

ADSEAL STRUCTURAL 4940 SERIES

STRUCTURAL NEUTRAL CURE SILICONE ADHESIVE SEALANT

DESCRIPTION

ADSEAL STRUCTURAL 4940 SERIES is a one-component sealant/adhesive that cures as durable, elastic rubber silicone in contact with ambient humidity. Due to its rheological and non-sagging characteristics, it can be applied above the head, on vertical and horizontal surfaces. ADSEAL STRUCTURAL 4940 SERIES can be used in different applications such as 2-sided or 4-sided structural curtain walls, architectural panels manufacturing, structural glazing and FIP gasket. ADSEAL STRUCTURAL 4940 SERIES adheres very well on anodized aluminum and glass without the use of a primer. Because the anodizing quality might vary, it is always preferable to carry out an adhesion test before starting work. Consult our technical department for more information.

ADSEAL STRUCTURAL 4940 SERIES CAN NOT BE PAINTED.

ADSEAL STRUCTURAL 4940 SERIES do not give off any unpleasant odor during curing and will not oxidize the metal. (Discoloration of copper-based metals may occur when sealed tightly). Due to its curing system in contact with moisture, the **depth / thickness** of the sealant joint should not exceed 1/2" (13mm), otherwise the sealant cannot cure completely. For applications with a sealant joint depth of more than 1/2" (13mm), we recommend a two components silicone. Minimum structural joints size should be 1/4" x 1/4" (6mm x 6mm) and must be validated by calculation according to ASTM C1401.

SPECIFICATIONS

- Meets ASTM C920, type S, NS grade, class 50, use NT, M, G, A, O.
- Meets ASTM C1184, Use G, A
- Meets American Federal Specifications TT-S-00227E Class A, Type II, TT-S-1543A, class A and TT-S-00230C, class A, type II

LIMITATIONS

- Not design for structural applications on painted surfaces.
- Structural adhesion to bare metal or surfaces subject to corrosion.
- Structural adhesion where silicone is encapsulated and does not have access to ambient humidity
- In continual contact with water or in immersion.
- In contact with strongly acidic or basic products.
- Not recommended for joint less than 1/4 " or 6 mm. (width and depth)
- When ambient and substrates temperature are below 41°F (5°C) or above 122°F (50°C)

PHYSICAL PROPERTIES

Uncured @ 73°F (23°C) - 50% R.H.		
Tests	Standards	Results
Appearance		Paste
Color		Black (4943) Anodized aluminum (4948) White (4942)
Density	ASTM D1475	1.34 g/ml

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V.O.C.	SCAQMD Rule 1168	49 g/L (3.6%)
Extrusion rate (30 psi/diameter 5mm)		50 – 150 g/min
Skin time		5 – 10 minutes
Tack free time	ASTM C679	5 – 10 minutes
Rheological properties	ASTM C639	4 hours at 37°F (3°C) = 0% 4 hours at 122°F (50°C) = 0%
Shelf life		12 months

Cured 21 days @ 73°F (23°C) - 50% R.H.		
Tests	Standards	Results
Hardness (shore A)	ASTM D2240	39 – 45
Tear Strength Die C	ASTM D624	32 lb/in
Movement capability	ASTM C719	± 50%
Peel strength	ASTM C794	34 lb/in
Staining on porous surfaces	ASDTM C1248	None on granite, marble, limestone, brick, and cement
Tensile adhesion strength At 25% elongation At 50% elongation Ultimate adhesion strength Elongation to break	ASTM C1135	88psi 105psi 168psi 263%
Aging At 25% elongation At 50% elongation Ultimate adhesion strength Elongation to break	ASTM G53 + ASTM C1135	70psi 80psi 91psi 159%
Heat resistance		392°F (200°C)

APPLICATION

- Anodized aluminum structural joints for curtain walls (2-sided or 4-sided)
- architectural panels
- structural glazing
- Bonding commercial glass

DESIGN AND DIMENSION OF STRUCTURAL JOINTS

The design of the structural joints varies depending on the type of curtain wall. Contact surfaces (thickness/width) between the aluminum mullion and the glass varies depending on the nature of the project, the surrounding wind loads and the dimensions of the glass. The minimum joint size should be 6mm x 6mm (¼" x ¼").

