

MIL-STD-652C (MU)  
30 November 1973  
SUPERSEDING  
MIL-STD-652B (MU)  
13 February 1969

MILITARY STANDARD  
PROPELLANTS, SOLID, FOR CANNONS  
REQUIREMENTS AND PACKING



PSC: 1376

MIL-STD-652C (MU)  
30 November 1973

DEPARTMENT OF DEFENSE  
WASHINGTON, D.C. 20301

Propellants, Solid For Cannons, Requirements and Packing,  
MIL-STD-652C (MU).

1. This Military Standard is mandatory for use by all Departments and Agencies of the Department of Defense.
2. Recommended corrections, additions or deletions should be addressed to: Commander, Picatinny Arsenal, ATTN: SARPA-QA-A-P, Dover, New Jersey 07801.

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## 1. SCOPE

1.1 This Standard covers the chemical, physical and packing requirements for cannon propellants. The ballistic requirements for the detailed propellants are covered in their detailed specifications.

1.2 Purpose.-The purpose of this Standard is to provide a single publication as a Military Standard containing requirements and tests pertinent to the propellants.

1.3 Classification.-The propellant shall be of the following forms and types as specified:

FORM A	FLAKE
FORM B	SHEET
FORM C	GRAIN

Cylindrical multiple-perforated grain (MP) (Type I)  
Cylindrical single-perforated grain (SP) (Type II)

## 2. REFERENCED DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids or request for proposal form a part of this Standard to the extent specified herein.

## SPECIFICATIONS

### MILITARY

MIL-D-98	Diphenylamine
MIL-G-155	Graphite
MIL-P-156	Potassium Nitrate
MIL-B-162	Barium Nitrate
JAN-W-181	Wax, Candelilla
MIL-P-193	Potassium Sulfate (For Ordnance Use)
MIL-D-204	Dinitrotoluene (For Use in Explosives)
MIL-D-218	Dibutylphthalate (For Use in Explosives)
JAN-D-242	Diethylphthalate (For Use in Explosives)
MIL-N-244	Nitrocellulose (For Use in Explosives)
MIL-N-246	Nitroglycerin
MIL-E-255	Ethyl Centralite (Carbamite)
MIL-N-494	Nitroguanidine (Picrite)
MIL-N-3399	2-Nitrodiphenylamine
MIL-R-3065	Rubber, Fabricated Products
MIL-L-18618	Lead Carbonate, Basic Dry (For Ordnance Use)

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STANDARDS

MILITARY

- MIL-STD-105 -Sampling Procedures and Tables for Inspection by Attributes (ABC-STD-105)
- MIL-STD-286 -Propellants, Solid; Sampling, Examination and Testing
- MIL-STD-417 -Rubber Composition Vulcanized General Purpose Solid (Symbols and Test)
- MIL-STD-1235 -Single and Multilevel Continuous Sampling Procedures and Tables for Inspection by Attributes

DRAWINGS

- 76-4-46 Box, Packing with Metal Liner, M24 for Smokeless Powder, Assembly and Details
- 76-4-53 Box, Steel, M2 for Smokeless Powder, Assembly
- 76-4-55 Box, Steel M2 for Smokeless Powder Detail
- 76-4-56 Box, Packing, Metal-Wood, M17 for Smokeless Powder Assembly
- 9282946 Marking Diagram and Sealing of Steel Packing Boxes for Shipment of Propellants
- 7549033 Container, Metal, Universal M25 for Propellants and Explosives Assembly and Detail
- 8858577 Marking Diagram and Sealing of Container, Metal, Universal M25 for Shipping of Propellants
- 8858848 Marking Diagram and Sealing of Metal Lined Wooden Packing Boxes for Shipment of Propellants
- 138439 Packing Box, MARK 7
- 138441 Packing Box, MARK 7 Cover Details
- 9256486 Container, Packing PA54 Wood with Metal Liner (Modified M24 Box) for Smokeless Powder

2.2 Other publications.-The following documents form 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.

CODE OF FEDERAL REGULATIONS, Title 49, Transportation  
Parts 100-199

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(The Code of Federal Regulations is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Orders should specify "49 CFR 100-199 (latest revision)."

