MIL-S-12935D
12 November 1973
SUPERSEDING
MIL-S-12935C
21 May 1971

MILITARY SPECIFICATION

SEALER, SURFACE; FOR KNOTS

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 This specification covers a synthetic resin knot-sealing compound for use in the preparation for painting of lumber resinous knots, and can be used in areas covered by Air Pollution Regulations.

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

O-E-760	- Ethyl Alcohol (Ethanol); Denatured Alcohol; and Proprietary Solvent.
TT-P-25	- Primer Coating, Exterior (Undercoat for Wood, Ready-Mixed, White and Tints).
TT-P-105	- Paint, Oil: Chalk-Resistant, Lead-Free, Exterior Ready-Mixed, White and Tints.
TT-P-143	- Paint, Varnish, Lacquer, and Related Materials; Packaging, Packing, and Marking of.

FSC 8010

STANDARDS

Federal

FED. TEST METHOD STD. No. 141 - Paint, Varnish, Lacquer, and Related Materials; Methods of Inspection, Sampling, and Testing.

(Copies of specifications and standards 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 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.

AMERICAN SOCIETY FOR TESTING AND MATERIALS

D304 - Normal Butyl Alcohol (Butanol)
D1396 - Chemical Analysis of Poly(Vinyl Butyral)
G26 - Operating Light- and Water-Exposure Apparatus. (Xenon-Arc Type) for Exposure of Nonmetalic Materials

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

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

National Motor Freight Classification.

(Application for copies should be addressed to the American Trucking Associations, Inc., ATTN: Tariff Order Section, 1616 P Street NW, Washington, DC 20036.)

DEPARTMENT OF TRANSPORTATION

CFR 49 parts 0-190 - Transportation of Hazardous Materials.

(Application for copies should be addressed to Superintendent of Documents, Government Printing Office, Washington, DC 20402.)

UNIFORM CLASSIFICATION COMMITTEE, AGENT

Uniform Freight Classification.

(Application for copies should be addressed to the Uniform Classification Committee, ATTN: Tariff Publishing Officer, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

3. REQUIREMENTS

3.1 Description. The sealer is a composition in liquid form, the formulation of which shall conform to the requirements specified in table I.

Table I Formulation

Component	Parts by weight
Phenolic resin solution (55-60 percent nonvolatile)	10.0
Polyvinyl butyral resin	1.0
Ethyl alcohol (95 percent) (denatured)	13.0
Normal butyl alcohol	6.0

3.2 Material. Material shall be as specified herein. Material not specified shall be selected by the supplier and shall be subject to all provisions of this specification.

3.2.1 Ethyl alcohol. Ethyl alcohol shall conform to O-E-760, grade III.

3.2.2 Butyl alcohol. Normal butyl alcohol shall conform to ASTM D304.

3.2.3 Phenolic resin solution. The phenolic resin solution shall be a clear baking solution of a 100 percent phenolic resin in denatured ethyl alcohol. The varnish shall have the following properties:

Nonvolatile matter, percent by weight	55 to 60
Viscosity, Gardner-Holdt (77° F.)	L to Q
Color (Gardner)	4 to 8
Weight per gallon (pounds) (77° F.)	8.8 to 8.9 pounds

3.2.4 Polyvinyl butyral resin. The resin shall be of a polyvinyl partial butyral resin containing only polyvinyl butyral, polyvinyl alcohol, and polyvinyl acetate in the molecule. The resin shall be as follows:

Polyvinyl alcohol, percent by weight.	18 to 22
Polyvinyl acetate, percent by weight maximum	1.0
Viscosity, 6 percent in methanol, Gardner-Holdt tubes	A-3 to A-2
Weight per gallon (pounds)	8.8 to 9.6

3.3 Quantitative requirements. The sealer shall conform to the requirements specified in table II.

Table II. Quantitative Requirements

Characteristics	Requirement Min.	Max.
Nonvolatile (percent by weight)	21.0	-
Viscosity (Gardner-Holdt tubes)	A	C
Drying time, set to touch, minutes	-	30
Butyraldehyde (percent by weight)	0.9	1.3
Weight per gallon (pounds)	7.1	7.6
Flash point (° F.)	55	-

3.4 Qualitative requirements.

3.4.1 Condition in container. The sealer in a freshly opened container shall be uniform, clear, and free from sediment and suspended matter.

