

SVENSK STANDARD

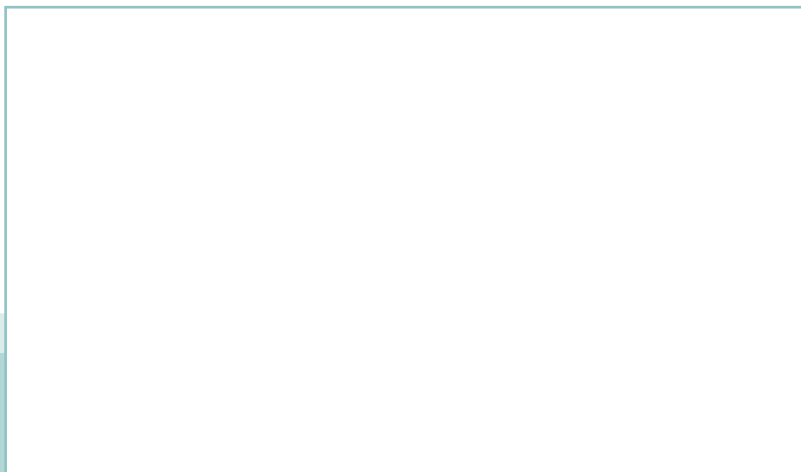
SS-EN 10120:2017



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Plåt och band av stål för svetsade gasflaskor

Steel sheet and strip for welded gas cylinders



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Europastandarden EN 10120:2017 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 10120:2017.

Denna standard ersätter SS-EN 10120:2008, utgåva 2.

The European Standard EN 10120:2017 has the status of a Swedish Standard. This document contains the official version of EN 10120:2017.

This standard supersedes the Swedish Standard SS-EN 10120:2008, edition 2.

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EUROPEAN STANDARD

EN 10120

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2017

ICS 77.140.50

Supersedes EN 10120:2008

English Version

Steel sheet and strip for welded gas cylinders

Tôles et bandes pour bouteilles à gaz soudées en acier

Stahlblech und -band für geschweißte Gasflaschen

This European Standard was approved by CEN on 7 May 2017.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents	Page
European foreword.....	3
1 Scope	3
2 Normative references	4
3 Terms and definitions	5
4 Classification and designation	5
5 Information to be supplied by the purchaser	5
5.1 Mandatory information	5
5.2 Options	6
5.3 Example of ordering	6
6 Manufacturing process	6
6.1 Steelmaking process	6
6.2 Delivery condition	6
7 Requirements	7
7.1 Chemical composition	7
7.2 Mechanical properties	8
7.3 Weldability	9
7.4 Tolerances	9
7.5 Surface condition	9
8 Inspection	9
8.1 Types of inspection and inspection documents	9
8.2 Tests to be carried out	9
8.3 Retests, sorting and reprocessing	10
9 Sampling	10
9.1 Frequency of testing	10
9.2 Sampling and test piece preparation	10
10 Test methods	11
10.1 Chemical analysis	11
10.2 Tensile test at room temperature	11
10.3 Other testing	11
11 Marking	11
Annex A (informative) Changes to the previous version EN 10120:2008	12

European foreword

This document (EN 10120:2017) has been prepared by Technical Committee ECISS/TC 107 “Steels for pressure purposes”, the secretariat of which is held by DIN.

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 January 2018 and conflicting national standards shall be withdrawn at the latest by January 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 10120:2008.

A list of changes between this document and the previous version can be found in Annex A.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

SS-EN 10120:2017 (E)**1 Scope**

This European Standard specifies requirements for sheet and strip up to 5 mm thickness of steels listed in Table 1 and intended for the manufacture of welded gas cylinders.

The general technical delivery conditions in EN 10021 also apply to products supplied in accordance with this European Standard.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 10020:2000, *Definition and classification of grades of steel*

EN 10021, *General technical delivery conditions for steel products*

EN 10027-1, *Designation systems for steels — Part 1: Steel names*

EN 10027-2, *Designation systems for steels — Part 2: Numerical system*

EN 10051, *Continuously hot-rolled strip and plate/sheet cut from wide strip of non-alloy and alloy steels — Tolerances on dimensions and shape*

EN 10052:1993, *Vocabulary of heat treatment terms for ferrous products*

EN 10079:2007, *Definition of steel products*

EN 10131, *Cold rolled uncoated and zinc or zinc-nickel electrolytically coated low carbon and high yield strength steel flat products for cold forming — Tolerances on dimensions and shape*

EN 10168, *Steel products — Inspection documents — List of information and description*

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

EN ISO 377:2013, *Steel and steel products — Location and preparation of samples and test pieces for mechanical testing (ISO 377:2013)*

EN ISO 6892-1:2016, *Metallic materials — Tensile testing — Part 1: Method of test at ambient temperature (ISO 6892-1:2016)*

EN ISO 14284:2002, *Steel and iron — Sampling and preparation of samples for the determination of chemical composition (ISO 14284:1996)*

CEN/TR 10261, *Iron and steel — European standards for the determination of chemical composition*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 10020:2000, EN 10052:1993 (but see 3.1), EN 10079:2007 and the following apply.

