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# INTERNATIONAL STANDARD 1688

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

# Sodium and potassium silicates for industrial use — Determination of dry matter — Gravimetric method

*Silicates de sodium et de potassium à usage industriel — Détermination de la matière sèche — Méthode gravimétrique*

**First edition — 1976-02-01**

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**Descriptors :** sodium silicates, potassium silicates, chemical analysis, determination of content, dry matter, gravimetric analysis.

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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 1688 and found it technically suitable for transformation. International Standard ISO 1688 therefore replaces ISO Recommendation R 1688-1970 to which it is technically identical.

ISO Recommendation R 1688 was approved by the Member Bodies of the following countries :

| | | |
|---|---|---|
| Australia | Hungary | Portugal |
| Austria | India | Romania |
| Belgium | Iran | South Africa, Rep. of |
| Brazil | Israel | Spain |
| Colombia | Italy | Switzerland |
| Czechoslovakia | Japan | Thailand |
| Egypt, Arab Rep. of | Netherlands | Turkey |
| France | New Zealand | United Kingdom |
| Germany | Peru | U.S.S.R. |
| Greece | Poland | Yugoslavia |

No Member Body expressed disapproval of the Recommendation.

No Member Body disapproved the transformation of ISO/R 1688 into an International Standard.

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# Sodium and potassium silicates for industrial use — Determination of dry matter — Gravimetric method

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a gravimetric method for the determination of dry matter of sodium and potassium silicates for industrial use.

## 2 REFERENCE

ISO 1686, *Sodium and potassium silicates for industrial use — Samples and methods of test — General.*

## 3 PRINCIPLE

Drying of a test portion followed by heating to between 600 and 650 °C.

Weighing of the residue.

## 4 APPARATUS

Ordinary laboratory apparatus and

**4.1 Platinum or silica dish,** having a capacity of 30 to 35 ml and an upper diameter of approximately 75 mm.

NOTE — Porcelain dishes may also be used, provided they are allowed to cool in a desiccator for at least 45 min before weighing.

**4.2 Electric furnace,** capable of being controlled at 600 to 650 °C.

NOTE — Use heating apparatus which does not produce carbon dioxide.

## 5 PROCEDURE

### 5.1 Test portion

Heat the platinum or silica dish (4.1) for a few minutes in the electric furnace (4.2) controlled between 600 and 650 °C, allow to cool to ambient temperature in a desiccator and weigh to the nearest 0,001 g.

Weigh into the tared dish, to the nearest 0,001 g, a test portion of 1 to 2 g of the test sample (see ISO 1686).

### 5.2 Determination

First gently heat the dish containing the test portion (5.1) in order to remove most of the water, while avoiding losses of matter due to splashing. For this purpose, use a device which heats the lower part of the vessel (heating plate) or the upper part (infra-red radiation lamp or other source of heat not in contact with the dish).

Gradually increase the temperature to between 600 and 650 °C, and maintain for 10 min.

Allow to cool in a desiccator to ambient temperature and weigh to the nearest 0,001 g.

Repeat the operation until the difference between the results of two successive weighings does not exceed 0,001 g.

## 6 EXPRESSION OF RESULTS

The dry matter content, 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 (5.1);

$m_1$ is the mass, in grams, of the weighed dry residue.

## 7 ACCURACY OF THE METHOD

Practice has shown that the maximum deviation between results obtained using this method is 0,6 % (*m/m*) in absolute value.

## 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 operations not included in this International Standard or the International Standard to which reference is made, or regarded as optional.



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ANNEX

## ISO PUBLICATIONS RELATING TO SODIUM AND POTASSIUM SILICATES FOR INDUSTRIAL USE

ISO 1686 – Samples and methods of test – General.

ISO 1687 – Determination of density at 20 °C of samples in solution – Method using density hydrometer and method using pyknometer.

ISO 1688 – Determination of dry matter – Gravimetric method.

ISO 1689 – Calculation of the ratio $\frac{SiO_2}{Na_2O}$ or $\frac{SiO_2}{K_2O}$.

ISO 1690 – Determination of silica content – Gravimetric method by insolubilization.

ISO 1691 – Determination of carbonate content – Gas-volumetric method.

ISO 1692 – Determination of total alkalinity – Titrimetric method.

ISO 2122 – Preparation of solution of products not easily soluble in boiling water and determination of matter insoluble in water.

ISO 2123 – Determination of dynamic viscosity.

ISO 2124 – Determination of silica content – Titrimetric method.

ISO 3200 – Determination of sulphate content – Barium sulphate gravimetric method.

ISO 3201 – Determination of iron content – 1,10-Phenanthroline photometric method.



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