

**MIL-M-14F****AMENDMENT 5  
30 DECEMBER 1965****SUPERSEDING<sup>1</sup>  
AMENDMENT 4  
15 AUGUST 1965**

**MILITARY SPECIFICATION**

**MOLDING PLASTICS AND MOLDED PLASTIC PARTS,  
THERMOSETTING**

*This amendment forms a part of Military Specification MIL-M-14F, 15 January 1960,  
and is mandatory for use by all Departments and Agencies of the Department of Defense.*

*Pages 1 and 2, paragraph 1.2: Add the following type under "Diallyl phthalate resin":*

*"Type SDG-F—Glass fiber, flame resistant."*

*Page 2, paragraph 2.2: Add:*

**"AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)**

**D229 — Testing Rigid Sheet and Plate Materials Used for Electrical Insulation."**

*(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19108.)*

*(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)"*

*Page 2, paragraph 3.1.1, last sentence: Delete.*

*Page 2, second paragraph numbered 3.1.2: Delete.*

<sup>1</sup>*Changes from previous issue. The extent of changes (deletions, additions, etc.) preclude the annotation of the individual changes from the previous issue of this document.*

*Page 3, footnote 1 at bottom of page, line 1: After "MAI-30" insert "MAI-60".*

*Page 3, paragraph 4.1: Delete and substitute:*

**"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 otherwise 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."**

*Page 3, paragraph 4.2: Delete "(Not required for Army Ordnance Corps procurement.)" and "Statement of identity values (by the manufacturer (see 6.3.1)). (For Army Ordnance Corps procurement only.)"*

*Tables I, II, and III, flame resistance: In column 2 delete "2023.2" and in column 3 add "4.6".*

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Compute the following ratios:

$$\frac{T_2 - T_1}{T_5 - T_1} \quad \text{and} \quad \frac{T_3 - T_4}{T_5 - T_1}$$

If either of these ratios exceeds 0.642 then  $T_1$  or  $T_5$  is judged to be abnormal and is eliminated. The burning time reported shall be the average of the remaining four values.

"(g) *Average ignition time.* The ignition time is calculated as the arithmetic mean of the five specimens."

Pages 23 and 24 paragraph 6.3.1: Delete.

Page 26, paragraph 10.1: Delete "not applicable for Army Ordnance Corps procurements)."

Page 28, paragraph 40.1: Delete and substitute:

"40.1 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 otherwise 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."

Page 29, paragraphs 40.4 through 40.5: Delete and substitute:

"40.4 Sampling for inspection. Sampling for inspection shall be performed in accordance with the provisions set forth in MIL-STD-105, except where otherwise indicated.

For purposes of sampling, an inspection lot for examinations and tests shall consist of all material of the same resin, filler and form submitted for inspection and delivery at one time.

"40.4.1 *Inspection of materials and components.* In accordance with 40.1 of the specification, the supplier is responsible for insuring that materials and components used were manufactured, tested and inspected in accordance with the requirements of referenced subsidiary specifications and standards to the extent specified. In event of conflict, this specification shall govern.

"40.4.1.1 The finished forms shall be fabricated from molding materials conforming to the property values for qualification tests for the applicable resin and filler as set forth in tables I, II and III of this specification.

"40.4.2 *Inspection of end item.*

"40.4.2.1 *Examination of the end item.* Examination of the end item shall be made in accordance with the classification of defects, inspection levels and acceptable quality levels (AQLs) set forth below. The lot size, for purpose of determining the sample size in accordance with MIL-STD-105, shall be expressed in units of sheets, rods, tubing or shapes of the same composition for examination in 40.4.2.1.1, 40.4.2.1.2 and in units of shipping containers in 40.4.2.1.3.

"40.4.2.1.1 *Examination of the end item for defects in appearance and workmanship.* The sample unit for this examination shall be one sheet, one length or a minimum of six feet of rod or tubing or one shape as applicable.

