

LLL-R-626D
5 January 1984

SUPERSEDING
LLL-R-626c
August 6, 1968

FEDERAL SPECIFICATION

ROSINS: GUM, WOOD, AND TALL OIL

This specification was approved by the Commissioner, Federal Supply and Services, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers 3 classes, 2 types, and 13 grades of rosin.

1.2 Classification. Rosin shall be of the following classes, types, and grades as specified (see 6.2).

1.2.1 Classes.

Class A - Gum rosin (obtained from the oleoresin collected from living trees).

Class B - Wood rosin (obtained from the oleoresin contained in dead wood such as stumps and knots).

Class C - Tall oil rosin (obtained from tall oil).

1.2.2 Types.

Type I - Lump [solid mass (molten) or large lumps].

Type II - Powdered (ground from type I rosin).

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1.2.3 Grades. Type I rosin shall be of the following grades as prescribed by the Federal Naval Stores Act:

Grade X (lightest color)
 Grade WW
 Grade WG
 Grade N
 Grade M
 Grade K
 Grade I
 Grade H
 Grade G
 Grade F
 Grade E
 Grade D (darkest color)
 Grade FF (unrefined dark-colored wood rosin)

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:

Federal Specifications:

L-P-378 - Plastic Sheet and Strip, Thin Gauge, Polyolefin
 NN-P-71 - Pallets, Material Handling, Wood, Stringer Construction, 2-Way and 4-Way (Partial)
 PPP-B-585 - Boxes, Wood, Wirebound
 PPP-B-621 - Boxes, Wood, Nailed and Lock-Corner
 PPP-B-636 - Boxes, Shipping, Fiberboard
 PPP-C-96 - Cans, Metal, 28 Gage and Lighter
 PPP-D-723 - Drums, Fiber
 PPP-D-729 - Drums, Shipping and Storage, Steel, 55-Gallon (208 Liters)
 PPP-F-320 - Fiberboard; Corrugated and Solid, Sheet Stock (Container Grade), and Cut Shapes

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards and Commercial Item Descriptions. The Index, which includes cumulative bimonthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, US Government Printing Office, Washington, DC 20402.

(Single copies of this specification, other Federal specifications, and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston, MA; New York, NY; Washington, DC; Philadelphia, PA; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Houston, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; and Seattle, WA.

(Federal Government activities may obtain copies of Federal standardization documents and the Index of Federal Specifications, Standards and Commercial Item Descriptions from established distribution points in their agencies.)

Military Specification:

MIL-B-117 - Bags, Sleeves and Tubing-Interior Packaging

Military Standards:

MIL-STD-105 - Sampling Procedures and Tables for Inspection by
Attributes
MIL-STD-129 - Marking for Shipment and Storage
MIL-STD-147 - Palletized Unit Loads
MIL-STD-1168 - Ammunition Lot Numbering

(Copies of Military specifications and standards required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

American Society for Testing and Materials (ASTM) Standards:

D269 - Toluene-Insoluble Solid Matter in Rosin (Chiefly Sand, Chips,
Dirt, and Bark)
D464 - Saponification Number of Rosin
D465 - Acid Number of Rosin
D509 - Sampling and Grading Rosin
D1193 - Reagent Water
D3951 - Commercial Packaging
E11 - Wire Cloth Sieves for Testing
E28 - Softening Point by Ring-and-Ball Apparatus

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

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

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

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3. REQUIREMENTS

3.1 Type I rosin.

3.1.1 Lump size. Type I rosin shall be a solid mass or broken lumps. In the latter case, a substantial portion of lumps in each container shall be of a size to permit cutting from the lump at least one approximately cubical sample, 7/8 inch on each side, for use in grading. Crushed, powdered, and small broken pieces of rosin shall constitute no more than 10 percent by weight of the rosin in the container.

3.1.2 Grade. The color of the finished specimen of type I rosin prepared for grading shall be no darker than that of the applicable standard when tested as specified in 4.2.4.1.