### 3. DEFINITIONS

3.1 Not applicable

### 4. GENERAL REQUIREMENTS

4.1 Constituent material.—The constituent materials shall comply with the requirements of the applicable specification as follows:

<u>Constituent Material</u>	<u>Conforming to Specification</u>
Wax, Candelilla	JAN-W-181
Barium Nitrate	MIL-B-162, Class 3
Dibutylphthalate	MIL-D-218
Diethylphthalate	JAN-D-242
Dinitrotoluene	MIL-D-204
Diphenylamine	MIL-D-98
Ethyl Centralite	MIL-E-255, Class 2 or Class 3 (see note)
Graphite	MIL-G-155, Grade III or IV
Nitrocellulose	MIL-N-244, (See Table II)
Nitroglycerin	MIL-N-246, Type I
Nitroguanidine	MIL-N-494, Class to be specified in contract
Potassium Nitrate	MIL-P-156, Class 2 or 3
Potassium Sulfate	MIL-P-193, Type I
2-Nitrodiphenylamine	MIL-N-3399
Lead Carbonate	MIL-L-18618

Cryolite shall be commercial grade of "Technical sodium aluminum fluoride."

NOTE: Any class permitted when added in solution.

#### 4.2 Form and dimension

4.2.1 Flake propellant shall conform to the requirements listed in the detail propellant specification or drawings (see 6.1) Code No. 01001 (See 4.2.5.2).

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4.2.2 Sheet propellant shall conform to the requirements listed in the detail propellant specification or drawing. Code No. 02001.

#### 4.2.3 Grain

4.2.3.1 Type I.-The grain shall be cylindrical with 7 longitudinal perforations, one in the center of the grain and six at the vertices of a symmetrical hexagon. Code No. 03001.

4.2.3.2 Type II.-The grain shall be cylindrical with a single longitudinal perforation through the center of the grain. Code No. 04001.

4.2.3.3 The following requirements regarding grain dimensions shall govern unless authorization for departure is given by the procuring activity concerned prior to manufacture of the propellant.

4.2.3.3.1 Length: Diameter Ratio. Code No. 05001.

4.2.3.3.1.1 Type I.-The average grain length (L) shall be from 2.10 to 2.50 times the average grain diameter (D).

4.2.3.3.1.2 Type II.-The average grain length (L) shall be from 3.0 to 6.0 times the average grain diameter (D).

4.2.3.3.1.3 The length and diameter of grain shall comply with the uniformity requirements shown in Table I.

TABLE I

Mean variation of individual dimensions expressed as a percentage of the mean dimension.

<u>Dimensions</u>	<u>Maximum</u>
L	6.25
D(grains 0.2 inch or more in diameter)	3.125
D(grains less than 0.2 inch in diameter)	6.25

4.2.3.3.2 Grain diameter.-perforation diameter ratio. Code No. 06001.

4.2.3.3.2.1 Type I.-The average grain diameter (D) shall be from 5.0 to 15 times the average diameter of the perforation (d).

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4.2.3.3.2.2 Type II.-The average grain diameter (D) shall be approximately three times the average diameter of the perforation(d).

4.2.3.3.2.3 Web measurements.Code No. 07001.

4.2.3.3.2.3.1 Type I.-The difference between the average outer web thickness (Wo) and the average inner web thickness (Wi) shall not exceed 15 percent of the average web thickness (Wa).

4.2.3.3.2.3.2 Type II.-The standard deviation of the web measurements, expressed as a percent of the average web measurement, shall not be greater than 20 percent.

4.2.4 Form.-Determination of the form of the propellant shall be by visual examination, Code No. 08001.

#### 4.2.5 Dimensions

4.2.5.1 Thirty normal grains of propellant shall be selected at random and tested as specified in Standard MIL-STD-286, Method 504.1. If the sample fails to comply with the requirements, the lot shall be rejected.

4.2.5.2 Flakes.-Thirty flakes shall be examined under a microscope for length or thickness and diameter.

4.2.4.3 Sheets.-The dimensions of the sheets shall be tested as specified in the applicable drawing or item specification.

4.2.6 Total graphite content, when applicable.-The total graphite content shall not exceed 0.55 percent.

#### 4.3 Packing

4.3.1 Level A.-The propellant shall be packed in containers conforming to Drawings 76-4-46, 76-4-53, 76-4-56, 7549033, 9256486, 138439 and marked,sealed and tested in accordance with Drawings, 8858848, 9282946 or 8858577. The net weight of propellant in the container shall be specified by the Contracting Officer with a tolerance of plus 1 pound or minus 1/2 pound, but shall not exceed 150 pounds.

