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SOCOMORE Aerospace Sealants

SHIMS & SEALANTS

CS 135 Class B

FUEL TANK AND FUSELAGE SEALANT

Technical Data Sheet

Description

CS 135 Class B is a fast-curing, medium density aerospace sealant designed for fuel tank and fuselage sealing applications, such as repairing integral fuel tanks, cabin pressure sealing, and aerodynamic smoothing. It can be used for sealing joints and seams in both fuel and non-fuel areas.

- Two-part, manganese dioxide cured polysulfide
- Room temperature cure
- No hydrogenated terphenyl, alkylphenol ethoxylates (APEOs), or aromatic solvents
- No expandable/compressible fillers
- Excellent adhesion to a wide variety of coated and bare aircraft substrates
- Excellent flexibility and resistance to fuel, water, and other aerospace fluids
- Cured material has a service temperature range of -65°F to 250°F (-54°C to 121°C), with intermitent use to 360°F (182°C).
- Uncured CS 135 Class B is a thixotropic (low sag) material easily applied with an extrusion gun or spatula.
- CS 135 B-1/2, B-1, B-2, and B-4 are qualified to SAE AMS-S-8802 (Type 2). CS 135 B-1/2, B-2, B-4, and B-6 are qualified to SAE AMS3276.

For information on other qualifications or the availability of modified products, contact Sales.

The following technical information and data are typical for the material but should not be used for specification or acceptance purposes. Testing was performed in accordance with SAE AMS5127/1.

Typical Performance Properties

Cured 14 days at 77°F (25°C) and 50% relative humidity

Specific gravity	1.38
Ultimate hardness	52A
% Nonvolatile material	97.8%

Hydrolytic stability – 120 days at 160°F (70°C) and 95% relative humidity + 14 days at standard conditions	Pass - 44A hardness
Chalking in AMS2629 Type 2	Pass - none
Thermal rupture resistance – 30 min at 300°F (149°C), 10 psi (69 kPa), dry	Pass – no deformation or sponging
Volume swell AMS2629 Type 1	3.8%
Weight loss after AMS 2629 Type 1	2.2%
Low temperature flexibility at -65°F (-54°C)	No cracking, or loss of adhesion
Corrosion resistance per AS5127/1 7.9	Pass

Typical Application Properties

At 77°F (25°C) and 50% relative humidity

Color	
Base	Off-white
Curing agent	Black
Mixed	Dark gray
Mix ratio	
By weight	100:10 (base/curing agent)
Base viscosity (Brookfield #7@ 2 rpm)	11,000 Poise (1100 Pa·s)
Slump	< 0.2" (5 mm)

	Minimum application time	Extrusion rate at application time (g/min)	Tack-free time (hours)	Cure time to 30A (hours)
B-1/2	30 minutes	30 - 50	< 5	< 8
B-1	1 hour	30 - 50	< 6	< 14
B-2	2 hours	20 - 40	< 8	< 16
B-4	4 hours	30 - 60	< 16	< 32
B-6	6 hours	30 - 60	< 30	< 40

Tensile strength and elongation

Conditioning	Tensile strength	Elongation
Standard cure	307 psi 2.1 MPa	365 %
Cure + 12 days at 140°F (60°C) + 60 hours at 160°F (72°C) + 6 hours at 180°F (82°C), all in JRF + 24 hours at 120°F (49°C) followed by AMS3276 heat cycle in air	194 psi 1.3 MPa	434 %
Standard Cure + 7 days in air at 250°F (121°C) in air	312 psi 2.2 MPa	116 %
Cure + AMS3276 standard heat cycle in air	233 psi 1.6 MPa	92 %

Peel strength

First value is pli; second value is N/25 mm. All 100% cohesive failure * indicates use of AMS3100 adhesion promoter	
No exposure (dry)	
IFT coating (AMS-C-27725)	32 (140)
After 7 days in JRF (AMS2629 Type 1) at 140°F (60°C)	
Alodine (MIL-DTL-5541)	44 (194)
Sulfuric acid anodized	39 (170)
Stainless steel (AMS 5516)	46 (201)
Titanium (AMS 4911)	36 (159)
IFT coating (AMS-C-27725)	34 (150)
AS4/3501-6, tool side	35 (154)
AS4/3501-6, ply side	37 (162)
BMI, tool side	35 (153)
BMI, ply side	34 (151)

