



SLOVENSKI STANDARD
SIST EN 10213-3:1997
01-december-1997

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Technical delivery conditions for steel castings for pressure purposes - Part 3: Steel grades for use at low temperatures

Technische Lieferbedingungen für Stahlguß für Druckbehälter - Teil 3: Stahlsorten für die Verwendung bei tiefen Temperaturen

iTeh STANDARD PREVIEW

Conditions techniques de livraison des pièces moulées en acier pour service sous pression - Partie 3: Nuances d'acier pour utilisation a basses températures

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Ta slovenski standard je istoveten z: EN 10213-3:1995

ICS:

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

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ICS 77.140.10

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

English version

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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.

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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.

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European Committee for Standardization
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 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.

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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 low 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

The mechanical properties, at low temperatures and room temperature, 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.

Table 1 : Chemical composition (cast analysis)
max % (or range where specified)
[%(m/m)]

Designation Name	Number	C	Si max.	Mn	P max.	S max.	Cr	Mo	Ni
G17Mn5	1.1131	0,15 to 0,20	0,60	1,00 to 1,60	0,020	0,0201			
G20Mn5	1.6220	0,17 to 0,23	0,60	1,00 to 1,60	0,020	0,0201			0,80 max.
G18Mo5	1.5422	0,15 to 0,20	0,60	0,80 to 1,20	0,020	0,020		0,45 to 0,65	
G9Ni10	1.5636	0,06 to 0,12	0,60	0,50 to 0,80	0,020	0,015			2,00 to 3,00
G17NiCrMo13-6	1.6781	0,15 to 0,19	0,50	0,55 to 0,80	0,015	0,015	1,30 to 1,80	0,45 to 0,60	3,00 to 3,50
G9Ni14	1.5638	0,06 to 0,12	0,60	0,50 to 0,80	0,020	0,015			3,00 to 4,00
GX3CrNi13-4	1.6982	0,05 max.	1,00	1,00 max.	0,035	0,015	12,00 to 13,50	0,70 max.	3,50 to 5,00

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

Table 2 : Mechanical properties

Designation Name	Number	Symbol ¹⁾	Heat treatment °C		Thickness mm max	Tensile test at room temperature			Impact test	
			Quenching	Tempering		Rp0,2 MPa*) min.	Rm MPa*)	A %	KV J min.	at °C
G17Mn5	1.1131	+ QT	890 to 980	600 to 700	50	240	450 to 600	24	27	- 40
		+ N	900 to 980		30	300	480 to 620	20	27	- 30
G20Mn5	1.6220	+ QT	900 to 940	610 to 660	100	300	500 to 650	22	27	- 40
G18Mo5	1.5422	+ QT	920 to 980	650 to 730	100	240	440 to 790	23	27	- 45
G9Ni10	1.5636	+ QT	830 to 890	600 to 650	35	280	480 to 630	24	27	- 70
G17NiCrMo13-6	1.6781	+ QT	890 to 930	600 to 640	200	600	750 to 900	15	27	- 80
G9Ni14	1.5638	+ QT	820 to 900	590 to 640	35	360	500 to 650	20	27	- 90
GX3CrNi13-4	1.6982	+ QT	1000 to 1050	670 to 690 + 590 to 620	300	500	700 to 900	15	27	- 120

1) + Q : quenching in water except for GX3CrNi13-4 (quenching in air). + T = tempering. + N = normalizing.

*) 1 MPa = 1 N/mm².