

OTTOSEAL®**S 28**

Technical Datasheet

1-component silicone sealant based on acetate

For indoor and outdoor application

Characteristic:

- **Complies with OECD 203**
Offers the highest possible safety standard for highly sensitive life forms
- **High adhesive power**
Suitable also as special adhesive
- **Excellent weathering, ageing and UV-resistance**
For long-lasting indoor and outdoor applications

Fields of application:

- Manufacture of all-glass aquariums and terrariums
- Bonding of glass blocks

Standards and tests:

- According to DIN 32622, pt. 4.4.2.2 (Glass Aquaria)
- Non-toxic for fish according to OECD 203 (Acute Toxicity Test - tested by the Institute Fresenius, 65232 Taunusstein, Germany)
- Suitable for applications according to IVD instruction sheet no. 35 (IVD = German industry association sealants)
- French VOC-emission class A+
- Classification according to building certification systems, see the sustainability data sheet

Important information:

Before applying this product the user has to ensure that the materials in the area of contact (solid, liquid and gaseous) are compatible with it and also amongst each other and do not damage or alter (e. g. discolour) each other. As for the materials that will be used at a later stage in the surrounding area of the product the user has to clarify beforehand that the substances of content or evaporations do not lead to an impairment or alteration (e. g. discolouration) of the product. In case of doubt the user should consult the respective manufacturer of the material.

While curing small amounts of acetic acid are released.

Ensure good ventilation during application and curing.

The required vulcanization time prolongs with increasing thickness of the silicone layer. One-component silicones must not be used for full-surface bonding applications unless special constructional prerequisites are met. If one-component silicones are to be used for thickness layers of more than 12 mm please contact our technical department beforehand.

Not suitable for the bonding and sealing of Plexiglas® aquaria.

Technical properties:

| | |
|--|---------------|
| Skin-forming time at 23 °C/50 % RH [minutes] | ~ 10 |
| Curing in 24 hours at 23 °C/50 % RH [mm] | ~ 2 - 3 |
| Curing in 7 days at 23 °C/50 % RH [mm] | ~ 7 - 8 |
| Processing temperature from/to [°C] | + 5 / + 35 |
| Density at 23 °C according to ISO 1183-1 [g/cm³] | ~ 1,0 |
| Viscosity at 23 °C | pasty, stable |
| Shore-A-hardness according to ISO 868 | ~ 25 |
| Permissible movement capability [%] | 25 |

| | |
|---|--------------|
| Stress expansion modulus at 100 % according to ISO 37, S3A [N/mm ²] ~ 0,5 | |
| Tensile expansion according to ISO 37, S3A [%] | ~ 575 |
| Tensile strength according to ISO 37, S3A [N/mm ²] | ~ 1,4 |
| Temperature resistance from/to [°C] | - 40 / + 180 |
| Shelf life at 23 °C/50 % RH for cartridge/foil bag [months] | 12 |

These data are not suitable for the issue of specifications. Please contact OTTO-CHEMIE before issuing specifications.

Pretreatment:

All adherent surfaces must be clean and any contaminant such as release agents, preserving agents, grease, oil, dust, water, old adhesives or sealants and other substances which could affect adhesion, should be removed. Cleaning of non-porous substrates: Apply OTTO Cleaner T (airing time approx. 1 minute) using a clean, lint-free cotton cloth. Cleaning porous substrates: Clean surfaces with steel-wire brush e. g. or a grinding disk to remove loose particles. The adherent surfaces have to be clean, free from fat, dry and sustainable.

Primer Table:

The demands on elastic sealings and bondings depend on the respective exterior influences. Extreme fluctuations in temperature, tensile or shear forces, repeated contact with water etc. demand high requirements of a bonding. In such cases it is advisable to apply primer according to the recommendations of our technical department (e. g. +/OTTO Primer 1216) in order to achieve a resilient bonding.

| | |
|--|------|
| Aluminium | 1216 |
| Aluminium (permanent water stress) | 1216 |
| Aluminium anodized | 1216 |
| Aluminium, anodised (permanent water stress) | 1216 |
| Glass | + |
| Ceramic, glazed | + |
| Ceramic, glazed (permanent water stress) | 1216 |
| Ceramics, unglazed | 1215 |
| Ceramic, unglazed (permanent water stress) | 1218 |

+ = good adherence without primer
 - = not suitable
 T = Test/pilot test advised

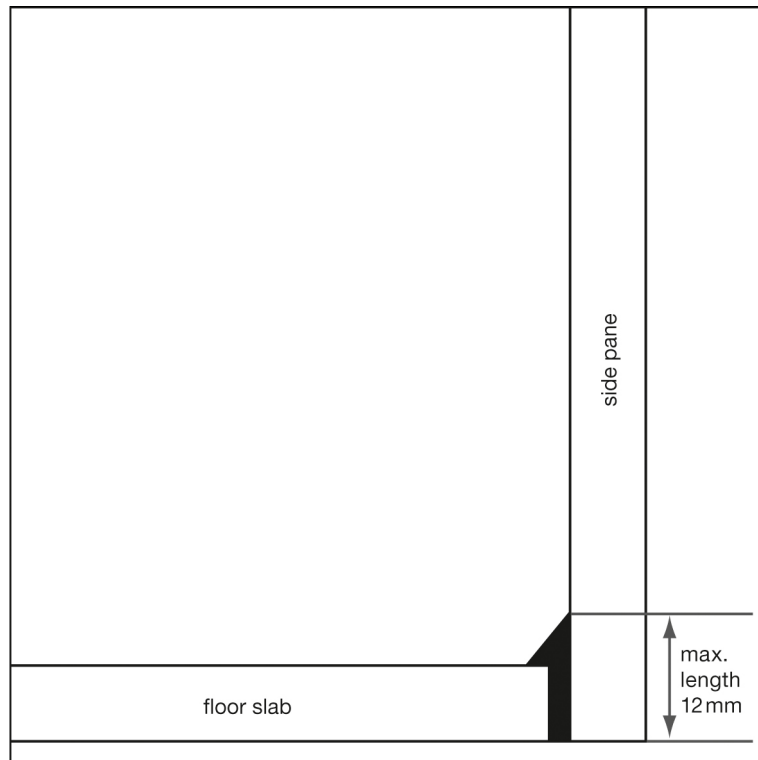
Application information:

