Australian Standard®

Methods of testing concrete

Method 20.2: Determination of water-soluble chloride in aggregates and hardened concrete

WARNING: SOME OF THE CHEMICALS OR PROCEDURES SPECIFIED IN THIS STANDARD COULD LEAD TO A HAZARDOUS SITUATION IF CORRECT SAFETY MEASURES ARE NOT FOLLOWED. PERSONS USING THIS AUSTRALIAN STANDARD MUST BE FAMILIAR WITH NORMAL LABORATORY PRACTICE. THIS STANDARD DOES NOT ADDRESS THE SAFETY PROBLEMS, IF ANY, ASSOCIATED WITH ITS USE.

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PREFACE

This Standard has been prepared by the Standards Australia Committee CE-012, Aggregates and Rock for Engineering Purposes, in consultation with the Committee BD-042, Methods of Testing Concrete, to supersede, in part, AS 1012.20—1992, *Methods of testing concrete*, Method 20: *Determination of chloride and sulfate in hardened concrete and concrete aggregates*.

It is widely accepted that water-soluble chloride poses a threat to the corrosion of steel reinforcement in concrete. Therefore, a test method which accurately determines the water-soluble chloride in concrete and aggregate is considered an important tool. With limited crushing of aggregate to pass an 850 μm sieve, a more accurate measurement of water-soluble chloride ions in concrete can be made.

The Volhard titration method is the only non-instrumental titration permitted. Alternatively, a potentiometric titration by ion selective electrode can be used. One such method, Method 4B described in the Canadian Standard CSA A23.1-09/A23.2-09 (R2014) (see copyright information below), is described in this Standard.

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.

METHOD

1 SCOPE

This Standard sets out a method for the determination of water-soluble chloride content of concrete aggregates and hardened concrete. A boiling water extraction procedure is used and the material to be tested is ground coarser to pass an 850 µm sieve. The method assumes that personnel conducting the procedure are trained and competent in conducting chemical tests and in the preparation of standard solutions.

2 NORMATIVE REFERENCE

The following document is required for the implementation of this Standard:

NOTE: Documents referenced for informative purposes are listed in the Bibliography.

AS
1152 Specification for test sieves

3 PRINCIPLE

The sample is stirred in hot water to provide a solution from which an aliquot is tested for water-soluble chloride content.

4 SAFETY PRECAUTIONS

Procedures using concentrated mineral acids, including the preparation of dilute solutions of these acids, shall be carried out in a fume cupboard.

WARNING: CONCENTRATED ACIDS POSE HAZARDS OF ACID BURNS RESULTING IN OFTEN IRREVERSIBLE DAMAGE TO THE SKIN OR EYES. INGESTION OF THE CONCENTRATED ACID, INHALATION OF THE VAPOUR, OR SKIN CONTACT CONSTITUTES A SERIOUS HEALTH HAZARD.

Full length rubber gauntlets and a face mask should be worn when handling the acid.

Appropriate documentation should be consulted as to safety precautions.