SLOVENSKI STANDARD
SIST EN 10293:2005

01-junij-2005

Jekleni ulitki za splošne tehnične namene

Steel castings for general engineering uses

Stahlguss für allgemeine Anwendungen

Aciers moulés d'usage général

Ta slovenski standard je istoveten z: EN 10293:2005

ICS:

77.140.80 Železni in jekleni ulitki Iron and steel castings

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Steel castings for general engineering uses

Aciers moulés d'usage général

Stahlguss für allgemeine Anwendungen

This European Standard was approved by CEN on 14 February 2005.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 10293:2005) has been prepared by Technical Committee ECISS/TC 31 “Steel castings”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by October 2005, and conflicting national standards shall be withdrawn at the latest by October 2005.

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

Introduction

This document retains the same format for clauses as EN 1559-1:1997 and EN 1559-2:2000. It should be used in conjunction with these standards. Where no text is given under a paragraph heading, the corresponding paragraph of EN 1559-1:1997 and EN 1559-2:2000 applies.

The structure of this document is as follows:

— clauses and subclauses preceded by ■ indicates no additional conditions to EN 1559-1[1)] and EN 1559-2[1)] ;

— clauses and subclauses marked with a single dot ● indicate that the conditions shall be agreed at the time of enquiry and order;

— subclauses marked with two dots ●● indicate that conditions may be agreed at the time of enquiry and order (optional);

— subclauses without dot marking are mandatory.

1) When a complementary information is given in a clause or subclause of this document (versus the same clause or subclause of EN 1559-1:1997 or EN 1559-2:2000) it is preceded by “in addition to EN 1559-2:2000”.

1 Scope

This document applies to steel castings:

— for general engineering uses. Its uses include machinery (mechanical, electrical...), automotive industries, railroad, armament, agricultural equipment, mining … .

In cases where castings are joined by welding by the founder, this document applies.

In cases where castings are welded:

— to wrought products (plates, tubes, forgings...), or

— by non founders

this document does not apply.

2 Normative references

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

EN 1559-2:2000, *Founding — Technical conditions of delivery — Part 2: Additional requirements for steel castings*

■ 3 Terms and definitions

• 4 Information to be supplied by the purchaser

In cases of grades with different mechanical properties relating to heat treatment conditions the purchaser shall specify the heat treatment symbol (see Clause 5).

5 Designation

In addition to EN 1559-2:2000:

— for a steel grade which can be delivered to different strength levels, according to the heat treatment, a suffix shall be added in accordance with Table 3. For example: G26CrMo4 + QT1.

6 Manufacture

6.1 Manufacturing process

■ 6.1.1 Melting

6.1.2 Heat treatment

Unless otherwise agreed, the type of heat treatment shall comply with Table 3.

6.2 Welding operations

■ 6.2.1 General

6.2.2 Production welding

In addition to EN 1559-2:2000:

— information on preheat and interpass temperatures as well as on postweld heat-treatment is given in Annex A.

■ 6.3 Further processing

7 Requirements

■ 7.1 General

7.2 Material

7.2.1 Chemical composition

In addition to EN 1559-2:2000:

— the chemical composition determined by a cast analysis shall conform to the values given in Table 1;

— elements unspecified in Table 1 of this document shall not be intentionally added without agreement of the purchaser other than for the purpose of finishing the heat. If not otherwise agreed the maximum values in % (by mass) given in Table 2 shall be applicable;

— permissible deviations between the specified cast analysis and the check analysis on test blocks are indicated in Table 1 of EN 1559-2:2000.

Table 1 — Chemical composition (cast analysis), (% by mass)

