INCH-POUND
A - A - 50272
28 October 1997

COMMERCIAL ITEM DESCRIPTION

# ADHESIVES, EPOXY

The General Services Administration has authorized the use of this Commercial Item Description as a replacement for MIL-A-47280 which is canceled.

1. Scope. This Commercial Item Description (CID) covers two types of room temperature curing, epoxy adhesives. These epoxy adhesives are intended for bonding metal to metal, metal to plastic, plastic to plastic, and electronic components to boards or metal surfaces where excellent physical and electrical properties are required.

2. Classification. Each adhesive shall consist of a two-component system containing an epoxy resin and an activator material.

2.1 Types. The adhesives shall be of the following types as specified:

Type I - High viscosity

Type II - Low viscosity

2.2 Operating temperature range. The mixed and cured epoxy adhesives shall have a useful operating range of minus 60 degrees C (minus 76 degrees F) to plus 150 degrees C ( plus 302 degrees F).

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any other data which may improve this document should be sent by letter to: Commander, US Army ARDEC, AMSTA-AR-EDE-S Picatinny Arsenal, NJ 07806 -5000 .

AMSC - N/A FSC - 8040

3. Salient characteristics.

3.1 Uncured physical properties.

3.1.1 Shelf Life. The shelf life of the resin and activator, in unopened containers, shall be a minimum of one year from date of manufacture when stored at a temperature less than 27 degrees C (80.6 degrees F).

3.1.2 Pot life. The pot life of the adhesive, when properly mixed, shall (at 25 degrees C (77 degrees F)) be thirty minutes.

3.1.3 Cure Time. The cure time of the adhesive, when properly mixed, shall be as follows:

| | |
|---|---|
| at 25 degrees C (77 degrees F)): | 72 hours. |
| at 65 degrees C (149 degrees F)): | 4 hours. |
| at 100 degrees C (212 degrees F)): | 2 hours. |

3.1.4 Viscosity. The viscosity of the resin shall not exceed 11,000 centipoises (cps) for type I, and 600 cps for type II at 23 plus or minus 2 degrees C (73.5 plus or minus 3.6 degrees F) when tested in accordance with ASTM D1084. A Brookfield viscometer, model RVF (or equivalent equipment) shall be used (with a number 4 spindle at 4 revolutions per minute (RPM) for Type I epoxy, and a number 2 spindle at 20 rpm for Type II epoxy).

3.1.5 Appearance. The adhesive, in a mixed condition, shall be translucent and colorless when visually inspected.

3.1.6 Contamination. The resin and activator shall be free of dirt, foreign material, or other contaminants when visually inspected.

3.2 Cured physical/mechanical properties. Samples prepared and cured in accordance with the manufacturer's directions, when tested at 25 degrees C (77 degrees F), shall have the properties listed below:

3.2.1 Specific gravity. The specific gravity shall be 1.2, when measured in accordance with ASTM D792.

3.2.2 Tensile strength. The tensile strength shall be 8,300 pounds per square inch, when measured in accordance with ASTM D638.

3.2.3 Compressive strength. The compressive strength shall be 14,100 pounds per square inch, when measured in accordance with ASTM D695.

3.2.4 Flexure strength. The flexure strength shall be 13,900 pounds per square inch, when measured in accordance with ASTM D1184.

3.2.5 Tensile shear strength. The tensile shear strength (aluminum test samples) shall be 1,600 pounds per square inch at room temperature, when measured in accordance with ASTM D1002.

3.2.6 Elongation. The elongation shall be 3.25 percent, when measured in accordance with ASTM D638.

3.2.7 Density. The density shall be 0.043 pounds per cubic inch, when measured in accordance with ASTM D792.

3.2.8 Hardness. The hardness shall be Shore D 80 plus or minus 5, when measured in accordance with ASTM D2583.

3.3 Electrical properties. Samples prepared and cured in accordance with the manufacturer's directions shall have the properties listed below:

3.3.1 Dielectric constant. The dielectric constant shall be 4.3 at 1,000 cycles, when measured at 25 degrees C (77 degrees F) in accordance with ASTM D1304.