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4.3.1.1 Immediately prior to packing, containers listed in 4.3.1 shall be subjected to an internal pressure of 1/2 to 1 pound per square inch by a method satisfactory to the contracting officer's representative.

4.3.1.2 When replacing cover gaskets for the M2 Steel Box, Dwg. 76-4-55, solid rubber gaskets as described on Dwg. 138441 for the MK7 Packing Box (Navy) may be used in lieu of Gasket Part No. 76-4-55H. Solid rubber gaskets shall comply with Specification MIL-R-3065 and RN-715 or RS-715 of Standard MIL-STD-417.

4.3.2 Level B.-Packing shall be as specified in 4.3.1.

4.3.3 Level C.-The propellant shall be packed as specified in 4.3.1 or in fiber drums.

4.3.3.1 Fiber drums.-For truck or trailer on flat car (TOFC) shipment and short term storage (not more than six months) approximately 150 pounds of propellant may be packed in fiber drum certified in accordance with DOT specification 21C of the Code of Federal Regulations, Title 49, Parts 100-199, and meeting the following additional requirements. Size shall be 15 1/2 + 1/2 inches in diameter by 26 + 1 inch deep. A layer of aluminum foil shall be laminated into the body and the bottom if it is made of fiberboard. The bottom shall be either steel or asphalt laminated fiberboard. The bottom and top edge of the drum shall have 24 gauge welded galvanized steel chimes. The cover shall be either plain or interlocking (with bottom) design lever lock type with gasket and shall provide a moisture-proof seal. The cover shall be made from 24 gauge steel with either a galvanized finish or a baked on varnish, resistant to chipping, peeling and cracking. The exterior of the drum shall be coated with a water resistant material. The drum shall be filled with not less than 250 pounds of dry sand when performing the drop test. Net weight shall be as specified in paragraph 4.3.1.

4.3.3.2 Alternative fiber drum.-Alternatively, fiber drums shall be constructed as specified in 4.3.3.1 except that a layer of aluminum foil 0.010 thick shall be laminated to the inside of the body and the aluminum foil between the layers of Kraft paper in the body shall not be required.

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4.3.3.3 Marking.-Drums shall be marked on the sidewall only with the same information as required for the side of the box by Dwg. 8858848. Alternatively, marking may be placed on a commercial water resistant label, securely and completely adhered to the sidewall. The label shall be black on a white, tan or kraft color. All marking shall be with black ink using letters approximately one half inch high.

4.3.4 Palletization.-All level A shipments shall be palletized in accordance with instructions furnished by the procuring activity. Palletization is not required for Level B or C shipments.

4.4 Sampling for testing

4.4.1 Sampling plans and procedures for the following classifications of defects shall be in accordance with Standard MIL-STD-105. Standard MIL-STD-1235 may be used if approved by the procuring activity. Also, at the option of the procuring activity, AQL's and sampling plans may be applied to the individual characteristics listed using an AQL of 0.40 percent for each major defect and an AQL of 0.65 percent for each minor defect.

4.4.1.1 Container or fiber drums prior to filling (see drawings 76-4-46, 76-4-53, 76-4-56, 138439, 7549033, and 9256486.

Categories	Defects	Method of Inspection	Code No.
Critical: None defined.			
Major:	AQL 0.40 percent		
101.	Foreign material, propellant or corrosion.....	Visual	10001
102.	Gasket missing or damaged.....	Visual	10002
103.	Holes in cover or end.....	Visual	10003
104.	Locking device damaged.....	Visual	10004
105.	Bare areas on exterior coating of metal container, the sum of which is in excess of 1/2 square inch.....	Visual	10005

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Minor:	AQL 1.50		
201.	Protective finish incomplete....	Visual	10006
202.	Wood split terminating at edge of board.....	Visual	10007
203.	Board broken or piece missing...	Visual	10008
204.	Loose boards.....	Visual	10009
205.	Nails or staples protruding or loose.....	Visual	10010
206.	Split boards insufficiently nailed.....	Visual	10011
207.	Wood rot.....	Visual	10012
208.	Large dents or damaged seam....	Visual	10013

4.4.1.2 Sealed container (see drawings 7549033, 138439, 76-4-46, 76-4-53, 76-4-56 and 9256486)

Categories	Defect	Method of Inspection	Code No.
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Critical: None defined

Major:	AQL 0.65 percent		
101.	Holes in container.....	Visual	11001
102.	Damaged seams.....	Visual	11002
103.	Damaged locking devices.....	Visual	11003
104.	Gasket missing or incomplete...	Visual	11004

