



Technical Data Sheet

DOWSIL™ 983 Structural Glazing Sealant

Description

Two-part silicone rubber

Sustainability Attribute:

Uses / Applications

- Designed for use in structural adhesive/sealant applications such as factory glazing and curtainwall production.



Benefits

- Structural capability (See Limitations paragraph)
- Excellent adhesion to most surfaces including glass, reflective coatings, metals and paints
- Consistently non-slump
- Excellent weatherability, durability, and recovery after repeated extension and compression
- Lot matching of base and curing agent not necessary
- Excellent mechanical properties
- Resistant to ozone, ultra-violet radiation and temperature extremes

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Test	Property	Unit	Result
Base: as supplied			
	Color and consistency		Viscous white paste
	Specific gravity		1.40
	Storage life	months	6
Curing agent: as supplied			
	Color and consistency		Black liquid
	Density		1.03
	Flammability		Non-flammable
	Storage life	months	6
As mixed²			
	Color and consistency		Black non-slump paste
	Density		1.36
	Working time	minutes	20 to 25
	Corrosiveness		Non-corrosive

Typical Properties (Cont.)

Test ¹	Property	Unit	Result
	Handling time	hours	Max. 3
As cured - 7 days at room temperature			
ISO 8339	Tensile strength	MPa	1.0
ASTM D624	Tear strength, (Die B)	KN/m	9.8
ISO 8339	Elongation at break	%	100
ASTM D2240	Durometer hardness, Shore A	points	45
	Service temperature range	°C	-20 to +150

1. ASTM: American Society for Testing and Materials.
ISO: International Standardization Organization.
2. Mixed by weight at 12:1 or volume at 8.8:1 base-to-curing agent ratio. (Other mixes are possible but should be consulted to ascertain adhesion and structural properties.)

Description

DOWSIL™ 983 Structural Glazing Sealant is a two-component, neutral curing part silicone formulation that cures to a high-modulus elastomeric adhesive sealant. (A physical property profile that is suitable for structural adhesive applications).

Cure

Neutral alkoxy; cures at room temperature giving off a small amount of alcohol.

Installation

Joint Design

Optimum joint design for structural glazing applications demands careful consideration of the dead and live loads to be imposed on the sealant bead. Dow provides joint dimension and print reviews as part of a comprehensive technical service package. For structural glazing applications, DOWSIL 983 Sealant beads should, as a general rule, be no thicker than 13 mm, and no thinner than 6 mm. Ideally, the ratio of joint width to sealant depth should be about 2:1.

Closed-cell polyethylene foam is the recommended back-up material for most joints; use polyethylene tape for joints too shallow to allow foam road. These materials permit application of a thin bead and act as bond breakers which allow the silicone sealant to stretch freely with the joint. Some typical joint designs are shown in Figures 1–4.

Application examples for DOWSIL 983 Structural Glazing Silicone Sealant

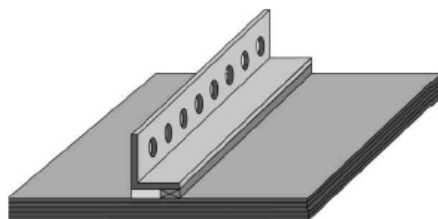


Figure 1:
Structural panel (glass, granite) with stiffener.

Installation (Cont.)

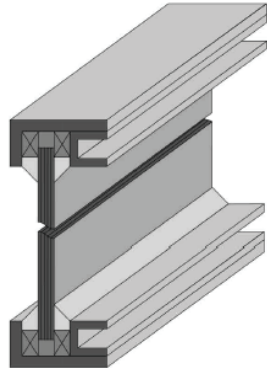


Figure 2:
Transom detail. Examples of structural glazing designs: Two-sided design (installed on site).

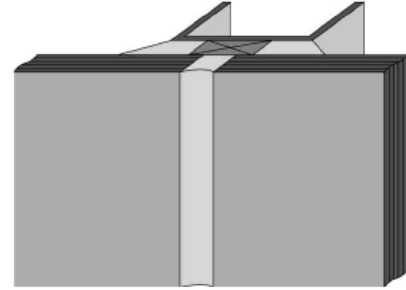


Figure 2a:
Mullion detail.

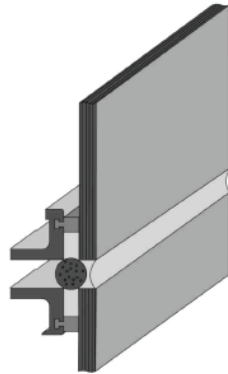


Figure 3:
Examples of structural glazing designs: Four-sided design (factory glazed).

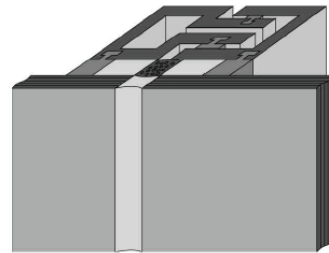


Figure 3a:
Mullion detail.

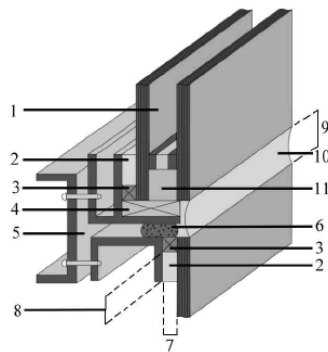


Figure 4:
Design with stepped insulating glass unit.