Designation		C		Si	Mn		P	S	Cr		Mo		Ni		V		W
Name	Number	min.	max.	max.	min.	max.	max.	max.	min.	max.	min.	max.	min.	max.	min.	max.	max
GE200	1.0420	-	-	-	-	-	0,035	0,030	-	-	-	-	-	-	-	-	-
GS200	1.0449	-	0,18	0,60	-	1,20	0,030	0,025	-	-	-	-	-	-	-	-	-
GE240	1.0446	-	-	-	-	-	0,035	0,030	-	-	-	-	-	-	-	-	-
GS240	1.0455	-	0,23	0,60	-	1,20	0,030	0,025	-	-	-	-	-	-	-	-	-
GE300	1.0558	-	-	-	-	-	0,035	0,030	-	-	-	-	-	-	-	-	-
G17Mn5	1.1131	0,15	0,20	0,60	1,00	1,60	0,020	0,020 [a]	--	-	-	-	-	-	-	-	-
G20Mn5	1.6220	0,17	0,23	0,60	1,00	1,60	0,020	0,020 [a]	-	-	-	-	-	0,80	-	-	-
G24Mn6	1.1118	0,20	0,25	0,60	1,50	1,80	0,020	0,015	-	-	-	-	-	-	-	-	-
G28Mn6	1.1165	0,25	0,32	0,60	1,20	1,80	0,035	0,030	-	-	-	-	-	-	-	-	-
G20Mo5	1.5419	0,15	0,23	0,60	0,50	1,00	0,025	0,020 [a]	-	-	0,40	0,60	-	-	-	-	-
G10MnMoV6-3	1.5410	-	0,12	0,60	1,20	1,80	0,025	0,020	-	-	0,20	0,40	-	-	0,05	0,10	-
G15CrMoV6-9	1.7710	0,12	0,18	0,60	0,60	1,00	0,025	0,020 [a]	1,30	1,80	0,80	1,00	-	-	0,15	0,25	-
G17CrMo5-5	1.7357	0,15	0,20	0,60	0,50	1,00	0,025	0,020 [a]	1,00	1,50	0,45	0,65	-	-	-	-	-
G17CrMo9-10	1.7379	0,13	0,20	0,60	0,50	0,90	0,025	0,020 [a]	2,00	2,50	0,90	1,20	-	-	-	-	-
G26CrMo4	1.7221	0,22	0,29	0,60	0,50	0,80	0,025	0,020 [a]	0,80	1,20	0,15	0,30	-	-	-	-	-
G34CrMo4	1.7230	0,30	0,37	0,60	0,50	0,80	0,025	0,020 [a]	0,80	1,20	0,15	0,30	-	-	-	-	-
G42CrMo4	1.7231	0,38	0,45	0,60	0,60	1,00	0,025	0,020 [a]	0,80	1,20	0,15	0,30	-	-	-	-	-
G30CrMoV6-4	1.7725	0,27	0,34	0,60	0,60	1,00	0,025	0,020 [a]	1,30	1,70	0,30	0,50	-	-	0,05	0,15	-
G35CrNiMo6-6	1.6579	0,32	0,38	0,60	0,60	1,00	0,025	0,020 [a]	1,40	1,70	0,15	0,35	1,40	1,70	-	-	-
G9Ni14	1.5638	0,06	0,12	0,60	0,50	0,80	0,020	0,015	-	-	-	-	3,00	4,00	-	-	-
GX9Ni5	1.5681	0,06	0,12	0,60	0,50	0,80	0,020	0,020	-	-	-	-	4,50	5,50	-	-	-
G20NiMoCr4	1.6750	0,17	0,23	0,60	0,80	1,20	0,025	0,015 [a]	0,30	0,50	0,40	0,80	0,80	1,20	-	-	-
G32NiCrMo8-5-4	1.6570	0,28	0,35	0,60	0,60	1,00	0,020	0,015	1,00	1,40	0,30	0,50	1,60	2,10	-	-	-
G17NiCrMo13-6	1.6781	0,15	0,19	0,50	0,55	0,80	0,015	0,015	1,30	1,80	0,45	0,60	3,00	3,50	-	-	-
G30NiCrMo14	1.6771	0,27	0,33	0,60	0,60	1,00	0,030	0,020	0,80	1,20	0,30	0,60	3,00	4,00	-	-	-
GX3CrNi13-4	1.6982	-	0,05	1,00	-	1,00	0,035	0,015	12,00	13,50	-	0,70	3,50	5,00	-	-	-
GX4CrNi13-4	1.4317	-	0,06	1,00	-	1,00	0,035	0,025	12,00	13,50	-	0,70	3,50	5,00	-	-	-
GX4CrNi16-4	1.4421	-	0,06	0,80	-	1,00	0,035	0,020	15,50	17,50	-	0,70	4,00	5,50			-
GX4CrNiMo16-5-1	1.4405	-	0,06	0,80	-	1,00	0,035	0,025	15,00	17,00	0,70	1,50	4,00	6,00	-	-	-
GX23CrMoV12-1	1.4931	0,20	0,26	0,40	0,50	0,80	0,030	0,020	11,30	12,20	1,00	1,20	-	1,00	0,25	0,35	0,50

[a] For castings of ruling thickness < 28 mm, S ≤ 0,030 % (by mass) is permitted.