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Test methods for sprayed concrete —

Part 3: Measurement of compressive strength

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 71, *Concrete, reinforced concrete and pre-stressed concrete*, Subcommittee SC 1, *Test methods for concrete*.

A list of all parts in the ISO 23945 series can be found on the ISO website.

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Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

Sprayed concrete is widely used for the stabilization of structures in a very short time and for concrete applications without using moulds. In addition to being ideal for ground support in tunnelling and mining, sprayed concrete is also used in repairs, restoration, new constructions and many other fields.

The requirements for properties, test methods, standards and specifications for the spray forming process of concrete are different from those of cast forming concrete. This document is intended to provide a normative test method for sprayed concrete.

This document is applied under various climatic and geographical conditions, various levels of protection and under different established regional traditions and experiences. Consequently, this document includes conditions for tests covering standard, tropical and subtropical region environments.

This document is intended for use with other parts of the ISO 23945 series which provide requirements associated with the level of quality specified and the methods to be employed for the execution of sprayed concrete.

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Test methods for sprayed concrete —

Part 3:
Measurement of compressive strength

1 Scope

This document specifies the test methods for measurement and determination of the compressive strength of sprayed concrete at different age, from young hardened to long term hardened sprayed concrete. The test methods could be applied to measure compressive strength of sprayed concrete in the range of 0,2 MPa to 100 MPa. The specimens of hardened sprayed concrete are extracted from either an in-situ element or a test panel.

This document does not purport to address all of the safety concerns, if any, associated with its use.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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ISO 23945-2, *Test Methods for Sprayed Concrete — Part 2: Sampling fresh and hardened concrete*

ISO 1920-3, *Testing of concrete — Part 3: Making and curing test specimens*

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3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Needle penetration method

4.1 General

This clause specifies the method from which an estimate of the in-situ compressive strength of young hardened sprayed concrete can be made in the range of 0,2 MPa to 1,5 MPa.

4.2 Principle

The needle penetration method is used to measure the force required to push a needle of specified dimensions to penetrate into the sprayed concrete to a depth of 15 mm ± 2 mm. A penetrometer indicates the resisting force, through compression of a calibrated spring from which an estimated compressive strength can be derived from a calibration curve provided by the producer of the test equipment.

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