Legend

1. Insulating glass unit
2. Silicone structural seal (DOWSIL™ 895 Structural Glazing Sealant)
3. Silicone rubber spacer block
4. Silicone setting block
5. Aluminium profile
6. Backer rod
7. Joint depth dimension
8. Structural sealant width
9. Weatherseal dimension
10. Silicone weatherseal (DOWSIL™ 897 Natural Stone and Facade Sealant)
11. Silicone insulating glass seal (DOWSIL™ 3362 Insulating Glass Sealant)

Installation (Cont.)

Small curtainwall panels and lites should allow a minimum width of 6 mm for the sealant bead. Larger panels and lites, or those in which a great deal of movement is expected, should allow a minimum width of four times the expected movement.

Glazing of plastic lights, and panels fabricated from plastic, require larger than usual joint dimensions due to the higher coefficient of thermal expansion for plastic. For these applications, DOWSIL 895 Structural Glazing Sealant is recommended.

Preparatory Work

Clean all joints and glazing pockets, removing all foreign matter and contaminants such as grease, oil, dust, water, frost, surface dirt, old sealants, or glazing compounds and protective coatings.

Metal, glass and plastic surfaces should be cleaned by mechanical or solvent procedures. Where used, solvent should be wiped on and off with clean, oil- and lint-free cloths.

Priming

When using DOWSIL 983 Sealant, priming is not usually required. Prior to general job use, it is always recommended that a bead of sealant be applied to the substrate material to test adhesion.

Masking

Areas adjacent to joints may be masked to ensure a neat sealant line. Do not allow masking tape to touch clean surfaces to which the silicone sealant is to adhere. Tooling should be completed in one continuous stroke immediately after sealant application and before a skin forms. Masking tape should be removed immediately after tooling.

Application Method

To obtain best results, it is recommended that DOWSIL™ 983 Sealant Base and Curing Agent be thoroughly mixed using an airless mixing system.

DOWSIL 983 Sealant is compatible with existing commercial two-part silicone dispensing equipment. Neither hand mixing nor hand-held power mixers are satisfactory due to incorporation of air resulting in altered physical properties. Lot matching of DOWSIL 983 Sealant Base and Curing is not required.

DOWSIL 983 Sealant Curing Agent should be stirred before use because settling can occur during shipment. Because of its reactivity with atmospheric moisture, the curing agent should not be exposed to air for prolonged periods of time. The curing agent is not flammable, so special precautions for storage are not necessary.

Changes in the humidity of the environment will affect snap time. To aid in the proper adjustment of mix ratio, it is recommended that Dow and/or the dispensing pump manufacturer be contacted.

Application Method (Cont.)

DOWSIL 983 Sealant offers unprimed adhesion to most coated and uncoated glasses as well as most metal spacers. This sealant is compatible with all neutral DOWSIL™ construction sealants and most common glazing components. It is important that adhesion and compatibility be evaluated before sealant use. To obtain optimum adhesion, joints should be tooled immediately after sealant application to ensure complete substrate contact. During shutdown it is recommended that the dispensing and mixing lines be purged with uncatalyzed base prior to solvent flush.

For in-depth cleaning, should any cured particles have built-up in the machine during operation, DOWSIL™ Q3-3522 Cleaning Solvent is recommended.

Composition And Materials

DOWSIL 983 Sealant is a two-part RTV silicone sealant. As supplied, the base is a smooth, white paste and the curing agent is a non-flammable, black, pourable liquid. Once catalyzed, the material cures to a high modulus, flexible silicone rubber. Priming is not required for most common construction substrates. To ensure proper adhesion a sample should be tested and/or trial installation placed on the project.

Maintenance

No maintenance is needed. If sealant becomes damaged, replace damaged portion DOWSIL 983 Sealant will adhere to cured silicone sealant which exhibits a clean knife cut or abraded surface.

Handling Precautions

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

Usable Life And Storage

When stored at or below 25°C in the original unopened containers, DOWSIL 983 Structural Glazing Sealant has a usable life of 12 months from the date of production.

Sealant kept beyond its suggested usable life should not be used for structural applications.

Packaging Information

As a kit, DOWSIL 983 Base and Curing Agent are available in 250 kg drums and 21 kg pails. DOWSIL 983 Base is also available in 28 kg pails suitable for small pump dispensing.

Limitations

DOWSIL 983 Sealant should not be used for structural applications without the prior written approval of the construction industry technical department. Each project should be specifically and separately approved by Dow. Project-specific approval involves the following prerequisites:

- Joint dimension and print reviews
- Successful laboratory adhesion and compatibility testing to all project building components
- Demonstrated ability to provide adequate insurance coverage
- Observance of professional sealant application and workmanship standards

Limitations (Cont.)

Dow shall not be liable for any possible claims arising from structural use of DOWSIL 983 Sealant for projects which have not been specifically approved by Dow. For projects which have been approved, Dow will issue a structural adhesive warranty on a case by case basis.

For further details, conditions and remedies, consult the structural glazing warranty. It is the user's exclusive responsibility to ensure project compliance with the local building regulations. Because of a potential for incompatibility, DOWSIL 983 Sealant should not come in contact, with or be exposed to, sealants that liberate acetic acid.

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

Health And Environmental Information

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, www.consumer.dow.com or consult your local Dow representative.

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products — from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

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