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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 1689

SODIUM AND POTASSIUM SILICATES

FOR INDUSTRIAL USE

CALCULATION OF THE RATIO

$$\frac{SiO_2}{Na_2O} \quad \text{OR} \quad \frac{SiO_2}{K_2O}$$

1st EDITION

July 1970

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BRIEF HISTORY

The ISO Recommendation R 1689, *Sodium and potassium silicates for industrial use – Calculation of the ratio* $\frac{SiO_2}{Na_2O}$ *or* $\frac{SiO_2}{K_2O}$ 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. 1689 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	Iran	South Africa, Rep. of
Austria	Israel	Spain
Belgium	Italy	Switzerland
Brazil	Japan	Thailand
Czechoslovakia	Netherlands	Turkey
France	New Zealand	U.A.R.
Germany	Peru	U.S.S.R.
Greece	Poland	Yugoslavia
Hungary	Portugal	
India	Romania	

The following Member Body opposed the approval of the Draft :

United Kingdom

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

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ISO Recommendation | R 1689 | July 1970

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1. SCOPE

This ISO Recommendation specifies the formula for the calculation of the ratio $\frac{SiO_2}{Na_2O}$ or $\frac{SiO_2}{K_2O}$ for sodium silicates and potassium silicates for industrial use, respectively.

2. SODIUM SILICATES

a = total alkalinity expressed in Na_2O, % (m/m)*

b = silica (SiO_2), % (m/m)**

c = sodium carbonate (Na_2CO_3), % (m/m)***

d = Na_2O combined in the carbonate form, % (m/m) $= c \times \frac{62}{106} = 0.585\ c$

e = Na_2O combined in the silicate form, % (m/m) $= a - d = a - 0.585\ c$

f = ratio by mass $\frac{SiO_2}{Na_2O} = \frac{b}{e} = \frac{b}{a - 0.585\ c}$

g = molar ratio $\frac{SiO_2}{Na_2O} = f \times 1.032$

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* See ISO Recommendation R 1692, *Sodium and potassium silicates for industrial use – Determination of total alkalinity expressed in Na_2O or K_2O – Volumetric method.*

** See ISO Recommendation R 1690, *Sodium and potassium silicates for industrial use – Determination of silica content – Gravimetric method by insolubilization.*

*** See 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.*