The necessary contact area can be determined by the following calculation method:

CW = contact width (inches or millimeters)

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DWL = design wind load (pressure in PSF or kPa)

LSS = Longest short span (largest piece of glass; short side) (as shown in figure 1)

SDS = sealant design stress

- Permanent (dead) loading ≤ 1 psi (7 kPa)
- Dynamic (wind) loading ≤ 20 psi (138 kPa)

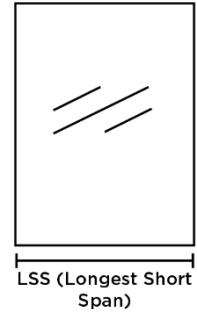


Figure 1

$$CW = \frac{DWL \text{ (kPa)} \times LSS \text{ (mm)}}{SDS \times 2}$$

$$CW = \frac{DWL \text{ (PSF)} \times LSS \text{ (Ft)}}{SDS \times 24}$$

Alternative calculation methods can also be used. They must be made by a qualified engineer based on ASTM C1401 (Guide for Structural Sealant Glazing).

SURFACE PREPARATION

In order, to ensure a perfect adherence this step is crucial. Surfaces must be free of dust, grease, frost, or other contaminants. Clean the surfaces with the ADSEAL CLEANER 6003 using the two rags method. This method consists of washing with the first cloth moistened with cleaning agent and then wiping with the second dry, clean cloth before the solvent is evaporated. Change cloths regularly to avoid accumulation of dirt. Avoid soaking a soiled cloth in the clean solvent to avoid contaminating it. Choose white rags that do not keep dust and do not leave lint on substrates. Be sure to clean all surfaces where the ADSEAL STRUCTURAL 4940 SERIES will be applied. Allow to evaporate for 20 minutes before application of the ADSEAL STRUCTURAL 4940 SERIES. Sealant should be applied within one hour of cleaning to avoid contamination of surfaces. If the application is made after more than one hour, repeat the cleaning. Avoid using detergents or other cleaning agents not specified by ADFAST. In some case, the ADSEAL STRUCTURAL 4940 SERIES may require the use of a primer. If this is the case, use ADSEAL PRIMER. For the complete procedure and the type of primer to use, consult our [ADSEAL PRIMER Guide](#). For more information, contact your technical representative.

METHOD OF USE

Structural joint

ADSEAL STRUCTURAL 4940 SERIES should be applied in a continuous operation with a conventional manual, electric or pneumatic applicator (do not exceed 45psi for a cartridge).

2-sided or 4-sided structural curtain wall:

Determine the type of curtain wall. According to the manufacturer the method of realizations of the structural joints can vary. Follow the manufacturer's specifications. Before beginning work the dimension of the structural joints must be determined by an accredited engineer and approved by Adfast. Adfast will not comment on the structural integrity of the overall framing system.

Ensure that the secondary seal of the insulated glass unit (IGU) is made of structural silicone to maintain the structural integrity of the system. The joint size of the secondary sealant must also be determined by an accredited engineer.

The minimum joint thickness between the aluminum mullion and the glass should be 1/4" (6mm) as shown in Figure 2. In certain types of curtain wall, a minimum 1/4" (6mm) or more, spacing tape (Norton type) will be

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installed at the factory by the curtain wall manufacturer or on site by the glazier to create a gap that will be used for the installation of the structural silicone.