The necessary strength of glass of the floor slab and side panes depends on the dimensions of the aquarium (see DIN 32622).

All-glass aquariums with a water volume in excess of 300 l are to be structurally reinforced such as by an all-round frame so that the silicone only has a sealing function.

1. Aquaria with a sealant/adhesive layer up to 12 mm: - Cleaning of the bonding surfaces with OTTO Cleaner T and a clean cloth - Minimum joint width on the bottom plate 2 mm, maximum joint width 5 mm (note: on side panes the joint can have bigger dimensions). Vibration because of transportation or handling as well as any other stress on the joint of the freshly bonded aquarium has to be avoided because of the risk of the sealant/adhesive losing its adhesion on the glass or of cracks in the silicone. Transport may only take place after the sealant/adhesive has completely cured. Generally speaking, a loss of adhesion of the sealant/adhesive on the glass ("shrinkage bubble") can be avoided by a preliminary coating of the bonding area and by filling up the joint with the sealant/adhesive layer-by-layer, as described under point 2. - The vulcanization can take several days, depending on the thickness of the layer and the ambient conditions. In thick layers a slower the curing speed per day has to be considered. The curing time can take up to 2 weeks, depending on the dimension of the joint and the ambient conditions. Before the first filling with water the basin has to be rinsed with clear water in order to remove the last residues of the splitting product (acetic acid) set free during vulcanization.
2. Aquaria with a sealant/adhesive layer of more than 12 mm: Cleaning of the bonding surfaces with OTTO Cleaner T and a clean cotton cloth - Coating of the bonding surfaces: on the area of the side pane and bottom plate designated for the bonding a silicone film of approx. 1 - 2 mm strength is applied using a scraper. - Once the coating has cured (approx. 24 hours), the joint is filled up to a silicone layer of maximum 10 mm - Curing time at least 5 days - Afterwards the rest of the joint is filled and left to cure for at least another 7 days. - Vibration because of transportation or handling as well as any other stress on the joint of the freshly bonded aquarium has to be avoided because of the risk of the sealant/

adhesive losing its adhesion on the glass or of cracks in the silicone. Transport may only take place after the sealant/adhesive has completely cured. - The vulcanization can take several days, depending on the thickness of the layer and the ambient conditions. In thick layers a slower the curing speed per day has to be considered. - Before the first filling with water the adhesive/sealant has to be completely cured. - Before the first filling with water the basin has to be rinsed with clear water in order to remove the last residues of the splitting product (acetic acid) set free during vulcanization.



For correct dimensioning of the adhesion joint we advise a minimum joint width of 2 mm, depending on the strength of the glass. At a strength of 8 mm we advise adhesion joints with a width of 2 - 3 mm and at a strength of 12 to 15 mm a width of 3 - 4 mm.

Due to the many possible influences during and after application, the customer always has to carry out trials first.

We recommend to store our products in unopened original packagings dry (< 60 % RH) at temperatures of +15 °C up to +25 °C. If the products are stored and / or transported at higher temperatures / air humidity for longer periods (some weeks), a diminution of durability or a change of material characteristics may arise.

Please observe the recommended shelf life which is printed on the packaging.

Packaging:

| | 310 ml cartridge | 400 ml aluminium foil bag | 20 l hobcock | 200 l drum |
|--------------------------|------------------|---------------------------|--------------|------------|
| black | S28-04-C04 | S28-07-C04 | on request | on request |
| transparent | S28-04-C00 | S28-07-C00 | on request | on request |
| Packaging unit | 20 | 20 | 1 | 1 |
| Pieces per pallet | 1200 | 900 | 16 | 2 |

Safety precautions:

Please observe the material safety data sheet.
After curing the product is completely odourless.

Disposal:

Information about disposal: Please refer to the material safety data sheet.

Warranty information:

All information in this publication is based on our current technical knowledge and experience. However, since conditions and methods of use and application of our products are beyond our control, we suggest that you test the product before final use. Information given in this technical data sheet and explanations of OTTO-CHEMIE in connection with this technical data sheet (e.g. service description, reference to DIN

regulations etc.) is not to be seen as a warranty. Warranties require a separate written declaration of OTTO-CHEMIE to prove their validity. The characteristics stated in this data sheet define the characteristics of the article broadly and conclusively. Suggestions of use are not to be taken as confirmation of the appropriateness for the recommended intended use. We reserve the right to alter the product, adjusting it according to technical progress and new developments. We are at your disposal both for inquiries as well as specific application problems. If a governmental approval or clearance is necessary for the application of our products, the user is responsible for the obtainment of such. Our recommendations do not excuse the user from the obligation to take into consideration the possibility of infringement of third parties' rights and - if necessary - resolving it. For the rest our general terms and conditions apply, in particular regarding a possible liability for defects. You can find our general terms and conditions on our homepage: <http://www.otto-chemie.de/en/terms-and-conditions>