Minor:	AQL 1.50 percent		
201.	Metallic seal missing, unsealed or improperly positioned.....	Visual	11006
202.	Hardware improperly engaged.....	Visual	11006
203.	Marking misleading or unidentifiable.....	Visual	11007
204.	Excess dents.....	Visual	11008

4.4.1.3 Sealed fiber drums (see 4.3.3)

Categories	Defects	Method of Inspection	Code No.
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Major:	AQL 1.00 percent		
101.	Locking device damaged or improperly closed.....	Visual	33001
102.	Holes or breaks in cover or body.....	Visual	33002
103.	Damage to coating or cover.....	Visual	33003

Minor:	AQL 1.00 percent		
201.	Marking misleading or unidentifiable.....	Visual	33004
202.	Exterior torn or delaminated....	Visual	33005

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4.4.2 Sampling for chemical and physical testing.-Fifteen pounds of propellant shall be selected at random from the lot. Five pounds shall be forwarded to the Commander, Picatinny Arsenal, Dover, New Jersey for 65.5 degree Centigrade surveillance test in accordance with Standard MIL-STD-286, Method 407.1. The remaining ten pounds shall be used for the chemical/physical test. All samples shall be packed in air-tight containers and shall be marked to show the propellant designation, lot number, manufacturer, date of sampling, contract number, and number of pounds in the lot. If the sample fails to comply with the requirements the lot shall be rejected.

4.4.3 Sampling for ballistic testing for specifications which do not have sample.-Seven containers shall be selected for ballistic testing at each temperature specified in the applicable item specification. The total sample size at each temperature shall consist of the weight in pounds specified on the applicable assembly drawing multiplied times the sample size (7) times the factor 1.3. The samples shall be selected from individual containers, packaged separately and shipped to the Proving Ground, if specified by the basic propellant specification. Duplicate sampling of containers shall be accomplished if necessary to prepare the required number of samples. For the initial production lots, a ten round sample will be fired at the specified temperature. Initial production lots are defined as the first three lots manufactured, provided that no irregularities are observed, there is no change in the manufacturing process, and no significant time gap exists in production.

## 5. Testing and procedures

5.1 The chemical and physical properties shall be determined as specified in Table II and conform to the requirements specified in Table III.

5.2 The composition shall be calculated on total volatiles and added ingredient free basis when required.

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Methods from MIL-STD-286 for the chemical and physical properties of the propellant.

TABLE II

Properties	Methods Either/or	Code No.
Nitrocellulose	209.2 209.3 209.6	12001
Nitroglycerin(1)	208.1	13001
Nitroguanidine(2)	213.1	14001
Ethyl Centralite	202.2	15001
Barium Nitrate(3)	304.1 316.1	16001
Potassium Nitrate	310.4 316.1	17001
Potassium Sulfate	310.4 316.1	18001
Diphenylamine	201.1 201.4 226.1	19001
Dinitrotoluene(4)	205.1 205.2 205.3 226.1	20001
Dibutylphthalate	204.1 209.6 222.1 226.1	21001
Diethylphthalate	222.1 226.1	22001
2-Nitrodiphenylamine	218.1 218.4 226.1	23001
Graphite	308.1	24001
Cryolite	307.1 316.1	25001

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Total Volatiles	103.1 103.3	26001
Moisture (for M8 propellant)	102.1 103.1	27001
Hygroscopicity	503.2	28001
Graphite (glaze)	308.1	29001
Compressibility	505.1	30001
Lead Carbonate	311.1	32001

(1) Except that pentane methylene chloride azeotrope (Two volumes of technical grade pentane to one volume of methylene chloride) shall be used as the solvent for extraction of triple base propellant.

(2) Except that pentane methylene chloride azeotrope shall be used as the solvent for extraction.

(3) The filtrate obtained from the determination shall be retained for the determination of potassium nitrate.

(4) Depending on the presence or absence of nitrate esters.

5.3 Heat tests shall be conducted in accordance with Method 404.1, Standard MIL-STD-286. For single base propellants, the test shall be conducted at 134.5 degrees Centigrade. For M1, M6 and M14, the color of the methyl violet test paper shall not change to a salmon pink color in less than 40 minutes and shall not explode in less than 5 hours. For M10, the color of the methyl violet test paper shall not change to salmon pink color in less than 60 minutes and shall not explode in less than 5 hours. For double or triple base propellants, the test shall be conducted at 120 degrees Centigrade. The propellant shall not change the color of the methyl violet test paper to a salmon pink color in less than 40 minutes. Code No. 31001.

