



# SLOVENSKI STANDARD

SIST EN 10213-2:1997

01-maj-1997

---

HY\ b] b]XcVUj b]dc[ c]nU^Y`YbYi`h\_YnUhU bYdcgcXY!'&"XY. JfghY^Y\_Y`nU  
i dcfUvc`df]gcVb]b`df]dcj ]yUb] hYa dYfUhi fU

Technical delivery conditions for steel castings for pressure purposes - Part 2: Steel grades for use at room temperature and elevated temperatures

Technische Lieferbedingungen für Stahlguß für Druckbehälter - Teil 2: Stahlsorten für die Verwendung bei Raumtemperatur und erhöhten Temperaturen

**iTeh STANDARD PREVIEW**

Conditions techniques de livraison des pièces moulées en acier pour service sous pression - Partie 2: Nuances d'acier pour utilisation a température ambiante et a températures élevées

[SIST EN 10213-2:1997](https://standards.iteh.ai/catalog/standards/sist/7ca84802-76bc-44a1-b2e4-457969e77024/sist-en-10213-2-1997)

[https://standards.iteh.ai/catalog/standards/sist/7ca84802-76bc-44a1-b2e4-](https://standards.iteh.ai/catalog/standards/sist/7ca84802-76bc-44a1-b2e4-457969e77024/sist-en-10213-2-1997)

[457969e77024/sist-en-10213-2-1997](https://standards.iteh.ai/catalog/standards/sist/7ca84802-76bc-44a1-b2e4-457969e77024/sist-en-10213-2-1997)

**Ta slovenski standard je istoveten z: EN 10213-2:1995**

---

## **ICS:**

77.140.10	Jekla za toplotno obdelavo	Heat-treatable steels
77.140.30	Jekla za uporabo pod tlakom	Steels for pressure purposes

**SIST EN 10213-2:1997**

**en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 10213-2:1997

<https://standards.iteh.ai/catalog/standards/sist/7ca84802-76bc-44a1-b2e4-457969e77024/sist-en-10213-2-1997>

ICS 77.140.10

Descriptors: cast steels, structural steels, boilers, pressure equipment, delivery, designation, grades:quality, chemical composition, mechanical properties, environmental tests, high temperature tests

English version

**Technical delivery conditions for steel castings for  
pressure purposes - Part 2: Steel grades for use at  
room temperature and elevated temperatures**

Conditions techniques de livraison des pièces  
moulées en acier pour service sous pression -  
Partie 2: Nuances d'acier pour utilisation à  
température ambiante et à températures élevées

Technische Lieferbedingungen für Stahlguß für  
Druckbehälter - Teil 2: Stahlsorten für die  
Verwendung bei Raumtemperatur und erhöhten  
Temperaturen

This European Standard was approved by CEN on 1995-10-20. 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.

The European Standards exist 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

<https://standards.iteh.ai/catalog/standards/sist/7ca84802-76bc-44a1-b2e4-457969e77024/sist-10213-2-1995>

**CEN**

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

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

<b>Contents</b>	<b>Page</b>
<b>Foreword</b> .....	<b>3</b>
<b>1 Scope</b> .....	<b>4</b>
<b>2 Normative references</b> .....	<b>4</b>
<b>3 Requirements</b> .....	<b>4</b>
<b>Annex A (informative) Creep properties</b> .....	<b>7</b>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 10213-2:1997](https://standards.iteh.ai/catalog/standards/sist/7ca84802-76bc-44a1-b2e4-457969e77024/sist-en-10213-2-1997)  
<https://standards.iteh.ai/catalog/standards/sist/7ca84802-76bc-44a1-b2e4-457969e77024/sist-en-10213-2-1997>

## Foreword

This European Standard was prepared by the Technical Committee ECISS/TC 31 "Steel castings" the secretariat of which is held by AFNOR.

This European Standard EN 10213 "Technical delivery conditions for steel castings for pressure purposes" consists of 4 parts :

- Part 1            General
- Part 2            Steel grades for use at room temperature and elevated temperatures
- Part 3            Steel grades for use at low temperatures
- Part 4            Austenitic and austenitic-ferritic steel grades

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 June 1996, and conflicting national standards shall be withdrawn at the latest by June 1996.

