

Free cutting steels — Technical delivery conditions for semi-finished products, hot-rolled bars and rods

The European Standard EN 10087:1998 has the status of a
British Standard

ICS 77.140.60

National foreword

This British Standard is the English language version of EN 10087:1998. Together with BS EN 10083-1:1991, BS EN 10084:1998, BS EN 10088-1:1995, BS EN 10088-2:1995 and BS EN 10088-3:1995, it supersedes BS 970-1:1996 which is withdrawn.

National annex NA describes steels used in the United Kingdom but not included in the European Standard.

The UK participation in its preparation was entrusted to Technical Committee ISE/31, Wrought steels, 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.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their 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, the EN title page, pages 2 to 12, an inside back cover and a back cover. This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Amendments issued since publication

Amd. No.	Date	Comments
10442 Corrigendum No. 1	February 1999	National annex NA added
15803 Corrigendum No. 2	23 January 2006	Revision of the supersession details

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 15 January 1999

© BSI 23 January 2006

ISBN 0 580 30635 6

Contents

	Page
National foreword	Inside front cover
Foreword	2
Text of EN 10087	3
National annex NA (informative) Non-conflicting national additions	Inside back cover

ICS 77.140.50; 77.140.60; 77.140.65

Descriptors: Iron and steel products, hot-rolled products, metal bars, wire rod, free machining steels, grades, quality, chemical position, mechanical properties, heat treatment, delivery condition, surface defects, inspection, tests

English version

Free-cutting steels — Technical delivery conditions for semi-finished products, hot-rolled bars and rods

Aciers de décolletage — Conditions techniques de livraison pour les demi-produits, barres et fils-machine laminés à chaud

Automatenstähle — Technische Lieferbedingungen für Halbzeug, warmgewalzte Stäbe und Walzdraht

This European Standard was approved by CEN on 4 September 1998.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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

© 1998 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

 **Documents**
Ref. No. EN 10087:1998 E
Document Sharing Hub

Foreword

This European Standard has been prepared by Technical Committee ECISS/TC 23, *Steels for heat treatment, alloy steels and free-cutting steels — Qualities and dimensions*, the Secretariat of which is held by DIN.

ECISS/TC 23 met on 1st/2nd July 1997 in Düsseldorf and agreed on the text for submission of this draft European Standard to COCOR-Vote. The following countries were represented in the meeting: Finland, France, Germany, Italy and United Kingdom.

The United Kingdom issues a non-conflicting national addition which describes a steel used in the United Kingdom but not included in this European Standard. 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 March 1999, and conflicting national standards shall be withdrawn at the latest by March 1999.

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.

Contents

	Page
Foreword	2
1 Scope	3
2 Normative references	3
3 Definitions	3
3.1 Free-cutting steels	3
4 Classification and designation	3
4.1 Designation	3
5 Information to be supplied by the purchaser	3
5.1 Mandatory information	3
5.2 Options	4
6 Manufacturing process	4
6.1 General	4
6.2 Treatment condition at delivery	4
6.3 Cast separation	4
7 Requirements	4
7.1 Chemical composition and mechanical properties	4
7.2 Weldability	4
7.3 Structure	4
7.4 Internal soundness	4
7.5 Surface quality	4
7.6 Dimensions, tolerances on dimensions and shape	5
8 Inspection and testing	5
8.1 Types and contents of inspection documents	5
8.2 Specific inspection and testing	5
9 Marking	5
Annex A (normative) Ruling section for the mechanical properties	11
Annex B (normative) Supplementary or special requirements	12
Annex C (informative) Bibliography	12
Annex D (informative) Dimensional standards applicable to products complying with this European Standard	12
National annex NA (informative) Non-conflicting national additions	Inside back cover
Figure A.1 — Diameter of the ruling section for square and rectangular sections for quenching in oil or water	11
Table 1 — Types of steel, chemical composition (applicable to cast analysis)	6
Table 2 — Permissible deviations between specified analysis and product analysis	6
Table 3 — Hardness and tensile strength in the untreated condition of free-cutting steels not intended for heat-treatment	7
Table 4 — Hardness and tensile strength of case hardening free-cutting steels in the untreated condition	7
Table 5 — Mechanical properties of direct-hardening free-cutting steels	8
Table 6 — Conditions for heat treatment of case-hardening free-cutting steels	9
Table 7 — Conditions for heat treating of direct-hardening free-cutting steels	9
Table 8 — Test conditions for verification of compliance with the various requirements	10
Table NA1 — Chemical composition (% by mass)	13
Table NA2 — Mechanical properties in the normalized condition	13
Table NA3 — Mechanical properties in the quenched and tempered condition	13