

MIL-M-14G
AMENDMENT 1
13 March 1987

MILITARY SPECIFICATION

MOLDING PLASTICS AND MOLDED PLASTIC PARTS,
THERMOSETTING

This amendment forms a part of MIL-M-14G, dated 13 October 1972, and is approved for use by all Departments and Agencies of the Department of Defense.

PAGE 1

1.2, Under "Phenolic resin" delete: "Types MFA-30, MFG, MFI-10, and MFI-20".

1.2, Under "Phenolic resin" Add:

- "Type GPG - Glass filler, general purpose.
- Type GPI-5 - Glass filler, impact resistant; nominal impact strength, 0.5 foot-pounds per inch notch.
- Type GPI-10 - Glass filler, impact resistant; nominal impact strength, 1.0 foot-pounds per inch notch.
- Type GPI-20 - Glass filler, impact resistant; nominal impact strength, 2.0 foot-pounds per inch notch.
- Type GPI-30 - Glass filler, impact resistant; nominal impact strength, 3.0 foot-pounds per inch notch.
- Type GPI-50 - Glass filler, impact resistant; nominal impact strength, 5.0 foot-pounds per inch notch."

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4.3: Delete "Naval Ship Engineering Center" and substitute "Naval Sea Systems Command."

AMSC N/A

DISTRIBUTION STATEMENT A

Approved for public release; distribution unlimited

FSC 9330

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Table I: Delete and substitute "New Table I".

"TABLE I. Property values for qualification tests of phenolic resin molding compounds. - Continued

Property to be tested	Value required for each type of compound														
	CFG	CFI-5	CFI-10	CFI-20	CFI-30	CFI-40	MFB	MFH	GPG	GPI-5	GPI-10	GPI-20	GPI-30	GPI-50	GPI-100
Arc resistance	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Compressive strength endwise	25,000	23,000	20,000	20,000	19,000	18,000	15,000	15,000	23,000	25,000	25,000	23,000	20,000	20,000	20,000
Dielectric constant: At 1 kilocycle	----	----	----	----	----	----	6.0	----	6.5	6.0	6.0	6.0	6.0	6.0	6.0
At 1 megacycle	----	----	----	----	----	----	6.0	----	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Dissipation factor: At 1 kilocycle	----	----	----	----	----	----	0.030	----	0.04	0.04	0.05	0.04	0.04	0.04	0.04
At 1 megacycle	----	----	----	----	----	----	.033	----	.05	.05	.06	.05	.05	.05	.05
	----	----	----	----	----	----	0.15	----	.03	.03	.03	.03	.03	.03	.03
	----	----	----	----	----	----	.017	----	.04	.04	.04	.04	.04	.04	.04
Dielectric strength: Short-time test	300	250	240	210	250	175	325	215	275	250	250	250	250	250	300
Step-by-step test	200	150	180	150	150	----	275	150	225	200	200	200	200	200	200
Short-time test	75	50	40	45	20	25	325	125	225	175	175	175	175	175	75
Step-by-step test	45	27.5	27.5	25	10	15	275	80	200	125	125	125	125	125	50
Dielectric breakdown: Short-time test	(To be recorded as basis for determining initial voltage step-by-step)														
Step-by-step test	30	18	18	18	18	18	45	35	35	35	35	35	35	35	40
Short-time test	(To be recorded as basis for determining initial voltage step-by-step)														
Step-by-step test	2.5	2.5	2.5	2.5	2.5	2.5	40	10	15	15	15	15	15	15	15
Flame resistance: Ignition time	60	60	60	60	60	60	60	120	150	150	150	150	150	150	120
Burning time	270	330	330	330	330	330	210	150	150	150	150	150	150	150	120
Flexural strength, face ^{1/}	9,000	8,000	8,000	8,000	8,000	8,000	8,000	7,000	9,000	12,000	12,000	12,000	12,000	14,000	15,000
Heat distortion temperature, side ^{2/}	115	115	115	115	115	115	115	130	170	175	175	175	175	175	200
Impact strength: face ^{1/}	----	0.60	1.10	2.30	4.0	5.20	----	0.26	0.30	0.50	1.0	2.0	3.0	5.0	10.0
side ^{2/}	0.24	.48	1.05	1.75	2.55	3.50	----	.25	0.27	0.45	0.9	1.8	2.7	4.5	10.0
Tensile strength	6,000	5,700	5,600	5,700	5,700	6,000	4,200	4,200	4,500	7,000	6,500	6,500	6,500	6,000	4,500
Water absorption	3.0	4.0	4.0	4.0	4.0	4.0	0.10	0.35	0.30	0.35	0.35	0.40	0.50	1.0	1.5
Volume resistance	----	----	----	----	----	----	2.0	----	----	----	----	----	----	----	----
Surface resistance	----	----	----	----	----	----	5.0	----	----	----	----	----	----	----	----
Toxicity when heated Carbon dioxide Carbon monoxide Ammonia Aldehydes as H.CHO Cyanide as HCN Oxides of nitrogen as NO ₂ Hydrogen chloride	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