3.1.3 Physical and chemical characteristics. Type I rosin shall conform to applicable physical and chemical characteristics of table I when tested as specified therein.

TABLE I. Physical and chemical characteristics of type I rosin

Characteristic	: All grades except : grade FF	: Grade FF	: Test : paragraph
Insoluble matter in toluene, maximum percent by weight	: 0.05	: 0.05	: 4.2.4.2
Softening point, °C, minimum	: 70	: 67	: 4.2.4.3
Acid number, minimum	: 160	: 150	: 4.2.4.4
Saponification number, minimum	: 166	: 162	: 4.2.4.5
	:	:	:

3.2 Type II rosin.

3.2.1 Inert filler. The quantity of inert filler added to type II rosin to prevent congealing and solidification on standing shall not exceed 10 percent by weight, determined as insoluble matter in toluene, when tested as specified in 4.2.4.2.

3.2.2 Particle size. All the type II rosin shall pass through a 2.36-millimeter sieve when tested as specified in 4.2.4.6.

3.2.3 Heat test. The type II rosin shall remain uncongealed and free from lumps when tested as specified in 4.2.4.7.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by 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 Quality conformance inspection.

4.2.1 Lotting. A lot shall consist of the rosin of one class, type, and grade, produced by one manufacturer, at one plant, from the same materials, and under essentially the same manufacturing conditions provided the operation is continuous. In the event the process is a batch operation, each batch shall constitute a lot (see 6.3). When specified (see 6.2), lot numbering shall be in accordance with MIL-STD-1168.

4.2.2 Sampling.

4.2.2.1 For examination of packaging. Sampling shall be conducted in accordance with MIL-STD-105.

4.2.2.2 For rosin test (except grading). See 6.5 for sampling and testing precautions. Sampling shall be conducted in accordance with table II. A representative specimen of approximately 1 kilogram shall be removed from each sample container and placed in a suitable clean, dry container labeled to identify the lot and container from which it was taken.

TABLE II. Sampling for test (except grading)

Number of containers in batch or lot	:	Number of sample containers
2 to 15	:	2
16 to 50	:	3
51 to 150	:	5
151 to 500	:	8
501 to 3,200	:	13
3,201 to 35,000	:	20
Over 35,000	:	32

4.2.2.3 For grading. Sampling for grading shall be conducted in accordance with ASTM D509.

4.2.2.4 For container leakage test. Sampling shall be conducted in accordance with MIL-STD-105.

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4.2.3 Inspection procedure.

4.2.3.1 For examination of packaging. The sample unit shall be one filled unit or shipping container, as applicable, ready for shipment. Sample unit and shipping containers shall be examined for the following defects using an AQL of 1.0 percent defective:

- (a) Contents per container not as specified
- (b) Container not as specified
- (c) Container closure not as specified
- (d) Container damaged or leaking
- (e) Marking incorrect, missing or illegible
- (f) Unitization not as specified

4.2.3.2 For rosin test. Each sample specimen taken in 4.2.2.2 shall be tested as specified in the applicable portions of 4.2.4, omitting 4.2.4.1. Failure of any test by any specimen shall be cause for rejection of the lot represented.

4.2.3.3 For grading. Each sample specimen shall be tested as specified in 4.2.4.1. Failure of any specimen to pass the test shall be cause for rejection.

4.2.3.4 For container leakage test. See 6.5 for sampling and testing precautions. The sample unit shall be one container. The sample containers selected in 4.2.2.4 shall be tested as specified in 4.2.5 using an AQL of 1.5 percent defective.

