



DOW CORNING® 90-006 Aerospace Sealant

FEATURES

- Good ablative and char characteristics under low shear, medium heat flux environments
- Low thermal conductivity
- Flexibility at temperature extremes
- Resistant to weathering, moisture and ozone
- Two part room temperature cure

Two part, high viscosity, non-slump, high performance silicone elastomer

APPLICATION

- Primarily used as a thermal barrier, insulative coating and pressurisation sealant for moderate heat flux environments.

TYPICAL PROPERTIES

Specification writers: These values are not intended for use in preparing specifications. Please contact your local Dow Corning sales representative prior to writing specifications on this product.

CTM*	ASTM*	Property	Unit	Value
As supplied				
		Colour - base/curing agent		Red/green
0050	D1084	Viscosity at 25°C (base)	mPa.s	1,100,000
		Mixing ratio by weight (base/curing agent)		10/1
Catalysed, mixed 10:1 base/curing agent by weight				
		Working time at 25°C	hours	1/8, 1/2 or 2
0095		Tack-free time	hours	1/2, 3/4 or 3
		Application time at 6MPa, 3mm orifice at designated time after mixing	g/minute	15
Physical properties, cured 24 hours at 25°C and 50% relative humidity				
0022	D792	Relative density at 25°C		1.50
		Cure time at 25°C	hours	24
0099	D2240	Durometer hardness, Shore A		50
0137A	D412	Tensile strength	MPa	4.2
		Deep section cure - 25mm thickness		Yes
0137A	D412	Elongation at break	%	130
		Low temperature flexibility	°C	-65
0293		Peel strength, cohesive	kN/m	0.9
0293		Lap shear cohesive failure		
		- Aluminium ALCAD 2024		2.8
		- Aluminium ALCAD 2024 - treated per MIL-C-5541		2.8
		Repairability		Good
		Humidity resistance 10 days at 50°C condensing conditions		Good
		Specific heat at 25°C	kJ/kg.K	1.46
		Thermal conductivity	W/(m.K)	0.35
		Coefficient of thermal expansion (volumetric) x 10 ^⁴	(l/K)	9.0

TYPICAL PROPERTIES (continued)

CTM*	ASTM*	Property	Unit	Value
Ablation				
45 Watts/cm ² , oxy-acetylene torch				
		- Penetration rate	mm/s	0.033
		- Char retention		Good
850 Watts/cm ² , oxy-acetylene torch				
		- Penetration rate	mm/s	0.89
		- Char retention		Poor

* CTM: Corporate Test Method, copies of CTMs are available on request.
ASTM: American Society for Testing and Materials.

HOW TO USE

Surface preparation

DOW CORNING 90-006 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 aluminium. It may not adhere well to polyethylene or certain plastics and organic materials (including rubber), which bleed or exude plasticisers.

Stronger and more uniform bonds are obtained by preparing metal and plastic surfaces with DOW CORNING® 1200 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.
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. In thin sections, a primer may be needed.

Mixing

DOW CORNING 90-006 Catalyst is added in a ratio of 1 part to 10 parts DOW CORNING 90-006 Base, by weight. It may be dispersed by 2 to 5 minutes of hand mixing, or by approximately 40 cycles of a mechanical mixer. The base and

catalyst are supplied in contrasting colours: when uniformity of colour is achieved, components are uniformly blended.

How to apply

After being catalysed DOW CORNING 90-006 Aerospace Sealant may be applied with a spatula. It can also be loaded into a cartridge and applied from a pressure gun. Uncured excess may be removed with xylene, toluene or similar aromatic solvents.

Working and cure time

DOW CORNING 90-006 Aerospace Sealant is useable for a minimum of 2 hours after catalyst addition, unless otherwise specified. Although a 2 hour working time is standard, DOW CORNING 90-006 Aerospace Sealant is available with working times of 1/8 and 1/2 hours, under the following designations.

DOW CORNING 90-006 Aerospace Sealant - 1/8

DOW CORNING 90-006 Aerospace Sealant - 1/2

The cure rate of DOW CORNING 90-006 Aerospace Sealant may be accelerated by the application of heat; however, the short working time versions produce finished sealants with the same physical, electrical and ablative characteristics.

HANDLING PRECAUTIONS

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED. 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 FROM YOUR LOCAL DOW CORNING SALES REPRESENTATIVE.

USABLE LIFE AND STORAGE

When stored at or below 32°C in the original unopened containers, DOW CORNING 90-006 Aerospace Sealant has a usable life of 12 months from the date of production.

PACKAGING

DOW CORNING 90-006 Aerospace Sealant is available with its catalyst in 45kg, 3.8 litre or 19 litre 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 Corning has an extensive Product Stewardship organization and a team of Health, Environment and Regulatory Affairs specialists available in each area.

For further information, please consult your local Dow Corning representative.

**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. Dow Corning's sole warranty is that the product will meet the Dow Corning sales specifications in effect at the time of shipment. Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted. Dow Corning specifically disclaims any other express or implied warranty of fitness for a particular purpose or merchantability. Unless Dow Corning provides you with a specific, duly signed endorsement of fitness for use, Dow Corning disclaims liability for any incidental or consequential damages. Suggestions of use shall not be taken as inducements to infringe any patent.

Table 1: Typical ablative properties - chemical torch testing

	<i>Test condition No. 1</i>	<i>Test condition No. 2</i>
Fuel	Oxy - acetylene	Oxy - acetylene
Heat flux, cold wall, watts/cm ²	45	300
Flame direction to surface,	20	90
Penetration rate (60 second test duration), mm per second	0.02	0.05
Backside temperature increase °C (6mm thick sample) at 30 seconds		
at 30 seconds	6.6 ¹	8.8 ²
at 60 seconds	24.4 ¹	26.2 ²
Char characteristics	Hard, granular, good adhesion	Hard, granular, good adhesion

¹ No backing panel.

² 1mm aluminium backing panel.

Table 2: Typical ablative properties - plasma torch testing (simulated air)

	<i>Test condition No.3</i>	<i>Test condition No.4</i>
Cold wall heat flux, watts/cm ²	115	350
Enthalpy, kJ/kg	11,600	16,300
Test duration, seconds	60	60
Surface temperature, °C	1620	1980
Apparent gross heat of ablation and radiation ¹ , kJ/kg	84,000	26,000
Net effective heat of ablation ² , kJ/kg	17,700	11,400

¹ Based on cold wall heat flux and mass loss - residual char left intact.

² Based on hot wall flux and mass loss - residual char left intact.