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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 1691

SODIUM AND POTASSIUM SILICATES
FOR INDUSTRIAL USE

DETERMINATION OF CARBON DIOXIDE CONTENT
EXPRESSED AS SODIUM OR POTASSIUM CARBONATE
GAS-VOLUMETRIC METHOD

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 1691, *Sodium and potassium silicates for industrial use – Determination of carbon dioxide content expressed as sodium or potassium carbonate – Gas-volumetric method*, 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 led to the adoption of Draft ISO Recommendation No. 1691, which was circulated to all the ISO Member Bodies for enquiry in December 1968. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

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

No Member Body opposed the approval of the Draft.

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

**SODIUM AND POTASSIUM SILICATES
FOR INDUSTRIAL USE**

**DETERMINATION OF CARBON DIOXIDE CONTENT
EXPRESSED AS SODIUM OR POTASSIUM CARBONATE
GAS-VOLUMETRIC METHOD**

1. SCOPE

This ISO Recommendation describes a gas-volumetric method for the determination of carbon dioxide, expressed as sodium or potassium carbonate, in sodium or potassium silicates for industrial use.

2. FIELD OF APPLICATION

The general method applies to the analysis of sodium or potassium silicates which do not contain reducing sulphur compounds such as sulphides and sulphites.

2.1 Special case

Determination of the carbon dioxide content in sodium or potassium silicates containing reducing sulphur compounds such as sulphides and sulphites (see section 9).

3. PRINCIPLE

Measurement of the volume of carbon dioxide evolved from a test portion by reaction with a hydrochloric acid solution.

4. REAGENTS**4.1** *Distilled water* or water of equal purity free from carbon dioxide at room temperature.

Eliminate any carbon dioxide present either by boiling the water for 10 minutes and cooling in the absence of atmospheric carbon dioxide or, more simply, by bubbling air free from carbon dioxide through it for 15 minutes.

The air is freed from carbon dioxide by passing it through a column containing pellets of sodium hydroxide.

Store the water in the absence of atmospheric carbon dioxide.

4.2 *Hydrochloric acid*, approximately ρ 1.19 (g/ml), 38 % (m/m) or 12 N solution.**4.3** *Sodium chloride*, coloured acid solution.

Dissolve 263 g of sodium chloride in water. Add 5 ml of a 96 % (m/m) sulphuric acid solution (approximately ρ 1.84 (g/ml) or 36 N). Dilute to 1000 ml, add a small amount of a 0.5 g/l methyl orange solution and mix thoroughly.

4.4 *Sodium hydroxide*, approximately ρ 1.22 (g/ml), 20 % (m/m) or 6 N solution.

Dissolve 120 g of sodium hydroxide in water. Dilute to 500 ml and mix thoroughly.