



Standard Test Methods of Chemical Analysis of Industrial Metal Cleaning Compositions¹

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

1. Scope

1.1 These test methods describe the procedures for the chemical analysis of industrial metal cleaning compositions in solid, paste, or liquid form. These cleaning compositions may contain caustic alkalis, silicates, phosphates, chromates, carbonates, bicarbonates, borates, sulfates, sulfites, nitrates, chlorides, soaps, rosin, sulfonated wetting agents, anti-foaming agents, organic bases, organic solvents, organic coupling agents, and sometimes inorganic acid salts or organic acids. Occasionally, such cleaning compositions may contain sulfonated oils; in such cases, reference should be made to Method D 500. The examination under a low power microscope or magnifying glass, supplemented by a few qualitative tests, will often indicate the number of components and their identity.

1.2 The analytical methods appear in the following order:

	Section
Preparation of Sample	4
Total Alkalinity as Na_2O	5-7
Total Fatty Acids (and Rosin)	8 and 9
Na_2O Combined with Fatty Acids (and Rosin)	10 and 11
Anhydrous Soap	12
—Rosin (McNicol Test Method):	
Qualitative	13 and 14
Quantitative	15-18
Total Silica Calculated as SiO_2	19-22
Phosphates:	
Qualitative	23 and 24
Quantitative	25-17
Combined Sodium and Potassium Oxides	33-36
Chlorides	37-39
Sulfates	40-42
Water, Distillation Test Method	43-46
Carbon Dioxide by Evolution-Absorption Test Method	47-51
Loss at 105°C	52 and 53
Total Matter Insoluble in Alcohol	54-56
Free Alkali	57-59

Synthetic Detergent or Wetting Agent	60 and 61
Volatile Hydrocarbons	62-66
Loss on Ignition	67 and 68
Report	69 and 70

1.3 *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.* Material Safety Data Sheets are available for reagents and materials. Review them for hazards prior to usage.

2. Referenced Documents

2.1 ASTM Standards:

- D 500 Test Methods of Chemical Analysis of Sulfonated and Sulfated Oils²
- D 841 Specification for Nitration Grade Toluene³
- D 843 Specification for Nitration Grade Xylene³
- D 1193 Specification for Reagent Water⁴

3. Purity of Reagents and Materials

3.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available.⁵ Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

² *Annual Book of ASTM Standards*, Vol 15.04.

³ *Annual Book of ASTM Standards*, Vol 06.04.

⁴ *Annual Book of ASTM Standards*, Vol 11.01.

⁵ *Reagent Chemicals, American Chemical Society Specifications*, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see *Analar Standards for Laboratory Chemicals*, BDH Ltd., Poole, Dorset, U.K., and the *United States Pharmacopeia and National Formulary*, U.S. Pharmaceutical Convention, Inc. (USPC), Rockville, MD.

¹ These test methods are under the jurisdiction of ASTM Committee D-12 on Soaps and Other Detergents and are the direct responsibility of Subcommittee D12.12 on Analysis of Soaps and Synthetic Detergents.

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