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Supplementary cementitious materials for use with portland cement

Part 3: Silica fume

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Association of Consulting Engineers Australia
Australasian Slag Association
AUSTROADS
Bureau of Steel Manufacturers of Australia
CSIRO—Division of Building, Construction and Engineering
Cement and Concrete Association of Australia
Cement and Concrete Board
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PREFACE

This Standard was prepared by the Standards Australia Committee on Supplementary Cementitious Materials for Use with Portland Cement.

The objective of this Standard is to enable the specification of silica fume for use as a supplementary material in concrete and mortar.

This Standard provides for performance testing in terms of relative water and relative strength requirements for undensified silica fume or slurry. For compacted, densified or pelletized silica fume it is necessary to carry out these tests on the material in an undensified condition. There are limited laboratory data as yet available as to the applicability of this test procedure to other than undensified material. The principal area of uncertainty is associated with the effects of the mixing process in a mortar versus that in a concrete.

The term 'informative' has been used in this Standard to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance.

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STANDARDS AUSTRALIA

Australian Standard

Supplementary cementitious materials for use with portland cement

Part 3: Silica fume

1 SCOPE This Standard sets out the requirements for silica fume as a supplementary material in concrete and mortar.

NOTE: Alternative methods for determining compliance with this Standard are given in Appendix A.

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS
1199 Sampling procedures and tables for inspection by attributes

1289 Methods of testing soils for engineering purposes
1289.1 Part 1: Preparation of disturbed soil samples for testing

1399 Guide to AS 1199—Sampling procedures and tables for inspection by attributes

2879 Alumina—Determination of loss of mass at 300°C and 1000°C
2879.4 Part 4: Determination of specific surface area by nitrogen adsorption

3583 Methods of test for supplementary cementitious materials for use with portland cement
3583.2 Method 2: Determination of moisture content
3583.3 Method 3: Determination of loss on ignition
3583.5 Method 5: Determination of relative density
3583.6 Method 6: Determination of relative water requirement and relative strength
3583.8 Method 8: Determination of sulfuric anhydride content
3583.12 Method 12: Determination of available alkali
3583.13 Method 13: Determination of chloride ion content

3900 Quality management and quality assurance standards
3900.1 Part 1: Guidelines for selection and use

3904 Quality management and quality system elements
3904.1 Part 1: Guidelines

SAA
HB18 Guidelines for third-party certification and accreditation
HB18.44 Guide 44—General rules for ISO or IEC international third-party certification schemes for products

3 DEFINITIONS For the purpose of this Standard, the definitions below apply.

3.1 Pozzolan—a siliceous material which is not naturally cementitious, but will, in the presence of moisture, react with calcium hydroxide to form water insoluble compounds.

3.2 Silica fume—very fine pozzolanic material, composed mostly of amorphous silica produced by electric arc furnaces as a by-product of the production of elemental silicon or ferro-silicon alloys.

NOTE: Silica fume is also known as ‘condensed silica fume’ and ‘microsilica’.

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