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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 43875-2024

Determination method of total chromium in cement raw materials

水泥原材料中总铬的测定方法

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Foreword

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1 Scope

GB/T 43875-2024 gives the methods for measuring total chromium in cement raw materials, and the reason to measure it at the raw material stage is what happens later. Chromium entering the kiln in the limestone, clay, iron corrective or fuel ash is partly oxidised to the hexavalent form during clinker burning, and hexavalent chromium in wet cement causes allergic contact dermatitis in construction workers - the historical occupational disease known as cement eczema, which is why several jurisdictions cap it and why producers add reducing agents. Controlling the outcome means knowing the input, and the input varies with every quarry face and every alternative fuel accepted. This document specifies three methods for determining total chromium in cement raw materials: inductively coupled plasma optical emission spectrometry, flame atomic absorption spectrophotometry and diphenylcarbazide spectrophotometry - three because plants differ in what instrumentation they have, and the spectrophotometric route needs none. Under ICS 91.100.10 and CCS Q11, it is written for cement plant laboratories, for raw material and alternative fuel suppliers, and for the occupational health and product certification authorities.

This document specifies the methods of inductively coupled plasma optical emission spectrometry, flame atomic absorption spectrophotometry and diphenylcarbazide spectrophotometry: Method for determining the total chromium content in cement raw materials by chromatographic method: This document applies to the determination method

of total chromium in cement raw materials:

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document: For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document: GB/T 2007:

1 General rules for sampling and sample preparation of bulk mineral products Manual sampling method

GB/T 6682 Specifications and test methods for water used in analytical laboratories

GB/T 8170 Rules for rounding off values and expression and determination of limit values JJG196 Verification procedures for commonly used glass measuring instruments

3 Terms and definitions

There are no terms or definitions that require definition in this document:

4 Basic requirements for the test

1 Test times and requirements Each sample is measured twice independently using the method listed in this document: The absolute difference between the two results is within the allowable difference in the same laboratory (see Table 5): The average value of two test results is used to express the test result: 4:

2 Expression of mass, volume, titer and results The mass is expressed in grams (g) with an accuracy of 0:0001 g: The volume of the burette is expressed in milliliters (mL) with an accuracy of 0:01 mL: The analysis results are expressed in milligrams per kilogram (mg/kg): When the result is less than 1000 mg/kg, the result is rounded to one decimal place: When the result is greater than or equal to 1000 mg/kg, retain four significant figures: The rounding of numerical values shall be in accordance with the provisions of GB/T 8170: 4:

3 Blank test A blank test is performed along with the sample: Without adding the sample, the test is performed according to the same test steps and using the same amount of reagents: The obtained measurement results are corrected: 4:

4 General Unless otherwise specified, the reagents used in inductively coupled plasma emission spectrometry and flame atomic absorption spectrophotometry should be no less than high grade