Designation: D128 – 98 (Reapproved 2014)$^{\varepsilon 1}$

Standard Test Methods for Analysis of Lubricating Grease[1]

This standard is issued under the fixed designation D128; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

ε[1] NOTE—A section reference in subsection 21.1 was corrected editorially in July 2015.

1. Scope

1.1 These test methods for analysis cover greases of the conventional type, which consist essentially of petroleum oil and soap. The constituents that can be determined are soap, unsaponifiable matter (petroleum oil, and so forth), water, free alkalinity, free fatty acid, fat, glycerin, and insolubles.

NOTE 1—Any of the test methods described herein are best used by an experienced grease analyst who may also be able to make appropriate adaptations of the techniques as occasion requires.

1.2 A supplementary test method is provided in Appendix X1. This test method is intended primarily for application to greases containing thickeners that are essentially insoluble in *n*-hexane, and to greases that cannot be analyzed by conventional methods because of the presence of such constituents as nonpetroleum fluids or nonsoap-type thickeners, or both. In some cases, these constituents can react with strong acid or alkaline solutions.

1.3 These test methods appear in the following order:

	Sections
Ash Determination	7 – 11
Insolubles, Soap, Fat, Petroleum Oil, and Unsaponifiable Matter	12 – 20
Free Alkali and Free Acid	21 – 23
Water	24
Glycerin (Quantitative)	25 – 29

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices, and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D95 Test Method for Water in Petroleum Products and Bituminous Materials by Distillation

D156 Test Method for Saybolt Color of Petroleum Products (Saybolt Chromometer Method)

D217 Test Methods for Cone Penetration of Lubricating Grease

D445 Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)

D473 Test Method for Sediment in Crude Oils and Fuel Oils by the Extraction Method

D804 Terminology Relating to Pine Chemicals, Including Tall Oil and Related Products

D1078 Test Method for Distillation Range of Volatile Organic Liquids

D1193 Specification for Reagent Water

D1353 Test Method for Nonvolatile Matter in Volatile Solvents for Use in Paint, Varnish, Lacquer, and Related Products

3. Terminology

3.1 *Definitions:*

3.1.1 *asphalt, n*—a dark brown-to-black cementitious material in which the predominating constituents are bitumens.

3.1.1.1 *Discussion*—Asphalt can be a natural product or a material obtained from petroleum processing.

3.1.2 *candle pitch, n*—a dark brown-to-black, tarry or solid, by-product residue from soap and candle stock manufacture, refining of vegetable oils, refining of wool grease, or refining of refuse animal fats.

3.1.3 *cup grease, n*—any lubricating grease having physical properties, such as consistency and texture, suitable for its use in spring-loaded or screw-type lubricating cups.

[1] These test methods are under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and are the direct responsibility of Subcommittee D02.G0.01 on Chemical and General Laboratory Tests.

Current edition approved Oct. 1, 2014. Published November 2014. Originally approved in 1922. Last previous edition approved in 2008 as D128 – 98(2008). DOI: 10.1520/D0128-98R14E01.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

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