



Technical Data Sheet

DOWSIL™ Q4-2805 Fluorosilicone Channel Sealant

One part, fuel- and oil-resistant compound

Features & Benefits

- Superior sealing characteristics under exposure to fuels and oils
- Easily injected and reinjected
- Maintains consistency over wide temperature range from 55°C to +200°C
- Non-curing
- Good tack adhesion
- Essentially unaffected by shock, vibration and thermal cycling
- Contains no catalyst or curing agent
- Withstands immersion in fuels and exposure to fuel vapors in temperatures up to +200°C
- Contains flow-control particles
- Excellent flow characteristics provide faster injection at reduced pressures
- Meets MIL-S-85334(AS)

Applications

- Primarily used as groove injection sealants for aircraft fuel tanks.
- Also suitable for various sealing applications that require a non-curing sealant. The sealant is injected directly by air gun into the grooves of integral fuel tank systems during fabrication or maintenance. Upon exposure to common fuels, this sealant will swell slightly, tightening the seal during service. This characteristic is especially beneficial when, as a result of aerodynamic heating, expansion of fuel and fuel vapors may cause internal tank pressure.

Typical Properties

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

CTM ¹	ASTM ²	Property	Unit	Result
Physical Properties				
		Physical nature		Putty-like
		Color		White
0022	D792	Relative density @ 25°C		1.37
		Extrusion force	kg	91

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

Typical Properties (Cont.)

CTM	ASTM	Property	Unit	Result
Fuel Resistance				
7 day immersion @ 80°C in:				
		Jet reference fuel swell	%	30
		JP-4 swell	%	12
		JP-5 swell	%	12
7 day immersion @ 80°C, plus 24 hours dry @90°C:				
		Jet reference fuel weight loss	%	2.5
		JP-4 weight loss	%	1.0
		JP-5 weight loss	%	1.0
Adhesion				
		2024 clad aluminum		Excellent: adhesive strength exceeds cohesion strength

How To Use

Dispensing

Although any high pressure sealant gun may be used, the No. 223 Grover air operated aircraft sealant gun is recommended by the U.S. Navy and Air Force, and is covered by a national stock number for both branches. The gun is made by Grover Manufacturing Corporation. To utilize the cartridge, the sealant container supplied with the Grover gun must be replaced with a special Semco Cartridge Adapter Kit. The adapter is easily attached and has been assigned national stock numbers.

Injecting The Sealant

DOWSIL™ Q4-2805 Fluorosilicone Channel Sealant is injected from the gun directly into the channel, port by port, so the channel is filled sectionally. Starting at either end of the wing, the first two ports are opened. The sealant is injected in the first port, travels the length of the channel between the ports (usually 10–15 cm), and exits from the second port. The first port is then closed and the third opened. The sealant is then gunned into the second port until it exits from the third port.

The procedure is followed until the entire wing channel has been sealed, section by section. With the exit ports opened, the sealant will not be forced to the faying surface or into the fuel tank, the exiting sealant indicates a fully sealed, leak free channel section.

When injecting DOWSIL Q4-2805 Fluorosilicone Channel Sealant, the gun nozzle should be in direct contact with the port. The use of a hose connection between the gun and injection port should be avoided, as it considerably reduces outlet pressure. If it is impossible to place the gun nozzle directly into the port, and a hose must be attached, the following suggestions should be followed:

1. Use as short a hose as possible.
2. Increase the input pressure to permit the maximum allowable output pressure at the nozzle if it can be done safely and is permitted by the aircraft manufacturer.
3. Inject over as short a distance as possible.

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How To Use (Cont.)

Usually the port diameter is smaller than the channel is wide. This diminishes the sealant flow rate from the port. The size of the grease fitting used to inject the sealant and the exit port diameter may contribute to a slower flow rate. For example, if the exit port is 6 mm in diameter and the I.D. of the grease fitting is 1.5 mm, the exit bead will be very large compared with the injected bead. The operator should consider a reduced rate of exit normal.

Do not skip ports. DOWSIL Q4-2805 Fluorosilicone Channel Sealant should not be injected beyond the next port because of lack of back pressure that develops. Laboratory tests have demonstrated that forcing the sealant 30 cm through a channel can take seven times as long as it would to move the sealant 15 cm along the same channel.

Air Pressure

No specific recommendation can be made pertaining to the amount of inlet pressure required to move the sealant down the channel. Because the Grover gun multiplies the inlet pressure by 70, it is necessary to know the maximum pressure the wing structure can safely take. Too much pressure can separate wing skins, damaging the plane structure. It can also blow off the cartridge adapter, creating a projectile danger. As examples of inlet pressure variance, 0.42MPa is recommended for injecting the McDonnell Douglas F-4, 0.28MPa for the Grumman A-6A.

Repairing Leaks In The Field

It is strongly recommended that the plane be defueled to repair a leak; a dry tank promotes better adhesion of the sealant to the channel and the leak can be eliminated more quickly. In the case of an emergency or a short scheduled mission that precludes defueling, the ports closest to the leak (at least two) should be opened and the sealant injected until the material flowing from the observation port is dry or fuel-free.

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 WWW.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 30°C in the original unopened containers, this product has a usable life of 48 months from the date of production.

Packaging

This product is available in 213 g containers, 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, www.consumer.dow.com or consult your local Dow representative.

<http://www.consumer.dow.com>

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