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5.4 Candellilla Wax.-A 10 gram sample shall be accurately weighed. The sample shall then be added to a Soxhlet extraction apparatus and extracted for 16 hours with methylene chloride or six hours if a Roweg Extraction is used. The methylene chloride shall then be evaporated down to dryness in a tared evaporating dish in a current of air. The residue shall be dissolved in 20 ml of glacial acetic acid. To the acid, 10 ml of water shall be added to precipitate the wax, stirred thoroughly, and let stand for 30 minutes. The solution shall be decanted through a silex crucible beaker and then rinsed with several portions of 70% acetic acid. The crucible shall be dried in an oven at 60-70 degrees C. The wax from the crucible shall be transferred to the tared beaker using several portions of methylene chloride. The methylene chloride shall be evaporated to dryness under a current of air. The evaporating dish shall be dried in an oven at 50 to 70 degrees °C. Cool in a desiccator and weigh. Code No. 32001

$$\text{Percent Wax} = \frac{\text{Residue Weight (100)}}{\text{Weight of Sample}}$$

## 6. NOTES

6.1 Inspection code numbers.-The five digit code numbers assigned to the inspections herein are to facilitate future data collection and analysis by the Government.

Copies of specifications, standards, drawings and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring agency or as directed by the contracting officer.

Copies of this Standard may be obtained as indicated in the forward to the Department of Defense Index of Specifications and Standards.

Copies of this Standard may be obtained for other than official used by individuals, firms and contractors from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.

Both the title and the identifying symbol number should be stipulated when requesting copies of Military Standards.

Custodian:  
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Preparing Activity:  
ARMY-MU

Project Number: 1376-A107

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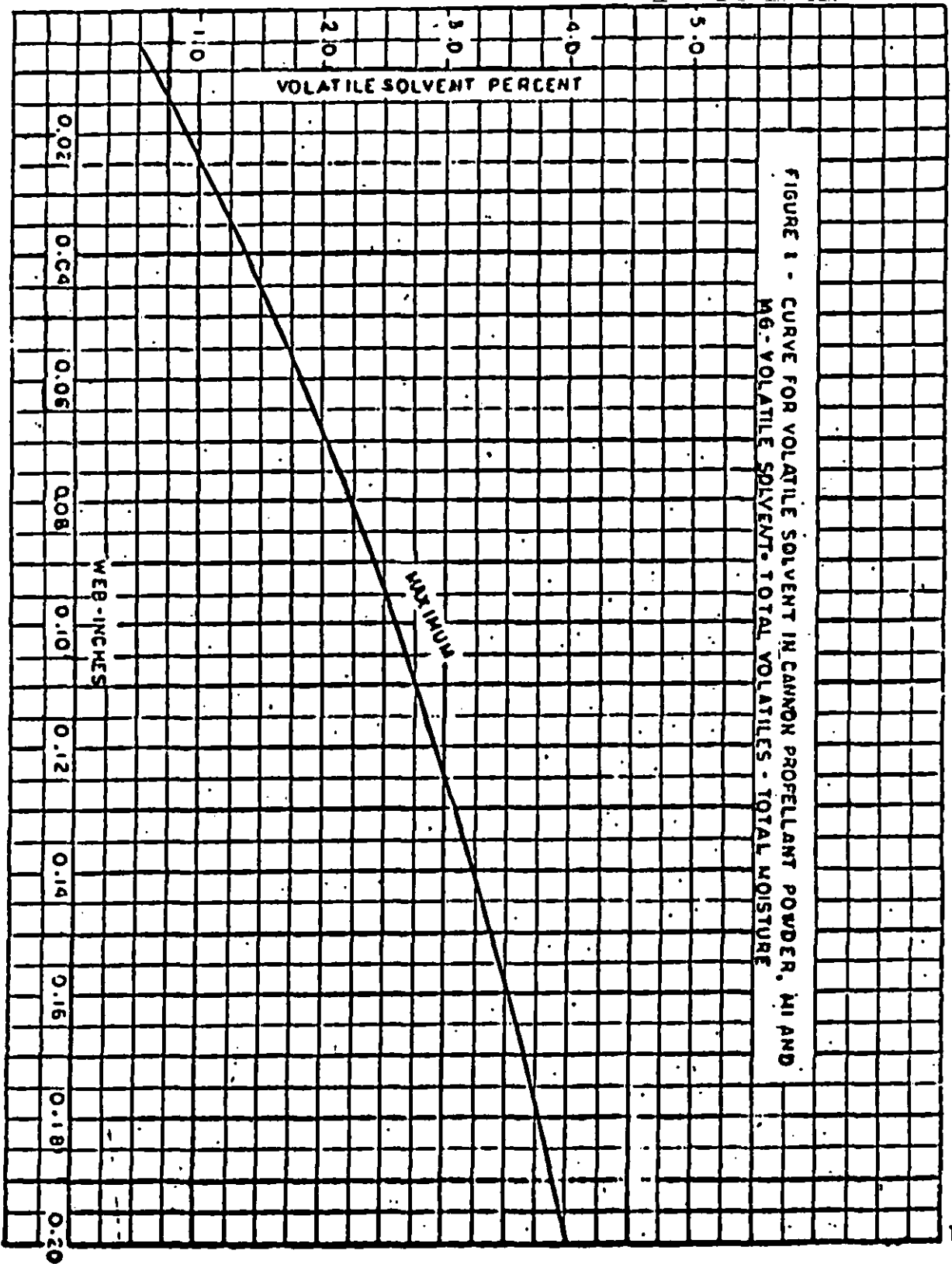