4.2.4 Rosin tests. See 6.5 for sampling and testing precautions. Water in accordance with ASTM D1193 and reagent grade chemicals shall be used throughout the tests. Where applicable, blank determinations shall be run and corrections applied where significant. Tests shall be conducted as follows:

4.2.4.1 Grading. Determine the grade of rosin in accordance with ASTM D509.

4.2.4.2 Insoluble matter in toluene. Determine the percent insoluble matter in toluene in accordance with ASTM D269.

4.2.4.3 Softening point. Determine the softening point in accordance with ASTM E28.

4.2.4.4 Acid number. Determine the acid number in accordance with ASTM D465.

4.2.4.5 Saponification number. Determine the saponification number in accordance with ASTM D464.

4.2.4.6 Particle size. Weigh 100 ± 1 gram (g) of the specimen into a large container and add approximately 1 liter of distilled water. Stir the rosin thoroughly in the water to separate all the particles. Wash the rosin onto a

2.36-millimeter sieve conforming to ASTM E11 with a gentle stream of water while gently brushing, with a camel's hair brush, any matter retained on the sieve. No rosin shall remain on the sieve.

4.2.4.7 Heat test. Weigh approximately 5 g of the specimen into one 6-inch test tube and stopper lightly. Place the tube in a water bath at $57^{\circ} \pm 1^{\circ}\text{C}$ to the depth of the rosin in the tube and let stand for two hours. Remove the tube, wipe off the outside water, and gently tap the tube with a pencil. Turn the contents out onto a sheet of paper or a flat dish. There shall be no aggregate lumps in the powdered material.

4.2.5 Container leakage test. Hold the can in each of the following positions and moderately shake for a minimum period of one minute:

- (a) Upright
- (b) Upside down
- (c) On one side
- (d) On one end
- (e) On other side

Examine the container after each period for any evidence of leakage.

5. PREPARATION FOR DELIVERY

5.1 Preservation. Rosin shall be preserved level A, E or industrial, as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Unit packing. Rosin shall be unit packed level A in a 10-, 500-, 505- or 520-pound (lb) quantity as specified (see 6.2).

5.1.1.1.1 Ten-lb quantity. A quantity of 10 lb [+4 or -0 ounces (oz)] of rosin shall be unit packed level A in a metal can conforming to type V, class 2, electrolytic tin plate No. 100, exterior coating plan B with side seam striped of PPP-C-96. The can shall be securely closed by firmly pressing the cover onto the can. There shall be no evidence of sifting out of contents when tested as specified in 4.2.5.

5.1.1.1.2 Five hundred-lb quantity.

(a) A quantity of 520 (+5 or -0) lb of grade FF molten rosin, or 505 (+5 or -0) lb of any other grade of molten rosin shall be unit packed in a nominal 29 gauge steel, domed head, standard rosin drum furnished with a friction type lid. When specified (see 6.2), the drum shall be zinc-galvanized for the light color grades.

(b) A quantity of 500 (+5 or -0) lb of lump or powdered rosin shall be packed in a fully-removable-head steel drum conforming to type IV of PPP-D-729. The drum shall be furnished with a bag liner conforming to type I,

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class B of MIL-B-117 and formed from polyethylene material conforming to type I or II, grade A, class 1 of L-P-378. The bag shall be closed by tying or knotting, permitting reclosure. The drum shall be securely bolted closed while tapping the locking ring to prevent binding.

5.1.2 Level B.

5.1.2.1 Unit packing. Rosin shall be unit packed level B in a 10-, 500-, 505-, or 520-lb quantity, as specified (see 6.2).

5.1.2.1.1 Ten-lb quantity. A 10-lb quantity of rosin shall be unit packed level B in the same manner as for level A except that the side seam striping shall not be required on the can.

5.1.2.1.2 Five hundred-lb quantity. A 500-lb quantity of rosin shall be unit packed level B in the same manner as for level A in 5.1.1.1.2, except that the drum shall be a fiber drum conforming to type II, grade A of PPP-D-723.

