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Kemijski dodatki za beton, malto in injekcijsko maso - Metode preskušanja - 10. del: Določanje deleža vodotopnih kloridov

Admixtures for concrete, mortar and grout - Test methods - Part 10: Determination of water soluble chloride content

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Admixtures for concrete, mortar and grout - Test methods - Part 10: Determination of water soluble chloride content

Adjuvants pour béton, mortier et coulis - Méthodes d'essai - Partie 10 : Détermination de la teneur en chlorure soluble dans l'eau

Zusatzmittel für Beton, Mörtel und Einpressmörtel - Prüfverfahren - Teil 10: Bestimmung des wasserlöslichen Chloridgehaltes

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 104.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (prEN 480-10:2005) has been prepared by Technical Committee CEN/TC 104 “Concrete and related products”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 480-10:1996.

It has been drafted by Subcommittee 3 (SC 3) of TC 104 "Admixtures for concrete, mortar and grout".

This draft European Standard is part of the series EN 480 "Admixtures for concrete, mortar and grout – Test methods" which comprises the following

Part 1 *Reference concrete and reference mortar for testing*

Part 2 *Determination of setting time*

Part 4 *Determination of bleeding of concrete*

Part 5 *Determination of capillary absorption*

Part 6 *Infrared analysis*

Part 8 *Determination of the conventional dry material content*

Part 10 *Determination of water soluble chloride content*

Part 11 *Determination of air void characteristics in hardened concrete*

Part 12 *Determination of the alkali content of admixtures*

Part 13 *Reference masonry mortar for testing mortar admixtures*

Part 14 *Potentiostatic electrochemical test for the measurement of corrosion susceptibility of steel*[1)]

This standard is applicable together with the other standards of the EN 480 series.

1) This part is under preparation

1 Scope

This draft European Standard describes methods for determining water soluble halogens (except fluorides) in admixtures.

The total water soluble halogen content is expressed as the chloride content.

2 Principle

The object of the test is to determine the content of chloride ions (including other halogen ions except fluorides) in an admixture by precipitation of the chloride ions with a silver nitrate solution, according to the reaction:

$$Cl^- + Ag^+ \rightarrow AgCl \text{ (solid)}$$

The end point of this reaction is determined with the aid of a pH meter.

The volume of the sample required for this test has been calculated for an admixture of which the chloride content is lower than 0,1 % by mass. If the chloride content is known, or can be assumed to be higher, the admixture has to be diluted in a precise ratio before carrying out the test.

3 Apparatus

3.1 pH meter

Either:

a) a pH millivoltmeter in which case the graph is plotted point by point, or

b) a recording pH millivoltmeter connected to an automatic burette.

3.2 Electrodes

Either:

a) a combination of two electrodes consisting of

- an indicator: silver
- a reference: mercurous sulphate (electrolyte KNO_3) or calomel with algar gel (electrolyte KNO_3) or

b) a combined electrode (indicator and reference) *Ag - AgCl* (electrolyte KNO_3).

NOTE Other electrodes such as ion selective electrodes may be used provided the results will be unaffected.

3.3 Additional apparatus

a) Balance with an accuracy of 0,1 mg reading up to 200 g

b) 20 ml burette graduated with accuracy of 0,05 ml

c) 250 ml and 500 ml beakers

d) 1 000 ml measuring flask

e) heating device with a magnetic stirrer

f) 10 ml, 20 ml and 50 ml graduated flasks.

3.4 Reagents

All reagents shall be of analytical grade.

— Dilute nitric acid;mix equal volumes of concentrated nitric acid (d = 1,38) and distilled water

— Hydrogen peroxide 30 % (or 110 volumes)

— 33 % sodium hydroxide solution

— Ethanol

— pre-prepared 0,01 mol/l silver nitrate solution normality n determined to 0,0001

— Acetone

4 Procedure

4.1 Preparation of sample

4.1.1 Liquid admixture

From a liquid admixture a sample of (10 ± 1) g is weighed to 0,01 g and placed into a 250 ml or a 500 ml beaker.

4.1.2 Powder admixture

From a powder admixture a sample (5 ± 1) g is weighed to 0,01 g. The sample is placed into a 250 ml or a 500 ml beaker.

4.2 Determination

4.2.1 General

Depending upon the composition of the admixture one of the following methods shall be used.

4.2.2 Method 1

If the admixture does not contain constituents that will interfere with the test, such as lignosulphonates, thiocyanates or reducing agents, dilute the sample or dissolve it and make the solution up to 100 ml with distilled water. Then add 80 ml of acetone followed by dilute nitric acid to fix a pH-value of about (2,0 ± 0,5) and carry out the titration of the chloride ions with the silver nitrate solution, recording the volume (V) used to 0,05 ml.

Carry out a blank titration under the same conditions and record the volume (V_o) to 0,05 ml.