INTERNATIONAL STANDARD 3052

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Gypsum plasters — Determination of water of crystallization content

Plâtres — Détermination de la teneur en eau de cristallisation

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FOREWORD

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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.

International Standard ISO 3052 was drawn up by Technical Committee ISO/TC 152, *Gypsum, gypsum plasters and gypsum products*, and circulated to the Member Bodies in March 1973.

It has been approved by the Member Bodies of the following countries :

Australia	Mexico	Spain
Austria	Netherlands	Sweden
Bulgaria	New Zealand	Thailand
France	Poland	Turkey
Germany	Portugal	United Kingdom
Iran	Romania	U.S.S.R.
Ireland	South Africa, Rep. of	

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

Czechoslovakia
Italy

Printed in Switzerland

Gypsum plasters — Determination of water of crystallization content

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a gravimetric method for the determination of the water of crystallization content of gypsum plasters (hereinafter referred to as "plasters").

2 REFERENCE

ISO 3048, *Gypsum plasters — General test conditions.*

3 PRINCIPLE

Determination of the loss in mass of a test portion on complete dehydration at 230 °C.

4 APPARATUS

4.1 Crucible, resistant to thermal shocks, provided either with a cover or a container in which it may be sealed.

4.2 Oven capable of being maintained at a temperature of 230 ± 5 °C.

4.3 Desiccator containing silica gel.

4.4 Analytical balance, accurate to ± 0,2 mg.

5 PREPARATION OF TEST SAMPLE

From the laboratory sample kept as indicated in 3.1.2 or 3.2.2 of ISO 3048, take a mass of 100 g and allow it to stand for 18 to 24 h in a uniform layer of maximum thickness 10 mm in a closed container in which the temperature is 20 ± 2 °C and the relative humidity 65 ± 5 %.

Dry this sample to constant mass[1] at 40 ± 4 °C. Before each weighing, allow it to cool to ambient temperature in the desiccator (4.3).

Determine the water of crystallization content immediately after cooling.

Preserve the remaining plaster in a sealed flask.

6 PROCEDURE

Into the crucible (4.1) which has previously been heated to 230 °C, cooled in the desiccator (4.3) and weighed with its cover or in the container, place approximately 2 g of plaster taken from the test sample prepared in accordance with clause 5.

Immediately replace the cover on the crucible or place the crucible in the weighing container. Reweigh the assembly to obtain the exact mass of the plaster.

Place the uncovered crucible in the oven maintained at 230 ± 5 °C. After 45 min, remove the crucible from the furnace, replace the lid or seal in the weighing container. Cool in a desiccator and reweigh.

Repeat these drying and weighing operations until constant mass[2] is attained.

Carry out a duplicate determination.

7 EXPRESSION OF RESULTS

The water of crystallization content is expressed as a percentage of the initial mass of the test portion by the following formula :

$$\frac{m_1 - m_2}{m} \times 100$$

where

m_1 is the mass, in grams, of the crucible containing the test portion before dehydration;

m_2 is the mass, in grams, of the crucible containing the test portion after dehydration;

m is the initial mass, in grams, of the test portion.

The difference between the results of two determinations shall not exceed 0,15 %.

1) The mass is regarded as constant when the difference between the results of two successive weighings separated by 1 h of effective drying does not exceed 0,2 g.

2) The results of two successive weighings carried out at an interval of 15 min shall not differ by more than 0,5 mg.

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 regarded as optional.