

INCH - POUND

MIL-A-46864B (MI)
28 March 1991
SUPERSEDING
MIL-A-46864A
20 December 1983

MILITARY SPECIFICATION

ADHESIVE, EPOXY, MODIFIED, FLEXIBLE, TWO COMPONENT

This specification is approved for use by the U.S. Army Missile Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification establishes the requirements for a two component modified epoxy adhesive system capable of curing at room temperature.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, U.S. Army Missile Command, ATTN: AMSMI-RD-SE-TD-ST, Redstone Arsenal, AL 35898-5270 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 8040

DISTRIBUTION STATEMENT A.
unlimited.

Approved for public release; distribution is

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SPECIFICATIONS

FEDERAL

L-P-512	Plastic Sheet (Sheeting); Polyethylene
O-S-1926	Sodium Chloride, Technical
QQ-A-250/5	Aluminum Alloy Alclad 2024, Plate and Sheet
PPP-B-601	Boxes, Wood, Cleated-Plywood
PPP-B-621	Boxes, Wood, Nailed and Lock-Corner
PPP-B-636	Boxes, Shipping, Fiberboard
PPP-C-96	Can, Metal, 28 Gage and Lighter

MILITARY

MIL-P-116	Preservation, Methods of
MIL-H-5606	Hydraulic Fluid, Petroleum Base: Aircraft, Missile, and Ordnance
MIL-T-5624	Turbine Fuel, Aviation, Grades JP-4, JP-5 and JP-5/JP-8 ST
MIL-S-8516	Sealing Compound, Polysulfide Rubber, Electric Connectors and Electric Systems, Chemically Cured
MIL-I-23053/1	Insulation Sleeving, Electrical, Heat Shrinkable, Polychloroprene, Flexible
MIL-I-23053/5	Insulation Sleeving, Electrical, Heat Shrinkable, Polyolefin, Flexible, Crosslinked
MIL-P-38714	Sealant Cartridge for Two Component Materials

STANDARDS

MILITARY

MIL-STD-129	Marking for Shipment and Storage
MIL-STD-1190	Minimum Guidelines for Level C Preservation, Packing and Marking

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(Unless otherwise indicated, copies of the federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Ave., Philadelphia, PA 19111-5094.)

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 149	-	Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Standard Test Method for
ASTM D 150	-	A-C Loss Characteristics and Permittivity (Dielectric Constant) of Solid Electrical Insulating Materials, Standard Test Methods for
ASTM D 740	-	Methyl Ethyl Ketone, Standard Specification for
ASTM D 903	-	Peel or Stripping Strength of Adhesive Bonds, Standard Test Method for
ASTM D 1002	-	Strength Properties of Adhesives in Shear by Tension Loading (Metal-to-Metal) Standard Test Method for
ASTM D 2651	-	Preparation of Metal Surfaces for Adhesive Bonding, Practice for

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the 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.

3. REQUIREMENTS

3.1 First article. When specified (see 6.2) a sample shall be subjected to first article inspection (see 6.3) in accordance with 4.4.

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3.2 Data. Unless otherwise specified by the procuring activity, (see 6.2) no data, other than test reports submitted with the first article sample is required by this specification.

3.3 Materials. The adhesive system shall consist of a modified epoxy base and a curing agent.

3.4 Characteristics and performance.

3.4.1 Properties before curing.

3.4.1.1 Flow. When tested as specified in 4.8.1, the measured flow of the mixed compound shall be not greater than 0.5 inch.

3.4.1.2 Application time. The application time (1200 Pascal seconds [Pa·s]) of the mixed adhesive when measured in accordance with 4.8.2 shall be not less than 1 hour.

3.4.2 Properties after cure. Properties after cure shall be as specified in table I. The cured adhesive shall maintain functional integrity from -55° Celsius (C) to 177°C.

3.4.3 Storage properties.

3.4.3.1 Accelerated storage. After the accelerated storage test specified in 4.8.11, the adhesive system shall conform to 3.4.1.1 and the "as cured" peel strength requirements of table I.

3.4.3.2 Shelf life. The manufacturer shall certify that the adhesive system, after storage at 18 to 35°C for a period of not less than 8 months, conforms to all the requirements of this specification. The certification shall accompany the first article sample if specified in the contract or purchase order (see 6.2).

3.5 Workmanship. The adhesive and curing agent shall be free of dirt, foreign material or other contaminants and shall be so formulated to meet the requirements of this specification.

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TABLE I. Properties after cure.