^{1/} The face of a test specimen is that area formed by the top or bottom force plug.^{2/} The side of a test specimen is that area formed by the chase of the mold."

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Table IV, lower portion of table: Delete and substitute "New section".

"TABLE IV. Property values for lot - acceptance of phenolic resin molding compounds."

Property to be tested	Value required for each type of compound														
	CFG	CFI-5	CFI-10	CFI-20	CFI-30	CFI-40	MFE	MFH	GPG	GPI-5	GPI-10	GPI-20	GPI-30	GPI-50	GPI-100
Arc resistance	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dielectric constant at 1 megacycle	---	---	---	---	---	6.0	---	---	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Dissipation factor at 1 megacycle	---	---	---	---	---	0-017	---	---	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Dielectric strength step-by-step	45	27.5	27.5	25	25	---	80	200	125	125	125	125	125	125	50
Flexural strength face ^{1/}	9,000	8,000	8,000	8,000	8,000	8,000	7,000	9,000	12,000	12,000	12,000	12,000	12,000	14,000	15,000
Impact strength side ^{2/}	---	0.48	1.05	1.75	2.55	3.5	---	0.27	0.45	0.9	1.8	2.7	4.5	10.0	
Water absorption	3.0	4.0	4.0	4.0	4.0	4.0	0.35	0.30	0.35	0.35	0.40	0.50	1.0	1.5	

1/ The face of a test specimen is that area formed by the top or bottom force plug.

2/ The side of a test specimen is that area formed by the chase of the mold."

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Table VII: Delete and substitute "New Table VII".

"TABLE VII. Standard test specimens for qualification tests."

Specimen designation	Specimen description	Number of specimens														
		Types CG, CFI-5, 10, 20, 30, 40, MFH	Type MFE	Type GPG, GFI-5, 10, 20, 30, 50, 100	Type CMI-5	Type CMG	Type CMI-10	Types MME, MAG	Types MMI-5, MMI-30, MSI-30	Types MAI-30, MAI-60	Type MAT-30	Type GDI-30	Type GDI-30F	Types MDC, SDI-5, SDI-30	Type SDG-F	Type MSC
1	4 in. disk by 1/8 in.	16	38	28	19	19	—	31	31	31	31	38	38	41	41	41
2	1 in. by 1/2 in. by 1/2 in.	5	5	5	5	5	—	5	5	5	5	5	5	5	5	5
3	2 in. disk by 1/8 in.	3	15	15	3	3	3	15	15	15	15	15	15	15	15	15
4	4 in. disk by 1/2 in. (Figure 1, MIL-M-14)	8	8	8	8	8	—	8	8	8	8	8	8	8	8	8
5	5 in. by 1/2 in. by 1/2 in.	8	8	8	12	12	4	17	12	12	12	8	17	8	17	12
6	5 in. by 1/2 in. by 1/4 in.	5	5	5	5	5	5	5	5	5	5	5	5	5	5	10
7	2-1/2 in. by 1/2 in. by 1/2 in. (Figure 1071, FED-STD-406)	10	—	10	10	—	10	—	10	10	10	10	10	10	10	10
8	See figure 1012A of FED-STD-406	5	5	5	5	5	—	5	5	5	5	5	5	5	5	5
9	2 in. by 5 in. by thickness	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10	See Method 7071 of FED-STD-406	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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6.1.7: Delete in its entirety.

