to stress
- Highly abrasion-resistant and non-streaky
- Good compatibility with paints according to DIN 52452 (not paintable)
- Tack-free surface
- Excellent adhesion on many substrates, partly in combination with primer
- Non-corrosive
- Contains fungicides
- Compatible with PVB-foils according to the criteria of the ift-guideline DI-02/1
- Stress expansion modulus at 100 % (DIN 53 504, S3A): 0,4 N/mm²

Fields of application:

- Window pane sealing on wooden windows
- Sealing of joints on windows and doors made of wood, metal and plastic
- Sealing double-glazings (e. g. “Profilit”)
- Expansion joints on prefabricated concrete and cellular concrete units
- Sealing of joints on façades, metal constructions
- Suitable for sealing glazing units
- Expansion joints in bathroom areas

Standards and tests:

- Tested according to DIN 18545, part 2, resistance group E (ift Rosenheim, Germany)
- According to the requirements of DIN 18540-F
- According to the requirements of ISO 11600 G 25 LM
- Tested according to FCBA (CTBA) L 114 (suitability of sealants for window pane sealing on wooden windows)
- “Highly recommendable non-hazardous building product” according to building material list (TOXPROOF) of the TÜV Rheinland, Germany
- Declaration of no objection when in contact with food (ISEGA Forschungs- und Untersuchungs-Gesellschaft mbH, Aschaffenburg, Germany)
- Suitable for applications according to IVD instruction sheet no. 7+9+10+13+14+19-1+20+22+24+25+27+29 (IVD = German industry association sealants)
- Quality seal of the IVD (Industrial association for sealants, registered society), tested by the ift Rosenheim (Institute of window engineering, registered society)
- According to regulation (EG) Nr. 1907/2006 (REACH)
- Conform to LEED® IEQ-credits 4.1 (Indoor Environmental Quality) adhesives and sealants
- Fulfills DGNB-characteristics 06 (DGNB e.V. = German Organisation for sustainable building)
- French VOC-emission class A+
- Certified according to GOS
- Declaration in “baubook” Austria

OTTOSEAL® S 125 LEED®

The constructional alkoxy silicone

Characteristics:

- Neutral-curing 1-component silicone sealant based on alkoxy
- Non-corrosive
- Good adhesion on ceramic substrates
- Contains fungicides
- Excellent weathering, ageing and UV-resistance
- Stress expansion modulus at 100 % (DIN 53 504, S3A): 0,4 N/mm²

Fields of application:

- Sealing of joints on windows and doors made of wood, metal and plastic
- Expansion joints in prefabricated concrete constructions
- Sealing of facades, parapet elements, roller blind housings and metal building constructions
- Expansion joints in bathroom areas
- For the external sealing of mirrors in connection with materials such as ceramic, metal, glass etc.

Standards and tests:

- Suitable for applications according to IVD instruction sheet no. 3+7+9+14+19-1+20+24+25+27+29 (IVD = German industry association sealants)
- Conform to LEED® IEQ-credits 4.1 (Indoor Environmental Quality) adhesives and sealants
- Fulfills DGNB-characteristics 06 (DGNB e.V. = German Organisation for sustainable building)
- French VOC-emission class A+
- Certified according to GOS
- Declaration in “baubook” Austria

OTTO Siloxan 290 L

The silicone for surface impregnation

Characteristics:

- Ready-to-use silicone surface impregnation
- High penetration depth
- UV-resistant
- Can also be applied on moist substrates (not rain-wet)
- Forms a water- and dirt-repelling surface
- The hydrophobe effect prevents the penetration of moisture from the outside to the inside but it lets the internal moisture escape to the outside
- Bridges hair cracks up to a width of 0.3 mm
- Reduces the tendency of treated surfaces to pick up dirt
- Avoids humidity in the construction material thus avoids salt efflorescence as well as moss and algae growth
- Paintable with commercial dispersion paints
- Low odour
- Colourless
- Slight deepening of colour is possible

Fields of application:

- Hydrophobic treatment of façades and building components made of concrete, cellular concrete, fibre cement, brick-work, natural and artificial stone, mineralic plasters and coatings
- Drainage of moist and cracked surfaces, which are then painted using dispersion paints
- Only for vertical surfaces

OTTO Fugenband BG1

The precompressed jointing tape

Characteristics:

- Impregnated foam tape, self-adhesive on one side
- Stretches slowly inside the joint to its final thickness
- Forms a driving rain resistant joint according to DIN 18542
- Good UV-resistance
- Flame resistant
- Protects against moisture and dust, heat loss, noise etc.
- Compatible with concrete, cellular concrete, bricks, sandlime brick, iron, zinc, steel, galvanised sheet metal, aluminium, copper, wood and unplasticized PVC
- Compatible with many dispersion façade paintings and compatible with many OTTO sealants based on silicone, dispersion acrylic, hybrid and polyurethane. In case of use on marble and other natural stones please contact our technical service department in advance

