



AEROSPACE STANDARD	AS5127™/2	REV. D
	Issued 2000-09 Revised 2024-03	
	Superseding AS5127/2C	
Test Method for Aerospace Firewall Sealant Flame Penetration		

RATIONALE

Clarifying the pass/fail reporting after the withdrawal of the burner flame of any residual fuel burn off, within the sealant material, is acceptable provided it is self-extinguishing.

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Documents

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1. SCOPE

This SAE Aerospace Standard (AS) describes the test methods to determine the flammability performance and capability to control the passage of, and effects from, fire on aircraft firewall sealing compounds. The methods are based on requirements of FAR Part 25, Sections 25.865, 25.867, 25.1191, and 25.1193 and may be used to demonstrate compliance with the requirements established by FAA AC 20-135. This standard shall be used in conjunction with applicable material specifications.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS5517	Steel, Corrosion Resistant, Sheet and Strip, 18Cr - 8Ni (301), Cold Rolled, 125 ksi (862 MPa) Tensile Strength
AIR4069	Sealing of Integral Fuel Tanks
AS5127	Aerospace Standard Test Methods for Aerospace Sealants, Methods for Preparing Aerospace Sealant Test Specimens
AS8028	Powerplant Fire Detection Instruments, Thermal and Flame Contact Types (Reciprocating and Turbine Engine Powered Aircraft)
AS34501	Connectors, Receptacle, Electrical, Wall Mounting, Rear Release, Crimp Contact, AN Type

2.1.2 FAA Publications

Available from Federal Aviation Administration, 800 Independence Avenue, SW, Washington, DC 20591, Tel: 866-835-5322, www.faa.gov.

FAR 25.865	Fire Protection: Flight Controls, Engine Mounts, and Other Flight Structure
FAR 25.867	Fire Protection: Other Components
FAR 25.1191	Powerplant Fire Protection: Firewalls
FAR 25.1193	Powerplant Fire Protection: Cowling and Nacelle Skin
FAA AC 20-135	Powerplant Installation and Propulsion System Component Fire Protection Test Methods, Standards and Criteria

2.2 Definitions

2.2.1 EXPOSURE TIME

The length of time the burner flame is applied to the specimen.

2.2.2 FIREPROOF

The ability of sealant materials to prevent flame penetration from a severe fire of extended duration at least as well as steel in dimensions appropriate for their purpose. Sealant materials are demonstrated to be fireproof by meeting the requirements of this test for an exposure time of 15 minutes.

2.2.3 FIREWALL

A structure designed to prevent a hazardous quantity of air, fluid, or flame from exiting a fire zone and causing hazard to the aircraft. Firewalls shall be fireproof.

2.2.4 FIRE RESISTANT

The ability of sealant materials to prevent flame penetration from a severe fire of extended duration at least as well as aluminum alloy in dimensions appropriate for their purpose. Sealant materials are demonstrated to be fire resistant by meeting the requirements of this test for an exposure time of 5 minutes.

2.2.5 HEAT FLUX DENSITY

The rate of thermal energy in Btu/ft²/s of the flame.

3. CLASSIFICATION

Class A - Fire Resistant: 5-minute exposure time.

Class B - Fireproof: 15-minute exposure time.

4. TEST PANELS

4.1 Preparation of Test Specimen

Unless otherwise specified, test panels shall be prepared in accordance with AS5127. Where not referenced in controlling material specification, test in duplicate.

4.2 Panel Configuration

4.2.1 Unless otherwise specified by the specific aircraft configuration, fabricate test panels for Class A and B materials in accordance with Figures 1 and 2 using 301 CRES sheets conforming to AMS5517, 0.063-inch (1.6-mm) thick and commercially available stainless-steel fasteners (bolts, nuts, and washers). The backside of the panel shall be protected from exposure to the flame.

4.3 Flame Penetration Test Configuration

4.3.1 Sealed Assembly (See Figure 1)

Seal all faying surfaces, apply fillet seal (flame side only), seal holes and slots, wet install fasteners, and overcoat fastener heads (flame side only) per Figure 1. AIR4069 sections 11.1.2.4, 11.1.2.5, and 11.1.3 may be used as reference for sealant application techniques. For any variations in dimensions between AIR4069 and this specification, this specification takes precedence unless the sealant manufacturer recommends alternative minimum material coating diameters and thicknesses. Cure sealant in accordance with manufacturer's instructions and sealing processing procedures. Test sealed panel in accordance with the applicable procedure specified in Section 6.