FIGURE 1 - CURVE FOR VOLATILE SOLVENT IN COMMON PROPELLANT POWDER, MI AND  
MG - VOLATILE SOLVENT - TOTAL VOLATILES - TOTAL MOISTURE

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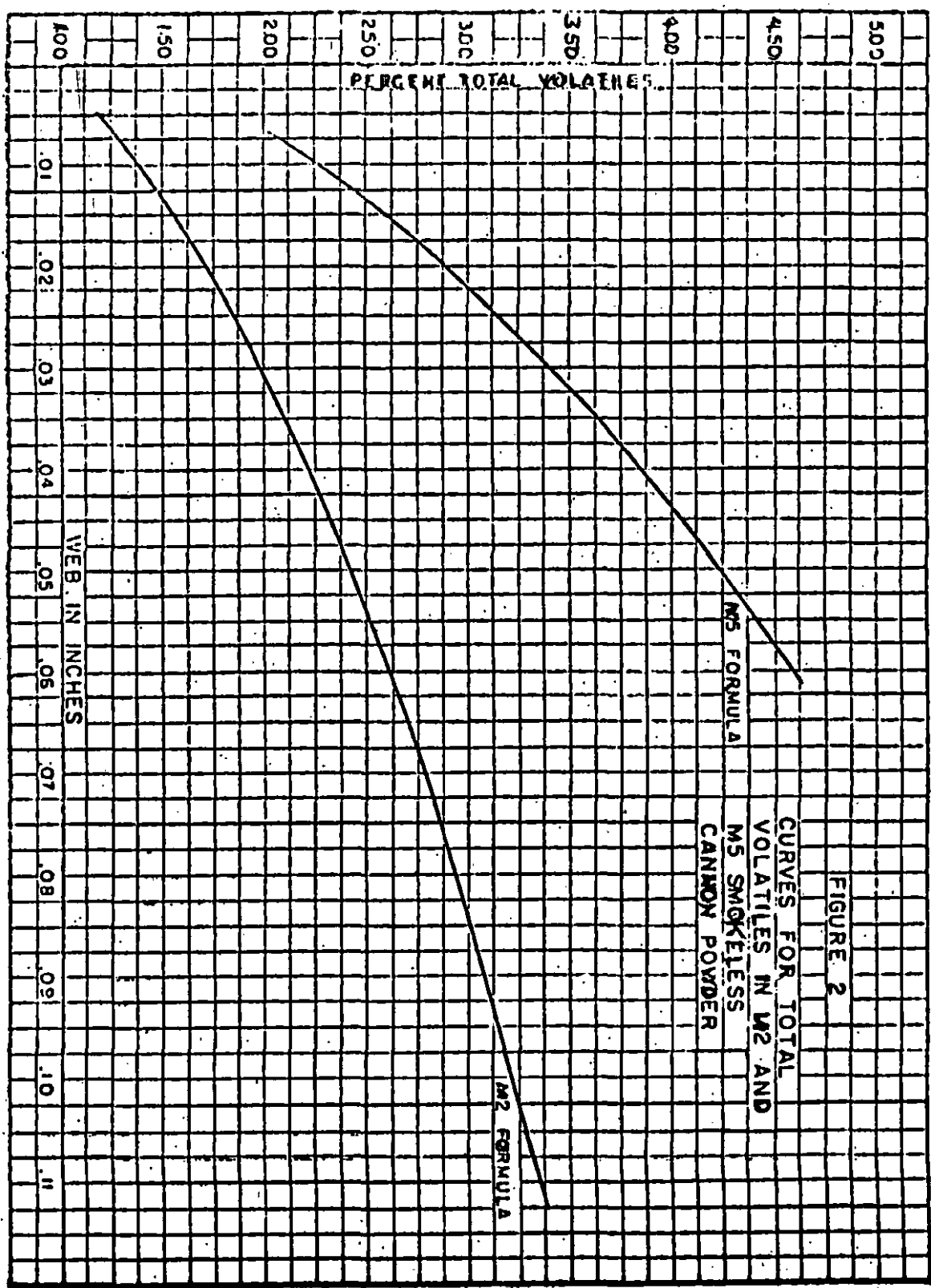