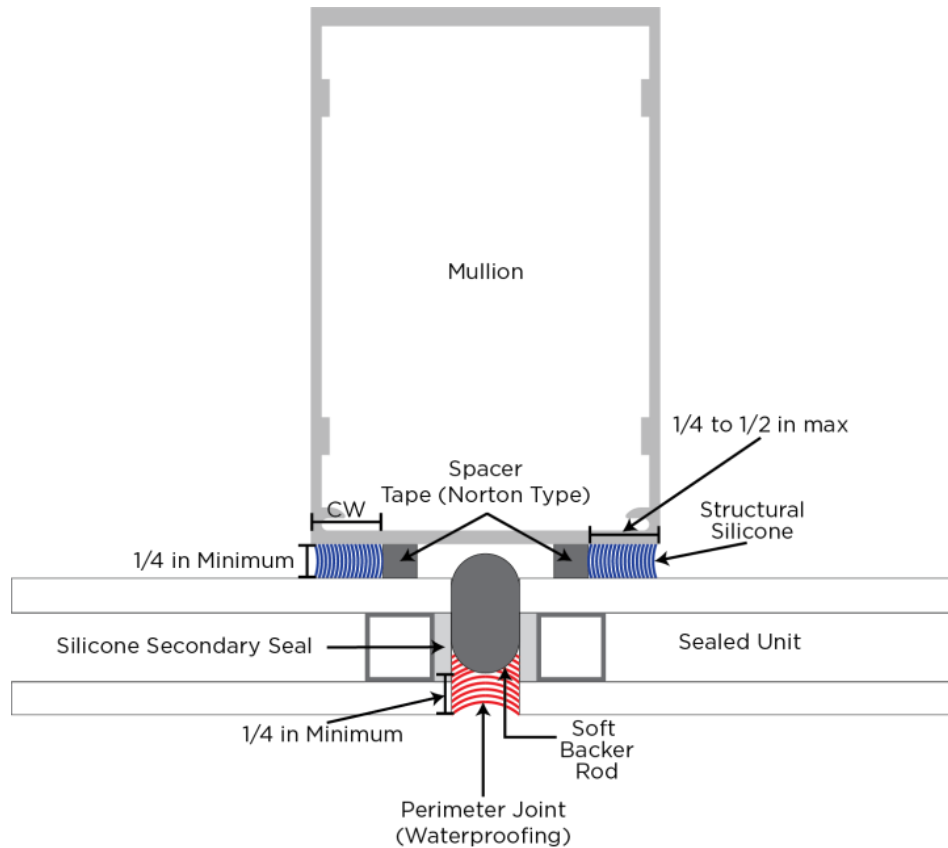


Figure 2

Install the insulated glass unit (IGU) by holding them in place with enough temporary retaining plates depending on the surrounding wind loads during curing of the structural sealant (21 days at 73°F (23°C) - 50% R.H). Use ADSEAL SETTING BLOCK that are compatible with ADSEAL silicones for the perimeter joints of a horizontal 2-sided or 4-sided structural curtain wall. This procedure will avoid staining of the perimeter joint silicone. Since the silicone cannot take up the dead load of the insulated glass unit, there must be two supports (setting block) generally 1/4 of the width to support the weight of the glass unit. The setting blocks must be of good size so that the outer glass is supported on at least half of its thickness.

Apply ADSEAL STRUCTURAL 4940 SERIES continuously between the glass and the mullion. Shape the sealant before skin formation with the appropriate tool such as ADSEAL TOOLING KIT to avoid any air bubbles between glass and mullion. A masking tape can be used to reduce the cleaning. Clean silicone overflow with solvent and remove the masking tape before curing. Avoid excess of solvent during cleaning, it can reduce the adhesion. If work is to be carried out in winter the interior and / or exterior of the building should be heated so that there is no condensation between the sealant and the substrates (glass and aluminum). The minimum ambient and substrates temperature must be above 41°F (5°C) and below 122°F (50°C).

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After 21 days at 73°F (23°C) – 50% R.H. temporary retaining plates can be removed. Ensure that the screw holes of the temporary retaining plates are properly sealed before installing the perimeter sealant (waterproofing). Insert the appropriate ADSEAL BACKER ROD between the sealed units and apply ADSEAL DWS 4580 SERIES perimeter sealant. The same surface preparation methods and shaping should be done as described in the previous sections. For more details consult the technical document: [Application Procedure for Sealant Movement and Waterproofing Joint.](#)

PACKAGING

- 304ml cartridge
- 600ml sausage
- Pail
- Drum

STORAGE

Store the sealant in closed original packaging. Store in dry premises at a temperature between 8°C (46°F) and 25°C (77°F). High humidity and storage below or above these temperatures will shorten shelf life. Expiration date is indicated on each container. Storage beyond the date specified on the container does not necessarily mean that the product is no longer usable. In this case however, the properties required for the intended use must be checked for quality insurance reasons. Contact our technical service.

CAUTION

Always consult SDS (Safety Data Sheet) before using the product. Apply usual hygienic rules. Always test the product on your application before use. For industrial use only. For more information, please contact your technical representative.

IMPORTANT**READ CAREFULLY**

The information and recommendations contained herein are derived from our research and information from other reliable sources. This data applies only to our products and not when used with other products. We believe in the reliability of our information. However, no guarantee is offered to that effect. It is the responsibility of the buyer to verify this data according to their own operating conditions to ensure that they conform to the purpose for which the product is intended, even before using it.

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