

Steel forgings for pressure purposes —

Part 1: General requirements for open die forgings

The European Standard EN 10222-1:1998, with the incorporation of amendment A1:2002, has the status of a British Standard

ICS 77.140.85

National foreword

This British Standard is the English language version of EN 10222-1:1998, including amendment A1:2002, published by the European Committee for Standardization (CEN). Together with EN 10222-2 to -4 it supersedes BS 1503:1989 which will be withdrawn when the four parts of EN 10222 are published.

The UK participation in its preparation was entrusted by Technical Committee ISE/73, Steels for pressure purposes, to Subcommittee ISE/73/3, Steel forgings for pressure purposes, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 15 and a back cover.

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Steel forgings for pressure purposes — Part 1: General requirements for open die forgings

(including amendment A1:2002)

Pièces forgées en acier pour appareils à
pression —
Partie 1: Prescriptions générales concernant les
pièces obtenues par forgeage libre
(inclut l'amendement A1:2002)

Schmiedestücke aus Stahl für Druckbehälter —
Teil 1: Allgemeine Anforderungen an
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(enthält Änderung A1:2002)

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European Committee for Standardization
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Foreword

This European Standard has been prepared by Technical Committee ECISS/TC 28 “Steel forgings”, the Secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 1998, and conflicting national standards shall be withdrawn at the latest by July 1998.

The titles of the other Parts of this European Standard are:

Part 2: Ferritic and martensitic steels with specified elevated temperature properties.

Part 3: Nickel steels with specified low temperature properties.

Part 4: Weldable fine grain steels with high proof strength.

Part 5: Martensitic, austenitic and austenitic-ferritic stainless steels.

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Foreword to amendment A1

This document EN 10222-1:1998/A1:2002, has been prepared by Technical Committee ECISS/TC 28 Steel forgings, the Secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2002, and conflicting national standards shall be withdrawn at the latest by October 2002.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship EU Directive(s), see informative Annex ZA, which is an integral part of this document.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This Part of this European Standard specifies the general technical delivery conditions for open die steel forgings, ring rolled products and forged bars for pressure purposes.

General information on technical delivery conditions is given in EN 10021.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

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

EN 288-1, *Specification and qualification of welding procedure for fusion welding — Part 1: General rules.*

EN 288-2, *Specification and qualification of welding procedure for fusion welding — Part 2: Welding procedure specification for arc welding of metallic materials.*

EN 288-3, *Specification and qualification of welding procedure for fusion welding — Part 3: Welding procedure tests for arc welding of steels.*

EN 10002-1, *Metallic materials — Tensile testing — Method of test (at ambient temperature).*

EN 10002-5, *Metallic materials — Tensile test — Method of test at elevated temperatures.*

EN 10020, *Definition and classification of grades of steel.*

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

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

EN 10027-2, *Designation system for steel — Part 2: Steel numbers.*

EN 10045-1, *Metallic materials — Charpy impact test — Test method.*

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

EN 10079, *Definition of steel products.*

EN 10204, *Metallic products — Inspection documents.*

prEN 10228-1, *Non-destructive testing of steel forgings — Part 1: Magnetic particle inspection.*

prEN 10228-2, *Non-destructive testing of steel forgings — Part 2: Penetrant testing.*

prEN 10228-3, *Non-destructive testing of steel forgings — Part 3: Ultrasonic testing of ferritic or martensitic steel forgings.*

prEN 10228-4, *Non-destructive testing of steel forgings — Part 4: Ultrasonic testing of austenitic and austenitic-ferritic stainless steel forgings.*

EURONORM 168, *Iron and Steel products — Inspection documents — Contents.*

ENV 22605-1, *Steel products for pressure purposes — Derivation and verification of elevated temperature properties — Part 1: Yield or proof stress of carbon and low alloy steel products.*

ENV 22605-2, *Steel products for pressure purposes — Derivation and verification of elevated temperature properties — Part 2: Proof stress of austenitic steel products.*

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

prEN ISO 3651, *Determination of resistance to intergranular corrosion stainless steels — Part 2: Ferritic, austenitic and ferritic-austenitic (duplex) stainless steels — Corrosion test in media containing sulfuric acid.*

CR 10260, ECISS Information Circular 10. *Designation systems for steel: Additional symbols for steel names.*

CR 10261, ECISS Information Circular 11. *Iron and steel: Review of available methods of chemical analysis.*

3 Definitions

3.1

General

For the purposes of this Part of this European Standard the following definitions apply in addition to the definitions in EN 10020, EN 10021, EN 10052, EN 10079 and EN ISO 377.

3.2

batch

forgings of similar dimensions from the same cast, made by the same forging procedure and from the same heat treatment charge

4 Classification and designation

4.1 Classification

The steels in this European Standard are classified as follows:

EN 10222-2, *Non-alloy quality steels 1.0352, 1.0426 and 1.0436 — Alloy special steels — Remaining steels.*

EN 10222-3, *Alloy special steels.*

EN 10222-4, *Non-alloy quality steels — 1.0477, 1.0478, 1.0565 and 1.0571 — Alloy special steels — 1.8932 and 1.8936.*

EN 10222-5, *Alloy special steels.*

4.2 Designation

The steels in Parts 2 to 5 of this European Standard are designated in accordance with the requirements of EN 10027-1, EN 10027-2 and CR 10260.

5 Information to be supplied by the purchaser

5.1 Mandatory information

The purchaser shall select the steel type, the shape and dimensions of the forging taking the intended use into account.

The purchaser shall provide in the purchase order all the information necessary for describing the forging and its characteristics and details concerning delivery including the following:

- a) the quantity of forgings required;
- b) the forging dimensions, or the drawing number(s) containing the dimensions, tolerances and surface finish, to which the forgings shall conform;
- c) the steel designation of the material of which the forgings are made (see Clause 4);
- d) whether the purchaser needs to be informed of the forging procedure (see 7.2);
- e) whether production and testing of the forgings is to be witnessed by the purchaser's representative, and if so, the particular stages in production and testing at which the purchaser's representative may require to be present (see Clause 15);
- f) any required options (see 5.2 and Annex A);
- g) whether additional sample material is required for welding tests, the dimensions and location of such test pieces being agreed with the manufacturer;
- h) the type of inspection document in accordance with EN 10204.

5.2 Options

A number of options are available and these are detailed in Annex A. Where any of the options given are specified at the time of the order, the forgings shall conform to the requirements of any such option, in addition to the mandatory requirements of this Part of this European Standard.

If the purchaser does not specify any options at the time of enquiry and order, the manufacturer shall supply in accordance with the basic specification.