INTERNATIONAL STANDARD

ISO 10679

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Steel — Cast tool steel

Acier — Aciers moulés à outil

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 10679 was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 11, *Steel castings*.

Steel — Cast tool steel

1 Scope

This International Standard covers tool-steel compositions for usable cast shapes in the annealed condition.

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.

ISO 4990:2003 *Steel castings — General technical delivery requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4990 apply.

4 Information to be supplied by the purchaser

The purchaser shall supply, in the enquiry and order, the following information:

a) the Brinell hardness required when the part is finished;

b) the surfaces which will be machined by the purchaser or user;

c) part drawings for each casting.

5 General conditions for delivery

Materials furnished in accordance with this International Standard shall conform to the applicable requirements of ISO 4990, including the supplementary requirements that are indicated on the enquiry and purchase order. Welding may be carried out only when approved by the purchaser.

6 Chemical composition

The cast steel shall conform to the requirements for chemical composition specified in Table 1.

7 Heat treatment

Castings shall be heat treated as specified in Table 2.

8 Marking

Unless otherwise agreed, alternative markings are permitted (see Table 1).

9 Supplementary requirements

A list of standardized supplementary requirements for use at the option of the purchaser is included in ISO 4990:2003, Annex B and is ordinarily considered suitable for use with this International Standard. Other requirements may be specified upon agreement between the manufacturer and purchaser.

The supplementary requirements shall only apply when agreed upon by the manufacturer and purchaser as specified on the enquiry and purchase order.

Table 1 — Chemical composition, mass fraction in %

Designation	C	Si	Mn	P	S	Cr	Mo	Ni	V	Co	W	Alternative marking
GX100CrMoV5-1	0,95 1,05	⩽ 1,50	⩽ 0,75	⩽ 0,03	⩽ 0,030	4,75 5,50	0,90 1,40	—	0,20 0,50	—	—	DA1
GX150CrMoCoV12	1,40 1,60	⩽ 1,50	⩽ 1,00	⩽ 0,03	⩽ 0,030	11,00 13,00	0,70 1,20	—	0,40 1,00	0,70 1,00	—	DB1
GX148CrCoMoNiV12-3	1,35 1,60	⩽ 1,50	⩽ 0,75	⩽ 0,03	⩽ 0,030	11,00 13,00	0,70 1,20	0,40 0,60	0,35 0,55	2,50 3,50	—	DC1
G58SiMnMo8-3-5	0,50 0,65	1,75 2,25	0,60 1,00	⩽ 0,03	⩽ 0,030	⩽ 0,35	0,20 0,80	—	⩽ 0,35	—	—	DD1
GX83WMoCrV6-5-4-2	0,78 0,88	⩽ 1,00	⩽ 0,75	⩽ 0,03	⩽ 0,030	3,75 4,50	4,50 5,50	⩽ 0,25	1,25 2,20	⩽ 0,25	5,50 6,75	DE1
G50CrMo12-1	0,45 0,55	0,60 1,00	0,40 0,80	⩽ 0,03	⩽ 0,030	3,00 3,50	1,20 1,60	—	—	—	—	DF1
GX35CrMoWV5-2	0,30 0,40	⩽ 1,50	⩽ 0,75	⩽ 0,03	⩽ 0,030	4,75 5,75	1,25 1,75	—	0,20 0,50	—	1,00 1,70	DG1
GX37CrMoV5-2	0,30 0,42	⩽ 1,50	⩽ 0,75	⩽ 0,03	⩽ 0,030	4,75 5,75	1,25 1,75	—	0,75 1,20	—	—	DH1
G90CrW5-3-2	0,85 1,00	⩽ 1,50	1,00 1,30	⩽ 0,03	⩽ 0,030	0,40 1,00	—	—	⩽ 0,30	—	0,40 0,60	DJ1
G105V	1,00 1,10	0,10 0,60	0,10 0,40	⩽ 0,030	⩽ 0,020	—	—	—	0,10 0,20	—	—	DK1
G50WCrV8-4	0,45 0,55	0,70 1,00	0,15 0,45	⩽ 0,030	⩽ 0,020	0,90 1,20	—	—	0,10 0,20	—	1,70 2,20	DL1
G60CoCrV8-4	0,55 0,65	0,70 1,00	0,15 0,45	⩽ 0,030	⩽ 0,020	0,90 1,20	—	—	0,10 0,20	1,70 2,20	—	DM1
G103Cr6	0,95 1,10	0,15 0,60	0,25 0,45	⩽ 0,030	⩽ 0,020	1,35 1,65	—	—	—	—	—	DO1
G21MnCr5-5	0,18 0,24	0,15 0,60	1,10 1,40	⩽ 0,030	⩽ 0,020	1,00 1,30	—	—	—	—	—	DP1

Table 1 (*Continued*)

