

DOW CORNING® 6-1104 Controlled Volatility Sealant

FEATURES

- Suitable for corrosion-sensitive applications
- No corrosive by-products produced during cure
- Extremely low weight loss under high vacuum exposure
- Good physical and electrical stability over a wide range of temperatures, frequencies and humidities
- Wide range of operating temperatures (-65°C to +200°C)
- One part room temperature cure
- Easy repairability
- Listed in the European Space Agency specification ESA PSS-01-701

One part, non-slumping, room temperature curing sealant

APPLICATIONS

- For bonding, sealing and encapsulating electrical/electronic wires and terminals, and the mounting and protection of components on a variety of electrical, electronic and optical assemblies used in space applications.
- Ideally suited to the harsh environment of space due to their inherent physical and electrical stability, together with extremely low mass loss under high vacuum.
- Protection of components from temperature extremes, high humidity, radiation, thermal shock and mechanical vibration.

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
Physical properties, as supplied				
		Consistency		Elastomer
		Color		Translucent
		Slump	mm	6
		Extrusion rate ¹	g/minute	120
0095		Tack free time	hours	1.1
		Cure time, 3mm thickness	hours	72
		Full cure, 3mm thickness	days	7
As cured - after 7 days at 25°C and 50% relative humidity				
0022	D792	Relative density		1.11
0099	D2240	Durometer hardness, Shore A		38
0137A	D412	Tensile strength	MPa	6.0
0137A	D412	Elongation at break	%	660
0159A	D624	Tear strength - die B	kN/m	22
		Deep section cure - 25mm thickness		No
0243		Lap shear, primed aluminium, 1.5mm glue line	MPa	1.6
		180° peel, primed aluminium	kN/m	10
0496A		Thermal vacuum weight loss, (24 hours at 125°C and <1x10 ^{a1} torr)	%	0.19
0496A		Volatile condensable materials collected at 25°C during vacuum weight loss test	%	0.023
		Volume coefficient of thermal expansion	1/K	8.5x10 ^{a2}
0224	D2214	Thermal conductivity	W/(m.K)	0.12
		Radiation resistance ²	megarads	100

TYPICAL PROPERTIES (continued)

CTM*	ASTM*	Property	Unit	Value
Electrical properties, as cured				
0114	D149	Dielectric strength	kV/mm	19
0249	D257	Volume resistivity	ohm.cm	3.36x10 ¹²
0112	D150	Permittivity at 25°C 100Hz		2.60
0112	D150	Permittivity at 25°C 100kHz		2.60
0112	D150	Dissipation factor at 25°C 100Hz		1.0x10 ⁻³
0112	D150	Dissipation factor at 25°C 100kHz		1.0x10 ⁻³

1. Extrusion rate, 6.3 MPa through 3mm nozzle, 1 minute.
2. Still usable after exposure to this megarad dose.

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

HOW TO USE

Substrate preparation

DOW CORNING 6-1104 Controlled Volatility Sealant adheres well to most materials used in the aerospace and aircraft industry. 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.

DOW CORNING 6-1104 Controlled Volatility Sealant should always be applied to clean, dry surfaces. A satisfactory bond will usually be formed without using primer on degreased surfaces. However, for maximum adhesion, the use of DOW CORNING® 1204 Primer is recommended. 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.

How to apply

Apply DOW CORNING 6-1104 Controlled Volatility Sealant in a

uniform thickness. Best adhesion is obtained with an approximately 0.5mm glue line. When bonding two surfaces, join the surfaces with enough uniform pressure to displace any excess sealant. Let the unit undisturbed at room temperature with at least 30% relative humidity to cure.

Working and curing time

On exposure to moisture in the air, the surface of DOW CORNING 6-1104 Controlled Volatility Sealant will form a skin in about 25 minutes at room temperature with 50% relative humidity. Any tooling should be completed before this "skin" forms and the assembled parts should then be left undisturbed until the curing is complete. Curing proceeds inward from the surface at a rate which depends upon the relative humidity, the degree of confinement and the thickness of the adhesive/sealant. Too little moisture or too thick an application will extend the cure time. Likewise, cure time is generally proportional to the degree of confinement. If both members are impermeable, as in the case of two metal plates, complete cure time will depend upon the thickness of the adhesive/sealant and the area confined. The larger the unexposed bond area, the longer the cure time. For best results in a metal to metal bond, the members should not overlap more than 25mm.

When bonding with at least one permeable member, sections up to 3mm thick will cure to rubbery solid masses in 72 hours at room temperature and a relative humidity of at least 30%. Lower levels of relative

humidity are not recommended. Optimum physical and electrical properties are reached after curing for 7 days at room temperature.

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 38°C in the original unopened containers, DOW CORNING 6-1104 Controlled Volatility Sealant has a usable life of 12 months from the date of production.

PACKAGING

DOW CORNING 6-1104 Controlled Volatility Sealant is available in 142g collapsible tubes and 142g plastic cartridges.

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.

