Technical data sheet

Product:	AC-251
Manufacturer:	3M DEUTSCHLAND GMBH
Product group:	KLEBSTOFF
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3M AEROSPACE SEALANT AC-251 BLACK B

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3M™ Aerospace Sealant AC-251 Black Class B

Product Description

3M™ Aerospace Sealant AC-251 Black Class B are two-part, quick curing, polysulfide based canopy and windshield sealants. These products are formulated for sealing acrylic, glass, and polycarbonate aircraft canopies and windshields. 3M AC-251 Black Class B Sealants contain no solvents and do not craze. The sealants quickly cure and exhibit excellent adhesion and resistance to UV and weather exposure.

3M AC-251 Black Class B Sealants have a thixotropic, non-sag consistency. They can be readily applied with a spatula or extrusion gun on vertical surfaces.

Applications

- Canopy and windshield sealant
- Exterior moldline applications

Typical Physical and Application Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Color	
Base:	Black
Accelerator:	Black
Mixed:	Black
Mix Ratio	100 base / 10 accelerator (by weight)
Nonvolatile Content	98%
Base Viscosity (Brookfield #7 spindle) @ 2 rpm)	9,000 - 16,000 poise

Application Life and Cure Time

(@ 77°F, 50% Relative Humidity)

	Minimum Application Life[1]	Typical Tack-Free Time[2]	Typical Cure Time[3]
B-1/2	1/2 hour	4 hours	4 hours
B-1	1 hour	5 hours	7 hours
B-2	2 hours	8 hours	9 hours

[1]Application life refers to the length of time the mixed compound remains at a consistency suitable for application with spatula or caulking gun. Application life is always measured as a standard temperature of 77°F with a relative humidity level of 50%. In general, for every 20°F rise in temperature, the application life is halved; and for every 20°F drop, it is doubled. High humidity levels during the mixing process will shorten application life.

[2]Tack-free time is the length of time after which a mixed sealant will no longer tightly adhere to L-LP-690 standard low density polyethylene film.

[3]Cure time is defined as the length of time it takes 3M™ Aerospace Sealant AC-251 Black Class B to reach 30A hardness. It depends on three factors: remaining application life, temperature and relative humidity. The temperature/humidity factors for application life also apply to curing. To accelerate the curing process, apply heat up to (but not more than) 160°F. If the humidity is low, increasing the humidity will cure the sealant more quickly.

Typical Physical and Performance Properties of Cured Compound After 14 Days @ 77°F/50% RH when tested per AMS-S-8802

Color	Black
Specifc Gravity	1.59
Hardness	55 Shore “A”
Low Temperature Flexibility	No cracking, checking or adhesion loss when tested at -65°F (-54°C)
Service Temperature	-65° to +250°F (-54° to +121°C)
Intermittent Exposure To:	360°F (182°C)
Thermal Rupture Resistance	Does not blister or sponge
Corrosion	None
Repairability	35 piw to itself and other AMS-S-8802 qualified sealants
Weight Loss and Flexibility	No cracking when bent 180° over a 1/8 inch mandrel. No more than 6% loss of the sealant compound after fluid immersion.
Fungus Resistance	Meets MIL-STD-810 requirement
Crazing	No effect on acrylic or polycarbonate

Typical Values of 3M™ Aerospace Sealant AC-251 Black Class B

Tensile Strength and % Elongation

Conditioning	Requirements	Results
Standard Cure - 14 days	200 psi / 200%	350 psi / 370%
7 days @ 250°F	125 psi / 100%	310 psi / 300%

Peel Strength*

Substrate	Conditioning	Load % Cohesion
MIL-G-25667 (Glass)	Standard Cure 7 days @ 140°F	50 lbs./100% 48 lbs./100%
MIL-P-8184 (Acrylic)**	Standard Cure 7 days @ 140°F	38 lbs./100% 41 lbs./100%
MIL-P-5424 (Acrylic)**	Standard Cure 7 days @ 140°F	35 lbs./100% 38 lbs./100%
MIL-P-83310 (Polycarbonate)**	Standard Cure 7 days @ 140°F	35 lbs./100% 33 lbs./100%
MIL-T-9046 (Titanium)	Standard Cure 7 days @ 140°F	44 lbs./100% 39 lbs./100%
AMS 2471 (Anodized Al)	Standard Cure 7 days @ 140°F	38 lbs./100% 38 lbs./100%
AMS 5516 (Stainless Steel)	Standard Cure 7 days @ 140°F	53 lbs./100% 46 lbs./100%

**Specification requirement - 20 lbs./100% cohesion, wire mesh.*

***Cleaned with Isopropyl alcohol and tested with 3M™ Adhesion Promoter AC-137 Red or Clear.

Mixing Instructions

Two-Part Sealant Cartridges:

1. Holding the cartridge, grasp the dasher rod and pull back approximately one inch.
2. Insert the ramrod into the hollow of the dasher rod, break the piston loose, and inject about 1/3 of the contents into the cartridge.

Note: *Do not inject all of catalyst in one location. Distribute evenly throughout base material.*

3. Repeat steps 1 and 2 until all the contents of the rod are emptied into the cartridge. Remove the ramrod.
4. Mix for the required number of strokes (hand mixing) or for the required amount of time (machine mixing) indicated in the kit instructions.

Mixing Instructions *(continued)*

5. When mixing is complete, remove bottom cap.
6. Pull the dasher rod back to the neck of the cartridge, grasp the cartridge firmly at the neck, unscrew the dasher rod and remove.
7. Screw the nozzle into the cartridge, insert into the extrusion gun and use as required. For hand extrusion, press the used dasher rod against the plunger to force the material from the cartridge.

Health and Safety Precaution

3M™ Aerospace Sealant AC-251 Black Class B are safe to use and apply when recommended precautions are followed. Before using this product, read and understand the Material Safety Data Sheet (MSDS), which provides information on health, physical and environmental hazards, handling precautions and first aid recommendations. An MSDS is available on request.

Storage

The shelf life of 3M™ Aerospace Sealant AC-251 Black Class B is 9 months from date of packaging, when stored at temperatures below 80°F in its original container. Pre-mixed and frozen sealant has a shelf life dependant upon the storage temperature.

Mixed 3M AC-251 Black Class B Sealants may be stored under refrigeration as follows:

15 days at -10°F
30 days at -40°F

It is important to remember that freezing, storing and thawing procedures reduce application life. In addition, frozen storage will reduce application life by varying amounts depending on the storage temperature and length of storage time. All aspects of storage, freezing and thawing should be planned carefully and it is not recommended to mix and freeze with less than 1/2-hour application time.

3M™ Aerospace Sealant AC-251 Black Class B

For Additional Information

In the U.S., call toll free 1-800-235-2376, or fax 1-800-435-3082 or 651-737-2171. For U.S. Military, call 1-866-556-5714. If you are outside of the U.S., please contact your nearest 3M office or one of the following branches:

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Technical Information

The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use

Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

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These products were manufactured under a 3M Quality Management System registered to the AS9100 standard.

3M

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