Designation	C	Si	Mn	P	S	Cr	Mo	Ni	V	Co	W	Alternative marking
G70MnMoCr9-12-4	0,65 0,75	0,10 0,60	1,80 2,50	⩽ 0,030	⩽ 0,020	0,90 1,20	0,90 1,40	—	—	—	—	DR1
G90MnCrV8	0,85 0,95	0,10 0,60	1,80 2,20	⩽ 0,030	⩽ 0,020	0,20 0,50	—	—	0,05 0,20	—	—	DS1
GX205Cr12	1,90 2,20	0,10 0,60	0,20 0,60	⩽ 0,030	⩽ 0,020	11,00 13,00	—	—	—	—	—	DT1
GX215CrW12	2,00 2,30	0,10 0,60	0,30 0,60	⩽ 0,030	⩽ 0,020	11,00 13,00	—	—	—	—	0,60 0,80	DU1
G35CrMo7-5	0,30 0,40	0,30 0,70	0,60 1,00	⩽ 0,030	⩽ 0,020	1,50 2,00	0,35 0,55	—	—	—	—	DV1
G40CrMnNiMo8-6-4	0,35 0,45	0,20 0,60	1,30 1,60	⩽ 0,030	⩽ 0,020	1,80 2,10	0,15 0,25	0,90 1,20	—	—	—	DX1
G45NiCrMo16-5-3	0,40 0,50	0,10 0,60	0,20 0,50	⩽ 0,030	⩽ 0,020	1,20 1,50	0,15 0,35	3,80 4,30	—	—	—	DY1
GX39Cr14	0,36 0,42	⩽ 1,00	⩽ 1,00	⩽ 0,030	⩽ 0,020	12,50 14,50	—	—	—	—	—	DZ2
GX39CrMo17	0,33 0,45	⩽ 1,00	⩽ 1,50	⩽ 0,030	⩽ 0,020	15,50 17,50	0,80 1,30	⩽ 1,00	—	—	—	DA2
G55NiCrMoV7-4-10	0,50 0,60	0,10 0,60	0,60 0,90	⩽ 0,030	⩽ 0,030	0,80 1,20	0,35 0,55	1,50 1,80	0,05 0,15	—	—	DB2
G32CrMoV12-28	0,28 0,35	0,10 0,60	0,15 0,45	⩽ 0,030	⩽ 0,020	2,70 3,20	2,50 3,00	—	0,40 0,70	—	—	DC2
GX37CrMoV5-1	0,33 0,41	0,80 1,20	0,25 0,50	⩽ 0,030	⩽ 0,020	4,80 5,50	1,10 1,50	—	0,75 1,20	—	—	DD2
GX38CrMoV5-3	0,35 0,40	0,30 0,60	0,30 0,50	⩽ 0,030	⩽ 0,020	4,80 5,20	2,70 3,20	—	0,40 0,60	—	—	DE2
GX30WCrV9-3	0,25 0,35	0,10 0,60	0,15 0,45	⩽ 0,030	⩽ 0,020	2,50 3,20	—	—	0,30 0,50	—	8,50 9,50	DF2
G38CrCoWV17-17-17	0,35 0,45	0,15 0,60	0,20 0,50	⩽ 0,030	⩽ 0,020	4,00 4,70	0,30 0,50	—	1,70 2,10	4,00 4,50	3,80 4,50	DG2

NOTE "—" indicates unspecified.

Table 2 — Heat treatment — Annealing

Designation	Minimum temperature (non-mandatory)	HBW maximum	Designation	Minimum temperature (non-mandatory)	HBW maximum
GX100CrMoV5-1	845 °C	229	G90MnCrV8	760 °C	229
GX150CrMoCoV12	870 °C	255	GX205Cr12	870 °C	248
GX140CrCoMoNiV12-3	870 °C	255	GX215CrW12	870 °C	255
G58SiMnMo8-3-5	775 °C	229	G35CrMo7-5	—	—
GX83WMoCrV6-5-4-2	870 °C	241	G40CrMnNiMo8-6-4	—	—
G50CrMo12-1	815 °C	223	—	—	—
GX35CrMoWV5-2	845 °C	235	G45NiCrMo16-5-3	—	285
GX37CrMoV5-2	845 °C	229	GX39Cr14	—	241
G90CrW5-3-2	760 °C	212	GX39CrMo17	—	—
G105V	790 °C	212	G55NiCrMoV7-4-10	—	248
G50WCrV8-4	740 °C	229	G32CrMoV12-28	—	229
G60CoCrV8-4	790 °C	229	GX37CrMoV5-1	845 °C	229
G103Cr6	760 °C	223	GX38CrMoV5-3	—	229
G21MnCr5-5	—	217	GX30WCrV9 3	—	241
G70MnMoCr9-12-4	760 °C	248	G38CrCoWV17-17-17	—	260
NOTE “—” indicates unspecified.					

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