

## Silicone Sealants

# Dow Corning® 999-A Silicone Building & Glazing Sealant

### FEATURES

- Resistant to sunlight, rain, sleet, snow, ultraviolet radiation, ozone and temperature extremes
- Retains design properties even after years of exposure – seals remain watertight and weatherproof
- Wide temperature range from -60 to 177°C (-76 to 350°F) with intermittent temperatures up to 200°C (392°F)

### COMPOSITION

- One-part RTV silicone sealant

### One-part sealant for glazing and curtainwall seal applications

#### APPLICATIONS

*Dow Corning*® 999-A Silicone Building & Glazing Sealant is intended for building construction applications and is particularly effective for glazing butt and lap shear joints and sealing curtainwall projections and other glass, plastic and metal assemblies. It is also appropriate for general construction applications. It may be factory applied as a primary seal to glass, plastic and metal assemblies.

#### TYPICAL PROPERTIES

Specification Writers: Please contact your local Dow Corning sales office or your Global Dow Corning Connection before writing specifications on this product.

Method	Test	Unit	Result
<b>As Supplied</b>			
ASTM C 679	Tack-Free Time at 25°C (77°F), 50% RH	minutes	10-20
	Tooling Time	minutes	5-10
ASTM C 639	Flow, Sag or Slump		Nil
	Color		Clear, white, bronze, light bronze, black, aluminum and custom colors
<b>As Cured – 7 days at 25°C (77°F) and 50% RH</b>			
ASTM D 2240	Durometer Hardness, Shore A	points	25
ASTM D 412	Ultimate Tensile Strength	psi (MPa)	325 (2.1)
ASTM D 624	Tear Strength	ppi (kN/m)	25 (4.4)
ASTM C 794	Peel Strength	pli (kN/m)	20 (3.5)
ASTM C 603	Extrusion Rate	g/min	350

#### DESCRIPTION

*Dow Corning* 999-A Silicone Building & Glazing Sealant is an easily applied, one-part sealant that cures in the presence of atmospheric moisture to produce a durable and flexible glazing and curtainwall seal. This silicone material is chemically stable and shows little change in physical properties with weathering.

In addition to the six standard colors, custom colors can be matched to customer-supplied samples.

*Dow Corning* 999-A Silicone Building & Glazing Sealant is compatible with most laminated glass, acrylic and polycarbonate glazing sheets, and all

one-part *Dow Corning*® brand silicone construction sealants. However, adhesion and compatibility must be evaluated in each instance prior to sealant use and one sealant should be applied only after the other has fully cured.

#### Applicable Standards

*Dow Corning* 999-A Silicone Building & Glazing Sealant meets the qualifications of:

- Federal Specification TT-S-001543, Class A
- Federal Specification TT-S-00230, Class A
- FDA Regulation No. 21 CFR 177.2600 (subject to end use compliance with any applicable total extractives limitations) – some

**Table I: Estimating Requirements**

Linear Feet Per Gallon of <i>Dow Corning</i> 999-A Silicone Building & Glazing Sealant for Various Joint Sizes								
Width, Inches								
Depth, Inches		1/8	1/4	3/8	1/2	5/8	3/4	1
	1/8	1232	616	411	307	246	205	154
	3/16	–	411	275	205	164	137	103
	1/4	–	307	205	154	123	103	77
	3/8	–	–	137	103	82	68	51
	1/2	–	–	103	77	62	51	39

custom colors may not meet this regulation; contact Dow Corning for information

- Canadian Specification CAN2-19.13-M82
- ASTM C 920 specification
- Chemically acceptable for application to surfaces and equipment that may contact edible products in establishments operating under the USDA federal meat and poultry inspection program

## HOW TO USE

Please refer to the *Dow Corning Americas Technical Manual*, Form No. 62-1112, for detailed joint design and installation guidelines.

## Joint Design

*Dow Corning* 999-A Silicone Building & Glazing Sealant should be no thicker than 1/2 inch (13 mm) and no thinner than 1/4 inch (6 mm). Ideally, the ratio of joint width to sealant depth should be about 2:1.

Polyurethane or polyethylene foam rod is the recommended backup material for deep joints; polyethylene tape is recommended for joints too shallow to allow foam rod. These materials permit application of a thin bead and act as bond breakers that allow the silicone sealant to stretch freely with the joint movement.

