

SS ISO 15835-1 : 2020
ISO 15835-1:2018, IDT
(ICS 77.140.15)

SINGAPORE STANDARD

**Steels for the reinforcement of concrete —
Reinforcement couplers for mechanical splices
of bars**

— Part 1 : Requirements



SS ISO 15835-1 : 2020
ISO 15835-1:2018, IDT
(ICS 77.140.15)

SINGAPORE STANDARD

**Steels for the reinforcement of concrete —
Reinforcement couplers for mechanical splices of bars**

— Part 1 : Requirements

Published by Enterprise Singapore

All rights reserved. Unless otherwise specified, no part of this Singapore Standard may be reproduced or utilised in any form or by any means, electronic or mechanical, including photocopying and microfilming, without permission in writing from Enterprise Singapore. Request for permission can be sent to: standards@enterprisesg.gov.sg.

© ISO 2018 – All rights reserved
© Enterprise Singapore 2020

ISBN 978-981-48-9464-7

The content of this Singapore Standard was approved on 4 February 2020 by the Building and Construction Standards Committee (BCSC) under the purview of the Singapore Standards Council.

First published, 2020

BCSC consists of the following members:

	Name	Representation
Chairman	: Ar. Chan Kok Way	<i>Individual Capacity</i>
Deputy Chairman	: Er. Clement Tseng	<i>Building and Construction Authority</i>
Secretary	: Ms Amy Sim	<i>The Institution of Engineers, Singapore – Standards Development Organisation</i>
Members	: Mr Bin Chee Kwan	<i>National Environment Agency</i>
	Er. Chan Ewe Jin	<i>The Institution of Engineers, Singapore</i>
	Mr Shawn Chan	<i>Singapore Manufacturing Federation</i>
	Er. Chee Kheng Chye	<i>Housing & Development Board</i>
	Mr Herman Ching	<i>PUB, Singapore's National Water Agency</i>
	Mr Chng Chee Beow	<i>Real Estate Developers' Association of Singapore</i>
	Mr Dominic Choy	<i>Singapore Contractors Association Ltd</i>
	Er. Paul Fok	<i>Land Transport Authority</i>
	Mr Goh Ngan Hong	<i>Singapore Institute of Surveyors and Valuers</i>
	Mr Desmond Hill	<i>Individual Capacity</i>
	Prof Ho Puay Peng	<i>National University of Singapore</i>
	Ar. William Lau	<i>Individual Capacity</i>
	Er. Lee Chuan Seng	<i>Individual Capacity</i>
	Ar. Benedict Lee Khee Chong	<i>Singapore Institute of Architects</i>
	A/Prof Leong Eng Choon	<i>Nanyang Technological University</i>
	SAC Lian Wee Teck	<i>Singapore Civil Defence Force</i>
	Mr Darren Lim	<i>Building and Construction Authority</i>
	Dr Lim Lan Yuan	<i>Association of Property and Facility Managers</i>
	Er. Lim Peng Hong	<i>Association of Consulting Engineers Singapore</i>
	Er. Mohd Ismadi	<i>Ministry of Manpower</i>
	Ms Kay Pungkothai	<i>National Parks Board</i>
	Er. Yvonne Soh	<i>Singapore Green Building Council</i>
	Er. Tang Pei Luen	<i>JTC Corporation</i>

BCSC sets up the Technical Committee on Building Structures and Substructures to oversee the preparation of this standard. The Technical Committee consists of the following members:

	Name	Representation
Chairman	: Er. Lim Peng Hong	<i>Individual Capacity</i>
Deputy Chairman	: Er. Lung Hian Hao	<i>Building and Construction Authority</i>
Secretary	: Ms Jasmine Bai	<i>The Institution of Engineers, Singapore – Standards Development Organisation</i>
Members	: Er. Chan Ewe Jin	<i>The Institution of Engineers, Singapore</i>
	Er. Dr Chiew Sing Ping	<i>Singapore Institute of Technology</i>
	Er. Ho Chew Fook	<i>Housing & Development Board</i>
	Er. Dr Richard Liew Jat Yuen	<i>National University of Singapore</i>
	Er. Neo Bian Hong	<i>Land Transport Authority</i>
	Mr Ng Yek Meng	<i>Singapore Contractors Association Ltd</i>
	Dr Ng Yiaw Heong	<i>Singapore Structural Steel Society</i>
	Dr Gary Ong Khim Chye	<i>Singapore Concrete Institute</i>
	Mr Sze Thiam Siong	<i>Singapore Welding Society</i>
	Dr Tam Chat Tim	<i>Individual Capacity</i>
	Prof Tan Kang Hai	<i>Nanyang Technological University</i>
	Prof Tan Kiang Hwee	<i>National University of Singapore</i>
	Er. Dr Tan Teng Hooi	<i>Individual Capacity</i>
	Er. Tang Pei Luen	<i>JTC Corporation</i>
	LTC Tong Hong Haey	<i>Singapore Civil Defence Force</i>
	Er. Yong Fen Leong	<i>Association of Consulting Engineers Singapore</i>