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

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 10213-2:1997

<https://standards.iteh.ai/catalog/standards/sist/7ca84802-76bc-44a1-b2e4-457969e77024/sist-en-10213-2-1997>

## 1 Scope

In accordance to the general delivery conditions of EN 10213-1 this standard specifies the chemical and mechanical requirements to be met under specific inspection of steel grades for use at room temperature and elevated temperatures.

## 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 10213-1                      Technical delivery conditions for steel castings for pressure purposes -  
Part 1 : General

## 3 Requirements

### 3.1 Chemical composition

The cast analysis shall comply with table 1 (see 7.1 of EN 10213-1 for permissible deviations and for unspecified elements). For chemical analysis on castings see 8.4.1 of EN 10213-1.

### 3.2 Heat treatment

Heat treatment shall comply with table 2 (see 6.2 of EN 10213-1).

### 3.3 Mechanical properties

3.3.1 The mechanical properties at room temperature and elevated temperatures shall comply with table 2. For the conditions of verification on test blocks see 7.2.1 of EN 10213-1, and on castings see 7.2.2 and 8.4.2 of EN 10213-1.

(standards.iteh.ai)

3.3.2 Mechanical properties at elevated temperatures are specified in table 2 but their verification is performed only by agreement (see 7.2.3 of EN 10213-1).

NOTE : Creep resistance mean values are given for some grades in annex A, table A.1, only for information.

Table 1 : Chemical composition (cast analysis)  
[% (m/m)]

Designation		Number	C	Si max.	Mn	P max.	S max.	Cr	Mo	Ni	V	Others max.
Name												
GP240GR		1.0621	0,18 to 0,25	0,60	1,20 max.	0,030	0,020 <sup>1)</sup>	-	-	-	-	-
GP240GH		1.0619	0,18 to 0,23	0,60	0,50 to 1,20	0,030	0,020 <sup>1)</sup>	-	-	-	-	-
GP280GH		1.0625	0,18 to 0,252)	0,60	0,80 to 1,202)	0,030	0,020 <sup>1)</sup>	-	-	-	-	-
G20Mo5		1.5419	0,15 to 0,23	0,60	0,50 to 1,00	0,025	0,020 <sup>1)</sup>	-	0,40 to 0,60	-	-	-
G17CrMo5-5		1.7357	0,15 to 0,20	0,60	0,50 to 1,00	0,020	0,020 <sup>1)</sup>	1,00 to 1,50	0,45 to 0,65	-	-	-
G17CrMo9-10		1.7379	0,13 to 0,20	0,60	0,50 to 0,90	0,020	0,020 <sup>1)</sup>	2,00 to 2,50	0,90 to 1,20	-	-	-
G12MoCrV5-2		1.7720	0,10 to 0,15	0,45	0,40 to 0,70	0,030	0,020 <sup>1)</sup>	0,30 to 0,50	0,40 to 0,60	-	0,22 to 0,30	Sn : 0,025
G17CrMoV5-10		1.7706	0,15 to 0,20	0,60	0,50 to 0,90	0,020	0,015	1,20 to 1,50	0,90 to 1,10	-	0,20 to 0,30	Sn : 0,025
GX15CrMo5		1.7365	0,12 to 0,19	0,80	0,50 to 0,80	0,025	0,025	4,00 to 6,00	0,45 to 0,65	-	-	-
GX8CrNi12		1.4107	0,10 max.	0,40	0,50 to 0,80	0,030	0,020	11,50 to 12,50	0,50 max.	0,80 to 1,50	-	-
GX4CrNi13-4		1.4317	0,06 max.	1,00	1,00 max.	0,035	0,025	12,00 to 13,50	0,70 max.	3,50 to 5,00	-	-
GX23CrMoV12-1		1.4931	0,20 to 0,26	0,40	0,50 to 0,80	0,030	0,020	11,30 to 12,20	1,00 to 1,20	1,00 max.	0,25 to 0,35	W : 0,50
GX4CrNiMo16-5-1		1.4405	0,06 max.	0,80	1,00 max.	0,035	0,025	15,00 to 17,00	0,70 to 1,50	4,00 to 6,00	-	-

1) For castings of ruling thickness < 28 mm, % 0,030 S is permitted.