Property	Requirement	Test Paragraph
Peel strength, lbs per inch width, min. <u>1/</u>		
As cured	14	4.8.3
After heat stability	14	4.8.4
After thermal cycle	14	4.8.5
After fluid resistance	10	4.8.6
Tensile shear, psi, min.	1500	4.8.7
Dielectric constant, max.	5.5	4.8.8
Dielectric strength, volts per mil, min.	500	4.8.9
Corrosion	No pitting or blackening of test wire	4.8.10

1/ Values may be less than the stated minimum when cohesive failure occurs.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of

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known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.4)
- b. Quality conformance inspection (see 4.5).

4.3 Inspection condition. Unless otherwise specified, all inspections shall be performed in accordance with 4.6.3.

4.4 First article inspection. Unless otherwise specified in the contract or purchase order (see 6.2) a first article sample shall be subjected to first article inspection. The first article sample shall be submitted in containers as specified in section 5. The total weight of the sample shall be 2 pounds and must be furnished in specified containers that have been processed through the same facilities intended for delivery of the entire contract or purchase order.

4.4.1 Instruction sheet. As specified in the contract or order (see 6.2) the manufacturer shall submit with the first article sample instruction sheets detailing the following:

- a. Complete mixing instructions.
- b. Complete instructions for preparation of surfaces to be bonded. When a primer is required, the manufacturer shall furnish the primer with the first article.

4.5 Quality conformance inspection. Quality conformance inspections shall be as specified in table II.

TABLE II. Quality conformance inspection.

Inspection	Requirement paragraph	Test paragraph
Flow	3.4.1.1	4.8.1
Application time	3.4.1.2	4.8.2
Peel strength	3.4.3.1	4.8.3
Tensile shear (psi minimum)	3.4.3.1	4.8.7
Dielectric constant (maximum)	3.4.3.1	4.8.8
Dielectric strength (volts per mil, min)	3.4.3.1	4.8.9
Corrosion	3.4.3.1	4.8.10
Workmanship	3.5	4.8.12

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4.6 Quality conformance.

4.6.1 Lot formation. Unless otherwise specified, a lot shall consist of all the adhesive of the same batch or production run that forms a part of one contract and is submitted for inspection at one time.

4.6.2 Sampling.

4.6.2.1 For physical property tests. A number of containers, whose total mixed contents when added together weigh approximately 0.5 pounds shall be randomly selected from each lot offered for inspection. The sample shall be inspected and tested in accordance with 4.6.3.1.

4.6.2.2 Preparation for delivery. Just prior to closure a quantity of shipping containers fully prepared for delivery shall be selected at random from each lot in accordance with table III. The lot size for this examination shall be the number of shipping containers.

4.6.3 Inspections.

4.6.3.1 Physical properties. Two specimens for each test shall be prepared from the containers selected in 4.6.2.1. The specimens shall be tested to the requirements of table IV. In addition, the procuring activity may specify any other test herein, when considered necessary to ensure conformance to the specification. Nonconformance of any specimen to the requirements in table IV shall be cause to reject the lot represented by the sample.

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TABLE III. Sampling plans

Lot Size	Sample Size
2 to 8	*
9 to 15	13
16 to 25	13
26 to 50	13
51 to 90	13
91 to 150	13
151 to 280	20
281 to 500	29
501 to 1200	34
1201 to 3200	42
3201 to 10,000	50
10,001 to 35,000	60
35,001 to 150,000	74
150,001 to 500,000	90
500,001 and over	102

Accept on ZERO and reject on 1 or more
 * The entire lot must be inspected

4.6.3.2 Preparation for delivery. The containers selected in 4.6.2.2 shall be visually examined to the requirements of table V and all other applicable requirements to determine conformance to section 5 of this specification. The defective level acceptable for this examination shall be zero. In addition, shipping containers fully prepared for delivery shall be examined for closure defects.

TABLE IV. Physical property inspection

Property	Test paragraph	Specimens tested <u>1/</u>
Flow	4.8.1	2
Application time	4.8.2	2
Peel strength, aluminum to polyethylene; as cured only	4.8.3	2

1/ Results shall be reported as pass or fail

4.7 Test conditions.

4.7.1 Standard conditions. Unless otherwise specified herein, all mixing and tests shall be conducted at $25 \pm 1^\circ\text{C}$ and 50 ± 5 percent relative humidity.

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4.7.2 Mixing. All mixing operations shall be in accordance with the procedures outlined in the manufacture's instruction sheet (see 4.4.1).