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Examine	Defect										
Appearance and workmanship											
All forms .....	Not type resin, filler or form specified. Not uniform color, finish or texture. Presence of dirt, foreign material or imbedded particles. Any holes, cracks, gouges, bubbles, blisters, chipped edges or surfaces, dents, or heat marks.										
Sheets .....	Laminations not as specified (as applicable). Warped, twisted or distorted. (Unless otherwise specified, a 3 foot sheet shall not deviate from a straight edge by more than the following values: <table border="1"> <thead> <tr> <th>Thickness, inches</th> <th>Percent</th> </tr> </thead> <tbody> <tr> <td>to <math>\frac{1}{8}</math></td> <td>5</td> </tr> <tr> <td>over <math>\frac{1}{8}</math> to <math>\frac{1}{4}</math></td> <td>2.5</td> </tr> <tr> <td>over <math>\frac{1}{4}</math> to 1</td> <td>1.0</td> </tr> <tr> <td>over 1</td> <td>0.5</td> </tr> </tbody> </table> Edges not straight, smooth or square.	Thickness, inches	Percent	to $\frac{1}{8}$	5	over $\frac{1}{8}$ to $\frac{1}{4}$	2.5	over $\frac{1}{4}$ to 1	1.0	over 1	0.5
Thickness, inches	Percent										
to $\frac{1}{8}$	5										
over $\frac{1}{8}$ to $\frac{1}{4}$	2.5										
over $\frac{1}{4}$ to 1	1.0										
over 1	0.5										
Rods .....	Not straight. (Unless otherwise specified, a three foot length of $\frac{1}{2}$ inch or larger diameter rod shall not deviate from a straight edge by more than $\frac{1}{4}$ inch.) Ends not square cut.										
Tubes .....	Not straight. (Unless otherwise specified, a three foot length of tube, 1 inch or larger diameter and $\frac{1}{8}$ inch or thicker wall, shall not deviate from a straight edge more than $\frac{1}{4}$ inch.) Hole not concentric. Ends not square.										
Shapes .....	Not shape specified. Sharp edges or projections, as applicable.										

"40.4.2.1.2 Examination of the end item for dimensional defects. The sample unit for this examination shall be one sheet, one length or a minimum length of six feet of rod or tubing or one shape as applicable. Unless otherwise specified or required by contract or purchase order, the tolerances for the dimension indicated below shall apply for the applicable form.

Examine	Defect														
Sheets															
Length and width (Commercial sizes) (cut sizes)	Minus $\frac{1}{8}$ , plus $\frac{1}{4}$ inch Minus $\frac{1}{16}$ , plus $\frac{1}{4}$ inch														
Thickness	<table border="1"> <thead> <tr> <th>Range</th> <th>± Tolerance</th> </tr> <tr> <th>inches</th> <th>percent</th> </tr> </thead> <tbody> <tr> <td>up to <math>\frac{1}{8}</math></td> <td>10</td> </tr> <tr> <td>over <math>\frac{1}{8}</math> to <math>\frac{1}{4}</math></td> <td>8</td> </tr> <tr> <td>over <math>\frac{1}{4}</math> to <math>\frac{1}{2}</math></td> <td>6</td> </tr> <tr> <td>over <math>\frac{1}{2}</math> to 1</td> <td>5</td> </tr> <tr> <td>over 1</td> <td>3</td> </tr> </tbody> </table>	Range	± Tolerance	inches	percent	up to $\frac{1}{8}$	10	over $\frac{1}{8}$ to $\frac{1}{4}$	8	over $\frac{1}{4}$ to $\frac{1}{2}$	6	over $\frac{1}{2}$ to 1	5	over 1	3
Range	± Tolerance														
inches	percent														
up to $\frac{1}{8}$	10														
over $\frac{1}{8}$ to $\frac{1}{4}$	8														
over $\frac{1}{4}$ to $\frac{1}{2}$	6														
over $\frac{1}{2}$ to 1	5														
over 1	3														
Rods															
Length (commercial lengths) (cut length)	minus $\frac{1}{8}$ , plus 2 inches minus $\frac{1}{16}$ , plus $\frac{1}{4}$ inch														
Diameter	<table border="1"> <thead> <tr> <th>Range</th> <th>± Tolerance</th> </tr> <tr> <th>inches</th> <th>inches</th> </tr> </thead> <tbody> <tr> <td>up to <math>\frac{1}{4}</math></td> <td>0.003</td> </tr> <tr> <td>over <math>\frac{1}{4}</math> to <math>\frac{1}{2}</math></td> <td>0.004</td> </tr> <tr> <td>over <math>\frac{1}{2}</math> to 1</td> <td>0.005</td> </tr> <tr> <td>over 1</td> <td>0.0075</td> </tr> </tbody> </table>	Range	± Tolerance	inches	inches	up to $\frac{1}{4}$	0.003	over $\frac{1}{4}$ to $\frac{1}{2}$	0.004	over $\frac{1}{2}$ to 1	0.005	over 1	0.0075		
Range	± Tolerance														
inches	inches														
up to $\frac{1}{4}$	0.003														
over $\frac{1}{4}$ to $\frac{1}{2}$	0.004														
over $\frac{1}{2}$ to 1	0.005														
over 1	0.0075														
Tubes															
Length (commercial lengths) (cut lengths)	minus $\frac{1}{8}$ , plus 2 inches minus $\frac{1}{16}$ , plus $\frac{1}{4}$ inch														
Outside diameter	<table border="1"> <thead> <tr> <th>Range</th> <th>± Tolerances</th> </tr> <tr> <th>inches</th> <th>inches</th> </tr> </thead> <tbody> <tr> <td>up to <math>\frac{1}{2}</math></td> <td>0.005</td> </tr> <tr> <td>over <math>\frac{1}{2}</math> to 1</td> <td>0.010</td> </tr> <tr> <td>over 1 to 3</td> <td>0.025</td> </tr> <tr> <td>over 3</td> <td>0.050</td> </tr> </tbody> </table>	Range	± Tolerances	inches	inches	up to $\frac{1}{2}$	0.005	over $\frac{1}{2}$ to 1	0.010	over 1 to 3	0.025	over 3	0.050		
Range	± Tolerances														
inches	inches														
up to $\frac{1}{2}$	0.005														
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over 3	0.050														
Wall thickness	<table border="1"> <thead> <tr> <th>Range</th> <th>± Tolerances</th> </tr> <tr> <th>inches</th> <th>inches</th> </tr> </thead> <tbody> <tr> <td>up to 0.10</td> <td>0.005</td> </tr> <tr> <td>over 0.10 to .25</td> <td>0.008</td> </tr> <tr> <td>over 0.25 to 0.5</td> <td>0.010</td> </tr> </tbody> </table>	Range	± Tolerances	inches	inches	up to 0.10	0.005	over 0.10 to .25	0.008	over 0.25 to 0.5	0.010				
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up to 0.10	0.005														
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over 0.25 to 0.5	0.010														