3.1

normalizing rolling

rolling process in which the final deformation process is carried out in a certain temperature range leading to a material condition equivalent to that obtained after normalizing so that the specified values of the mechanical properties are retained even after normalizing

Note 1 to entry: The symbol for this delivery condition is N.

Note 2 to entry: The definition is deviating from EN 10052:1993.

4 Classification and designation

4.1 Classification

The steels specified in this European Standard are non-alloy quality steels, except HCT600XB which is an alloy quality steel, in accordance with EN 10020.

4.2 Designation

The steel grades are designated with steel names in accordance with EN 10027-1. The corresponding steel numbers have been allocated in accordance with EN 10027-2.

5 Information to be supplied by the purchaser

5.1 Mandatory information

The following information shall be supplied by the purchaser at the time of enquiry and order:

- a) quantity required;
- b) type of flat products (sheet or strip);
- c) nominal dimensions of the product (length¹, width, thickness);
- d) number of this European Standard;
- e) steel name or number (see Table 1 or 3);
- f) delivery condition (see 6.2 and 7.5);
- g) inspection document to be delivered (see 8.1.1).

1) For sheet only.

SS-EN 10120:2017 (E)**5.2 Options**

A number of options are specified in this European Standard and listed below. If the purchaser does not indicate his wish to implement any of these options the products shall be supplied in accordance with the basic specification (see 5.1).

- 1) Information on the melting and de-oxidation process (see 6.1.1 and 6.1.2);
- 2) product analysis (see 7.1.2 and Table 4);
- 3) sampling conditions for the product analysis (see 9.2.2);
- 4) special marking conditions (see Clause 11).

5.3 Example of ordering

10 t sheets with nominal dimensions of thickness = 4,0 mm, width = 600 mm, length = 1 200 mm, made of the steel grade P265NB (1.0423) as specified in EN 10120, delivered normalized, descaled and oiled, inspection certificate 3.1 in accordance with EN 10204:

10 t sheet – 600x1200x4,0 – EN 10120 — P265NB– normalized and oiled – EN 10204-3.1

or

10 t sheet – 600x1200x4,0 – EN 10120 — 1.0423– normalized and oiled – EN 10204-3.1

6 Manufacturing process**6.1 Steelmaking process**

6.1.1 The melting and de-oxidation process shall be at the discretion of the manufacturer with the limitations to 6.1.2 and 6.1.3 and Table 1, unless otherwise agreed at the time of enquiry and order.

6.1.2 The steel shall be manufactured using the electric arc process or an oxygen process. Other melting processes may be used by agreement at the time of enquiry and order. On request, the purchaser shall be informed of the process used.

6.1.3 The used type of de-oxidation shall ensure that the steel has an acceptable degree of resistance to ageing (see Table 1, footnote b).

6.2 Delivery condition

The delivery condition shall be specified at the time of enquiry and order. Usual delivery conditions are:

- a) hot rolled and normalized (N)²⁾;
- b) hot rolled (AR);
- c) cold rolled.

NOTE The delivery condition “hot rolled and normalized²⁾” is generally used for gas cylinders which are only stress relieved after welding. The “hot rolled” delivery condition is only intended for gas cylinders which are normalized after welding.

Gas cylinders which are made of steel grade HCT600XB, which is delivered “cold rolled”, shall not be normalized after welding, because normalizing affects the mechanical properties of the material.

2) This includes the normalizing rolled condition.

7 Requirements

7.1 Chemical composition

7.1.1 Cast analysis

The cast analysis reported by the steel producer shall apply and comply with the requirements of Table 1.

7.1.2 Product analysis

The product analysis shall not deviate from the limiting values for the cast analysis as specified in Table 1 by more than the values given in Table 2.

Table 1 — Chemical composition of the cast analysis, in %^a

Steel grade		C max.	Si max.	Mn	P max.	S max.	Al _{total} ^b min.	N ^c max.	Nb max.	Ti max.
Steel name	Steel number									
P245NB	1.0111	0,16	0,25	≥ 0,30	0,025	0,015	0,020	0,009	0,050	0,03
P265NB	1.0423	0,19	0,25	≥ 0,40	0,025	0,015	0,020	0,009	0,050	0,03
P310NB	1.0437	0,20	0,50	≥ 0,70	0,025	0,015	0,020	0,009	0,050	0,03
P355NB	1.0557	0,20	0,50	≥ 0,70	0,025	0,015	0,020	0,009	0,050	0,03
HCT600XB ^e	1.0950	0,15	0,75	≤ 2,50	0,040	0,015	0,015	–	d	d

^a Elements not listed in this table may not be intentionally added to the steel without the agreement of the purchaser except for finishing the cast. All appropriate measures shall be taken to prevent the addition from scrap or other materials used in steelmaking of these elements which may adversely affect the mechanical properties and usability.

^b The aluminium content may partly be replaced by ≤ 0,050 % Nb and/or ≤ 0,03 % Ti (see 6.1.3). In such cases the content of these elements is to be reported in the inspection document.

^c If the ratio of $\frac{Al_{total}}{N} \geq 2,2$ or if Nb and/or Ti additions are applied, the nitrogen content may be ≤ 0,012 %.

^d Nb+Ti ≤ 0,150 %

^e Cr+Mo ≤ 1,0 %