4.7.3 Curing procedures. All laboratory specimens shall be cured as follows (see 6.1.1):

2 hours \pm 5 minutes @ standard conditions (4.7.1)

2 hours \pm 5 minutes @ 107 \pm 1°C

24 hours \pm 1 hour @ standard conditions

TABLE V. Examination of preparation for delivery.

Examination	Defect
Packaging	Wrong size containers or kits Material or construction not as specified Components damaged or missing Intermediate package closure incomplete or damaged Adhesive and curing agent not properly separated Not level of packaging required by contract
Packing	Not level as required by contract or order Any non-conforming component, incomplete closures Bulged or damaged containers
Marking	Omitted, incomplete, not in accordance with specification, contract or order

4.8 Test methods.

4.8.1 Flow. A flow test jig conforming to figure 1 of MIL-S-8516 shall be placed on a horizontal surface with the front face upward and the plunger depressed to the limit of its travel. The adhesive and curing agent shall be thoroughly mixed for 5 minutes, then transferred into the cavity of the test apparatus. Any excess adhesive shall be removed by leveling with a straight edge. Within 10 seconds after removal of the excess adhesive, the apparatus shall be placed on end and the plunger advanced to the limit of its travel. The apparatus shall remain on end for 10 minutes. Conformance to 3.4.1.1 shall then be noted.

4.8.2 Application time (pot life). Application time measurements shall be made using a Brookfield RVF Viscometer equipped with a #6 spindle, or equivalent, operated at 10 revolutions per minute (rpm).

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4.8.2.1 Procedure. The adhesive shall be mixed and transferred to a standard 0.5 pint can 2.75 inches in diameter. The retaining flange of the can may be removed. The volume of mixed adhesive used shall be sufficient to allow immersion of the spindle to its depth mark. The viscosity shall be determined after not less than 1 hour elapsed time. The readings shall be taken after five revolutions of the spindle. The viscosity shall be in accordance with 3.4.1.2.

4.8.3 Peel strength.

4.8.3.1 Specimen preparation. The identification and number of adherents needed for peel strength shall be as noted in table VI.

TABLE VI. Peel strength adherents.

Adherent	Reference	Size, inch	Number required
Aluminum alloy panel	QQ-A-250/5 clad, 2024	1 by 4 by 0.063	12
Polyethylene strip <u>1/</u>	L-P-512	1 by 6 by 0.010	12
Polychloroprene sleeving	MIL-I-23053/1	1.25 dia by 8 <u>2/</u>	5
Polyolefin sleeving <u>1/</u>	MIL-I-23053/5 Class 1	1.50 dia by 1.5 <u>2/</u>	15

1/ The surface of the polyethylene strip, and the inner area of each polyolefin sleeving shall be lightly abraded with number 320 emery cloth, or equivalent and wiped dry with a clean cloth wet with methyl ethyl ketone conforming to ASTM D 740.

2/ The diameter of the sleeving is the "as supplied diameter".

4.8.3.1.1 Preparation of specimen "A". One aluminum panel, shall be cleaned in accordance with ASTM D 2651, Method A and evenly coated with adhesive freshly mixed in accordance with the manufacturer's recommendations (see 4.4.1). The coating thickness shall be 0.010 ± 0.001 inch after cure (wire spacers 10 mils in diameter may be used if desired). A strip of polyethylene shall be placed on the coated panel and positioned in a manner that allows a 2-inch plastic overhang at one end. The specimen shall be cured as specified in 4.7.3. A total of 12 "A" specimens shall be prepared in this manner. Two specimens shall be tested "as cured". The remaining specimens shall be used for heat stability, thermocycle stability and fluid resistance tests.

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4.8.3.1.2 Preparation of specimen "B". The polychloroprene sleeving shall be heat shrunk (see 6.1.2) onto a 1-inch diameter steel mandrel, 12 inches long. The "recovered" sleeving shall be cooled to standard conditions and the outer surface abraded as noted in footnote 1/ of table VI. Freshly mixed adhesive shall be evenly applied to the abraded surface to a thickness of 0.020 inches, except that a 0.75 inch wide by 8-inch long section shall be left uncoated. Three pieces of the polyolefin sleeving shall be slipped over the polychloroprene sleeving and evenly spaced on the coated area. The polyolefin shall then be heat shrunk (see 6.1.2). The assembly shall be cured as specified in 4.7.3., except that the 24 hour conditioning period at standard conditions may be omitted. After curing, the sleeving assembly shall be removed from the mandrel by carefully slitting the sleeving along one edge of the uncoated area. The cut sleeving shall then be laid flat and a 1- x 3-inch section cut from each of the three double layers of sleeving. The 0.75 inch uncoated section shall be at one end of each strip. Five sleeving assemblies shall be prepared as described above to yield 15 "B" specimens. Three specimens shall be used for thermocycle stability and fluid resistance.

