

# CS 3213 CORROSION INHIBITING SEALANT

## Chem Seal

## Class B

Technical Bulletin  
May, 2009

MIL-PRF-81733 Type-II Class-1 Dash-2 Grade-A

### Product Description

CS 3213 is a corrosion inhibitive sealant; manganese dioxide cured, polysulfide compound containing soluble chromate for use in the sealing and coating of metal components on weapons and aircraft systems for protection against corrosion when subject to contact with water and/or weathering. CS 3213 is exceptionally efficient in combating the common causes of corrosion occurring on aluminum alloys or assemblies consisting of dissimilar metals.

CS 3213 is a two-part polysulfide base compound which cures at room temperature to a flexible, resilient rubber with excellent adhesion to aluminum, magnesium, titanium, steel, and numerous other materials.

When mixed, CS 3213 Type II (class B) is a thixotropic paste that will not flow or sag on vertical or overhead surfaces. It has an operational temperature range from -65°F (-54°C) to 250°F (121°C), with intermittent excursions up to 275°F (135°C).

### Application Properties (typical)

Color			
Part A base compound	off-White		
Part B curing agent	Black		
Mixed	Gray		
Mixing Ratio			
	Part A : Part B		
By Weight	100 : 17		
By Volume	100 : 14		
Base viscosity			
Brookfield RVF Spindle #7@ 2 RPM	11000 poises 1100 (Pa-s)		
Slump, inches (mm)			
	initial	50 minutes	90 minutes
B 1/2			
B 2	0.20 (5.08)	0.20 (5.08)	0.30 (7.62)
B 4			
Air content	< 1.5%		

### Application Properties continued

Application / cure time @ 77°F (25°C), 50% RH

	Work-life (hours)	Tack-free (hours)	Cure 35 A (hours)
B 1/2			
B 2	2	< 24	< 48
B 4			

### Performance Properties (typical)

Cured 14 days @ 77°F (25°C), 50% RH		
Cured specific gravity	1.50	
Nonvolatile content, %	96%	
Cured hardness	Shore A 44	
Soluble chromate	5%	
Thermal Stability 48 hrs @ 320 °F/Air		
No blistering max increase shore A (+15 pts)	Pass (+4 pts)	
Low Temp Flexibility -65° ± 2° F (-54° ± 1° C)		
No cracking or loss of adhesion	Pass	
Tensile Strength (std cure)	287 PSI (1990 kPa)	
Elongation (std cure)	400%	
Salt-SO <sub>2</sub> spray (Fog) MIL-PRF-81733 (ASTM B117) – No corrosion to base substrate or deterioration of sealant		
Mixed metal assembly (Al – Ti)	Pass	
Mixed metal assembly (Al – Ma)	Pass	
Stressed aluminum cycling	Pass	
Repairability		
	Adhesive Lbs/in (k/cm <sup>2</sup> )	Cohesive %
To self	47	100%
MIL-PRF-81733	42	100%
Resistance to hydrocarbons - 7 days @ 140°F (60°C) Immersed in type-III JRF		
Weight loss %	6	

Chem Seal Products

Manufactured By The Flamemaster Corporation  
13576 Desmond Street Pacoima, CA 91331  
Phone (818) 890-1401 Fax (818)-890-6001 <http://www.flamemaster.com>

Supersedes December, 2005

**Performance Properties Continued**

Peel strength, lb/in (N/25 mm), 100% cohesion  
Minimum lb/in (N/25 mm) 15 (66)

AMS 2629 JRF, immersion 2 days @ 140°F (60°C)

MIL-A-8625 (AMS-2471)  
(Anodized aluminum) 28 (125)

MIL-T-9046 (AMS-4911)  
(Titanium) 27(120)

Peel strength, lb/in (N/25 mm), 100% cohesion  
Minimum lb/in (N/25 mm) 15 (66)

3% AMS 2629 JRF/NaCl-H<sub>2</sub>O immersion,  
2 days @ 140°F (60°C)

MIL-A-8625 (AMS-2471)  
(Anodized aluminum) 27 (120)

MIL-T-9046 (AMS-4911)  
(Titanium) 26 (116)

Non-nutrient Pass

Note: For a complete description of properties refer to specifications MIL-PRF-81733. Test results are typical and individual batches may vary within the specification requirements. For design and inspection reference only the specification documents. Variations may exist between individual laboratories are beyond our control or knowledge

**Mixing Instructions**

Mix can kits according to the ratios indicated in the application properties section. Mix Part A and Part B separately to uniformity, then thoroughly mix entire contents of both parts of kit together taking care to avoid leaving unmixed areas around the sides or bottom of the mixing container. When provided in sectional plastic kits (Semkits) consult packaging for mixing instructions.

**Safety**

**Industrial use only / keep out of the reach of children**

Before using this product, read and understand the Material Safety Data Sheet (MSDS). The MSDS provides information on; health, handling, environmental and physical hazards as well as disposal and first-aid.

**Shelf Life**

When stored at temperatures below 80°F (27°C) in original, unopened containers. The shelf life of CS-3213 Class B is at least 9 months.

**Surface Preparation**

Clean the substrate immediately before applying sealant. The surfaces should be free from Contaminants. Remove dirt, grease, and/or processing lubricants prior to sealant application. To obtain good adhesion, the surfaces must be free of all traces of oil, wax, grease, dirt or other contamination. Working in small area segments, wipe the surface using a clean rag wetted with a solvent conforming to AMS-3819. Before the solvent evaporates, wipe the surface dry with a second clean rag. Maintain a clean solvent supply by pouring the solvent on the washing cloth. CS 3213 will adhere tenaciously to most substrates providing the surface to be sealed is clean and sound.

For detailed information on sealant applications consult; [SAE](#) Aerospace document (AIR 4069) this document is available from SAE, 400 Commonwealth Avenue, Warrendale, PA 15096-0001.

**Available Packaging**

CS-3213 Class B is supplied in two-part kits, sectional cartridges and pre-mixed-frozen.

The basis for all recommendations, statements, and technical data contained herein are tests we believe to be reliable and correct. Accuracy and completeness of said tests are not guaranteed and are not to be construed as a warranty, either expressed or implied. User shall rely on his own information and tests to determine suitability of the product for the intended use and user assumes all risk and liability resulting from his use of the product. Sellers and manufacturers sole responsibility shall be to replace that portion of the product of this manufacturer, which proves to be defective. Neither seller nor manufacturer shall be liable to buyer or any third person for any injury, loss, or damage directly or indirectly resulting from use of, or inability to use, the product. Recommendations or statements other than those contained in a written agreement signed by an officer of the manufacturer shall not be binding upon the manufacturer or seller.