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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION
R 745

SODIUM CARBONATE FOR INDUSTRIAL USE

DETERMINATION OF LOSS OF MASS AND OF NON-VOLATILE MATTER AT 250 °C

1st EDITION

May 1968

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Also issued in French and Russian. Copies to be obtained through the national standards organizations.

BRIEF HISTORY

The ISO Recommendation R 745, *Sodium carbonate for industrial use – Determination of loss of mass and of non-volatile matter at 250 °C*, was drawn up by Technical Committee ISO/TC 47, *Chemistry*, the Secretariat of which is held by the Ente Nazionale Italiano di Unificazione (UNI).

Work on this question by the Technical Committee began in 1951 and led, in 1956, to the adoption of a Draft ISO Recommendation.

In June 1966, this Draft ISO Recommendation (No. 1011) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Argentina	Italy	Switzerland
Austria	Japan	Turkey
Belgium	Korea, Rep. of	U.A.R.
Brazil	Netherlands	United Kingdom
Chile	New Zealand	U.S.A.
Czechoslovakia	Poland	U.S.S.R.
France	Portugal	Yugoslavia
Germany	Romania	
Hungary	South Africa, Rep. of	
India	Spain	
Israel		

No Member Body opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the Council, which decided, in May 1968, to accept it as an ISO RECOMMENDATION.

ISO Recommendation R 745 May 1968

SODIUM CARBONATE FOR INDUSTRIAL USE

DETERMINATION OF LOSS OF MASS AND OF NON-VOLATILE MATTER AT 250 °C

1. SCOPE

This ISO Recommendation describes a method for the determination of loss of mass and of non-volatile matter at a temperature of 250 °C.

2. FIELD OF APPLICATION

The method is applicable to the determination of the loss of mass and of non-volatile matter at 250 °C in anhydrous sodium carbonate for industrial use.

2.1 Special case

Sodium carbonate decahydrate.

3. PRINCIPLE

Heating of thin layers of a test portion to constant mass at a temperature of 250 °C.

The loss of mass represents water in its various forms plus half the carbon dioxide content of the hydrogen carbonate present.

The residue constitutes the non-volatile matter at 250 °C.

4. APPARATUS

Ordinary laboratory apparatus and

4.1 *Weighing bottle*, approximately 100 ml capacity and 75 mm in diameter, with ground glass stopper.

4.2 *Electric oven*, capable of reaching a temperature of at least 250 °C, regulated so as not to exceed a temperature of 270 °C.

5. PROCEDURE

5.1 Test portion

Weigh to the nearest 0.1 mg, 5 ± 0.1 g of the test sample.*

* See clause 2.2 of ISO Recommendation R 739, *Sodium carbonate for industrial use – Preparation and storage of test samples.*

5.2 **Determination**

Spread thin layers of the test portion (5.1) in the weighing bottle (4.1) previously dried for 30 minutes in the oven (4.2) controlled at a temperature of 250 °C and allowed to cool to room temperature in a desiccator and weighed.

Place in the oven (4.2) with the ground glass stopper of the weighing bottle (4.1) placed slantwise. Gradually heat in the oven (4.2) from the starting temperature (which should not exceed 100 °C) to at least 250 °C and maintain this temperature for 3 hours. Do not exceed a temperature of 270 °C.

Remove the weighing bottle, place it in a desiccator to cool, and after cooling to room temperature, weigh it again with stopper in position.

6. EXPRESSION OF RESULTS

Loss of mass at 250 °C is expressed as a percentage by mass, by the following formula :

$$\frac{(M_1 - M_2) \times 100}{E}$$

Non-volatile matter at 250 °C is expressed as a percentage by mass, by the following formula :

$$100 - \frac{(M_1 - M_2) \times 100}{E}$$

where

M_1 is the mass, in grammes, of the test portion and weighing bottle before heating,

M_2 is the mass, in grammes, of the test portion and weighing bottle after heating,

E is the mass, in grammes, of the test portion.

7. SPECIAL CASE

7.1 **Principle**

When sodium carbonate decahydrate (soda crystals) is being analysed, the temperature should be raised slowly in order to avoid loss through sputtering.

7.2 **Apparatus**

(See section 4).

7.3 **Procedure**

7.3.1 *Test portion* (see clause 5.1).