Fields of application:

- Sealing of joints
- Joint between masonry and door or window frames
- Joint between masonry and concrete pillars, gable and roofing panels, sheet metal window sills, expanding joints, sheet pile profiles and corrugated panels

Standards and tests:

- BG1 according to DIN 18542
- Driving rain resistant up to 600 Pa according to DIN EN ISO 1027
- Compatible with general construction material according to DIN 18542
- Tested and monitored (MPA BAU Hannover, Germany) according to DIN 4102-B1 - flame resistant between massive mineralic constructional elements
- Suitable for applications according to IVD instruction sheet no. 24+26 (IVD = German industry association sealants)
- French VOC-emission class A+

OTTO Dämmband BG2

The precompressed insulating tape

Characteristics:

- Impregnated foam tape, self-adhesive on one side
- Stretches slowly inside the joint to its final thickness
- Forms a driving rain resistant joint according to DIN 18542
- Good UV-resistance
- Protects against moisture and dust, heat loss, noise etc.
- Compatible with concrete, cellular concrete, bricks, sandlime brick, iron, zinc, steel, galvanised sheet metal, aluminium, copper, wood and unplasticized PVC
- Compatible with many dispersion façade paintings and compatible with many OTTO sealants based on silicone, dispersion acrylic, hybrid and polyurethane. In case of use on marble and other natural stones please contact our technical service department in advance

Fields of application:

- Sealing of joints against sound, driving rain, dust, draft and heat loss.
- Especially suitable for joint constructions as in e. g. coupled windows, hidden window joints to define a boundary for sealants

Standards and tests:

- BG 2 according to DIN 18542
- Driving rain resistant up to 600 Pa according to DIN EN ISO 1027
- Compatible with general construction material according to DIN 18542
- Tested according to DIN 4102-B2 - normally flammable
- Suitable for applications according to IVD instruction sheet no. 24+26 (IVD = German industry association sealants)
- French VOC-emission class A+

OTTOCOLL® M 570

The 2-component hybride mounting adhesive

Characteristics:

- The 2-component hybrid-polymer-based (STPU) adhesive
- Fast curing even in thick layers
- Excellent primerless adhesion on numerous substrates - even when exposed to water
- For stress-compensating bonding and dynamic stresses
- High resistance to notches, tension and tearing
- Low odour
- Free of isocyanates
- Silicone-free
- Good weathering and ageing resistance
- Compatible with coatings according to DIN 52452

Fields of application:

- For application in interior and exterior areas
- Elastic bonding and mounting of various materials such as wood, derived wood products, glass, metals (e. g. aluminium, stainless steel, anodising aluminium, brass, copper), plastics (e. g. unplasticised PVC, plasticised PVC, fibrereinforced plastics etc.), mineral substrates (e. g. brick, tile, ceramic), fireproof building panels (gypsum board etc.)
- For the bodywork and vehicle construction, waggon and container construction, metal construction and apparatus engineering, ship building
- Sealing of air condition and ventilation systems
- Bonding of stone, natural stone and ceramic
- Elastic bonding of mirrors on ceramic, glass, plastic, stainless steel, aluminium, wood, concrete etc.

Standards and tests:

- Suitable for applications according to IVD instruction sheet no. 30 (IVD = German industry association sealants)
- French VOC-emission class A+
- Certified according to GOS

OTTOCOLL® M 590

The hybrid-adhesive for full-surface bonding

Characteristics:

- 1-component sealant based on silane-terminated polymers (hybrid)
- Free-flowing
- Excellent primerless adhesion on numerous substrates - even when exposed to water
- Good weathering and ageing resistance
- For stress-compensating bonding and dynamic stresses
- Low odour
- Free of isocyanates
- Solvent-free
- Silicone-free
- Compatible with coatings according to DIN 52452

Fields of application:

- For application in interior and exterior areas
- Elastic bonding and mounting of various materials such as wood, derived wood products, glass, metals (e. g. aluminium, stainless steel, anodising aluminium, brass, copper), plastics (e. g. unplasticised PVC, plasticised PVC, fibrereinforced plastics etc.), mineral substrates (e. g. brick, tile, ceramic), fireproof building panels (gypsum board etc.)
- For the bodywork and vehicle construction, waggon and container construction, metal

Standards and tests:

- Suitable for applications according to IVD instruction sheet no. 30 (IVD = German industry association sealants)
- French VOC-emission class A+
- Certified according to GOS
- Declaration in “baubook” Austria

