

JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS A 5571 : 2019

**Tension member for seismic
reinforcement — Carbon fibre composite
strand wires**

ICS 59.100.20 ; 91.100.01

Reference number : JIS A 5571 : 2019 (E)

PROTECTED BY COPYRIGHT

Date of Establishment: 2019-11-20

Date of Public Notice in Official Gazette: 2019-11-20

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

JIS A 5571 : 2019, First English edition published in 2021-05

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 2021

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

PROTECTED BY COPYRIGHT

Contents

	Page
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Classification	3
5 Performance	3
5.1 Breaking force	3
5.2 Tensile modulus of elasticity	4
6 Appearance	4
7 Construction and dimensions	4
7.1 Construction	4
7.2 Dimensions	5
8 Materials	5
8.1 Carbon fibre	5
8.2 Composite resin	5
9 Test methods	5
9.1 Test environment	5
9.2 Test specimen	6
9.3 Dimensional measurement and mechanical properties test	6
10 Inspections	10
11 Marking	10
Annex A (informative) Preparation of strand wire test specimen	11
Annex B (information) Installation of strand wires	12

Foreword

This Japanese Industrial Standard has been established by the Minister of Economy, Trade and Industry, through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Act.

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

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

NOTE Based on Article 9 of the Supplementary Provisions to the Unfair Competition Prevention Act etc., procedures such as deliberation by the Japanese Industrial Standards Committee employed under the previous Industrial Standardization Act shall be deemed to have been conducted pursuant to the revised Industrial Standardization Act.

Tension member for seismic reinforcement — Carbon fibre composite strand wires

1 Scope

This Japanese Industrial Standard specifies requirements for the carbon fibre composite strand wires (hereafter referred to as strand wires) made of carbon fibre and thermoplastic resin or thermosetting resin, mainly used for the seismic reinforcement of wooden buildings.

NOTE Example of installation is provided in Annex B.

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 B 7507 *Vernier, dial and digital callipers*

JIS B 7721 *Tension/compression testing machines — Calibration and verification of the force-measuring system*

JIS K 7010 *Vocabulary for fibre reinforced plastic*

JIS R 7608 *Carbon fibre — Determination of tensile properties of resin-impregnated yarn*

3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in **JIS K 7010**, and the following apply.

3.1

wire

single wire made of composite material of carbon fibre, resin, etc. which constitutes a strand wire and mainly bears the strand wire stress (see Figure 1)

3.2

carbon fibre composite strand wire, strand wire

strand obtained by bundling and intertwisting a plurality of wires

Wire strands covered by this Standard are composed of wires of identical construction.

3.3

twist pitch

length of one twist of a wire in the outer layer of the strand wire, measured for the

distance it makes one complete spiral around the centre of the strand (see Figure 4)

3.4

thermoplasticity

property to plastically deform when heated and reversibly harden when cooled

3.5

thermosetting property

property to progressively cure when heated and become insoluble and infusible

3.6

effective sectional area, A_e

total sectional area of carbon fibre and composite resin which constitute a strand wire

The cross-section of a strand wire is shown in Figure 1. Each of the wires constituting a strand wire is a composite material composed of carbon fibre and composite resin; the effective sectional area of a strand, A_e , is obtained by adding the total of sectional areas of carbon fibre of all the wires in the strand, A_{cf} , to the total of sectional areas of composite resin of all the wires in the strand, A_r , as given by Formula (1) :

$$A_e = A_{cf} + A_r \dots\dots\dots(1)$$

where, A_e : effective sectional area of strand wire
 A_{cf} : total sectional area of carbon fibre of strand wire
 A_r : total sectional area of composite resin of strand wire

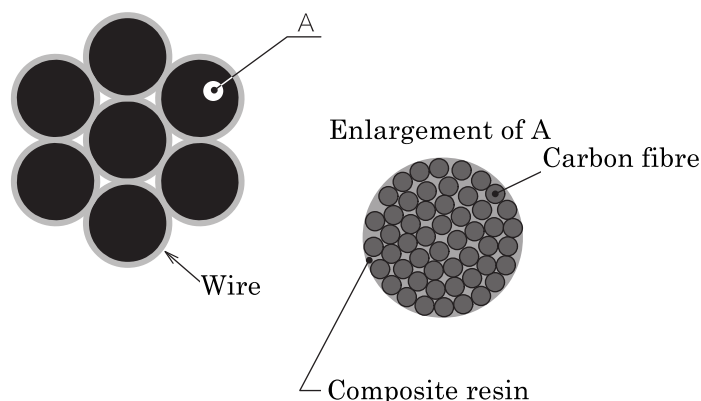


Figure 1 Effective sectional area of strand wire

3.7

carbon fibre volume content, V_f

value of carbon fibre volume content of a strand wire expressed in percentage (%)

V_f is obtained by Formula (2) :