



Technical Data Sheet

DOWSIL™ 93-076 RF Aerospace Sealant

Two part, thixotropic silicone elastomer

Features & Benefits

- Good tensile strength
- High bond strength
- Good char characteristics under low to medium heat fluxes
- Low thermal conductivity
- High temperature stability from -65°C to +260°C
- Good resistance to weathering, moisture and ozone
- Two part room temperature cure

Applications

- A high temperature sealant/adhesive with high bond strength. Can be used as an effective high temperature pressurization sealant, thermal barrier or insulative coating and as an adhesive for ablative coatings.
- Can be used for protecting cable breakouts and terminations and for fabricating formed in place seals.

Typical Properties

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

Test ¹	Property	Unit	Result
	As supplied		
	Color (base)		Gray
	Color: catalyst 1/2 hour work time		Beige
	Color: catalyst 2 hour work time		Blue
CTM 0050, ASTM D1084	Viscosity (base)	mPa.s	360,000
	Mixing ratio (base/catalyst) by weight		10/1
	Physical properties, after catalyst addition		
CTM 0092A	Work time: 1/2; 2 hour catalyst ²		1/2; 2
CTM 0095	Tack free time: 1/2 hour catalyst		4
CTM 0095	Tack free time: 2 hour catalyst		14

1. CTM: Corporate Test Method, copies of CTMs are available on request.
ASTM: American Society for Testing and Materials.
2. Length of time that at least 15 grams per minute of sealant can be extruded through a 3 mm orifice of a standard 6 oz sealant cartridge under 6.3 MPa pressure.

Typical Properties (Cont.)

Test	Property	Unit	Result
CTM 0022, ASTM D792	Relative density at 25°C		1.11
CTM 0293	Lap shear strength ³	MPa	2.3
CTM 0099, ASTM D2240	Durometer hardness, Shore A		46
CTM 0137A, ASTM D412	Tensile strength	MPa	5.2
CTM 0137A, ASTM D412	Elongation at break	%	400
CTM 0159A, ASTM D624	Tear strength - die B	kN/m	25
CTM 0293	Peel strength, 1.5 mm glue, 6mm cold rolled steel	kN/m	12
	Brittle point	°C	-68
	Cure time at 25°C	hours	24
	Deep section cure – 25 mm thickness		Yes
Electrical properties, after catalyst addition			
	Volume resistivity	ohm.cm	1x10 ¹³
CTM 0112, ASTM D150	Permittivity at 100 Hz		3.2
CTM 0112, ASTM D150	Permittivity at 100 kHz		3.2
CTM 0112, ASTM D150	Dissipation factor at 100Hz		0.01
CTM 0112, ASTM D150	Dissipation factor at 100 kHz		0.01
CTM 0114, ASTM D149	Dielectric strength	kV/mm	16
Ablation			
	45 Watts/cm ² , oxyacetylene torch:		
	- Char retention		Poor
	- Penetration rate	mm/s	0.02
	850 Watts/cm ² , oxyacetylene torch		
	- Char retention		Good
	- Penetration rate	mm/s	1.39

3. For good adhesion, all substrates except silicone rubber, should be primed with DOWSIL™ 1204 primer. All bond strengths measured on ASTM-D-2024-T3 aluminum.

How to Use

Surface preparation

DOWSIL™ 93-076 RF Aerospace Sealant adheres well to primed surfaces of most materials used in the aerospace and aircraft industries. Typical materials include glass, cured silicone rubber, cork, phenolic, polyester, epoxy, silicone resin laminates and most metals including stainless steel, titanium and aluminum. It may not adhere well to polyethylene or certain plastics and organic materials (including rubber), which bleed or exude plasticizers.

Stronger and more uniform bonds are obtained by preparing metal and plastic surfaces with DOWSIL™ 1204 Primer. For best results:

1. Clean the surface with a chlorinated solvent (see Handling Precautions) and a slightly abrasive pad or a coarse lint-free cloth.
2. Rinse cleaned surface with acetone or methyl ethyl ketone.

How to Use (Cont.)

3. Apply a thin coat of primer by dipping, brushing or spraying.
4. Allow the primer to dry for at least 1 hour, according to relative humidity.
5. Silicone rubber surfaces should not normally be primed, but only roughened slightly with abrasive paper and rinsed with acetone.

Mixing

The catalyst is added in a ratio of 10 parts of base to 1 part catalyst by weight. For best results the base should be thoroughly de-aired in standard vacuum equipment for 2 hours at greater than 650 mm of mercury vacuum. The catalyst may then be added to the base in an air free mixer, such as a Semco® Pressure Mixer, model S-1350 or S-1378. Hand mixing may also be used if, after mixing, the product is de-aired in vacuum for about 30 minutes.

Working and curing time

With either catalyst, the cure rate may be accelerated by the application of heat.

4 hours at 85°C, or
2 hours at 95°C.

Although full physical properties will not be obtained after this elevated temperature cure, the material will be tack-free and can be released from a mold. With either catalyst, the sealant will set up in 24 hours and achieve optimum physical properties in 5 days.

Curing

DOWSIL™ 93-076 Aerospace Sealant is specially compounded to assure deep section curing.

Like all tin-catalyzed silicone rubbers, DOWSIL™ 93-076 RF Aerospace Sealant may depolymerize in thick section when overheated in total confinement. To minimize this effect, encapsulations which must operate for extended periods in total confinement at elevated temperatures must be given a graduated post cure to allow volatiles to escape. During the graduated post cure, the temperature should be increased approximately 25°C per hour, depending upon the thickness of the potted sections. A final bake of 4 hours at 50°C above the maximum operating temperature of the device is recommended. To eliminate all the possibilities of depolymerization, contact Dow for alternate product recommendations.

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 CONSUMER.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 32°C in the original unopened containers, DOWSIL™ 93-076 RF Aerospace Sealant has a usable life of 9 months from the date of production.

After catalyst addition, the sealant will remain useable for about 2 weeks if stored immediately at -40°C or below. Since the catalyst is extremely sensitive to moisture, the container should be covered at all times. Also, frequent opening of the catalyst container should be avoided. If catalyst becomes grainy or crystalline, it should not be used.

Packaging Information

DOWSIL™ 93-076 Aerospace Sealant is supplied with its catalyst in 0.45 kg, 4.1 kg and 20.4 kg kits, net weight.

Limitations

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, consumer.dow.com or consult your local Dow representative.

consumer.dow.com

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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 our 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.

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