

Open die steel forgings for general engineering purposes —

Part 4: Stainless steels

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British Standard

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee ISE/31, Wrought steels, which has the responsibility to:

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- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 19 and a back cover.

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Verwendung - Teil 4: Nichtrostende Stähle

This European Standard was approved by CEN on 9 September 1999.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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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of an identical text or by endorsement, at the latest by April 2000, and conflicting national standards shall be withdrawn at the latest by April 2000.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association. This European Standard is considered to be a supporting standard to those application and product standards which in themselves support an essential safety requirement of a New Approach Directive and which make reference to this European Standard.

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

- Part 1: General requirements
- Part 2: Non-alloy quality and special steels
- Part 3: Alloy special steels

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, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This part of this European Standard specifies the technical delivery requirements for open die forgings, forged bars and products pre-forged and finished in ring rolling mills, manufactured from stainless steels with ferritic, martensitic, austenitic and austenitic-ferritic structures.

NOTE: The majority of steels listed in this part of EN 10250 are identical to steels specified EN 10088-3 and more extensive information on properties is given in that European Standard.

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 10021 General technical delivery requirements for iron and steel products

EN 10088-3 Stainless steels – Part 3: Technical delivery conditions for semi-finished products, bars, rods and sections for general purposes.

EN 10250-1 Open steel die forgings for general engineering purposes – Part 1: General requirements

3 Chemical composition

3.1 Cast analysis

The chemical composition of the steel shall be determined by cast analysis and shall conform to the analysis given in Tables 1, 2 and 3 (see A.7, A.8, and A.11 of EN 10250-1).

Elements not quoted in Tables 1, 2, and 3 shall not be added intentionally to the steel without the agreement of the purchaser, except for the purpose of finishing the heat. All reasonable measures should also be taken to prevent the addition from the scrap, or other material used in the manufacture of the steel, of such elements which affect the corrosion resistance, mechanical properties and applicability of the steel.

3.2 Product analysis

The product analysis shall not deviate from the specified cast analysis (see Tables 1, 2 and 3) by more than the values specified in Table 4 (see 9.2 of EN 10250-1).

Table 1: Steel grades and chemical composition - ferritic and martensitic grades

Steel designation		C	Si max	Mn max	P max	S max	Cr	Mo	Ni	Others
Name	Number	%	%	%	%	%	%	%	%	%
X6CrAl13	1.4002	≤ 0,08	1,00	1,00	0,040	0,030 ¹⁾	12,00 to 14,00	—	—	Al 0,10 to 0,30
X6Cr17	1.4016	≤ 0,08	1,00	1,00	0,040	0,030 ¹⁾	16,00 to 18,00	—	—	—
X12Cr13	1.4006	0,08 to 0,15	1,00	1,50	0,040	0,030 ¹⁾	11,50 to 13,50	—	≤ 0,75	—
X20Cr13	1.4021	0,16 to 0,25	1,00	1,50	0,040	0,030 ¹⁾	12,00 to 14,00	—	—	—
X30Cr13	1.4028	0,26 to 0,35	1,00	1,50	0,040	0,030 ¹⁾	12,00 to 14,00	—	—	—
X17CrNi16-2	1.4057	0,12 to 0,22	1,00	1,50	0,040	0,030 ¹⁾	15,00 to 17,00	—	1,50 to 2,50	—
X3CrNiMo13-4	1.4313	≤ 0,05	0,70	1,50	0,040	0,015	12,00 to 14,00	0,30 to 0,70	3,50 to 4,50	N ≥ 0,020
X4CrNiMo16-5-1	1.4418	≤ 0,06	0,70	1,50	0,040	0,030 ¹⁾	15,00 to 17,00	0,80 to 1,50	4,00 to 6,00	N ≥ 0,020
X5CrNiCuNb16-4	1.4542	≤ 0,07	0,70	1,50	0,040	0,030 ¹⁾	15,00 to 17,00	≤ 0,60	3,00 to 5,00	Nb=5 × C to 0,45 Cu=3,00 to 5,00
¹⁾ For products to be machined a controlled sulfur content of 0,015 to 0,030 % is recommended.										