

SINGAPORE STANDARD

SS 503 : Part 1 : 2003

(ICS 77.140)

SPECIFICATION FOR

Cold formed welded steel structural hollow sections

Part 1 : Technical delivery requirements

Published by
SPRING Singapore
2 Bukit Merah Central
Singapore 159835
SPRING Singapore Website: www.spring.gov.sg
Standards Website: www.standards.org.sg



SINGAPORE STANDARD

SS 503 : Part 1 : 2003

(ICS 77.140)

SPECIFICATION FOR

Cold formed welded steel structural hollow sections

Part 1 : Technical delivery requirements

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 the SPRING Singapore at the address below:

Programme Director
Standardisation Department
SPRING Singapore
2 Bukit Merah Central
Singapore 159835
Telephone: 62786666 Telefax: 62786667
Email: stn@spring.gov.sg

ISBN 9971-67-916-7

Contents

	Page
Foreword _____	6

SPECIFICATION

1	Scope _____	7
2	Normative references _____	8
3	Definitions _____	9
4	Classification and designation _____	9
5	Information to be supplied by the purchaser _____	12
6	Requirements _____	14
7	Inspection _____	18
8	Sampling _____	19
9	Test methods _____	22
10	Marking _____	24

ANNEXES

A	Structural hollow sections of 'non-alloy' steels – Chemical composition and mechanical properties (normative) _____	25
B	Structural hollow sections of fine grain steels - Chemical composition and mechanical properties (normative) _____	27
C	Location of samples and test pieces (normative) _____	30
D	List of national standards which correspond with EURONORMS referenced (informative) _____	31

TABLES

1	Permissible deviations of the product analysis from the specified limits of the cast analysis given in Tables A.1, B.1 and B.2 _____	15
2	Inspection and test programme for hollow sections of 'non-alloy' steels _____	20
3	Inspection and test programme for hollow sections of fine grain steels _____	20
4	Test units _____	21

Foreword

This Singapore Standard was prepared by the Technical Committee on Steel under the direction of the Building Construction Standards Committee.

This standard is based on EN 10219-1 : 1997 'Cold formed welded structural hollow sections of non-alloy and fine grain steels : Part 1 – Technical delivery requirements' and is produced with permission of CEN, rue de Stassart 36, B-1050 Brussels. All exploitation rights of the European Standard in any form and by any means are reserved worldwide by CEN to CEN members and no production may be undertaken without expressed permission in writing of CEN through SPRING Singapore.

Acknowledgement is made for the use of information from the above reference.

Deviations from EN 10219-1 are in the following areas:

- (a) The title of this SS uses the term 'Cold formed welded steel structural hollow sections' instead of 'Cold formed welded structural hollow sections of non-alloy and fine grain steels';
- (b) Clause 1 'Scope' and Clause 4 'Classification and Designation' more clearly identify the type of steel to which this standard refers, in a different layout;
- (c) The definition of manufacturing process (under Clause 3) has been clarified;
- (d) References to non-alloy have been replaced with 'non-alloy' to indicate that it is a name given to a certain range of plain carbon steels;
- (e) Provisions have been made (under Clause 10) for marking of the sections to prevent cold formed sections being mistaken for hot finished sections;
- (f) Footnotes have been added to make clear that the existence of a strength grade does not imply local availability in any shape or size (Clause 4.1) and to clarify convention for specifying section sizes (Clause 4.2.4);
- (g) Impact tests are not required for nominal thickness less than *or equal* to 6 mm (Clause 6.7.2).
- (h) Annex E 'Designation of steel grades in the EN and corresponding former national designation' which is not relevant in local context, has been deleted.
- (i) Low temperature qualities designated by 'L', which are rarely specified in this region, have been deleted;
- (j) The Footnote: 'Only circular hollow sections available in thicknesses over 24 mm', which has no relevance to the mechanical or chemical properties, has been deleted from the Tables (under Annexes A and B).

NOTE

1. *Singapore Standards are subject to periodic review to keep abreast of technological changes and new technical developments. The revisions of Singapore Standards are announced through the issue of either amendment slips or revised editions.*
2. *Compliance with a Singapore Standard does not exempt users from legal obligations.*

Specification for cold formed welded steel structural hollow sections – Part 1 : Technical delivery requirements

1 Scope

This Part of this Singapore Standard specifies the technical delivery requirements for cold formed welded steel structural hollow sections of circular, square or rectangular form and applies to structural hollow sections formed cold without subsequent heat treatment.

The specified requirements apply to the following three types of steels:

- (a) Non-alloy base and quality steels that are not fine grain;

NOTE – For consistency with European and International Standards, these steels are referred to in this standard as 'non-alloy' steels.

The grades, chemical composition and mechanical properties for these steels are given in Annex A.

- (b) Non-alloy quality steels that are fine grain;

- (c) Alloy special steels that are fine grain.

The grades, chemical composition and mechanical properties for items (b) and (c) are given in Annex B.

These steel types are defined in EN 10020. See Clause 4 for further details.

NOTE 1 – These steels are referred to in this standard as fine grain steels.

NOTE 2 – Alloy steels are formally defined as those having minimum concentrations of alloying elements e.g. Mn > 1.65%, Si > 0.5%, Cu > 0.6%

The products specified in this Part of this Singapore Standard are intended for use in construction. Requirements for tolerances, dimensions and sectional properties are contained in Part 2 of this Singapore Standard (SS 503 : Part 2).

NOTE – A range of steel grades is specified in this Singapore Standard and the user should select the grade appropriate to the intended use and service conditions and according to availability, as not all grades specified will be available locally. The grades and mechanical properties of the finished hollow sections are compatible with those in EN 10025 and EN 10113 and some of those in EN 10149.

This Singapore Standard does not apply to products covered by the following standards:

EN 10025	Hot-rolled products of non-alloy structural steels – Technical delivery conditions
EN 10113	Hot-rolled products in weldable fine grain structural steels
EN 10149	Hot-rolled flat products made of high yield strength steels for cold forming
EN 10155	Structural steels with improved atmospheric corrosion resistance – Technical delivery conditions
SS 470	Hot finished structural hollow sections of non-alloy and fine grain structural steels
EN 10225	Weldable structural steels for fixed offshore structures.