



Standard Specification for Raw Castor Oil¹

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1. Scope

1.1 This specification covers castor oil suitable for use in resins and protective coatings, including lacquers. This is generally known in the trade as No. 1 castor oil.

2. Referenced Documents

2.1 ASTM Standards:

D 555 Guide for Testing Drying Oils²

D 1466 Test Method for Sampling Liquid Oils and Fatty Acids Commonly Used in Paints, Varnishes, and Related Materials²

D 1544 Test Method for Color of Transparent Liquids (Gardner Color Scale)³

D 1545 Test Method for Viscosity of Transparent Liquids by Bubble Time Method²

D 1639 Test Method for Acid Value of Organic Coating Materials²

D 1957 Test Method for Hydroxyl Value of Fatty Oils and Acids²

D 1959 Test Method for Iodine Value of Drying Oils and Fatty Acids²

D 1960 Test Method for Loss on Heating of Drying Oils²

D 1962 Test Method for Saponification Value of Drying Oils, Fatty Acids, and Polymerized Fatty Acids²

D 1963 Test Method for Specific Gravity of Drying Oils, Varnishes, Resins, and Related Materials at 25/25°C²

D 1965 Test Method for Unsaponifiable Matter in Drying Oils, Fatty Acids, and Polymerized Fatty Acids²

D 2090 Test Method for Clarity and Cleanness of Paint and Ink Liquids²

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² Annual Book of ASTM Standards, Vol 06.03.

³ Annual Book of ASTM Standards, Vol 06.01.

TABLE 1 Properties of Castor Oil

Property	Requirement	ASTM Test Method
Acid value, max	2.0	D 1639
Clarity	clear	D 2090
Color (Gardner), max	3	D 1544
Hydroxyl value	160 to 168	D 1957
Loss on heating, max, %	0.25	D 1960
Refractive index, 25°C	1.4764 to 1.4778	...
Saponification value	176 to 184	D 1962
Solubility in alcohol ⁴	complete	...
Specific gravity, 25/25°C	0.957 to 0.961	D 1963
Unsaponifiable, max, %	0.7	D 1965
Viscosity, St	6.3 to 8.9	D 1545
Iodine value	83 to 88	D 1959
Ricinoleic Acid Content	85 % min	ISO 5008/9

⁴Castor oil shall be completely soluble without turbidity at 20°C in two volumes of specifically denatured alcohol (95 %) conforming to Formula 3A of U. S. Bureau of Alcohol, Tobacco, and Firearms.

3. Properties

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

4. Test Methods

4.1 The properties enumerated in this specification shall be determined in accordance with the ASTM test methods listed in Table 1.

5. Sampling

5.1 Sampling shall be conducted in accordance with Test Method D 1466.

6. Significance and Use

6.1 The significance of the test methods enumerated under Section 2 of this specification is discussed in Guide D 555.

7. Keywords

7.1 castor oil; non-drying oils