(blank page)

Contents

	Page
National Foreword	6
Foreword	7
1 Scope	8
2 Normative references	8
3 Terms and definitions	8
4 Symbols	9
5 Requirements	10
5.1 General	10
5.2 Categories of mechanical splices	10
5.3 Strength and ductility under static forces	11
5.3.1 General	11
5.3.2 Strength	11
5.3.3 Ductility	12
5.4 Slip under static forces	12
5.4.1 Testing requirements	12
5.4.2 Slip requirement	12
5.5 Properties under high-cycle fatigue loading (optional)	13
5.5.1 Testing programme	13
5.5.2 Fatigue performance	13
5.5.3 <i>S-N</i> diagram (optional)	14
5.6 Properties under low-cycle reverse loading (optional)	14
5.7 Marking and traceability	14
5.8 Installation instructions	14
Annex A (informative) Items to be specified	15
Bibliography	16

National Foreword

This Singapore Standard was prepared by the Technical Committee on Building Structures and Substructures under the purview of BCSC.

This standard is identical with ISO 15835-1:2018, “Steels for the reinforcement of concrete — Reinforcement couplers for mechanical splices of bars — Part 1: Requirements”, published by the International Organization for Standardization.

NOTE 1 – Reference to International Standards are replaced by applicable Singapore Standards/Technical References.

NOTE 2 – Where numerical values are expressed as decimals, the comma is read as a full point.

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

NOTE

- 1. Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions. Where SSs are deemed to be stable, i.e. no foreseeable changes in them, they will be classified as “Mature Standards”. Mature Standards will not be subject to further review, unless there are requests to review such standards.*
- 2. An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore and the Singapore Standards Council shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR. Although care has been taken to draft this standard, users are also advised to ensure that they apply the information after due diligence.*
- 3. Compliance with a SS or TR does not exempt users from any legal obligations.*

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 17, *Steel*, Subcommittee SC 16, *Steels for the reinforcement and prestressing of concrete*.

This second edition cancels and replaces the first edition (ISO 15835-1:2009), which has been technically revised with changes made to Clauses 1, 2, 3, 4 and 5, 3.2, 3.5, 5.2, 5.3, 5.5 and 5.6, Table 1, and Annexes C and D. Clause 6 and Annexes A and B have been revised and have been moved out into a new document: ISO 15835-3.

A list of all the parts in the ISO 15835 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Steels for the reinforcement of concrete — Reinforcement couplers for mechanical splices of bars — Part 1: Requirements

1 Scope

This document specifies requirements for couplers for the mechanical splicing of steel reinforcing bars. More onerous requirements can be specified by the customer.

This document is applicable to the continuous production of coupler components. It is intended to be used with adequate control measures for the processing of reinforcing bars, i.e. the production of the mechanical splice.

This document specifies requirements for couplers used for mechanical splices in reinforced concrete structures under predominantly static loads. It specifies additional requirements for couplers used in structures subject to high-cycle elastic fatigue loading and/or low-cycle elastic-plastic reverse loading.

NOTE ISO 15835-3 specifies the quantity of tests.

Compression-only couplers such as end-bearing sleeves are not covered by the ISO 15835 series.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 15630-1, *Steel for the reinforcement and prestressing of concrete — Test methods — Part 1: Reinforcing bars, wire rod and wire*

ISO 15835-2:2018, *Steels for the reinforcement of concrete — Reinforcement couplers for mechanical splices of bars — Part 2: Test methods*

ISO 16020, *Steel for the reinforcement and prestressing of concrete — Vocabulary*