

JIS

JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS A 9501 : 2019

(JTIA/JSA)

**Standard practice for thermal
insulation works**

ICS 27.220;91.120.10

Reference number : JIS A 9501 : 2019 (E)

A 9501 : 2019

Date of Establishment: 1952-09-04

Date of Revision: 2019-02-20

Date of Public Notice in Official Gazette: 2019-02-20

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

JIS A 9501:2019, First English edition published in 2019-10

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 2019

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/AT

PROTECTED BY COPYRIGHT

Contents

| | Page |
|---|------|
| Introduction | 1 |
| 1 Scope | 1 |
| 2 Normative references | 1 |
| 3 Terms and definitions | 2 |
| 4 Materials used in thermal insulation works | 7 |
| 4.1 Selection of types of materials | 7 |
| 4.2 Main thermal insulation materials used in thermal insulation works | 7 |
| 4.3 Main subsidiary materials | 7 |
| 5 Thickness calculation of hot insulation material or cold insulation material | 10 |
| 5.1 Basic formulae for heat transfer calculation | 10 |
| 5.2 Basic formulae of mean thermal conductivity | 14 |
| 5.3 Design condition of thickness of hot insulation material or cold insulation material | 16 |
| 5.4 In the case where radiating quantity of heat is set as design condition | 17 |
| 5.5 In the case where surface temperature is set as design condition | 20 |
| 5.6 In the case of cold insulation | 23 |
| 5.7 In the case of dew proofing | 25 |
| 5.8 Calculation of thermal insulating economical thickness | 25 |
| 6 Execution methods for hot insulation works | 27 |
| 6.1 Hot insulation materials | 27 |
| 6.2 Main subsidiary materials | 27 |
| 6.3 Execution guideline of hot insulation works | 28 |
| 7 Execution methods for cold insulation works | 31 |
| 7.1 Cold insulation materials | 31 |
| 7.2 Main subsidiary materials | 31 |
| 7.3 Execution guideline of cold insulation works | 32 |
| 8 Execution methods for hot insulation/cold insulation/dew proofing works of building utility | 35 |
| 8.1 Hot insulation/cold insulation/dew proofing materials | 35 |
| 8.2 Main subsidiary materials | 36 |
| 8.3 Execution guideline of hot insulation work/cold insulation work/dew proofing work | 37 |
| 9 Inspections | 42 |
| 9.1 Classification of inspections | 42 |

| | | |
|-----------------------|---|-----|
| 9.2 | Voluntary confirmation items | 42 |
| 9.3 | Performance confirmation inspection | 43 |
| 9.4 | Acceptance criteria | 43 |
| 9.5 | Measuring instruments | 44 |
| Annex A (informative) | Calculation of hot insulation thickness when temperature change of fluid in piping during transportation is set as design condition | 79 |
| Annex B (informative) | Calculation of temperature change with time and hot insulation thickness of static fluid | 81 |
| Annex C (informative) | Calculation of hot insulation thickness for prevention of freezing of water in pipe | 84 |
| Annex D (informative) | Calculation methods of surface temperature and coefficient of surface heat transfer | 87 |
| Annex E (informative) | Method for determining thermal insulating economical thickness | 90 |
| Annex F (informative) | Service temperature of hot insulation material | 93 |
| Annex G (informative) | Notes for corrosion under hot insulation materials (CUI) | 95 |
| Annex H (informative) | Examples of calculation | 99 |
| Annex I (informative) | Comparison table between previous and current editions of this Standard on technically significant revisions | 155 |

Foreword

This Japanese Industrial Standard has been 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 Thermal Insulation Association (JTIA)/Japanese Standards Association (JSA) 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 A 9501:2014** 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.

Blank

Standard practice for thermal insulation works

Introduction

This Japanese Industrial Standard was established in 1952, and has gone through 16 revisions including this one. The last revision was made in 2014, and the revision at this time is to respond to changes in social needs and in execution technology of thermal insulation works. The comparison table between previous and current editions of this Standard on technically significant revisions is given in Annex I.

No corresponding International Standard has been established at this point.

1 Scope

This Standard specifies the types, usage methods, design methods and execution guidelines of thermal insulation materials and subsidiary materials used in the thermal insulation works on apparatuses relevant to chemical industry, fuel industry and heat utilizing power, and facilities of air conditioning, water supply/drainage for sanitation, etc. The thermal insulation works on refrigerators/ships/railway rolling stocks are excluded. The temperatures intended for the thermal insulation works applicable in this Standard shall be $-180\text{ }^{\circ}\text{C}$ to $1\ 000\text{ }^{\circ}\text{C}$.

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 A 0202 *Thermal insulation—Vocabulary*

JIS A 1322 *Testing method for incombustibility of thin materials for buildings*

JIS A 1412-2 *Test method for thermal resistance and related properties of thermal insulations—Part 2: Heat flow meter apparatus*

JIS A 5538 *Adhesives for wall and ceiling boards*

JIS A 5547 *Adhesives for preformed cellular plastics thermal insulation board*

JIS A 5549 *Adhesives for fixture*

JIS A 5556 *Staples*

JIS A 5758 *Sealants for sealing and glazing in buildings*

JIS A 9504 *Man made mineral fibre thermal insulation materials*

JIS A 9510 *Inorganic porous thermal insulation materials*

JIS A 9511 *Preformed cellular plastics thermal insulation materials*

JIS B 0147 *Blind rivets—Terminology and definitions*

JIS B 1122 *Cross recessed head tapping screws*

JIS B 1123 *Hexagon head tapping screws*