1 SCOPE

a. This specification establishes the requirements for epoxy–amine adhesives used for nonstructural bonding of plastics, metals, and a wide variety of other materials.

b. This specification requires Qualified Products.

2 CLASSIFICATION

a. This specification consists of the following types:

Type I – OBSOLETE

Type II – Asbestos free two–component adhesive

When no type is specified, Type II requirements shall apply.

b. Cure characteristics are specified by grades as follows:

Grade 1 – Room–temperature–curing adhesive

Grade 2 – Moderate–temperature–curing adhesive

Grade 3 – High–temperature–curing adhesive

3 REFERENCES

The issue of the following references in effect on the date of invitation for bid shall form a part of this specification to the extent indicated herein.

ASTM D 2471	–	Gel Time and Peak Exothermic Temperature of Reacting Thermosetting Resins, Test for
BAC5514–589	–	Application of Corrosion Inhibiting Adhesive Primer
BAC5555	–	Phosphoric Acid Anodizing of Aluminum for Structural Bonding
BSS7202	–	Shear, Lap, Adhesive Bond
OSHA 1910.1200	–	Hazard Communication Standard

4 DEFINITIONS

Not applicable to this specification.

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5 MATERIAL REQUIREMENTS

5.1 STORAGE AND SHELF LIFE

The adhesive shall meet the requirements of Table I for 1 year from date of acceptance when stored at a temperature below 80 F in the unopened original containers.

TABLE I PHYSICAL PROPERTIES

Property	Grade 1	Grade 2	Grade 3	Test Method (Section)
Pot Life at 75 ± 5 F, minimum, all types	60 minutes	30 minutes	4 hours	8.1
Cure Cycle, minimum to develop listed shear strengths for all types	24 hours at 75 ± 5 F	2 hours at 200 ± 5 F	30 minutes at 240 F plus 90 minutes at 350 F	8.2
Lap Shear, minimum average at 75 ± 5 F	1000 psi	1050 psi	1100 psi	8.2
Lap Shear, minimum average at 300 ± 5 F	–	–	1100 psi	8.2

5.2 MIXING AND HANDLING CHARACTERISTICS

a. The freshly opened container of adhesive shall be smooth and free of lumps.

b. The two components of the adhesive shall be of contrasting colors, suitable for use as a guide to thorough blending.

c. The two components shall blend together easily to form a homogeneous adhesive which can be spread easily with a spatula.

6 QUALIFICATION

a. All requests for qualification shall be directed to a Materiel department of The Boeing Company. Materiel will forward the request to the appropriate Engineering department for evaluation. After receiving written authorization from Materiel, the manufacturer shall submit the data and samples required for qualification purposes.

b. No changes in approved product formulation, raw materials, basic methods of manufacture, or plant site shall be made without notification and prior approval in writing. Requalification of the revised material may be required and a revised supplier designation may be requested.

c. Qualified products shall be listed in the QPL.

d. Production materials shall be capable of meeting all qualification requirements.

6 QUALIFICATION (Continued)

e. All suppliers shall have test facilities required to test in accordance with this specification or use certified commercial test laboratories with capability to test in accordance with this specification.

f. Prior to submitting a material for qualification to this specification, the supplier shall provide its Material Safety Data Sheet, and if requested the chemical formulation of the material. Agreements for non–disclosure and control of proprietary information shall be considered and executed as appropriate. The information provided shall be submitted to the appropriate Boeing Safety, Health, and Environmental Affairs Organization to evaluate it, determine whether it is adequate or whether additional information is necessary, and identify and document appropriate precautions for the material's use.

7 QUALITY CONTROL

Materials controlled by this specification are subject to inspection at the supplier's facilities by authorized representatives of The Boeing Company to ensure conformance to this specification.

7.1 SUPPLIER QUALITY CONTROL

Each production shipment shall be accompanied by a test report giving the actual data for each batch in the shipment showing that the adhesive in each batch satisfies the lap shear strength requirements of Table I.

7.2 PURCHASER QUALITY CONTROL

Purchaser Quality Control shall review all supplier test data submitted with each shipment and perform any additional inspection or testing necessary to ensure that the production material meets all the requirements specified herein.

8 MATERIAL TEST METHODS

8.1 POT LIFE

Measure the pot life time according to ASTM D 2471 using a 50 gram sample blended from components conditioned for a minimum of 4 hours at 25 ± 1 C (77 ± 2 F).

8.2 SHEAR STRENGTH

a. Use 2024–T3 aluminum specimens in accordance with BSS7202. Phosphoric acid anodize (BAC5555 for Boeing internal use) followed by priming with 0.15 to 0.40 mil of American Cyanamid BR–127 primer (BMS5–89 in accordance with BAC5514–589 for Boeing internal use).

b. Weigh out the adhesive and thoroughly blend the adhesive in accordance with the specified mix ratios. The two components of the adhesive shall be vigorously and thoroughly blended for 5 minutes or until a uniform color has definitely been achieved, prior to application.

c. Apply one coat of the blended adhesive to both faying surfaces and close the assembly.

8.2 SHEAR STRENGTH (Continued)

d. Apply 1 to 2 psi pressure and cure in accordance with Table I. Thickness of the cured bondline shall be 0.004 ± 0.002 inch.

e. Test in accordance with BSS7202 Type I and the following test criteria. All immersion test specimens shall be tested within 2 hours after removal from test fluid.

No. of Specimens	Immersion Condition	Test Temperature
5	None	75 ± 5 F
5	7 days immersion TT–S–735 Type III	75 ± 5 F
5	7 days immersion Jet A (ASTM D 1655)	75 ± 5 F
5	None	300 ± 5 F [1]

[1] Applicable only to Grade 3 adhesives.

9 MATERIAL IDENTIFICATION

Mark each unit container durably and legibly with the following information:

a. BMS5–25 (including latest revision letter) Type and Grade

b. Supplier's name and product designation

c. Date of manufacture

d. Batch number

10 PACKAGING AND MARKING

a. Packaging shall be such as to ensure safe delivery.

b. Mark each shipping container durably and legibly with the following information:

(1) Items a. through d. of Section 9

(2) Purchase order number

(3) Quantity

c. Labeling shall conform to OSHA 1910.1200, Hazard Communication Standard.