

**MIL-P-46094(MI)****23 FEBRUARY 1965****SUPERSEDING****MPD-3219A****19 FEBRUARY 1961****MILITARY SPECIFICATION****PLASTIC FILLER COMPOUND, EPOXY,  
FOR HONEYCOMB PANELS****1. SCOPE**

**1.1 Scope.** This specification covers an epoxy type material with filler.

**1.2 Classification.** The compound covered by this specification shall be of the following types and classes:

Type I	— $E_c$ —65,000 psi.
Type II	— $E_c$ —100,000 psi.
Type III	— $E_c$ —60,000 psi.
Class 1	— Resin with curing agent Z (Modified Polyamine).
Class 2	— Resin with curing agent A (Diethylamine Propylamine).
$E_c$	— Modulus of elasticity in compression: average ratio of stress to strain below proportional limit.

**2. APPLICABLE DOCUMENTS**

**2.1** The following documents, of the issue in effect on date of invitation for bids or

request for proposals, form a part of this specification to the extent specified herein.

**SPECIFICATIONS****FEDERAL**

NN-P-515	— Plywood, Container Grade.
PPP-C-843	— Cushioning Material, Cellulosic.
PPP-B-636	— Box, Fiberboard.
PPP-B-601	— Boxes, Wood, Cleated-Plywood.
PPP-B-621	— Boxes, Wood, Nailed and Lock-Corner.
PPP-C-96	— Cans, Metal, 28 Gage and Lighter.
PPP-P-704	— Pails: Shipping, Steel (1 through 12 gallons).

**STANDARDS****FEDERAL****FED TEST  
METHOD**

STD 406	— Plastics, Method of Testing.
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**FSC 9330**

**MIL-P-46094(MI)****MILITARY**

MIL-STD-105 — Sampling Procedures and Tables for Inspection By Attributes.

MIL-STD-129 — Marking for Shipment and Storage.

(Copies of documents required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the Contracting Officer.)

**2.2 Other publications.** The following document forms a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

ASTM D 1652 — Method of Test for Epoxy Content of Epoxy Resins (Tentative).

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia 3, Pa.)

**3. REQUIREMENTS**

**3.1 Preproduction sample.** Unless otherwise specified, a preproduction sample shall be furnished and shall be prepared using the same methods proposed for the preparation of subsequent production lots of filler compound. Any change or deviation in the formulation or method of manufacture from the preproduction sample shall be subject to the approval of the procuring activity.

**3.2 Material.** The material shall be a two part epoxy type with suitable filler. The compound shall be putty-like consistency with a minimum density of 47 pounds per cubic foot (specific gravity of 0.75), and requiring liquid curing agents as follows: For Class 1 material, the liquid curing agent shall be a modified polyamine and for Class

2, the curing agent shall be diethylamine propylamine. These curing agents shall be added at time of use. The material shall be uniform in quality and free of foreign material. Curing the compound shall result in a relatively hard, tough, and resilient material. Mixing and curing procedures shall be in accordance with manufacturer's instructions.

**3.2.1** The quantity of the epoxy shall be determined by testing in accordance with paragraph 4.4.

**3.3 Mechanical and physical properties.** The cured material shall have the following mechanical and physical properties: Minimum requirements are indicated except as otherwise specified.

**(a) Type I—Mechanical Properties:**

Compressive yield strength.

0.2 percent offset stress—1600 pounds per square inch (psi).

2.0 percent offset stress—2200 pounds per square inch (psi).

Modulus of elasticity (compression)—65,000 pounds per square inch (psi).

Shear strength—1300 pounds per square inch (psi).

Physical Properties:

Density—47 lb/cu. ft.

Specific gravity—0.75.

**(b) Type II—Mechanical Properties:**

Compressive yield strength.

0.2 percent offset stress—2500 psi.

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2.0 percent offset stress—3500 psi.

Modulus of elasticity (compression)  
—100,000 psi.

Physical Properties:

Density—38.0 to 47 lbs cu. ft.

Specific gravity—0.60 to 0.75.