OTTOCOLL® P 86

The 1-component PU adhesive for corner connections

Characteristics:

- 1-component adhesive based on polyurethane
- Excellent adhesion on metals
- Long skin-formation
- Fills cavities optimally foaming slightly
- Tensile strength after 7 days - approx. 14.000 N (ift-test certificate)
- Only for commercial users. Please observe the material safety data sheet

Fields of application:

- General bonding in metal construction
- Weathering resistant bonding of corner joints on metal windows, doors and façades as well as conservatories
- Bonding of modified wood

Standards and tests:

- Tensile strength tested by the ift Rosenheim, Germany (institute for window techniques)
- According to the requirements of DIN EN 204-D4 to weathering resistant bondings of wood and derived wood products
- According to the requirements of DIN EN 14257 (WATT 91) to temperature-resistant bondings of wood and derived wood products
- Expertise about the use of OTTOCOLL® P 86 translucent for bonding modified wood (Georg-August-University Göttingen, Germany)
- Suitable for applications according to IVD instruction sheet no. 30 (IVD = German industry association sealants)
- Conform to LEED® IEQ-credits 4.1 (Indoor Environmental Quality) adhesives and sealants
- French VOC-emission class A+
- Certified according to GOS

OTTOCOLL® P 520 LEED®

The premium 2-component PU adhesive

Characteristics:

- 2-component adhesive based on polyurethane
- Fast curing even in thick layers
- Non-shrink curing
- Excellent adhesion on metals
- Extremly high tensile
- strength after 24 hours – approx. 14.000 (ift-test certificate)
- For professional use only. Please observe the material safety data sheet

Fields of application:

- Weathering resistant bonding of corner joints on metal windows, doors and façades as well as conservatories
- General bonding in metal construction
- Also suitable for firm bonding of very different materials such as wood, metal, plastics, stone etc.

Standards and tests:

- Tensile strength tested by the ift Rosenheim, Germany (institute for window techniques)
- According to the requirements of DIN EN 204-D4 to weathering resistant bondings of wood and derived wood products
- According to the requirements of DIN EN 14257 (WATT 91) to temperature-resistant bondings of wood and derived wood products
- Suitable for applications according to IVD instruction sheet no. 30 (IVD = German industry association sealants)
- Conform to LEED® IEQ-credits 4.1 (Indoor Environmental Quality) adhesives and sealants
- French VOC-emission class A+
- Certified according to GOS

OTTOCORD PE-B2 back up foam rod

Characteristics:
Extruded back-filling poly-urethane (PE) material. For interior and exterior applications. With closed cells according to DIN 18540. Water repellent.
Colour: anthracite.
Coresponds to building material class B2 (normal flammability).

Fields of application: For pre-filling and pre-plugging interior and exterior joints. For tenders in comliance with DIN 18540.

OTTO Cleaner

Characteristics:
Very good cleansing and degreasing effect. No airing necessary. Dries fast and free of residue.

Fields of application:
Cleaning glass, metals and some plastics, such as PVC and polyester.

Standards and tests:
Certified according to GOS.

OTTO Primer

Characteristics:
Primer specially made to be used with OTTO sealants.

Fields of application:
Improving the adhesive properties of OTTO silicone sealants to the relevant substructures.

Standards and tests:
Certified according to GOS.

OTTO Fugenboy

Smoothing tool made of superior plastics for professional joint design.
Set of three, small:
5 mm, 8 mm, round.
Set of three, big: 11 mm, 14 mm and 17 mm.

OTTO Smoothing agent

Characteristics:
Aquaeous solution of surface-active substances.
Gentle on the skin due to dermatologically tested active ingredients.
Does not dry out the skin.
Dilutable with water;
2 (smoothing agent) : 1 (water).
Keeps the shine of the sealant surface intact. Colouring pigments of the sealant are not washed off. Not suitable for marble and other natural stones.

Fields of application:
Smoothing of sealant surfaces including silicone, polyurethane and MS hybrid polymer sealants.

Note:
For marble and other natural stones, please use the OTTO marble-silicone-smoothing agent.

OTTO Marble Silicone Smoothing Agent

Characteristics:
Aquaeous solution of surface-active substances.
Especially attuned to delicate marble and natural stone varieties.
Reduces the risk of staining from smoothing agents to a minimum.
Gentle on the skin due to dermatologically tested active ingredients.
Does not dry out the skin.
Keeps the shine of the sealant surface intact. Colouring pigments of the sealant are not washed off. Use in undiluted condition only.

Fields of application:
Smoothing of sealants in contact with natural stone.

