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Standard Specification for WATERLESS HAND CLEANER¹

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1. Scope

1.1 This specification covers waterless hand cleaner that is used to clean grease-based soils from human skin and is removed by wiping or water rinse.

1.2 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Applicable Documents

2.1 ASTM Standards:

D 217 Test Methods for Cone Penetration of Lubricating Grease²

D 460 Methods for Sampling and Chemical Analysis of Soap and Soap Products³

D 3278 Test Methods for Flash Point of Liquids by Setaflash, Closed⁴

D 3941 Test Method for Finite Closed-Cup Flash Point of Liquids by Equilibrium Method⁴

E 70 Test Method for pH of Aqueous Solutions with the Glass Electrode⁵

2.2 Other Standards:⁶

Canadian Government Specification 2-GP-16

2.3 Other Documents:⁷

Federal Food Drug and Cosmetic Act, Chapter VI, Title 21, Subchapter G, Part 700

3. Classification

3.1 The hand cleaner may be one of two types

which each contains two classes:

3.1.1 *Type 1*—No Abrasive: Class A, regular and Class B, antimicrobial.

3.1.2 *Type 2*—With Abrasive: Class A, regular, and Class B, antimicrobial.

4. Ordering Information

4.1 All types and classes of hand cleaners shall be purchased on a net weight basis.

5. General Requirements

5.1 Waterless hand cleaner shall quickly dissolve and suspend grease-based soils on hands and completely remove the soils from the skin when the hands are wiped with a towel or rinsed with water. The cleaning ability of the waterless hand cleaner shall be determined by the ability of the product to remove a standard test soil from

¹ This specification is under the jurisdiction of ASTM Committee D-12 on Soaps and Other Detergents and is the direct responsibility of Subcommittee D12.22 on Analysis of Soaps and Synthetic Detergents.

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² 1983 Annual Book of ASTM Standards, Vol 05.01.

³ 1983 Annual Book of ASTM Standards, Vol 15.04.

⁴ 1983 Annual Book of ASTM Standards, Vol 06.03.

⁵ 1983 Annual Book of ASTM Standards, Vol 15.05.

⁶ Available from American National Standards Institute, 1430 Broadway, New York, N. Y. 10018.

⁷ Available from Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.



the hands.

5.2 The ingredients used in waterless hand cleaner shall be suitable in quality for use in cosmetics. The finished formula shall not be irritating to normal human skin. Any solvent used shall be of the type classified as a low-odor hydrocarbon. Waterless hand cleaner may also contain synthetic detergents, soaps, humectants, fragrances and skin conditioners such as lanolin or mineral oil. It may also contain an approved dye. Waterless hand cleaner shall not contain halogenated hydrocarbon solvents, free ammonia or free alkali. In addition, Type 1 shall contain no abrasives or grit. The cleaner shall meet the requirements of Chapter VI of the Food, Drug and Cosmetic Act, including Amendments and the Code of Federal Regulations, Title 21, Subchapter G, Part 700. Both Type B antimicrobial products shall contain a suitable, safe antimicrobial ingredient which will provide bacteriostatic and fungistatic activity.

5.3 Waterless hand cleaner shall have a shelf life of 1 year when stored at room temperatures of 50 to 90°F (10 to 32°C). When frozen at a temperature of -20°F (-29°C) the hand cleaner shall thaw out, return to a serviceable condition and show no significant separation. At high temperatures, the cleaner shall not deteriorate or show any significant signs of separation. It should remain stable at a temperature of 120°F (49°C) when tested as specified. It shall remain smooth textured and show no rancidity or darkening of color.

5.4 The waterless hand cleaner shall not irritate normal skin when used in accordance with directions and tested as specified. The product shall not dry the skin or leave a greasy residue on the skin after use and removal by wiping or rinsing.

5.5 Waterless hand cleaner shall not leave any objectionable odor on the hands 10 min after use and removal by wiping or rinsing.

5.6 Both types and classes of hand cleaner shall be adequately dispensed through commercial cream-type dispensers. The dispensers and valve systems shall not be corroded by the product. The cleaner shall not clog drains when used in accordance with directions.

5.7 The hand cleaner, packaging and labelling shall comply with the Federal Food, Drug and Cosmetic Act and regulations promulgated under it.

6. Physical Requirements

6.1 The waterless hand cleaner shall conform to the physical requirements given in Table 1.

7. Methods of Sampling and Testing

7.1 Waterless hand cleaners shall be sampled in accordance with Method D 460, Section 6.

7.2 *Viscosity*—Fill a 600 mL low form Griffin beaker with the hand cleaner. Firmly pack the cleaner into the beaker avoiding air bubbles and allow to settle for at least 1 h. Determine the viscosity at 77°F ± 1.8°F (25°C ± 1°C) with a Brookfield Viscometer model RVT⁸ or equivalent. Use spindle numbers 2 through 5 and operate at 2.5 rpm. Use the average of three determinations.

7.3 *Dermal Irritation*—Perform the test with a panel of at least six persons half of which shall be men and half shall be women. The hands of the subjects shall not be cut or abraded. Each subject shall work the hand cleaner into the hands thoroughly for two min and then remove by wiping. Repeat three times within 1 h. Do not wash hands until 2 h after the last application. Examine the hands of the subjects immediately, after 2 h, 24 h and 48 h after the test. No subject's hands shall be irritated, inflamed, or otherwise injured by the hand cleaner if it is to be deemed acceptable.

7.4 *Cleaning ability:*

7.4.1 Evaluate the cleaning effectiveness of the hand cleaner by soiling the hands with an asphalt compound and observing the time required for the cleaner to start dissolving the asphalt and the time required for it to remove the soil. The soiling medium shall be a commercial petroleum asphalt⁹ having the following characteristics:

7.4.1.1 Softening point °F—170 to 195°F (75 to 90°C),

7.4.1.2 Penetration at 77°F (25°C)—25 to 85 mm, and

7.4.1.3 Solubility in carbon tetrachloride min-

⁸ Available from Brookfield Engineering Laboratories, 240 Cushing St., Stoughton, MA 02072.

⁹ Kosrite No. 1. Standard Oil of Indiana has been proved satisfactory.