3.3.2 Dielectric strength. The dielectric strength shall be 370 volts per Mil., when measured at 25 degrees C (77 degrees F) in accordance with ASTM D1304.

3.3.3 Volume resistivity. When measured in accordance with ASTM D257, The volume resistivity shall be as follows:

at 25 degrees C (77 degrees F) ohm - cm: $5.9 \times 10^{13}$
at 100 degrees C (212 degrees F) ohm - cm: $5.0 \times 10^{9}$

4. Quality assurance provisions.

4.1 Contractor certification. The contractor shall certify and maintain substantiating evidence that the product offered meets the salient characteristics of this Commercial Item Description and that the product conforms to the producer's own drawings, specifications, standards, and quality assurance practices. Items with known defects shall not be submitted for Government acceptance. The Government reserves the right to require proof of such conformance prior to the first delivery and thereafter as may be otherwise provided for under the provisions of the contract.

4.2 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as specified in the contract or purchase order, the supplier may use his own or any other facility 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 the CID where such inspections are deemed necessary to assure supplies and/or services conform to the prescribed requirements.

4.3 Market acceptability. The items offered must have been sold to the Government or commercial market and reflect demonstrated reliability and serviceability. Questions regarding market acceptability criteria should be directed to:

Commander
US Army ARDEC
ATTN: AMSTA-AR-EDE-S
Picatinny Arsenal, NJ 07806-5000
Phone (201) 724 - 6652
FAX: (201) 724 - 5288

5. Preservation, packaging, packing, labeling and marking. Preservation, packaging, packing, labeling, and marking shall be in accordance with ASTM D3951, or as specified in the contract or purchase order.

6. Notes. This section contains information of a general or explanatory nature that may be helpful, but is not mandatory unless otherwise specified in the contract or purchase order.

6.1 Source of documents.

6.1.1 ASTM standards are available from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

6.2 Ordering data. Acquisition documents shall specify the following:

a. Title, number, and date of this CID.
b. Type I or Type II epoxy.
c. Special preservation, packaging, packing, labeling, or marking requirements.
d. Quantity and size of containers.
e. Precautionary handling marking requirements.

6.3 Material Safety Data Sheets. Certain of the unreacted monomers and catalysts (components of the epoxy resin/ activator materials) are known to be able to cause some toxic effects, if no precautions are taken. Because of the range of possible effects among the chemicals involved, users should obtain Material Safety Data Sheets from their suppliers to review specific precautions applicable to the systems involved.

MILITARY INTEREST:

Custodians:
Army-AR
Navy-SH

PREPARING ACTIVITY: Army-AR

Agent: None

Project No.: 8040-0651

Review activities:
Army-ER, ME
Navy-AS

# 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 documents(s) or to amend contractual requirements.

| I RECOMMEND A CHANGE: | 1. DOCUMENT NUMBER | 2. DOCUMENT DATE (YYMMDD) |
|---|---|---|
| | A-A-50272 | 971028 |

3. DOCUMENT TITLE

Adhesives, Epoxy

4. NATURE OF CHANGE (*Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.*)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

| a. NAME (*Last, First, Middle Initial*) | b. ORGANIZATION | |
|---|---|---|
| c. ADDRESS (*Include Zip Code*) | d. TELEPHONE (*Include Area Code*)<br>(1) Commercial<br>(2) AUTOVON (*if applicable*) | 7. DATE SUBMITTED (*YYMMDD*) |

8. PREPARING ACTIVITY

| a. NAME | b. TELEPHONE (*Include Area Code*)<br>(1) Commercial | (2) AUTOVON |
|---|---|---|
| U. S. Army ARDEC | (201) 724-6652 | 880-6652 |
| c. ADDRESS (*Include Zip Code*)<br>ATTN: AMSTA-AR-EDE-S, B-12<br>Picatinny Arsenal, NJ 07806-5000 | IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:<br>Defense Quality and Standardization Office<br>5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466<br>Telephone (703) 756-2340 AUTOVON 289-2340 | |