

# ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

## ISO RECOMMENDATION R 1109

CLASSIFICATION OF DENSE REFRACTORY PRODUCTS

1st EDITION

September 1969

COPYRIGHT RESERVED

The copyright of ISO Recommendations and ISO Standards belongs to ISO Member Bodies. Reproduction of these documents, in any country, may be authorized therefore only by the national standards organization of that country, being a member of ISO.

For each individual country the only valid standard is the national standard of that country.

Printed in Switzerland

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

## BRIEF HISTORY

The ISO Recommendation R 1109, *Classification of dense refractory products*, was drawn up by Technical Committee ISO/TC 33, *Refractories*, the Secretariat of which is held by the British Standards Institution (BSI).

Work on this question led to the adoption of a Draft ISO Recommendation.

In October 1967, this Draft ISO Recommendation (No. 1261) 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 :

Australia	Israel	South Africa, Rep. of
Austria	Italy	Spain
Canada	Japan	Sweden
Denmark	Korea, Dem. P. Rep. of	Turkey
France	Netherlands	U.A.R.
Germany	New Zealand	United Kingdom
Greece	Poland	U.S.S.R.
Hungary	Portugal	Yugoslavia
India	Romania	

No Member Body opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in September 1969, to accept it as an ISO RECOMMENDATION.

---

## FOREWORD

As an extension of its earlier work, which resulted in the issue of ISO Recommendation R 836, *Vocabulary for the refractories industry*, Technical Committee ISO/TC 33 decided that a classification of refractories based on their chemical and mineralogical compositions would be useful; such a classification would be of assistance both to manufacturers and to users of refractories in their trading with foreign countries.

## CLASSIFICATION OF DENSE REFRACTORY PRODUCTS

### 1. SCOPE

This ISO Recommendation establishes a classification of dense refractory products. It applies only to shaped refractories of the dense type; classifications of unshaped refractories and of heat-insulating refractories are under discussion and will be the subject of future ISO Recommendations. The terminology used is in accordance with ISO Recommendation R 836.

### 2. CLASSIFICATION

Terminology	Limiting content of principal constituent	Criteria of subdivision and general observations
High alumina products Group 1	$\text{Al}_2\text{O}_3 \geq 56 \%$	A complete designation of these products should include an indication of either the raw material actually used or the mineralogical constitution of the final product. In the latter case, the method of obtaining this constitution should be stated.
High alumina products Group 2	$45 \% \leq \text{Al}_2\text{O}_3 < 56 \%$	
Fireclay products	$30 \% \leq \text{Al}_2\text{O}_3 < 45 \%$	
Low alumina fireclay products*	$10 \% \leq \text{Al}_2\text{O}_3 < 30 \%$ $\text{SiO}_2 < 85 \%$	
Siliceous products*	$85 \% \leq \text{SiO}_2 < 93 \%$	
Silica products	$\text{SiO}_2 \geq 93 \%$	Quality specifications according to use.

\* Products designated in certain countries by the name "semi-silica products" may belong either to the low alumina fireclay or to the siliceous products class.