

Weldable structural steels — Hot finished structural hollow sections in weather resistant steels — Specification

ICS 77.140.75

Confirmed January 2010

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee ISE/12, Structural steels, upon which the following bodies were represented:

- BEAMA Ltd.
- British Constructional Steelwork Association Ltd.
- Department of Transport — Highways Agency
- Energy Industries Council
- Engineering Equipment and Materials Association
- Galvanizers Association
- Institution of Structural Engineers
- Lloyds Register
- Steel Construction Institute
- UK Steel Association
- Welding Institute

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 23 April 2004

© BSI 23 April 2004

The following BSI references relate to work on this British Standard
Committee reference ISE/12
Draft for comment 02/703583 DC

Amendment issued since publication

Amd. No.	Date	Comments

ISBN 0 580 43445 1

Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Information and requirements to be agreed and documented	2
5 Classification and designation	3
6 Technical requirements	4
7 Inspection and testing	6
8 Samples	7
9 Test methods	8
10 Marking	10
Annex A (normative) Chemical composition and mechanical properties	11
Annex B (normative) Location of samples and test pieces	12
Bibliography	13
Figure B.1 — Tensile test piece locations — Small sections	12
Figure B.2 — Location of tensile and impact test pieces — Circular sections	12
Figure B.3 — Tensile test piece locations — Square and rectangular sections	12
Table 1 — Permissible limits on the product analysis from the specified ladle analysis	3
Table 2 — Inspection and test programme	7
Table 3 — Test units	7
Table A.1 — Chemical composition (ladle analysis)	11
Table A.2 — Maximum carbon equivalent value (CEV)	11
Table A.3 — Mechanical properties	11

Foreword

This British Standard has been prepared by Technical Committee ISE/12. It supersedes BS 7668:1994, which is withdrawn.

This revision of BS 7668 aligns the delivery requirements of hot finished structural hollow sections in weather resistant steels with co-existing standard BS EN 10210-1 for hot finished structural hollow sections of non-alloy and fine grain steels.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 13 and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

1 Scope

This British Standard specifies the technical delivery requirements for weldable weather resistant steels for general structural and engineering purposes in the form of hot finished hollow sections of circular, square or rectangular form. It also applies to hollow sections formed hot with or without subsequent heat treatment or formed cold with subsequent heat treatment to obtain equivalent metallurgical conditions to those obtained in the hot formed product. However, in the case of hollow sections formed from plate and with the seams metal arc welded, this standard covers only the requirements for the plate material.

The products are equally suitable for bolted and riveted structures. The products specified in this British Standard are intended for use in construction. Requirements for tolerances, dimensions and sectional properties are specified in BS EN 10210-2.

NOTE Two material grades are specified in this standard and the user should select the grade appropriate to the intended use and service conditions. The grades and mechanical properties are compatible with those in BS EN 10155.

This British Standard does not apply to products covered by BS EN 10025, BS EN 10113 (all parts), BS EN 10155, BS EN 10210-1, BS EN 10219-1, BS EN 10219-2 and BS EN 10225.

In addition to the definitive requirements, this standard also requires the items detailed in Clause 4 to be documented. For compliance with this standard, both the definitive requirements and the documented items have to be satisfied.

2 Normative references

The following referenced documents are indispensable for the application 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.

BS EN 287-1, *Approval testing of welders for fusion welding — Part 1: Steels*.

BS EN 288-2, *Specification and approval of welding procedures for metallic materials — Part 2: Welding procedures specification for arc welding*.

BS EN 288-3, *Specification and approval of welding procedures for metallic materials — Part 3: Welding procedure tests for the arc welding of steels*.

BS EN 1011-1, *Welding — Recommendations for welding of metallic materials — Part 1: General guidance for arc welding*.

BS EN 1011-2, *Welding — Recommendations for welding of metallic materials — Part 2: Arc welding of ferritic steels*.

BS EN 10002-1, *Tensile testing of metallic materials — Part 1: Method of test at ambient temperature*.

BS EN 10021, *General technical delivery requirements for steel and iron products*.

BS EN 10027-1, *Designation systems for steel — Part 1: Steel names, principal symbols*.

BS EN 10045-1, *Charpy impact test on metallic materials — Part 1: Test method (V- and U-notches)*.

BS EN 10052, *Vocabulary of heat treatment terms for ferrous products*.

BS EN 10079, *Definition of steel products*.

BS EN 10168, *Iron and steel products — Inspection documents — List of information and description*.

BS EN 10204, *Metallic products — Types of inspection documents*.

BS EN 10210-1, *Hot finished structural hollow sections of non-alloy and fine grain structural steels — Part 1: Technical delivery requirements*.

BS EN 10210-2, *Hot finished structural hollow sections of non-alloy and fine grain structural steels — Part 2: Tolerances, dimensions and sectional properties*.

BS EN 10246-3, *Non-destructive testing of steel tubes — Part 3: Automatic eddy current testing of seamless and welded (except submerged arc-welded) steel tubes for the detection of imperfections*.

BS EN 10246-5, *Non-destructive testing of steel tubes — Part 5: Automatic full peripheral magnetic transducer/flux leakage testing of seamless and welded (except submerged arc-welded) ferromagnetic steel tubes for the detection of longitudinal imperfections*.

BS EN 10246-8, *Non-destructive testing of steel tubes — Part 8: Automatic ultrasonic testing of the weld seam of electric welded steel tubes for the detection of longitudinal imperfections.*

BS EN 10246-9, *Non-destructive testing of steel tubes — Part 9: Automatic ultrasonic testing of the weld seam of submerged arc welded steel tubes for the detection of longitudinal and/or transverse imperfections.*

BS EN ISO 2566-1, *Steel — Conversion of elongation values — Part 1: Carbon and low alloy steels.*

BS EN ISO 377, *Steel and steel products — Location and preparation of samples and test pieces for mechanical testing.*

BS EN ISO 15607, *Specification and qualification of welding procedures for metallic materials — General rules.*

3 Terms and definitions

For the purposes of this British Standard the terms and definitions in BS EN 10021 (inspection and testing), BS EN 10052 (heat treatment), BS EN 10079 (hollow section), BS EN 10204 and contents as defined in BS EN 10168 (inspection documents), and the following apply.

3.1

test unit

quantity of hollow sections from one or more cast(s) of the same grade and dimensions manufactured by the same process (e.g. electric welding, submerged arc welding), and if applicable in the same heat treatment condition, submitted for acceptance at the same time

4 Information and requirements to be agreed and documented

4.1 Information

The following information to be supplied by the purchaser shall be fully documented. For compliance with the standard both the definite requirements specified throughout the standard and the following documented items shall be satisfied:

- a) the quantity (mass or total length);
- b) the range and type of length (see BS EN 10210-2);
- c) details of the product form:
 - HFCHS = hot finished circular hollow sections;
 - HFRHS = hot finished square or rectangular hollow sections;
- d) the designation (see Clause 5);
- e) the dimensions (see BS EN 10210-2);
- f) the options (see 4.3).

4.2 Requirements

The following items to be agreed between the contracting parties are specified in the clauses referred to and shall be fully documented. For compliance with the standard both the definitive requirements specified throughout the standard and the following documented items shall be satisfied.

- a) The conditions under which, and the extent to which, welding repair to the body shall be carried out (see 6.7.4).
- b) If an inspection document 3.1.A, 3.1.C or 3.2 is specified the purchaser shall notify the manufacturer of the address of the organization or person nominated by him to carry out the inspection and produce the certificate of conformity (see 7.2).