4.8.3.2 Test procedure. All specimens shall be tested in accordance with ASTM D 903. Results shall be reported as the average of all "A" and "B" specimens.

4.8.4 Heat stability. Two "A" specimens from 4.8.3.1 shall be exposed in an air circulating oven at $149 \pm 1^\circ\text{C}$ for 17 hours \pm 15 minutes, cooled to standard conditions 1 to 4 hours, then tested as specified in 4.8.3.2. Each specimen shall meet or be greater than the requirement in table 1.

4.8.5 Thermal cycle stability. Two "A" and three "B" specimens from 4.8.3.1 shall be thermally cycled as follows:

45 minutes @ $177 \pm 2^\circ\text{C}$
 1 minute in tap water @ $24 \pm 1^\circ\text{C}$
 15 minutes in a cold chamber @ $-53.9 \pm 1^\circ\text{C}$
 1 minute in water @ $24 \pm 1^\circ\text{C}$

The above cycle shall be repeated a total of eight times. Specimen transfer from a temperature extreme to water shall be accomplished as quickly as possible. After completion of the eight cycles, the specimens shall be wiped dry and tested within 24 hours. The average values shall be in conformance to the requirements of table I.

4.8.6 Fluid resistance. Two "A" specimens and two "B" specimens shall be totally immersed in each of the fluids listed below.

JP-4 fuel (MIL-T-5624)
 Hydraulic fuel (MIL-H-5606)
 5% Sodium chloride in water (O-S-1926)

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Immersion time shall be 24 ± 1 hour at standard conditions. After immersion, the specimens shall be lightly wiped and air dried for 30 to 60 minutes. The specimens shall be tested in accordance with 4.8.3.2 and average values shall be in conformance with the requirements of table I.

4.8.7 Tensile shear. Shear by tensile loading shall be determined on five aluminum to aluminum (QQ-A-250/5, 0.063 inch thickness) specimens overlapped 0.500 ± 0.010 inches with a bond line thickness of 0.0015 ± 0.0005 inch. Preparation of the specimens and testing shall be in accordance with ASTM D 1002.

4.8.8 Dielectric constant. Dielectric constant shall be determined at standard conditions in accordance with ASTM D 150. The test frequency shall be 1000 Megahertz (Mhz). Three void free films 4 x 6 inches and 0.010 to 0.015 inches thick shall be prepared and tested.

4.8.9 Dielectric strength. Dielectric strength determinations shall be made at standard conditions in accordance with ASTM D 149. Tests shall be conducted under oil using the short time procedure. Three specimens shall be tested.

4.8.10 Corrosion. Freshly mixed adhesive shall be used to encapsulate a 3-inch length of clean, bare, brightly buffed copper wire. The encapsulated wire shall be exposed in an air circulating oven for 16 hours at $250 \pm 1^\circ\text{C}$. The adhesive shall then be carefully stripped away, and the wire examined for corrosion. There shall be no pitting or blackening of the wire.

4.8.11 Accelerated storage. The unmixed adhesive shall be stored in an unopened container for 7 days at $49 \pm 2^\circ\text{C}$ then cooled to standard conditions for 24 ± 1 hour and tested for conformance to 3.4.3.1.

4.8.12 Workmanship. The materials used in the composition of this adhesive shall be of a quality to assure a well formulated product. All tests shall be conducted as specified in the contract or order (see 6.2).

4.7 Inspection of packaging. Except when commercial packaging is specified, the sampling and inspection of the preservation and interior package marking shall be in accordance with groups A and B quality conformance inspection requirements of MIL-P-116. The sampling and inspection of the packing for shipment and storage shall be in accordance with the quality assurance provisions of the applicable container specification shown in section 5. The inspection of marking for shipment and storage shall be in accordance with MIL-STD-129. The inspection of commercial packaging shall be as specified in the contract (see 6.2).

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5. PACKAGING

5.1 Preservation. Packaging, packing, unitization and marking shall be Level A or B (see 6.2).

5.1.1 Level A or B.

5.1.1.1 Cans. The adhesive and curing agent shall be packaged in 1-pint, 1-quart, or 1-gallon containers conforming to Type V, Class 4, oblong, of PPP-C-96.