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Peel strength, continued

After 7 days immersion in 50/50 JRF (AMS2629 Type 1) / 3% salt water (SW) at 140°F (60°C)	
Alodine (MIL-DTL-5541)	JRF: 38 (165); SW: 40 (176)
Sulfuric acid anodized	JRF: 39 (173); SW: 38 (166)
Stainless steel (AMS 5516)	JRF: 40 (176); SW: 39 (170)
Titanium (AMS 4911)	JRF: 39 (172); SW: 34 (150)
IFT coating (AMS-C-27725)	JRF: 37 (161); SW: 41 (177)
AS4/3501-6, tool side	JRF: 35 (154); SW: 35 (153)
AS4/3501-6, ply side*	JRF: 36 (175); SW: 34 (150)
BMI, tool side	JRF: 36 (159); SW: 29 (128)
BMI, ply side*	JRF: 34 (147); SW: 33 (143)
After 70 days in JRF (AMS2629 Type 1) at 140°F (60°C)	
Titanium (AMS4911)	37 (161)
IFT coating (AMS-C-27725)	33 (145)
After 70 days immersion in 50/50 JRF (AMS2629 Type 1) /3% salt water (SW) at 140°F (60°C)	
Titanium (AMS 4911)	JRF: 44 (191); SW: 39 (169)
IFT coating (AMS-C-27725)	JRF: 32 (142); SW: 36 (157)
After six (6) JRF/3% salt water heat cycles per AMS3276	
Alodine (MIL-DTL-5541)	JRF: 39 (170); SW: 41 (181)
Sulfuric acid anodized	JRF: 35 (154); SW: 33 (146)
Stainless steel (AMS 5516)	JRF: 35 (154); SW: 40 (176)
Titanium (AMS 4911)	JRF: 33 (145); SW: 35 (151)
IFT coating (AMS-C-27725)	JRF: 39 (171); SW: 37 (164)
AS4/3501-6, tool side	JRF: 36 (158); SW: 35 (155)
AS4/3501-6, ply side	JRF: 32 (140); SW: 34 (149)
BMI, tool side	JRF: 43 (190); SW: 43 (189)
BMI, ply side	JRF: 40 (176); SW: 37 (160)
After 7 days immersion in 3% salt water at 140°F (60°C)	
MIL-PRF-23377, standard cure	35 (154)
MIL-PRF-23377, 200°F (93°C) cure	39 (171)
Polyurethane topcoat, MIL-PRF-85285	37 (163)
Waterborne epoxy topcoat, MIL-PRF-85582	34 (147)
Repairability per AS5127/1, 8.2	
CS 135 to itself	47 (206)
To another AMS 3276 sealant	37 (161)
To second AMS 3276 sealant	34 (150)

Surface Preparation

To obtain good adhesion, surfaces must be free of all traces of oil, wax, grease, dirt or other contaminants. A progressive cleaning process is recommended. Use an appropriate solvent and lint-free clothes. Pour solvent on the cloth to keep the solvent supply clean. Clean a small area at a time and wipe the surface dry with a second clean cloth. See SAE AIR 4069 for additional information on surface preparation. For Socomore's full line of solvents and wipes used for aerospace sealant preparation, and their customer approvals, visit www.Socomore.com.

Storage

Unmixed CS 135 Class B has a shelf life of at least 9 months from date of packaging when stored below 80°F or below in the original, unopened package. Refrigerated shipping is not required, but storage above this temperature typically affects application properties before performance properties.

Mixing Instructions

CS 135 base and curing agents are matched and tested together; do not mix lots. Mix according to the indicated mix ratios; using the incorrect ratio can affect the sealant properties and voids the warranty. Do not thin the material with solvents. For additional information, see the FAQ on the Flamemaster website (www.flamemaster.com).

Curing

The application, tack-free, and cure times are based on the standard conditions of 77°F (25°C) and 50% relative humidity. For information on the effects of temperature and humidity, as well as information on accelerated curing, see the FAQ on the Flamemaster website (www.flamemaster.com).

Clean up

Cured aerospace sealants are difficult to remove. Cleaning tools and other surfaces is best done when the material has not yet cured. For fresh material and tool cleaning use an appropriate solvent and lint-free cloth. Once the material has cured, use an approved chemical and/or plastic scraper to remove the sealant. For Socomore's full line of solvents, wipes, chemical sealant removers (SkyRestore), plastic scrapers (SkyScraper), and their customer approvals, visit www.Socomore.com.

Packaging

CS 135 Class B is available in injection kits and can kits. Bulk packaging and premix frozen (PMF) may be available; contact Sales.

Health and Safety

Before using this material, read and understand the Safety Data Sheet (SDS) as it includes information on health, physical, and environmental hazards, as well as handling precautions and first aid recommendations. SDSs are available upon request.

Emergency Contact Chemtrec 800-424-9300
Outside North America 703-527-3887
Keep out of the reach of children
For industrial use only

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This technical data sheet replaces and cancels the previous one.