(c) Type III—Mechanical Properties:

Compressive yield strength.

0.2 percent offset stress—1500 psi.

2.0 percent offset stress—2000 psi.

Modulus of elasticity (compression)  
—60,000 psi.

Physical Properties:

Density—53 to 63 lb/cu. ft.

Specific gravity—0.85 to 1.0.

**3.4 Application.** The contractor shall prepare an application procedure which shall be approved by the procuring activity.

**3.5 Workmanship.** When applied in accordance with the contractor's procedure, the compound shall be free of voids greater than  $\frac{1}{8}$  inch, smooth, and machined to the honeycomb edge as specified on the applicable drawing.

#### **4. QUALITY ASSURANCE PROVISIONS**

**4.1 Responsibility for inspection.** Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as other-

wise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

**4.2 Preproduction sample.** Unless otherwise specified, the Government will perform the examinations and tests for preproduction sample acceptance at the contractor's plant. The preproduction sample shall be subjected to all examinations and tests specified herein. Preproduction samples which do not meet all the requirements of this specification shall be rejected and returned to the contractor. Subsequent quantities will not be considered for acceptance until approval of the preproduction sample has been obtained.

#### **4.3 Inspection provisions.**

**4.3.1 Lot size.** A lot shall consist of material from the same batch or blending operation from one manufacturer and one unchanged process. In the event of a continuous process, a lot shall consist of material subjected to the same processing operations and conditions.

##### **4.3.2 Sampling.**

**4.3.2.1 Sample for visual examination.** Sampling for visual examination shall be in accordance with MIL-STD-105 inspection level II, unless otherwise specified (see 6.2).

**4.3.2.2 Primary sample.** If the lot comprises 100 or more containers, the number of containers to be sampled is the lowest even number equal to or greater than 10 percent of the number of containers in the lot. If a lot comprises less than 100 containers, the number to be sampled is either ten or all the containers in the lot, whichever is less. If the number of containers in the lot is greater than ten, the containers from

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which samples are taken are to be selected at random. From each container to be sampled, take an appropriate size sample by repeated fillings of a sample thief inserted to maximum possible depth at random locations in the container. Seal each sample in a glass jar and label each jar with the lot number and container number. The purpose of primary sampling is to obtain material for composite sample. Chemical analysis are performed only on the composite samples in 4.3.2.3.

**4.3.2.3 Composite samples.** If there are four or more primary samples, divide them at random into two groups of as nearly equal number as possible and from each group collect a representative composite sample in a glass jar. Blend each composite thoroughly by manipulation of the jar and label with the lot number and the drum numbers in the composite. Save any residues of the primary samples pending final acceptance or rejection of the lot. If the number of primary samples is less than four, treat each as a composite sample. A single determination of each composite sample is required for each chemical and physical test. If all of the single determinations of any quality fall within the tolerance limits of the specification, the average is to be reported. If any determination of any quality falls outside the tolerance limits of the specification, a second determination of that quality is to be run on each composite and the average of the duplicates is to be reported for each composite. Duplicate determinations are required for each chemical and physical test when there is only one sample from the lot.

### 4.3.3 Examination.

**4.3.3.1 Visual examination.** Visual examination of the samples specified in 4.3.2 shall be conducted for the purpose of determining compliance with the workmanship requirements in 3.5 as well as the preservation, packaging, packing, and marking and requirements of section 5.

**4.3.3.2 Examination testing of the samples specified in 4.3.2.3 to determine compliance with the following characteristics shall be conducted in accordance with table I.**

TABLE I—Tests

Characteristic	Test method
Specific gravity .....	5011 of FED-STD-406.
Compressive yield strength	1021 of FED-STD-406.
Modulus of elasticity in compression.	1011 of FED-STD-406.
Shear strength .....	1041 of FED-STD-406.
Epoxy content .....	ASTM D 1652.

**4.4 Epoxy content.** The minimum percent epoxy requirement shall be determined by ASTM Method D 1652. It shall be within 2 percent of the amount of epoxy recommended by the manufacturer.

