



Designation: B915 – 22

Standard Test Method for Measuring Static Heat Resistance of Self-Cleaning Oven Coating¹

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INTRODUCTION

The purpose of this test is to qualitatively and quantitatively determine the resistance of a porcelain enamel to thermal conditions encountered in pyrolytic self-cleaning oven in an accelerated laboratory evaluation.

1. Scope

1.1 This test method covers the procedure for the qualitative and quantitative evaluation of static heat effects on porcelain enamel coatings.

1.2 This test method is adaptable to various temperatures and times, since the requirements in the porcelain enameling industry differ between manufacturers.

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. Referenced Documents

2.1 *ASTM Standards:*²

D523 Test Method for Specular Gloss

D2244 Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates

¹ This test method is under the jurisdiction of ASTM Committee B08 on Metallic and Inorganic Coatings and is the direct responsibility of Subcommittee B08.12 on Materials for Porcelain Enamel and Ceramic-Metal Systems.

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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.

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *blistering, n*—a defect caused by gas evolution consisting of a bubble that protrudes on the surface of the glass.

3.1.2 *color and gloss change, n*—this is determined by the color and gloss delta values calculated between each heat test cycle.

3.1.3 *copper heads/stickers, n*—protrusions of iron oxide crystals permeated from the steel substrate or conglomerated metal components in the enamel.

3.1.4 *crazing, n*—a defect appearing as one or more fine cracks in the porcelain enamel from thermal contraction and expansion in the glass.

3.1.5 *edge burn off, n*—this may occur in the first 24 to 72 h and appears as a thin dull discolored gray line around the entire edge of the test plate.

3.1.6 *enamel breakdown, n*—the point at which the glass composite has disintegrated. Microscopic examination will show loss of enamel bubble structure and devitrification of the enamel. This stage reveals metallic type elements derived from the glass composition and the iron oxide from the steel substrate that has completely permeated the glass.

3.1.7 *hazy appearance/scumming, adj*—the glass will develop an opaque film that exhibits low gloss on the surface of the porcelain enamel.

3.1.8 *metalizing, n*—enamel on test plates will have a reflective copper color from condensed metals in the enamel that may increase with the deterioration of the glass during the heat test cycle.

4. Significance and Use

4.1 This test method is intended for testing the porcelain enamel finish on oven parts of self-cleaning ranges.