

JIS

JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS R 5203 : 2015

(JCA)

**Determination of the heat of hydration of
cement — Solution method**

R 5203 : 2015

Date of Establishment: 1953-07-17

Date of Revision: 2015-03-20

Date of Public Notice in Official Gazette: 2015-03-20

Investigated by: Japanese Industrial Standards Committee
Standards Board for ISO area
Technical Committee on Civil Engineering

JIS R 5203 : 2015, First English edition published in 2016-09

Translated and published by: Japanese Standards Association
Mita MT Building, 3-13-12, Mita, Minato-ku, Tokyo, 108-0073 JAPAN

In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

© JSA 2016

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan

KK/HN

PROTECTED BY COPYRIGHT

Contents

	Page
Introduction	1
1 Scope	1
2 Normative references	1
3 General requirements for test	2
3.1 Expression of measurement results	2
3.2 Tolerances	2
4 Reagents and sample	2
5 Apparatus and instruments	4
6 Measurement of thermal capacity of calorimeter	9
6.1 Preparation	9
6.2 Measurement of thermal capacity	9
6.3 Measurement of thermal leakage coefficient of calorimeter	11
7 Measurement of heat of solution	12
7.1 Measurement of heat of solution of anhydrous cement	12
7.2 Measurement of heat of solution of hydrated cement	13
8 Calculation of heat of hydration	15
8.1 In the case of portland cement and portland blast-furnace slag cement	15
8.2 In the case of portland fly-ash cement	16
Annex JA (informative) Comparison table between JIS and corresponding International Standard	17
Annex JB (informative) Comparison table between previous and current editions of this Standard on technically significant revisions	36

Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Cement Association (JCA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently **JIS R 5203:1995** is replaced with this Standard.

This **JIS** document is protected by the Copyright Law.

Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, applications for a patent after opening to the public or utility model rights. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying any of such patent rights, applications for a patent after opening to the public or utility model rights.

Determination of the heat of hydration of cement — Solution method

Introduction

This Japanese Industrial Standard has been prepared based on the first edition of ISO 29582-1 published in 2009 without modification in the basic measuring principle, but with addition of unique contents of JIS that are: tolerances for the measurement of heat of solution of hydrated cement and solution conditions for respective types of cement.

The portions with continuous sidelines or dotted underlines are the matters in which the contents of the corresponding International Standard have been modified. A list of modifications with the explanations is given in Annex JA. The comparison table between previous and current editions of this Standard on technically significant revisions is given in Annex JB.

1 Scope

This Standard specifies the testing method for heat of hydration of portland cement, portland blast-furnace slag cement, and portland fly-ash cement.

NOTE : The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 29582-1 : 2009 *Methods of testing cement — Determination of the heat of hydration — Part 1 : Solution method* (MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standards and JIS are IDT (identical), MOD (modified), and NEQ (not equivalent) according to ISO/IEC Guide 21-1.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS K 0050 *General rules for chemical analysis*

JIS K 8001 *General rule for test methods of reagents*

JIS K 8005 *Reference materials for volumetric analysis*

JIS K 8405 *Zinc oxide (Reagent)*

JIS K 8541 *Nitric acid (Reagent)*

JIS Z 8801-1 *Test sieves — Part 1 : Test sieves of metal wire cloth*