5.1.1.2 Sectional cartridges. Pre-measured parts of the adhesive and curing agent shall be packaged in sectional type cartridges conforming to Type I or II, size A or B of MIL-P-38714. Each cartridge shall be individually packaged in snug-fitting intermediate containers as specified in MIL-P-38714.

5.1.1.3 Mixer packages. Very small quantities of adhesive and curing agent (2.8 gram when mixed) shall be packaged in individual containers as part of a kit. The kit shall consist of 10 mixer packages for a total of 28 grams.

5.2 Packing.

5.2.1 Level A. The packaged adhesive shall be packed in containers conforming to PPP-B-601 overseas type, or PPP-B-621, Class 2 as applicable.

5.2.2 Level B The packaged adhesive shall be packed in fiberboard containers conforming to PPP-B-636, Class weather resistant.

5.3 Marking.

5.3.1 Level A or B. Marking shall be in accordance with MIL-STD-129. Additional marking shall include, but not be limited to the following:

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Date of manufacture
Date of packaging
Manufacturer's name, address and product designation
Contract No.
National Stock Number

5.3.2 Instruction sheet. The manufacturer shall include an instruction sheet in each unit package. The instruction sheet shall include all information pertinent to the use of the adhesive system and must include the following:

Mixing instructions
Curing procedures at room and elevated temperatures
Shelf life expectations
Surface preparation of adherents

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6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. This adhesive is intended for use as a room temperature curing, flexible adhesive and sealant system for heat shrinkable sleeving and molded components. This two part system may also be employed in areas where bonding to rubber, metals, and plastic or combinations thereof is required. Each potential application shall be properly investigated before using the adhesive.

6.1.1 Curing conditions. The curing cycle specified in paragraph 4.7.3 is for laboratory preparation. For field use, the following may be used:

<u>Cure Temp °C</u>	<u>Time to Cure (hours)</u>
25	96
82	3
93	1
121	45 minutes

6.1.2 Shrinkdown. Recovery for heat shrinkable sleeving in paragraph 4.8.3.1.2 can be accomplished by heating the sleeving to temperatures in excess of 175°C. The heat shall be continued until shrinkdown occurs. The sleeving may be heated by a suitable hot air thermal gun or in a circulating air oven.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of the specification.
- b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
- c. Whether first article sample and shelf life certification is required (see 3.1 and 3.4.2.2).
- d. Whether additional test reports other than first article are required (see 3.2).
- e. Characteristics and performance (see 3.4).
- f. Quality conformance inspection results (see 4.4).
- g. Whether tests have been conducted as specified in the contract or order (see 4.8.12)

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h. Applicable level of preservation, packaging and marking.

6.3 First article. When first article inspection is required, the contracting officer should provide specific guidance to offerers whether the item(s) should be a first article sample, a first production item, or a number of items to be tested as specified in 4.4. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results and disposition of first articles. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

6.4 Metrication. Metric equivalents in accordance with FED-STD-376 are acceptable for use in this specification.

6.5 Subject term (keyword) listing.

Bonding compound
Glue
Sealant

6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodian:
Army-MI

Preparing Activity:
Army-MI

Civilian Coordinating Activity:
GSA-FSS

Project Number 8040-A159

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

RECOMMEND A CHANGE	1. DOCUMENT NUMBER MIL-A-46864B(MI)	2. DOCUMENT DATE (YYMMDD) 28 March 1991
3. DOCUMENT TITLE ADHESIVE, EPOXY, MIDIFIED, FLEXIBLE, TWO COMPONENT		
4. NATURE OF CHANGE (<i>Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.</i>)		
5. REASON FOR RECOMMENDATION		
6. SUBMITTER		
a. NAME (<i>Last, First, Middle Initial</i>)	b. ORGANIZATION	
c. ADDRESS (<i>include Zip Code</i>)	d. TELEPHONE (<i>include Area Code</i>) (1) Commercial (2) AUTOVON (<i>If applicable</i>)	7. DATE SUBMITTED (YYMMDD)
8. PREPARING ACTIVITY		
a. NAME COMMANDER U.S. ARMY MISSILE COMMAND	b. TELEPHONE (<i>include Area Code</i>) (1) Commercial (2) AUTOVON (205) 876-6980 746-6980	
c. ADDRESS (<i>include Zip Code</i>) ATTN: AMSMI-RD-SE-TD-ST REDSTONE ARSENAL, AL 35898-5270	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	