FIGURE 2

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TABLE III

PROPELLANT COMPOSITIONS AND CHEMICAL PROPERTIES

PROPELLANT	PERCENT							MREL <sup>1</sup>
	M0	M2	M5	M6	M8	M8E1		
Nitrocellulose	85.00 ± 2.00	77.45 ± 2.00	81.98 ± 2.00	87.00 ± 2.00	52.15 ± 1.50	52.15 ± 1.50		
Type	I	II	II	I	II	II	II	
Grade	C	C	C	C	C	C	C	
Nitroglycerin	---	19.50 ± 1.00	15.00 ± 1.00	---	43.00 ± 1.50	43.00 ± 1.50		
Nitroguanidine	---	---	---	---	---	---		
Ethyl Centralite	---	0.60 ± 0.15	0.60 ± 0.15	---	0.60 ± 0.15	0.60 ± 0.15		
Barium Nitrate	---	1.40 ± 0.25	1.40 ± 0.25	---	---	---		
Potassium Nitrate	---	0.75 ± 0.25	0.75 ± 0.25	---	1.25 ± 0.25	1.25 ± 0.25		
Potassium Sulfate	**1.0 ± 0.30	---	---	*1.0 ± 0.30	---	---	---	
Lead Carbonate	***1.0 ± 0.20	---	---	---	---	---	---	
Diphenylamine	*1.00 ± 0.10	---	---	*1.00 ± 0.20	---	---	---	
Dinitrotoluene	10.00 ± 2.00	---	---	10.00 ± 2.00	---	---	---	

\* ADDED BASIS  
 \*\* WHEN SPECIFIED, ADDED BASIS  
 \*\*\* WHEN SPECIFIED, ADDED BASIS

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TABLE III (CONTINUED)  
 PROPELLANT COMPOSITIONS AND CHEMICAL PROPERTIES

PROPELLANT	M1	M2	M5	M6	M8	MSEL <sup>1</sup>
Dibutylphthalate	5.00 + 1.00	---	---	3.00 + 1.00	---	---
Diethylphthalate	---	---	---	---	3.00 + 0.50	3.00 + 0.50
2-Nitrodiphenylamine	---	---	---	---	---	---
Graphite	---	0.30 + 0.10	0.30 + 0.10	---	---	---
Cryolite	---	---	---	---	---	---
Total Volatiles, Maximum (Max)	FIGURE 1	FIGURE 2	FIGURE 2	FIGURE 1	---	---
Moisture	0.6 + 0.2	0.70 Max	0.70 Max.	0.6 + 0.2	0.40 Max	0.40 Max
Compressibility, Minimum (Min)	30	---	---	30	---	---
Graphite, Glaze*	---	**0.15 Max	** 0.15 Max	---	---	---
Candelilla Wax (Added Basis)	---	---	---	---	---	0.2 Nominal

1) For information only

NOTE: The compressibility requirement does not apply to Type II Grain of M1 Propellant

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TABLE III (CONTINUED)

