AEROSPACE MATERIAL SPECIFICATION

AMS3695™/4

Issued 1983-04
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Adhesive Film, Epoxy-Base, High Durability
For 215 °C (420 °F) Service

RATIONALE

AMS3695/4 has been reaffirmed to comply with the SAE five year review policy.

1. SCOPE:

1.1 Form:

This specification covers an adhesive compounded from modified epoxy resins in ready-to-use film supplied in rolls or sheets, either supported by mat or by woven monofilaments or unsupported.

1.2 Application:

Primarily for bonding metal-to-metal or aluminum honeycomb sandwich assemblies for service up to 215°C (420°F). Adhesive thickness 0.005 in. (0.13 mm) is not intended for honeycomb-to-metal bonds and adhesive thickness 0.015 in. (0.38 mm) is not intended for metal-to-metal bonds.

2. APPLICABLE DOCUMENTS:

Shall be as shown in AMS 3695.

3. TECHNICAL REQUIREMENTS:

3.1 Basic Specification:

The complete requirements for procuring the adhesive described herein shall consist of this document and the latest issue of the basic specification, AMS 3695.

3.2 Material:

The adhesive shall be a modified epoxy resin film to be used with AMS 3107/4 corrosion-inhibiting primer to form an adhesive/primer system meeting the requirements specified in the basic specification, AMS 3695, and herein.

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3.2.1 Storage Life: The adhesive, stored in the original sealed package, shall meet the requirements of this specification when tested at any time up to the time and under the temperature conditions specified below:

180 days below -18°C (0°F), or
60 days at -18° to +5°C (0° to +40°F), or
10 days at 32°C ± 1 (90°F ± 2)

3.3 Properties:

Adhesive shall conform to the following requirements:

3.3.1 Uncured Adhesive: Shall meet the requirements of Table I, Tests 1 through 5.

3.3.2 Curing: Shall be as specified by the adhesive manufacturer in the preproduction test report. The adhesive shall meet all requirements when processed at the limits of cure time, cure temperature, rate of temperature rise, and cure pressure specified by the manufacturer. In addition, the preproduction test report shall also include evidence of meeting the requirements of Table I, Tests 6.1, 6.2, 7.3, 7.4, 12.1, 13.1, and 14.1, as applicable to each thickness, both before and after 10 days aging within the temperature and relative humidity limits shown in Fig. 1.

3.3.3 Cured Adhesive/Primer System: Shall meet the requirements of Table I, Tests 6 through 15.2 when applied over AMS 3107/4 corrosion-inhibiting primer and cured in accordance with 3.3.2.

TABLE I

Test Number		Property	Requirement	AMS 3695 Requirement	Test Method
1	Color		As approved on preproduction	3.3.1.1	AMS 3695, 4.5.2
2	Solids Content		99 - 100%	3.3.1.2	ASTM D3529
3	Weight		Preproduction Value ± 10%	3.3.1.3	ASTM D898
4	Thickness		Preproduction Value ± 10%	3.3.1.4	ASTM E252
5	Working Life at Temperature and Humidity shown in Fig. 1		Not less than 10 days	3.3.1.5	AMS 3695, 4.5.2
6	Tensile Shear	Average	Individual min		ASTM D3165
6.1	At 75°F ± 5	3000 psi	2800 psi		
6.2	At 420°F ± 5	--	1400 psi		
6.3	At 420°F ± 5 for 90 days	--	1400 psi		

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TABLE I (Continued)

Test Number		Property	Requirement	AMS 3695 Requirement	Test Method
6.4	At -67°F ± 2	--	2800 psi		
7	Environmental Exposure Tensile Shear after:				
7.1	Humidity, 30 days at 100% RH and 120°F ± 5		Change not greater than 5% of minimum individual, determined from Test 6.1		ASTM D1151
7.2	Salt Spray, 30 days at 95°F ± 5		Not less than 0.85 times minimum individual, determined from Test 6.1		ASTM B117
7.3	Aromatic Fuel, 7 days at 75°F ± 5		Change not greater than 5% of minimum individual, determined from Test 6.1		ASTM D3165
7.4	JP-4 Fuel, 7 days at 75°F ± 5		Change not greater than 5% of minimum individual, determined from Test 6.1		ASTM D3165
7.5	Hydraulic Fluid, Petroleum 7 days at 75°F ± 5		Change not greater than 5% of minimum individual, determined from Test 6.1		ASTM D3165
7.6	Anti-Icing Fluid, 7 days at 75°F ± 5		Change not greater than 5% of minimum individual, determined from Test 6.1		ASTM D3165
7.7	Diester Lubricating Oil, 7 days at 250°F ± 5		Change not greater than 5% of minimum individual, determined from Test 6.1		ASTM D3165
7.8	Polyol Ester Based Fluid, 30 days at 347°F ± 5		Change not greater than 5% of minimum individual, determined from Test 6.1		ASTM D3165
8	Fatigue at 75°F ± 5 and 1500 psi		10^7 cycles, min		ASTM D3166
9	Creep-Rupture-Deformation				ASTM D1780
9.1	At 75°F ± 2 under 1600 psi load for 192 hr ± 1		0.015 in., max		
9.2	At 420°F ± 2 under 800 psi load for 192 hr ± 1		0.015 in., max		

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