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Examine	Defect	
Shapes	± 1 percent	
Length	Range	± Tolerances
(cross section)	inches	inches
	to .5	0.0045
	over 0.5 to 1.0	0.0055
	over 1.0 to 2.0	0.007
	over 2.0	0.010

for delivery. An examination shall be made to determine that packaging, packing, and marking shall comply with the requirements set forth in Section 50 of this specification. The sample unit for this examination shall be one shipping container, fully packed, selected just prior to the closing operation. Shipping containers, fully packed for shipment shall be examined for closure defects.

**“40.4.2.1.3 Examination of preparation**

Examine	Defect
Packaging and Packing .....	Not level specified Container material or construction not as specified. Any non-conforming component, component missing or otherwise damaged, affecting serviceability.
Count .....	Less than the indicated or required number of sheets, rods, tubes or shapes, as applicable.
Marking .....	Interior or exterior markings (as applicable) omitted, illegible, incorrect, incomplete or not in accordance with contract requirements.

**“40.4.2.1.4 Inspection levels and acceptable quality levels (AQLs) for examinations.** The inspection level for determination of the sample size and acceptable quality levels (AQLs) expressed in defects per 100 units shall be as follows:

Examination paragraph	Inspection level	AQL
40.4.2.1.1	I	2.5
40.4.2.1.2	S-2	4.0
40.4.2.1.3	S-1	4.0

**“40.5 Quality conformance testing.** Quality conformance testing of the end item shall be conducted in accordance with table X for the characteristics as indicated therein for each lot submitted for inspection. The lot size

shall be expressed in units of sheet rods, tubes or shapes, as applicable, each form having the same resin and filler. The sample unit shall be two panels, one 12 by 12 by 1/8 inches and one 12 by 6 by 1/2 inches for preparation of test specimens. If the shape or size of the end item cannot be used for test specimens, or to avoid using portions of costly items, the contractor shall provide two panels of the size indicated for each sample unit prepared from the identical molding material and by methods used to fabricate the end item. The sample size shall be S-1 except that at least three sample units shall be randomly selected from the lot or prepared by the contractor, as applicable. The acceptable quality level shall be 4.0 expressed as defects per 100 units.

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**TABLE X. Instructions for Testing (Sample Unit).**

Characteristic	Specification reference		Rqmts. appl. to	Number determinations per sample unit	Results reported as
	Requirement	Test method L-P-406	Indiv. unit		Numerically to nearest <sup>1</sup>
Property values, as applicable	as applicable				
Arc resistance .....	Tables V & VI	4011.2	X	Avg of 3	Seconds
Dielectric constant .....	Tables IV, V & VI	4021	X	Avg of 3	0.1 unit
Dissipation factor .....	Tables IV, V & VI	4021	X	Avg of 3	0.0001 unit
Dielectric step by step .....	Tables IV, V & VI	4031 and 4.5.2.1	X	Avg of 5	volts per mil
Flexural strength, face .....	Tables IV, V & VI	1031.1 and 4.5.2.2	X	Avg of 5	P.S.L.
Impact Strength, side .....	Tables IV, V & VI	1071	X	Avg of 5	Foot-pounds per inch notch
Water absorption .....	Tables IV, V & VI	7031 and 4.5.2.4	X	Avg of 3	0.1 percent

<sup>1</sup> Test results shall include all values on which results are based.

**Custodians:**

Army—EL

Navy—SH

Air Force—11

**Preparing activity:**

Navy—SH

Project No. 9830-0191

**International interest (see section 6)**

**Review activities:**

Army—EL, MI, MR, MU

Navy—SH, WP

Air Force—11

**User activities:**

Army—MO

Navy—YD