PROPELLANT	M9	M10	M14 <sup>1</sup>	M15 <sup>1</sup>	M17 <sup>1</sup>
Nitrocellulose	57.75 ± 1.50	98.00 ± 1.50	90.00 ± 2.00	20.00 ± 1.30	22.00 ± 1.30
TYPE	I	I	I	I	I
GRADE	C	C	C	C	C
Nitroglycerin	40.00 ± 1.50	---	---	19.00 ± 1.00	21.50 ± 1.00
Nitroguanidine	---	---	---	54.70 ± 1.00	54.70 ± 1.00
Ethyl Centralite	0.75 ± 0.10	---	---	6.00 ± 0.30	1.50 ± 0.10
Barium Nitrate	---	--	---	---	---
Potassium Nitrate	1.50 ± 0.50	---	---	---	---
Potassium Sulfate	---	1.00 ± 0.30	---	---	---
Diphenylamine	---	1.00 ± 0.30	*1.00 ± 0.10	---	---
Dinitrotoluene	---	---	8.00 ± 2.00	---	---
Diethylphthalate	---	---	2.00 ± 1.00	---	---
Diethylphthalate	---	---	---	---	---

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<u>PROPELLANT</u>	<u>M9</u>	<u>M10</u>	<u>M14</u> <sup>1</sup>	<u>M15</u> <sup>1</sup>	<u>M17</u> <sup>1</sup>
2-Nitrodiphenylamine	----	----	----	----	----
Graphite	----	----	----	----	----
Cryolite	----	----	----	0.30 ± 0.10	0.30 ± 0.10
Total Volatiles, max.	----	Type I - 3.20 Type II- 2.30	----	----	----
	0.50		1.25	0.30	0.30
Moisture, Max.	---	0.50 to 1.20 <sup>2</sup>	0.60 ± 0.20	----	----
Graphite, Glaze, max. (When Applicable)*	0.40	----	----	----	0.15

1) For Information Only  
 2) Moisture content of M10 (formA) propellants to be as specified in item specification.  
 \* Added

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TABLE III (CONTINUED)

PROPELLANT	M26	M26E1	M30	M30A1	M31
Nitrocellulose Type Grade	67.25 ± 1.80 I C	68.70 ± 1.80 I C	28.00 ± 1.30 I A	28.00 ± 1.30 I A	20.00 ± 1.30 I A
Nitroglycerin	25.00 ± 1.00	25.00 ± 1.00	22.50 ± 1.00	22.50 ± 1.00	19.00 ± 1.00
Nitroguanidine	---	---	47.70 ± 1.00	47.00 ± 1.00	54.70 ± 1.00
Ethyl Centralite	6.00 ± 0.50	6.00 ± 0.50	1.50 ± 0.10	1.50 ± 0.10	---
Barium Nitrate	0.75 ± 0.20	---	---	---	---
Potassium Nitrate	0.70 ± 0.25	---	---	---	---
Potassium Sulfate	---	---	---	1.00 ± 0.30	---
Diphenylamine	---	---	---	---	---
Dinitrotoluene	---	---	---	---	---
Dibutylphthalate	---	---	---	---	4.50 ± 0.30
Diethylphthalate	---	---	---	---	---
2-Nitrodiphenylamine	---	---	---	---	1.50 ± 0.30
Graphite	0.30 ± 0.10	0.30 ± 0.10	---	---	---
Cryolite	---	---	0.30 ± 0.10	---	0.30 ± 0.10

MIL-STD-652C (MJ)  
 30 November 1973  
 TABLE III (CONTINUED)

<u>PROPELLANT</u>	<u>M26</u>	<u>M26E1</u>	<u>M30</u>	<u>M30A1</u>	<u>M31</u>
Total Volatiles, Max.	Type I - 2.00 Type II - 1.50	Type I - 2.00 Type II - 1.50	0.50 ---	0.50 ---	0.30 ---
Moisture, Max.	0.70	0.70	---	---	---
Graphite, Glaze, Max. (When Applicable) *	0.15	0.15	0.2	0.15	0.15

\*Added

**SPECIFICATION ANALYSIS SHEET**

Form Approved  
 Budget Bureau No. 119-R004

INSTRUCTIONS

This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity (as indicated on reverse hereof).

**SPECIFICATION**

ORGANIZATION (of submitter)

CITY AND STATE

CONTRACT NO.

QUANTITY OF ITEMS PROCURED

DOLLAR AMOUNT

\$

**MATERIAL PROCURED UNDER A**

DIRECT GOVERNMENT CONTRACT

SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

YES

NO IF "YES", IN WHAT WAY?

4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)

SUBMITTED BY (Printed or typed name and activity)

DATE