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Standard Specification for Raw Tung Oil[1]

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1. Scope

1.1 This specification covers raw tung oil derived from *Aleurites fordii Hemsley.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 93 Test Methods for Flash Point by Pensky-Martens Closed Tester[2]

D 555 Guide for Testing Drying Oils[3]

D 1466 Test Method for Sampling Liquid Oils and Fatty Acids Commonly Used in Paints, Varnishes, and Related Materials[3]

D 1541 Test Method for Total Iodine Value of Drying Oils and Their Derivatives[3]

D 1544 Test Method for Color of Transparent Liquids (Gardner Color Scale)[4]

D 1639 Test Method for Acid Value of Organic Coating Materials[3]

D 1955 Test Method for Gel Time of Drying Oils[3]

D 1959 Test Method for Iodine Value of Drying Oils and Fatty Acids[3]

D 1962 Test Method for Saponification Value of Drying Oils, Fatty Acids, and Polymerized Fatty Acids[3]

D 1963 Test Method for Specific Gravity of Drying Oils, Varnishes, Resins, and Related Materials at 25/25°C[3]

D 1964 Test Method for Tung Oil Quality[3]

D 1965 Test Method for Unsaponifiable Matter in Drying Oils, Fatty Acids, and Polymerized Fatty Acids[3]

D 2090 Test Method for Clarity and Cleanness of Paint and Ink Liquids[3]

D 3278 Test Methods for Flash Point of Liquids by Small Scale Closed-Cup Apparatus[4]

3. Properties

3.1 Raw tung oil shall conform to the requirements given in Table 1 .

TABLE 1 Properties of Raw Tung Oil[A]

	Requirements	ASTM Test Method
Specific gravity, 25/25°C	0.933 to 0.938	D 1963
Acid value, max	5.0	D 1639
Saponification value	189 to 195	D 1962
Unsaponifiable matter, max, %	0.75	D 1965
Iodine value (Wijs), min	163	D 1959
Total iodine value, min	220	D 1541
Clarity	clear and transparent at 25°C	D 2090
Color (Gardner), max	12	D 1544
Flash point, min	203°F (95°C)	D 3278[B]
	250°F (121°C)	D 93
Gel time, minutes, max	12	D 1955
Tung oil quality test	pass	D 1964
Refractive index, 25°C	1.5160 to 1.5200	

[A] A relationship between refractive index and tung oil adulteration with other oils is described in "Paint Testing Manual," Gardner-Sward-13th Edition, 1972, Chapter 2.1, Section 12.1, p. 62.

[B] Test Methods D 3278 are useful only at temperatures up to 230°F, but may be used to test for the presence of volatile solvents as evidenced by a flash point of 230°F or lower.

4. Test Methods

4.1 *Sampling*—Sampling shall be conducted in accordance with Test Method D 1466.

4.2 The significance of the test methods enumerated under properties in this specification is discussed in Guide D 555.

5. Keywords

5.1 drying oils; tung oil

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[2] *Annual Book of ASTM Standards*, Vol 05.01.

[3] *Annual Book of ASTM Standards*, Vol 06.03.

[4] *Annual Book of ASTM Standards*, Vol 06.01.