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Standard Guide for Testing Cleaning Performance of Hand Dishwashing Detergents¹

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1. Scope

1.1 This guide covers cleaning performance in hand dishwash applications.

1.2 This guide provides guidelines for several techniques of measuring the cleaning performance of light-duty hand dishwashing detergents in the presence of artificially applied test soils and/or standardized Ready To Use (RTU) test materials. It is intended as a laboratory screening test to aid in the formulation of products, for quality control and as a basis between the formulator and supplier in standardizing specific products' cleaning performance.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Summary of Guide

2.1 Soiled substrates and/or standardized RTU test materials are washed using a TQC Scrub ability tester by presoaking the soils in solutions of hand dishwashing detergents under standardized conditions. The soil removal efficacy of each hand dishwashing detergent is expressed as a percentage Soil Removal Index (SRI %) compared to a defined mid-tier Reference Hand Dishwashing Detergent.

3. Significance and Use

3.1 The guide is suitable for ranking of hand dishwashing products, using particular food soil or combination of soils with objective color measurement ranking of performance.

¹ This guide is under the jurisdiction of ASTM Committee D12 on Soaps and Other Detergents and is the direct responsibility of Subcommittee D12.16 on Hard Surface Cleaning.

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3.2 The relative wash performance ranking of hand dishwashing detergent products will vary depending on the type of food soils and/or standardized ready to use test materials used in the test. Therefore, a selection of the standard food soil or ready to use test materials to be used in a test shall be made by agreement between the interested parties on the basis of experience.

3.3 This laboratory screening guide includes flexibility in test methods to allow the end-user to decide which method suits best for its application area. To reach an acceptable level of accuracy dedicated equipment and reliable test materials should be used. It should be recognized that differences in specific test methods may result in different cleaning results, and such results must be evaluated with caution.

4. Recommended Conditions

4.1 *Water Hardness*—If only one test is to be made, hard water (8.5 °DH or 150 ppm, about 9 grains per gallon (gpg)) is suggested. To produce a more complete picture of product performance, test at two or three additional hardness levels: soft water (2.0 °DH or 35 ppm, 2 gpg); moderately hard water (5.5 °DH or 100 ppm, 6 gpg); or very hard water (15 °DH or 260 ppm, 15 gpg).

4.1.1 *Calcium/Magnesium Ratio (as CaCO₃)*—It is suggested that this ratio should be adjusted for different water hardness as follows:

Water Hardness Range, Calcium/Magnesium ppm (gpg)	Ratio
0 to 60 (0 to 3.5)	4:1
61 to 120 (3.6 to 7.0)	3:1
121 and over (7.1 and over)	2:1

4.2 *Water Temperature*—The recommended water temperature during the test should be 47 °C (117 °F).

5. Materials and Devices

5.1 *Tiles*—Melamine, plastic, technical porcelain, stainless steel, all 100 mm by 120 mm (3.9 in. by 4.7 in.).

5.2 *TQC Weights*—100 g, 200 g, 400 g (or combinations of).

5.3 *Disposables*—Synthetic sponges 90 mm by 46 mm by 30 mm (3.5 in. by 1.8 in. by 1.2 in.).

5.4 *Devices*—TQC Sheen scrub ability tester (X1.1).