5.1.3 Industrial. The specified quantity of rosin (see 6.2) shall be unit packed in accordance with ASTM D3951.

5.2 Packing. Packing shall be level A, B or industrial as specified (see 6.2).

5.2.1 Level A.

5.2.1.1 Ten-lb quantity. Six 10-lb cans of rosin, unit packed as specified in 5.1.1.1.1, shall be packed in two rows of three cans in a close-fitting wire-bound wood box conforming to class 3, style optional of PPP-B-585. The wood parts shall be preserved as specified for those of the grade A box of PPP-B-621. Fiberboard shall be used to line all inside faces of the box, and each can shall be placed in a close-fitting cell formed by half-slotted partitions of fiberboard. The fiberboard shall conform to class weather-resistant, grade V3c of PPP-F-320. Motion of contents shall be prevented by insertion of fiberboard pads where needed. The box shall be closed as specified in PPP-B-585.

5.2.1.2 Five hundred-lb quantity. The 500-lb quantities of rosin, unit packed as specified in 5.1.1.1.2, shall require no further protection for shipment.

5.2.2 Level B.

5.2.2.1 Ten-lb quantity. The 10-lb quantity of rosin shall be packed level B in the same manner as for level A, except that the box shall be fiberboard conforming to class weather-resistant, grade V3c of PPP-B-636. The box shall be closed and reinforced as specified in the appendix to PPP-B-636.

5.2.2.2 Five hundred-lb quantity. The 500-lb quantities, unit packed level B, shall require no further protection for shipment.

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5.2.3 Industrial. The specified quantity of rosin (see 6.2) shall be packed in accordance with ASTM D3951.

5.2.4 Unitization. Level A and B packs of the 10-lb quantity of rosin shall be palletized in accordance with the applicable requirements for a type I load of MIL-STD-147, using the soft wood pallet conforming to type IV of NN-P-71. Industrial packs shall be unitized to assure carrier acceptance, protection of the packs, and stable stacking in transit and storage for a minimum of six months.

5.3 Marking. Level A and B containers and pallet loads shall be marked in accordance with MIL-STD-129. Industrial containers shall be marked in accordance with ASTM D3951. Unitized industrial loads shall be marked to assure proper identification of contents, source and destination. Containers shall be marked to show the lot or batch number and date of manufacture of the rosin. In addition, each unit container shall be durably and legibly marked as follows:

WARNING!

COMBUSTIBLE

Keep away from heat and open flame.
In case of fire, extinguish with foam,
dry chemical, or carbon dioxide.
Water may be ineffective on fire.

6. NOTES

6.1 Definition. The rosin in this specification is defined in ASTM D804.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents.

- (a) Title, number, and date of this specification,
- (b) Class, type, and grade (if applicable) of rosin required (see 1.2),
- (c) If lot numbering in accordance with MIL-STD-1168 is required (see 4.2.1),
- (d) Level of preservation and packing required (see 5.1 and 5.2),
- (e) Quantity to be unit packed level A, E, or industrial (see 5.1.1.1, 5.1.2.1, and 5.1.3),
- (f) If drum should be zinc-galvanized (see 5.1.1.1.2), and
- (g) Quantity to be packed industrially (see 5.2.3).

6.3 Batch. A batch is defined as that quantity of material which has been manufactured by some unit chemical process or subjected to some physical mixing operation intended to make the final product substantially uniform.

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6.4 Significant places. For the purpose of determining conformance with this specification, an observed or calculated value should be rounded off "to the nearest unit" in the last right-hand place of figures used in expressing the limiting value, in accordance with the rounding-off method of ASTM E29.

6.5 Sampling and testing precautions. This specification covers inspection of chemical material which is potentially hazardous to personnel. All applicable safety rules, regulations, and procedures must be followed in the handling and processing of these materials.

MILITARY INTERESTS:

Custodians:

Army - EA
Navy - OS
Air Force - 68

Review activities:

Army - MD, MI
DLA - GS

CIVIL AGENCY COORDINATING ACTIVITIES:

AGR-AMS
GSA-FSS
HHS-NIH

Preparing activity:

Army - EA

Project No. 6810-B030

Orders for this publication are to be placed with the General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain copies and other documents referenced herein.

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