Hand-operated Gun H37

Heavy duty hand-operated gun made of highly impact-resistant plastic, very lightweight. With closer for sliding sleeve, smooth driving rod and sliding sleeve for 290/300/310 ml cartridges. Automatic pressure relief.

Hand-operated Gun H 400 (COX)

Hand-operated gun, aluminium cylinders.
For foil bags up to 400 ml. For 290/300/310 ml cartridges. Ladderhook available separately. No spare part service.

Compressed Air Gun P 400 Air3 (COX)

Compressed air gun with ergonomically designed gun handle. Aluminium cylinder for foil bags up to 400 ml. Not suitable for cartridges.

Compressed Air Gun P 620 Air3 (COX)

Compressed air gun with ergonomically designed gun handle. Aluminium cylinder for foil bags up to 620 ml. Not suitable for cartridges.

Metres per 300/310 ml cartridge

Joint depth [mm] \ Joint width [mm]	5	7	10	12	15	20	25
5	12	8	6				
7		6	4	3			
10			3	2.5	2.0	1.5	
12				2.1	1.7	1.2	1.0
15					1.3	1.0	0.8

Metres per 400 ml aluminium foil bag

Joint depth [mm] \ Joint width [mm]	5	7	10	12	15	20	25
5	15	10	8				
7		8	5	4			
10			4	3	2.6	2.0	
12				2.7	2.2	1.6	1.3
15					1.7	1.3	1.0

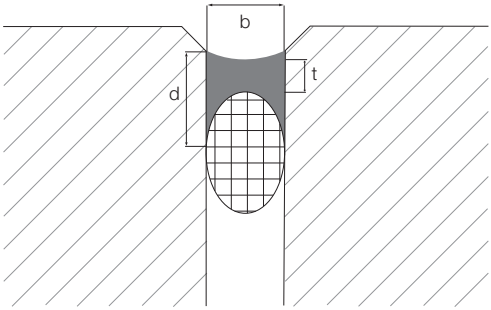
Metres per 580 ml aluminium foil bag

Joint depth [mm] \ Joint width [mm]	5	7	10	12	15	20	25
5	23	15	11				
7		11	7	6			
10			6	5	4	3	
12				4	3	2.4	2.0
15					2.5	1.9	1.4

Note: This values are approximate and serve as a rough guide for rightangled joints. The depth of the joints is measured to the rear of the profile.

Joint width b in ration of joint depth t [mm]					
b	10-15	15-20	20-25	25-30	30-35
t	8 ± 2	10 ± 2	12 ± 2	15 ± 3	15 ± 3

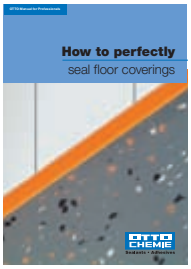
Source: Industrieverband Dichtstoffe e.V. / HS PR. Additional information to the IVD's information leaflets under www.ivd-ev.de



The rule of thumb for calculating the joint dimension is as follows:

Sealant depth (t) = 0,5 x joint width (b).

The thickness of the sealant (d) equals 2/3 of the joint width (b).



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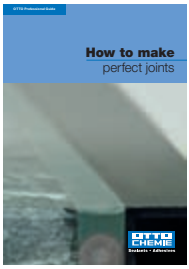
Part n° 9999557

Part n° 9999875



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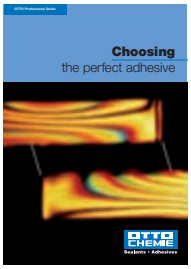

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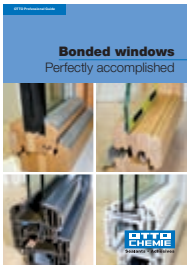

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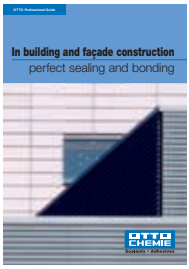

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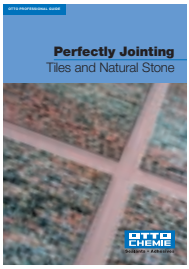

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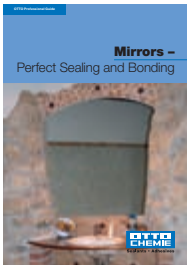

Part n° 9999596

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:

In order to ensure a quick and correct handling of your orders we would like to ask you to send them by fax or e-mail. Thank you in advance for your cooperation.

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.

For further information please contact:

OTTO CHEMIE

Sealants • Adhesives

Hermann Otto GmbH · Krankenhausstr. 14 · 83413 Fridolfing, GERMANY
Tel.: 0049-8684-908-0 · Fax: 0049-8684-1260
E-mail: info@otto-chemie.de · Internet: www.otto-chemie.com

Index: 9999801-GB-18.02.2014