

MIL-R-60671(MJ)

22 May 1967

SUPERSEDING

Frankford Arsenal Purchase
Description FED-1657, Rev. 1
14 July 1953

MILITARY SPECIFICATION

RUBBER, CHLORINATED, NATURAL: POWDER

1. SCOPE

1.1 This specification covers the requirements for a powdered chlorinated natural rubber used in pyrotechnic mixtures.

2. APPLICABLE 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 specification to the extent specified herein:

SPECIFICATIONS

FEDERAL

RR-S-366 - Sieves, Standard for Testing Purposes
PPP-B-621 - Boxes, Wood, Nailed and Lock-Corner

STANDARDS

FEDERAL

Fed. Test Method Std. No. 601 - Rubber: Sampling and Testing

MILITARY

MIL-STD-129 - Marking for Shipment and Storage

FSC 1370

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(Copies of specifications, standards, drawings, and publications required by suppliers 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.

AMERICAN SOCIETY FOR TESTING AND MATERIALS

ASTM D-1034-60 - Methods of Test for Consistency of Adhesives

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa., 19103).

3. REQUIREMENTS

3.1 Chlorine content. The chlorinated natural rubber shall contain not less than 60 percent chlorine.

3.2 Specific volume. The specific volume of the granular rubber powder shall be not less than 1,000 cubic centimeters per pound as shipped.

3.3 Specific gravity. The specific gravity of the powdered rubber shall be not less than 1.30.

3.4 Color. The color of the granular powdered rubber shall be white to cream white.

3.5 Granulation. The powdered rubber shall be of the granulation shown in table I. All percentages shall be by weight using U. S. standard sieves conforming to RR-S-366.

Table I - Granulation

<u>U. S. Standard Sieve No.</u>	<u>Percent, minimum</u>
Thru No. 20	30
Thru No. 60	40
Thru No. 100	20

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3.6 Stability. The chlorinated rubber powder shall be stable up to 125°C.

3.7 Viscosity. A 20 percent by weight mixture of the rubber powder in toluene shall have a viscosity of not more than 23 nor less than 15 centipoises when tested in accordance with para. 4.4.7.

3.8 Workmanship. The granulated rubber powder shall be free from dirt or dust, carbon black, or any other contaminant that will adversely affect the purpose for which the powdered rubber is intended.

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 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 that supplies and services conform to prescribed requirements.

4.2 Lot. A lot shall consist of 1,000 pounds or fraction thereof.

4.3 Sampling. The inspector shall select representative samples of the powder from at least two individual containers or bags of the material.

4.4 Test procedures.

4.4.1 Chlorine content. Weigh 50 mg. of the sample and determine the chlorine content by the Carius method whereby the material is oxidized in a sealed tube in the presence of nitric acid at 300°C and the resulting chloride ion is precipitated and determined gravimetrically as silver chloride.

4.4.2 Specific volume. Weigh one pound of the powdered rubber and pour into a graduated cylinder and read off the amount of cubic centimeters.

4.4.3 Specific gravity. The specific gravity shall be determined by using the pycnometer method in kerosene at 20°C.

4.4.4 Color. The color of the powdered rubber shall be determined visually.

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4.4.5 Granulation. Place a weighed portion of 25 gm. of the dried sample on the appropriate sieve as indicated in table I. Partially immerse the sieve in a saturated solution of the powdered rubber in 75 percent ethyl alcohol (by volume) in a large evaporating dish, and shake so that the finer material passes through the sieve. Change the alcohol solution several times. Dry the residue on the sieve at 43° plus or minus 3°C for 2 hours. Remove the material from the sieve and weigh. Repeat the above procedure using each of the sieves specified. Use a separate 25 gm. portion of the sample for the test with each sieve. From these values, calculate the percentage of the sample passed by the prescribed sieve.

4.4.6 Stability. The stability shall be determined by such method as approved by the contracting officer.

4.4.7 Viscosity. The viscosity shall be determined at a temperature of $73^{\circ} \pm 2^{\circ}\text{F}$ with a Brookfield RVF Viscosimeter (ASTM D-1084-60). The rubber mixture (in the container supplied by the manufacturer) shall be stirred manually for one minute using a one-inch wide spatula. Immediately on completion of the stirring operation, the viscosity shall be determined. Measurements shall be made at a spindle speed of 10 revolutions per minute (rpm). The spindle used shall be the smallest spindle number capable of giving a measurement of the viscosity at a spindle speed of 10 RPM. Viscosity determinations shall be made on each container of natural chlorinated rubber in the sample. The average value of the viscosity of the chlorinated natural rubber in the sample shall fall within the limits specified in 3.7.

5. PREPARATION FOR DELIVERY

5.1 Packaging.

5.1.1 Level A. The powdered rubber shall be packaged in 50 pound tin containers or paper bags, as specified in the contract or purchase order.

5.1.2 Level C. The powdered rubber shall be packaged in accordance with manufacturer's commercial practice.

5.2 Packing.

5.2.1 Level A. The individual tin containers or paper bags shall be packed in boxes, wood, nailed and lock-corner conforming to PPP-B-621.

5.2.2 Level C. The unit containers shall be packed in accordance with manufacturer's commercial practice.

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5.3 Marking. In addition to any special marking required by the contract or order, shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The granulated rubber powder is intended for use as a binder in pyrotechnic mixtures.

6.2 Ordering data. Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Level of packaging and packing (see 5.1 and 5.2).

Custodian:
Army - MU

Preparing activity:
Army - MU

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