

Australian Standard™

Methods of test for vitreous enamel coatings

Method 2.1: Physical tests—Determination of resistance of vitreous enamel coatings on metal substrates to thermal shock

PREFACE

This Standard was prepared by Committee CH-007, Vitreous Enamel Finishes, to supersede AS 2219.2.1—1978, *Methods of test for vitreous enamel coatings*, Method 2.1: *Physical tests—Determination of resistance of vitreous enamel coatings on steel to thermal shock*.

During its work on this Standard, the Committee took particular note of ISO/TC/SC 7's published Standards as listed below.

ISO

2723	Vitreous and porcelain enamels for sheet steel—Production of specimens for testing
2724	Vitreous and porcelain enamels for cast iron—Production of specimens for testing
2733	Vitreous and porcelain enamels—Apparatus for testing with acid and neutral liquids and their vapours
2734	Vitreous and porcelain enamels—Apparatus for testing with alkaline liquids
2742	Vitreous and porcelain enamels—Determination of resistance to boiling citric acid
2746	Vitreous and porcelain enamels—Enamelled articles for service under highly corrosive conditions—High voltage test

This Standard is Part 2.1 of a series of Standards covering the chemical, physical and miscellaneous testing of vitreous enamel coatings.

The series comprises of the following Standards:

AS

1914	Glossary of terms relating to vitreous enamel coatings
2219	Methods of test for vitreous enamel coatings
2219.1.1	Method 1.1: Chemical tests—Determination of resistance of vitreous enamel coatings to hot sodium hydroxide
2219.1.2	Method 1.2: Chemical tests—Determination of resistance of vitreous enamel coatings to boiling water and water vapour
2219.1.3	Method 1.3: Chemical tests—Determination of resistance of vitreous enamel coatings to boiling hydrochloric acid
2219.1.5	Method 1.5: Chemical tests—Determination of resistance of vitreous enamel coatings to citric acid at room temperature
2219.2.1	Method 2.1: Physical tests—Determination of resistance of vitreous enamel coatings on metal substrates to thermal shock
2219.3.1	Method 3.1: Miscellaneous tests—Determination of the performance of continuous cleaning vitreous enamel coatings

METHOD

1 SCOPE

This Standard describes the procedure for assessing the resistance of vitreous and porcelain enamel coatings on metal substrates to sudden changes in temperature.

2 APPLICATION

The method is suitable for assessing the ability of enamelled cooking utensils to withstand thermal shock.

3 REFERENCE DOCUMENTS

The following documents are referred to in this Standard:

ISO

2723 Vitreous and porcelain enamels for sheet steel—Production of specimens for testing

2724 Vitreous and porcelain enamels for cast iron—Production of specimens for testing

4 DEFINITIONS

For the purpose of this Standard, the following definitions apply:

4.1 Test panel

A panel prepared for testing and made from a test specimen by some mechanical operation.

4.2 Test sample

A portion of material or a group of items selected from a batch or consignment by a sampling procedure.

4.3 Test specimen

A portion of material or a single item taken from the sample for the purpose of applying a particular test.

5 PRINCIPLE

Enamelled test panels are heated and are then subjected to thermal shock by quenching with water, and then visually examined.

6 APPARATUS

The following apparatus is required:

Temperature controlled electric or gas hotplate ($190 \pm 5^\circ\text{C}$).

7 TEST PANELS

Two panels are required for each test. They shall be made of the appropriate metal substrate as specified in the relevant product specification. When a panel is used the dimensions shall be 105 mm in either a circular or square shape or as indicated in ISO 2723 and ISO 2724.