KENYA STANDARD **KS 2769-6:2018**

Admixtures for concrete, mortar and grout — Test methods Admixtures for concrete, mortar and grout - Test methods - Part 6: Infrared analysis

First Edition 2018

TECHNICAL COMMITEE REPRESENTATION

The following organizations were represented on the Technical Committee:

1. Architectural Association of Kenya
2. Bamburi Cement
3. CHRYSO Eastern Africa Limited
4. Concrete Products (K)Ltd
5. Consumer Information Network
6. Howards Humpreys East Africa LTD
7. Institute of quantity surveyors of Kenya
8. Kenya Industrial Research and Development Institute (KIRDI
9. Kenya Institute of Highways and Building Technology (KIHBT)
10. Ministry of Transport, Infrastructure, Housing and Urban Development.
11. National Environment Management Authority
12. National Housing Corporation
13. Technical University of Kenya
14. University of Nairobi
15. Kenya Bureau of Standards — Secretariat

REVISION OF KENYA STANDARDS

In order to keep abreast of progress in industry, Kenya Standards shall be regularly reviewed. Suggestions for improvements to published standards, addressed to the Managing Director, Kenya Bureau of Standards, are welcome.

KENYA STANDARD

KS 2769-2:2018

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Foreword

This Kenya Standard was revised by the Concrete Technical Committee, under the guidance of the standards Projects Committee, and it is in accordance with the procedures of the Kenya Bureau of Standards.

This Kenya Standard is part of the series KS 2769 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: Determination of the effect on corrosion susceptibility of reinforcing steel by potentiostatic electro-chemical test

— Part 15: Reference concrete and method for testing viscosity modifying admixtures

This standard is applicable together with the standards of the series KS 2770 Admixtures for concrete, mortar and grout.

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Admixtures for concrete, mortar and grout — Test methods Admixtures for concrete, mortar and grout - Test methods - Part 6: Infrared analysis

1. Scope

This document describes a method for identifying an admixture by infrared analysis (IR).

2. Normative references

The following referenced documents are indispensable for the application 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.

KS 2769-8, Admixtures for concrete, mortar and grout - Test methods - Part 8: Determination of the conventional dry material content.

3. Principle

The IR analysis is performed on dry material from an admixture dried at (105 ± 3) °C, unless a different temperature is stated by the manufacturer.

The residue from the determination of the conventional dry material content according to KS 2769-8 may be used.

4. Apparatus

4.1. Infrared spectrometer with accessories (cells, pelleting press, NaCI windows, etc.);

4.2. Evaporating dish with a flat bottom ca. diameter 75 mm, depth 45 mm;

4.3. Desiccator;

4.4. Oven with forced ventilation[1], thermostatically controlled at (105 ± 3) °C, fitted with a temperature indicating device. The required temperature range shall be maintained throughout the parts of the oven used for this test;

4.5. Balance with an accuracy of 0.5 g.

5. Procedure

5.1. Preparation of the dry material

The method given in KS 2769-8 shall be used[2].

5.2. Infrared spectrophotometry

Depending upon the consistence of the dry extract obtained, the test shall be carried out either on a thin film spread on the NaCI window (or KBr or Cs/ window depending upon the equipment available) using a spatula, or a KBr pellet. To make the pellet the dry residue shall be pulverised and mixed with potassium bromide (KBr). The mixture shall be pressed into a pellet. The quantity of dry extract in the mixture shall

[1] Fan circulation is necessary to ensure uniform temperature throughout the oven.

[2] Any water in the dry extract will affect the resulting IR spectrum. If this occurs , the period of drying should extended to remove all water but not to cause breakdown or evaporation of other constituents.

be about 1 % by mass and shall be adjusted so that a spectrum of good quality is obtained (e.g. from 0.25 % to 1.5 %).

The spectrum shall be recorded between 4 000 cm^{-1} and 600 cm^{-1} (or if possible up to 250 cm^{-1}).[3)]

6. Results

The sample subjected to the test shall be regarded as conforming or non-conforming to the reference sample on the basis of whether the spectra do or do not have similar characteristic peaks with corresponding relative absorptions[45]).

7. Test report

The recorded spectra shall be identified by means of:

— name or code of the material with all information relating to its marking;

— date of the test, the name of the laboratory, the type of equipment, the name of the operator;

— origin of the sample;

— drying procedure;

— preparation of the samples, e.g. film or KBr pellet containing x %.

[3] This procedure corresponds to the preparation of samples as generally adopted until now. The development of new instruments may affect the method of preparing the sample.

These new methods may be accepted if they ensure an accuracy similar to that of the method described above.

[4] Evaluation of the characteristic of conformity requires good experience in infrared spectrophotometry.