Glazing rabbets and joints should be designed to allow installation and retention of the bond-breaking backup material during the installation and curing of *Dow Corning* 999-A Silicone Building & Glazing Sealant.

Lap shear joints should have a bead width that is equal to, or greater than, the total anticipated movement.

## Joint Dimensions

Small curtainwall panels and lites should allow a minimum width of 1/4 inch (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 lites and panels fabricated from plastic require larger than usual joint dimensions due to the plastic's higher coefficient of thermal expansion. For these applications, *Dow Corning*® 795 Silicone Building Sealant or *Dow Corning*® 791 Silicone Weathersealing Sealant is recommended.

## Preparatory Work

Bonding surfaces on both new and remedial jobs must be sound, dry, and free of all foreign matter and contaminants such as grease, oil, dust, water,

soap residue, frost, surface dirt and old sealants or glazing compounds and protective coatings.

*Dow Corning* 999-A Silicone Building & Glazing Sealant will adhere to cured silicone sealant with a preparatory solvent wipe to remove accumulated dirt.

Wipe the surfaces using a clean, oil-free rag saturated with solvent such as xylol, toluol or methyl ethyl ketone.<sup>1</sup>

Clean metal, glass and plastic surfaces by mechanical or solvent procedures. Do not clean surfaces with soap, detergent or any water-based cleaner. Wipe solvents on with a clean, oil- and lint-free, absorbent cloth. Remove solvent before it dries, using a clean, dry cloth.

Do not flood surfaces with more solvent than necessary. Make sure that apparently clean surfaces are not covered with a thin film of construction dust.

## Priming

When applying *Dow Corning* 999-A Silicone Building & Glazing Sealant to nonreflective glass surfaces, priming is usually not required. Priming is usually required on plastic and metal surfaces. Refer to the *Surface Preparation Guide*, Form No. 61-182, for more specific recommendations. In cases where doubt exists, a sample should be tested before full-scale use.

## Masking

Areas adjacent to joints should be masked to ensure neat sealant lines. Do not allow masking tape to touch clean surfaces to which the silicone sealant will adhere. Tooling should be completed in one continuous stroke immediately after sealant application and before a skin forms. Masking should be removed immediately after tooling and before a skin forms (5-10 minutes).

<sup>1</sup>Always follow solvent manufacturer's recommended safe handling information and applicable federal, state and local regulations.

## Method of Application

*Dow Corning* acetoxymethyl sealants can be applied directly from the caulking cartridge with either an air-operated or hand-operated cartridge gun. Do not break the cartridge seal until just before use.

Install backup material or joint filler, setting blocks, spacer shims and tapes as specified. Apply the sealant in a continuous operation using a positive pressure adequate to properly fill and seal the joint.

## Tooling

Tooling is recommended and, if possible, should be completed in one continuous stroke. Tool or strike the sealant with light pressure to spread the material against the backup material and the joint surfaces. A tool with a concave profile is recommended to keep the sealant within the joint.

When glazing, tool the sealant applied at the sill so that precipitation and cleaning solutions will not pool.

Tool the joint within 10 minutes of application. Remove masking tape before a surface skin begins to form. Once a surface skin begins to form, it will be torn off when the tape is removed, leaving a rough surface.

After applying the sealant and a skin has formed, do not disturb the joint for 48 hours.

## Clean-Up

Excess sealant should be cleaned off tools and nonporous surfaces while it is in the uncured state, by using a solvent such as xylol, toluol or methyl ethyl ketone.<sup>1</sup>

Should sealant accidentally contact adjacent porous surfaces, the excess sealant should be allowed to progress

through the initial cure or set-up. It should then be removed by abrasion or other mechanical means.

## Short-Term Storage

After use, simply remove the excess material from the tip. To reopen the cartridge, remove the cured plug from the opening.

**HANDLING PRECAUTIONS**  
PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND MATERIAL SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE MATERIAL SAFETY DATA SHEET IS AVAILABLE ON THE DOW CORNING WEBSITE AT WWW.DOWCORNING.COM, OR FROM YOUR DOW CORNING REPRESENTATIVE, OR DISTRIBUTOR, OR BY CALLING YOUR GLOBAL DOW CORNING CONNECTION.

## PACKAGING

*Dow Corning* 999-A Silicone Building & Glazing Sealant is packaged in 10.3-fl oz (305-mL) disposable cartridges, which fit ordinary caulking guns, and 4.5-gal (17-L) bulk pails. It can be dispensed by many air-operated guns and most types of bulk dispensing equipment.

