



AEROSPACE MATERIAL SPECIFICATION

AMS-A-8576™

REV. A

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Superseding AMS-A-8576

Adhesive, Acrylic Base, for Acrylic Plastic

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

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The original Military Specification was adopted as an SAE standard under the provisions of the SAE Technical Standards Board (TSB) Rules and Regulations (TSB 001) pertaining to accelerated adoption of government specifications and standards. TSB rules provide for (a) the publication of portions of unrevised government specifications and standards without consensus voting at the SAE Committee level, (b) the use of the existing government specification or standard format, and (c) the exclusion of any qualified product list (QPL) sections.

1. SCOPE:

1.1 Scope:

This specification covers acrylic-monomer base adhesives intended for use in bonding acrylic plastics.

1.2 Classification:

The adhesive shall be furnished in the following types, as specified (see 6.2).

Type I	- Solvent type
Type II	- Non-solvent, high viscosity
Type III	- Non-solvent, medium viscosity

2. APPLICABLE DOCUMENTS:

The following publications, of the issues in effect on the date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

2.1 Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

PPP-B-585 Box, Wood, Wirebound
PPP-B-601 Box, Wood, Cleated-Plywood
PPP-B-621 Box, Wood, Nailed and Lock-Corner
PPP-B-636 Box, Shipping, Fiberboard
PPP-B-640 Box, Fiberboard, Corrugated, Triple-Wall
PPP-C-96 Can, Metal, 28 Gage and Lighter
PPP-T-60 Tape, Packaging, Waterproof

MIL-P-5425 Plastic, Sheet, Acrylic, Heat Resistant
MIL-P-8184 Plastic Sheet, Acrylic, Modified
MIL-L-10547 Liner, Case and Sheet, Overwrap, Watervaporproof or Waterproof, Flexible

MIL-STD-105 Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129 Marking for Shipment and Storage
CODE OF FEDERAL REGULATIONS

49 CFR 100-178 Regulations for the Transportation of Explosive and Other Dangerous Articles.

2.2 National Motor Freight Traffic Association, Inc., Agent Publications:

Available from the National Motor Freight Traffic Association, Tariff Order Section, 1616 P Street, N.W., Washington, DC 20036.

National Motor Freight Classification

2.3 Uniform Classification Committee, Agent Publications:

Available from the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.

Uniform Freight Classification Rules

2.4 ASTM Publications:

Available from ASTM, 100 Barr Harbor, West Conshohocken, PA 19428-2959.

ASTM D1545 Viscosity of Transparent Liquids by Bubble Time Method

ASTM D1747 Refractive Index of Viscous Materials

3. REQUIREMENTS:

3.1 Materials:

The adhesive shall consist of a containerized kit with individually packaged components described herein.

3.1.1 Base resin:

3.1.1.1 Type I: Type I shall consist of methyl-methacrylate monomer with a suitable polymerization retarder and a suitable solvent.

3.1.1.2 Types II and III: Types II and III shall consist of a methyl-methacrylate monomer with a suitable polymerization retarder only.

3.1.2 Promoter: Type II adhesive kits shall contain a suitable polymerization promoter compound. The promoter shall be added to the base resin and thoroughly mixed, prior to adding the catalyst.

3.1.3 Catalyst: The catalyst shall be a suitable compound for all types furnished in sufficient quantity to counteract the polymerization retarder and complete the base resin polymerization.

3.2 Appearance:

The base resin shall be colorless and transparent. It shall not be darker than the standard specified in 4.5.1.1.

3.3 Visual examination of bond:

The bonded face joint, when prepared as specified in 4.5.2 shall show no cracking, internal defects, loose area, or air bubbles in more than 10 percent of the bonded area.

3.4 Mechanical properties:

The bonded joints shall meet the requirements of table I when tested in accordance with the applicable paragraphs of Section 4.

3.5 Physical properties of base resin:

The base resin shall meet the requirements of table II when tested in accordance with the applicable paragraph specified in Section 4.

Table I. Mechanical properties.

Property	Requirement <u>1</u> /			
	Type I		Types II and III	
	Avg Value <u>2</u> /	Ind. Value Min.	Avg Value <u>2</u> /	Ind. Value Min.
Tensile strength of bonded butt joints, psi min:				
Standard conditions (4.4)	1800	1500	2700	2300
Heat treat 70°C (158°F) for:				
a.48 hours, tested at:				
Standard conditions (4.4)	5000	4000	--	--
70°C (158°F)	2400	2000	--	--
b.24 hours, tested at:				
Standard conditions (4.4)	--	--	3100	2300
70°C (158°F)	--	--	2700	2000

1/ A "--" indicates not applicable to that type.

2/ Average value of ten specimens.

Table II. Physical properties of base resin.

Property	Requirement			Test para.
	Type I	Type II	Type III	
As received				
Index of refraction @ 25°C (77°F)	1.413 to 1.419	1.442 to 1.445	1.439 to 1.443	4.5.4
Specific gravity @ 25°C (77°F)	1.165 to 1.185	1.03 to 1.04	1.02 to 1.04	4.5.5
Viscosity @ 25°C (77°F), approx. stokes	1.0 max	17.6 to 36.2	13.2 to 27.6	4.5.6
After heat stability				
Specific gravity @ 25°C (77°F)	1.16 to 1.18	---	---	4.5.5
Viscosity @ 25°C (77°F), approx. stokes	4.0 max	17.6 to 36.2	13.2 to 27.6	4.5.6