# INTERNATIONAL STANDARD 746

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# Sodium carbonate for industrial use — Determination of matter insoluble in water at 50 °C

*Carbonate de sodium à usage industriel — Détermination de l'insoluble dans l'eau à 50 °C*

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**Descriptors** : sodium carbonate, chemical analysis, determination of content, insoluble matter.



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## FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 47 has reviewed ISO Recommendation R 746 and found it technically suitable for transformation. International Standard ISO 746 therefore replaces ISO Recommendation R 746-1968 to which it is technically identical.



ISO Recommendation R 746 was approved by the Member Bodies of the following countries :

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

No Member Body expressed disapproval of the Recommendation.

No Member Body disapproved the transformation of ISO/R 746 into an International Standard.



Printed in Switzerland

# Sodium carbonate for industrial use — Determination of matter insoluble in water at 50 °C

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the determination of the matter insoluble in water at 50 °C of sodium carbonate for industrial use.

## 2 REFERENCES

ISO 739, *Sodium carbonate for industrial use — Preparation and storage of test samples.*

ISO 745, *Sodium carbonate for industrial use — Determination of loss of mass and of non-volatile matter at 250 °C.*



## 3 PRINCIPLE

Dissolution of a test portion and filtration of the solution through a tared filter. Washing of the insoluble matter at approximately 50 °C until the washings are no longer alkaline. Drying of the residue and weighing.



## 4 REAGENTS

During the analysis, use only reagents of recognized analytical reagent grade and only distilled water or water of equivalent purity.

**4.1 Phenolphthalein,** 10 g/l ethanolic solution.

Dissolve 1 g of phenolphthalein in 95 % (*V/V*) ethanol and dilute to 100 ml with the same ethanol.

## 5 APPARATUS

Ordinary laboratory apparatus and

**5.1 Glass filter crucible,** with sintered disk of porosity grade P16 (pore size between 10 and 16 $\mu$m).

**5.2 Electric oven,** capable of being controlled at 110 ± 5 °C.

## 6 PROCEDURE

### 6.1 Test portion

Weigh, to the nearest 0,01 g, 50 ± 0,1 g of the test sample (see ISO 739).

### 6.2 Determination

Dissolve the test portion by adding small quantities at a time, while stirring, to a beaker of suitable capacity (for example 600 ml) containing 200 ml of water heated to approximately 50 °C.

Place the crucible (5.1) in the oven (5.2) controlled at 110 ± 5 °C. After drying for 1 h, remove it, allow to cool in a desiccator to ambient temperature and weigh to the nearest 0,000 1 g.

Filter the decanted sodium carbonate solution through the tared filter crucible maintaining a reduced pressure by means of a filter pump or a vacuum pump. Wash the insoluble matter onto the sintered disk with water at approximately 50 °C until 20 ml of the filtrate show no colour on addition of 2 drops of the phenolphthalein (4.1). Place the filter crucible containing the insoluble matter in the oven controlled at 110 ± 5 °C and leave to dry for 1 h. After cooling, in a desiccator to ambient temperature, weigh to the nearest 0,000 1 g.

## 7 EXPRESSION OF RESULTS

The matter insoluble in water at 50 °C, expressed as a percentage by mass, is given by the formula :

$$m_1 \times \frac{100}{m_0}$$

where

$m_0$ is the mass, in grams, of the test portion (6.1);

$m_1$ is the mass, in grams, of the filtered and dried insoluble matter.

NOTE — If it is desired to express the result on the basis of non-volatile matter at 250 °C (see ISO 745), multiply the result obtained on the product as received by the ratio

$$\frac{100}{100 - \text{loss of mass at 250 °C in \% } (m/m)}$$

## 8 TEST REPORT

The test report shall include the following particulars :

a) the reference of the method used;

b) the results and the method of expression used;

c) any unusual features noted during the determination;

d) any operation not included in this International Standard or in the International Standards to which reference is made, or regarded as optional.

ANNEX

## ISO PUBLICATIONS RELATING TO SODIUM CARBONATE FOR INDUSTRIAL USE

ISO 739 – Preparation and storage of test samples.

ISO 740 – Determination of total soluble alkalinity – Titrimetric method.

ISO 741 – Determination of sodium hydrogen carbonate content – Titrimetric method.

ISO 742 – Determination of chloride content – Mercurimetric method.

ISO 743 – Determination of sulphate content – Barium sulphate gravimetric method.

ISO 744 – Determination of iron content – 1,10-Phenanthroline photometric method.

ISO 745 – Determination of loss of mass and of non-volatile matter at 250 °C.

ISO 746 – Determination of matter insoluble in water at 50 °C.