2) For each reduction of 0,01 % below the specified maximum carbon content, an increase of 0,04 % manganese above the specified maximum content will be permitted up to maximum of 1,40%.

STANDARD REVIEW  
http://standards.ich.nrc.ca/standards/8768802-76bc-44a1-b2e4-2112-2-997

Table 2 : Mechanical properties

Designation		Number		Symbol		Heat treatment °C		Thick-ness mm max.	Test at room temperature			Test at elevated temperature												
									Tensile test			Impact test		Tensile test										
									Rp0,2 MPa*)	Rm MPa*)	A %	KV	J	100 °C	200 °C	300 °C	350 °C	400 °C	450 °C	500 °C	550 °C			
GP240GR	1.0621	* N	900 to 980				100	240	420 to 600	22	27	-	-	-	-	-	-	-	-	-	-	-	-	-
GP240GH	1.0619	* N	900 to 980				100	240	420 to 600	22	27	175	145	135	130	125	-	-	-	-	-	-	-	-
		* QT	890 to 980	600 to 700			100	240	420 to 600	22	40	175	145	135	130	125	-	-	-	-	-	-	-	-
GP280GH	1.0625	* N	900 to 980				100	280	480 to 640	22	27	250	190	170	160	150	-	-	-	-	-	-	-	-
		* QT	890 to 980	600 to 700			100	280	480 to 640	22	35	250	190	170	160	150	-	-	-	-	-	-	-	-
G20Mo5	1.5419	* QT	920 to 980	650 to 730			100	245	440 to 590	22	27	-	190	165	155	150	145	135	-	-	-	-	-	-
G17CrMo5-5	1.7357	* QT	920 to 980	680 to 730			100	315	490 to 690	20	27	-	250	230	215	200	190	175	160	-	-	-	-	-
G17CrMo9-10	1.7379	* QT	930 to 970	680 to 740			150	400	590 to 740	18	40	-	355	345	330	315	305	280	240	-	-	-	-	-
G12MoCrV5-2	1.7720	* QT	950 to 1000	680 to 720			100	295	510 to 660	17	27	264	244	230	-	214	-	194	144	-	-	-	-	-
G17CrMoV5-10	1.7706	* QT	920 to 960	680 to 740			150	440	590 to 780	15	27	-	385	365	350	335	320	300	260	-	-	-	-	-
GX15CrMo5	1.7365	* QT	930 to 990	680 to 730			150	420	630 to 760	16	27	-	390	380	-	370	-	305	250	-	-	-	-	-
GX8CrNi12	1.4107	* QT1	1000 to 1060	680 to 730			300	355	540 to 690	18	45	-	275	265	-	255	-	-	-	-	-	-	-	-
		+ QT2	1000 to 1060	600 to 680			300	500	600 to 800	16	40	-	410	390	-	370	-	-	-	-	-	-	-	-
GX4CrNi13-4	1.4317	+ QT	1000 to 1050	590 to 620			300	550	760 to 960	15	50	515	485	455	440	-	-	-	-	-	-	-	-	-
GX23CrMoV12-1	1.4931	+ QT	1030 to 1080	700 to 750			150	540	740 to 880	15	27	-	450	430	410	390	370	340	290	-	-	-	-	-
GX4CrNiMo16-5-1	1.4405	+ QT	1020 to 1070	580 to 630			300	540	760 to 960	15	60	515	485	455	440	-	-	-	-	-	-	-	-	-

1) + Q means quenching media : air or liquid.

2) If there are alternative specifications for heat treatment, the requested alternative shall be indicated on the order e.g. : GX8CrNi12 + QT1 or 1.4107 + QT1.

\*) 1 MPa = 1N/mm<sup>2</sup>.