3.4.2 Accelerated weathering. Sealed surfaces of panels shall show no discoloration, cracking, or checking after exposure to 500 hours of accelerated weathering, when tested as specified in 4.4.1.1

3.5 Labeling. Each container of sealer shall be marked with the following information by stencil, lithograph, or securely affixed label:

"DANGER FLAMMABLE
VAPORS HARMFUL
MAY BE FATAL IF TAKEN INTERNALLY

Instructions for use. Surface-knot sealer is intended for use over knots as a sealer to prevent resinous materials in the knots from bleeding through and discoloring subsequently applied coats of paint. On new work, coat all knots and pitchy streaks with knot sealer before the prime coat of paint is applied. On repaint work, scrape off old paint from knots and pitchy streaks down to the bare wood; bevel edges of paint with sandpaper; and coat scraped areas with knot sealer before repainting. Brush the knot sealer thoroughly over the knot and surrounding area to insure complete coverage. Where it is doubtful that one coat is sufficient, brush on two coats of sealer. Sealer will set to touch in 10 to 15 minutes; however, it should be allowed to dry overnight before paint is applied over it. Do not use sealer under lacquer or apply putty directly over the sealer. Fill cracks and nail holes after primer has been applied."

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 in the contract or order, the supplier 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.

4.1.1 Component and material inspection. The supplier is responsible for insuring that components and materials used are manufactured, examined, and tested in accordance with referenced specifications and standards.

4.2 Classification of inspection. Inspection shall be classified as follows:

(a) Quality conformance inspection (see 4.3).
(b) Inspection of preparation for delivery (see 4.5).

4.3 Quality conformance inspection.

4.3.1 Sampling and inspection. Sampling and inspection shall be in accordance with FED. TEST METHOD STD. No. 141, method 1031.

4.3.1.1 Tests. Samples selected in accordance with 4.3.1 shall be tested as specified in 4.4.1 through 4.4.1.2 inclusive. Failure of any test shall be cause for rejection of the lot from which the sample was taken.

4.4 Test procedures.

4.4.1 Physical and chemical properties. The following tests shall be conducted in accordance with FED. TEST METHOD STD. No. 141, methods as specified in table III. Failure of any test result to fall within the ranges specified in 3.1, 3.2, 3.3 or 3.4, as applicable, shall constitute failure of the applicable test.

Table III Tests and Methods

Test	Applicable test method in FED. STD. No. 141
Condition in container	3011
Volatile and nonvolatile content	4041
Drying time	4061
Viscosity	4271
Weight, per gallon	4184
Flash point	4291
Solvent analysis	7360

4.4.1.1 Accelerated weathering test.

4.4.1.1.1 Test panels. Test panels shall be of Ponderosa pine and shall be new, and surfaced on four sides. Each panel shall contain at least one, live, intergrown knot.

4.4.1.1.2 Procedure. The knots and surrounding areas of three panels shall be brush coated with the sealer and allowed to dry overnight. After drying, the sealed surfaces, edges, and backs of the panels shall be painted with one coat of primer conforming to TT-P-25 and one coat of paint conforming to TT-P-105. Primer and paint shall be brushed on the panels in accordance with FED. TEST METHOD STD. No. 141, method 2141, at a total dry-film thickness of not less than 3 mils. Air-drying time between coats of primer

and paint shall be 48 hours. After being painted, the panels shall be air-dried for 72 hours and then exposed to 500 hours of accelerated weathering in accordance with ASTM G26, type BH, or FED. TEST METHOD STD. No. 141, method 6151. Nonconformance to 3.4.2 shall constitute failure of this test.

4.4.1.2 Butyraldehyde content. The analysis for total butyraldehyde content shall be conducted in accordance with ASTM method D1396, except the sample size shall be 10 grams. Nonconformance to 3.3 shall constitute failure of this test.

4.5 Inspection of preparation for delivery. The packaging, packing and marking of the sealer shall be in accordance with requirements of TT-P-143.

5. PREPARATION FOR DELIVERY

5.1 Packaging, packing and marking. The sealer shall be packaged, packed, and marked in accordance with TT-P-143. The level of packaging shall be A or C, and the level of packing shall be A, B, or C, as specified (see 6.2). The sealer shall be furnished in round 1-quart or 1-gallon multiple friction plug cans as specified (see 6.2).

6. NOTES

6.1 Intended use. The sealer is intended for use over knots to prevent resinous materials in the knots from bleeding through and discoloring subsequently applied coats of oilbase paint. This sealer is not suitable for use under lacquer or putty.

6.2 Ordering data. Procurement documents should specify the following:

(a) Title, number, and date of this specification.
(b) Quantity required.
(c) Size of container required (see 5.1).
(d) Level of packaging and level of packing required (see 5.1).

Custodians:

Army - ME
Navy - YD
Air Force - 84

Review activity:

Army - MR

Preparing activity:

Army - ME

Project No. 8010-0741

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1. DOCUMENT NUMBER

2. DOCUMENT TITLE

3a. NAME OF SUBMITTING ORGANIZATION

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4. TYPE OF ORGANIZATION *(Mark one)*

- ☐ VENDOR
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- ☐ OTHER *(Specify)*: _____

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional

b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional

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8. DATE OF SUBMISSION *(YYMMDD)*

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