6.1.9: Delete in its entirety.

6.1.11: Delete in its entirety.

6.1.12: Delete in its entirety.

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Add as new paragraphs, 6.1.33 through 6.1.38:

"6.1.33 Type GPG. This type is a general purpose glass filled phenolic compound intended for applications requiring good mechanical, electrical and heat resistant properties.

6.1.34 Type GPI-5. This type is a heat resistant moderate impact, glass filled phenolic compound having good electrical properties. Impact strength is approximately 0.5 foot-pounds per inch notch.

6.1.35 Type GPI-10. This type is a heat resistant, medium impact, glass filled phenolic compound having good electrical properties. Impact strength is approximately 1.0 foot-pounds per inch notch.

6.1.36 Type GPI-20. This type is a heat resistant, high impact, glass filled phenolic compound having good electrical properties. Impact strength is approximately 2.0 foot-pounds per inch notch.

6.1.37 Type GPI-30. This type is a heat resistant, high impact, glass filled phenolic compound having good electrical properties. Impact strength is approximately 3.0 foot-pounds per inch notch.

6.1.38 Type GPI-50. This type is a heat resistant, high impact, glass filled phenolic compound having good electrical properties. Impact strength is approximately 5.0 foot-pounds per inch notch."

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6.3: Delete and substitute:

"6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time set for opening of bids, qualified for inclusion in Qualified Products List QPL-14 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. The activity responsible for the Qualified Products List is the Naval Sea Systems Command, SEA 5523, Department of the Navy, Washington, DC 20362-5101 and information pertaining to qualification of products may be obtained from that activity. Application for qualification tests shall be made in accordance with "Provisions Governing Qualification SD-6" (see 6.3.1)."

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6.5.1: Delete and substitute:

"6.5.1 The molding compounds covered by MIL-M-14F, MIL-M-18794A(NAVY), MIL-M-19061(SHIPS), MIL-M-19536A(NAVY), MIL-P-19833B, and MIL-M-21699(SHIPS) have been included in MIL-M-14G as listed below:

MIL-M-14G	MIL-M-14F	MIL-M-18794A(NAVY)	MIL-M-19061(SHIPS)	MIL-M-19536A(NAVY)	MIL-P-19833B	MIL-M-21699(SHIPS)
<u>Types</u>						
CFG	X					
CFI-5	X					
CFI-10	X					
CFI-20	X					
CFI-30						
CFI-40	X					
MFE	X					
MFH	X					
GPI-100	X			X		
CMG	X					
CMI-5	X					
CMI-10	X					
MME	X					
MMI-5	X		X			
MMI-30	X					
MAG	X					
MAI-60	X					
MAT-30						
MAI-60	X					X
GDI-30					X	
GDI-30F					X	
MDG	X					
SDG	X	X				
SDG-F	X					
SDI-5	X	X				
SDI-30	X	X				
MSG	X					
MSI-30	X					

6.5.2 The following types included in MIL-M-14G have been deleted:

MFA-30 (formerly shown in MIL-M-21566)

MFG

MFI-10

MFI-20"

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Custodians:

Army - ME
Navy - SH
Air Force - 20

Preparing activity:

Navy - SH
(Project 9330-B205)

Review activities:

Army - EL, MI, MR, AR, EA
Navy - AS, OS
DLA - GS

User activities:

Navy - YD, AS, EC

International standardization (see 6.7)