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Sodium chloride for industrial use — Determination of calcium and magnesium contents — EDTA complexometric methods

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FOREWORD

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International Standard ISO 2482 was drawn up by Technical Committee ISO/TC 47, *Chemistry*.

It was approved in January 1972 by the Member Bodies of the following countries :

Austria	Ireland	South Africa, Rep. of
Belgium	Italy	Spain
Chile	Korea, Dem.P.Rep. of	Switzerland
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No Member Body expressed disapproval of the document.

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Sodium chloride for industrial use – Determination of calcium and magnesium contents – EDTA complexometric methods

1 SCOPE

This International Standard specifies complexometric methods for determining the calcium and magnesium contents in sodium chloride for industrial use.

2 FIELD OF APPLICATION

2.1 General case

The method is applicable to the determination of water-soluble calcium and magnesium, in sodium chloride for industrial use, for calcium or magnesium contents greater than 0,001 % (m/m).

2.2 Special case

Determination of calcium and magnesium in a principal solution prepared in an acid medium.

NOTE — Whatever the conditions adopted, all related determinations shall be carried out in the same medium, except the determination of chlorides which shall always be carried out in an aqueous solution.

3 REFERENCE

ISO 2479, *Sodium chloride for industrial use – Determination of matter insoluble in water or acid and preparation of principal solutions for other determinations.*

4 PRINCIPLE

Dissolution of a test portion and separation of insoluble matter.

Titration of the filtrate obtained according to ISO 2479, of calcium on the one hand and total (calcium + magnesium) on the other, using *d*/sodium ethylenediaminetetra-acetate (EDTA) in the presence of glyoxal-bis-(2-hydroxyanil) (GBHA) and mordant black 11 (CI 14645) respectively as indicators.

5 REAGENTS

Distilled water, or water of equivalent purity, shall be used in the test.

5.1 Sodium hydroxide, ρ 1,08 g/ml, approximately 7,5 % (m/m) solution or approximately 2 N.

Dissolve 80 g of sodium hydroxide in water and dilute to 1 000 ml.

5.2 Ethanol, 95 % (V/V).

Alcohol denatured with acetone, but not coloured, can also be used.

5.3 Triethanolamine, 25 % (V/V) solution.

Place 25 ml of triethanolamine in a 100 ml one-mark volumetric flask, dilute to the mark and mix.

5.4 Buffer solution

Dissolve 54 g of ammonium chloride in water. Add 350 ml of ammonia solution (ρ 0,920 g/ml) and dilute to the mark in a 1 000 ml one-mark volumetric flask.

5.5 Standard end-point matching solution

Prepare this standard solution immediately before the determination (7.1.2). Pour 50 ml of water into a 250 ml conical flask followed by 2 ml of the triethanolamine solution (5.3), 10 ml of the sodium hydroxide solution (5.1), 15 ml of ethanol (5.2) and 1,0 ml of the glyoxal-bis-(2-hydroxyanil) solution (5.8).

5.6 *d*/Sodium ethylenediaminetetra-acetate (EDTA), 0,02 M standard volumetric solution

Weigh, to the nearest 0,1 mg, 7,445 g of the EDTA and dissolve this in water. Transfer quantitatively into a 1 000 ml one-mark volumetric flask, dilute to the mark and mix.

5.7 *d*/Sodium ethylenediaminetetra-acetate (EDTA), 0,002 M standard volumetric solution.

Take 100,0 ml of the 0,02 M EDTA solution (5.6) and place in a 1 000 ml one-mark volumetric flask; dilute to the mark and mix.

5.8 Glyoxal-bis-(2-hydroxyanil) (GBHA), ethanolic solution approximately 2,5 g/l.

Place approximately 0,25 g of GBHA in a 100 ml brown glass flask, fitted with a ground glass stopper. Add 100 ml of the ethanol (5.2) and stir until dissolved.