## LIMITATIONS

*Dow Corning* 999-A Silicone Building & Glazing Sealant is not recommended for use in applications involving:

- Structural silicone glazing
- Joints where physical abuse or abrasion is likely to be encountered
- Prolonged water immersion
- Porous surfaces, such as masonry
- Building materials that might bleed oils, plasticizers or solvents – materials such as impregnated

wood, oil-based caulks, green or partially vulcanized rubber gaskets or tapes

- Totally confined spaces, because the sealant requires atmospheric moisture for cure
- Surfaces sensitive to corrosion by acetic acid vapors (a byproduct of sealant cure)
- Surfaces that will be painted (paint will not stretch with the extensions of the sealant and may crack and peel); complete all painting prior to using sealant
- Bonding to secondary seal of insulating glass units sealed with two-part silicone sealants
- Auto trim
- Appliance trim (i.e., adhesive trim)

Black *Dow Corning* 999-A Silicone Building & Glazing Sealant is recommended for glass-to-glass butt joints because butt joints sealed with clear sealant may contain small amounts of air that are trapped during the packaging and/or application of the sealant. Appearance standards should be established and agreed upon prior to sealant application.

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 Corning has an extensive Product Stewardship organization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area.

For further information, please see our website, [www.dowcorning.com](http://www.dowcorning.com), or consult your local Dow Corning representative.

## LIMITED WARRANTY INFORMATION – PLEASE READ CAREFULLY

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that Dow Corning's products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

### Limited Weatherseal Warranty

Dow Corning Corporation produces and sells a full line of silicone construction sealants and adhesives. These products offer a variety of physical characteristics and adhesion properties. *Dow Corning* 999-A Silicone Building & Glazing Sealant is part of that line and, when used with compatible substrates and when applied within the stated shelf life and according to manufacturer's recommendations for application and joint design, Dow Corning warrants that this sealant will perform as a watertight weatherseal for a period of 10 years from the date of purchase. In addition to maintaining the integrity of the seal, the sealant will not change color when used with back-up materials and substrates that have been approved for compatibility by Dow Corning, either after specific testing or noted in a current Dow Corning publication. However, light-colored silicone will yellow when in contact with neoprene, EPDM or santoprene.

### Limitations

This warranty specifically excludes failure of the sealant due to:

- Natural causes such as lightning, earthquake, hurricane, tornado, fire, etc., or
- Application to unapproved back-up or substrate materials such as masonry, or
- Movement of the structure resulting in stresses on the sealant that exceed Dow Corning's published specifications for elongation and/or compression for the sealant, whether due to structural settlement, design error or construction error, or
- Disintegration of the underlying substrates, or
- Mechanical damage to the sealant caused by individuals, tools or other outside agents, or
- Changes in the appearance of the sealant from the accumulation of dirt or other contaminants deposited on the sealant from the atmosphere, or
- Prolonged submersion in water (i.e., marine applications).

### Remedies

In the event of a claim under this warranty, Dow Corning Corporation must be notified in writing within 30 days of the failure. Dow Corning's sole liability shall be to provide sufficient silicone replacement material to restore the integrity of the weatherseal. Any labor or other costs associated with the repairs are the responsibility of the owner.

**DOW CORNING SHALL NOT BE LIABLE FOR AND EXPRESSLY DISCLAIMS ANY LIABILITY FOR DAMAGE TO THE CONTENTS OF THE STRUCTURE OR FOR CONSEQUENTIAL DAMAGE, WHETHER IN CONTRACT OR IN TORT, INCLUDING NEGLIGENCE. THIS WARRANTY IS IN LIEU OF ALL OTHER WRITTEN OR ORAL, EXPRESS OR IMPLIED WARRANTIES AND DOW CORNING SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE.**

### Silicone Structural Adhesives

*Dow Corning* 999-A Silicone Building & Glazing Sealant is NOT intended for use as a structural adhesive. Certain *Dow Corning*<sup>®</sup> silicone construction sealants may be used for structural applications, but Dow Corning Corporation disclaims any general adhesion warranty, whether express or implied. For these construction sealants, Dow Corning will issue project-specific Structural Adhesion Warranties after Dow Corning has reviewed the pertinent building specifications and has completed adhesion and compatibility testing of the various materials to be used with the sealants. For details on how to obtain a Structural Adhesion Warranty, please contact your Dow Corning field representative.