## 5. PREPARATION FOR DELIVERY

### 5.1 Packaging and packing. (see 6.2)

**5.1.1 Level A.** Unless otherwise specified by the procuring activity, the compound and the curing agent shall be furnished in type IV cans conforming to PPP-C-96, or in 5-gallon metal pails with lug closures conforming to PPP-P-704, or in 6 to 55 gallon metal drums, open-top style with bolted seal ring closures. If packaged in cans, the compound and equivalent proportion of curing agent shall be packed in fiberboard boxes conforming to PPP-B-636 and the contents shall be secured by means of vertical separators, fiberboard, or corrugated paper to fill voids, or cushioning material conforming to PPP-C-843. The fiberboard shall be made of single or double-wall cor-

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rugated board, and the corrugated paper shall be flexible and single faced. Cans packaged in fiberboard boxes shall be overpacked in exterior shipping containers conforming to PPP-B-601 and PPP-B-621. Plywood, if used, shall conform to NN-P-515, type I or II, class 2. Pails or drums require no overpacking for overseas shipment. Gross weight of shipping containers, when packed for shipment, shall not exceed 200 pounds.

5.1.2 *Level C.* The compound shall be packaged in containers complying with the rules and regulations applicable to the mode of transportation. As a minimum, protection shall be such as to prevent deterioration of the compound during shipment and insure safe delivery at destination.

5.2 **Marking of shipments.** Interior packages and exterior shipping containers shall be marked in accordance with MIL-STD-129. The nomenclature shall be as follows:

Plastic Filler Compound with Activator Specification MIL-C (MI)

Quantity \_\_\_\_\_\* Order No. \_\_\_\_\_\*  
 Manufacturer's name \_\_\_\_\_\*  
 Lot No. \_\_\_\_\_\* Batch \_\_\_\_\_\*  
 Date of manufacture \_\_\_\_\_\*  
 Storage conditions \_\_\_\_\_\*  
 Shelf life \_\_\_\_\_\*

**STORE IN A COOL PLACE**

**CAUTION.** Provide adequate ventilation during mixing and use of the compound and avoid contact with the skin.

\* Information to be entered by the manufacturer.

## 6. NOTES

6.1 **Intended use.** The filler compound is intended for use as an edge filler and sealer in honeycomb panels. After curing, it can be sawed, sanded, drilled, and spin dimpled using techniques similar to those used on wood. Bolts, screws, and mechanically upset rivets can be used. This compound cannot be used to transfer primary loads in structural attachments.

6.2 **Ordering data.** Procurement documents should specify the following:

(a) Title, number, and date of this specification.

(b) Whether or not a preproduction sample is required (see 3.1 and 4.2).

(c) Applicable sampling plan and level of inspection.

(d) Type and class (see 3.3. and 1.2).

(e) Capacity of containers (see 5.1.1).

(f) Selection of applicable levels of packaging, and packing (see 5.1 and 5.2).

(g) Procedure for application (see 3.4).

**Custodian:**

**Army—MI**

**Preparing Activity:**

**Army—MI**

**Project No. 8010-A062**

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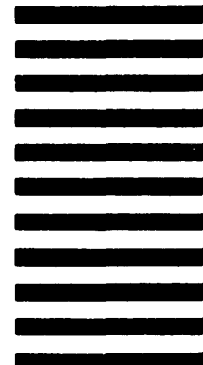
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(See Instructions -- Reverse Side)

1. DOCUMENT NUMBER

2. DOCUMENT TITLE

3a. NAME OF SUBMITTING ORGANIZATION

4. TYPE OF ORGANIZATION (Mark one)

☐ VENDOR☐ USER☐ MANUFACTURER☐ OTHER (Specify): \_\_\_\_\_

b. ADDRESS (Street, City, State, ZIP Code)

## 5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

## 6. REMARKS

7a. NAME OF SUBMITTER (Last, First, MI) - Optional

b. WORK TELEPHONE NUMBER (Include Area Code) - Optional

c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional

8. DATE OF SUBMISSION (YYMMDD)