



Material Reference Guide for Castings

Revision 00_ Dated 01-07-2024.

1: PURPOSE

This specification provides the minimum technical requirements with regards to manufacturing, inspection and testing of castings.

2.CODES, STANDARDS, PROCEDURES

The seller shall supply the parts within its scope, in compliance with the applicable specifications & standards specified and attached to the RFQ/PO. The seller shall also consider the basic manufacturing, regulatory considerations: The castings shall comply with the applicable local, national, international statutory requirement over & above the requirement specified in this specification.

Materials shall be identified by reference to applicable international standards, including the material grade. Where International standards are not available, the materials proposed by the SELLER (with physical properties and chemical composition) shall form the subject of a separate agreement between the SELLER and the BUYER.

MATERIALS

Sl. No	Reference Standard	Designation No (DIN)	Reference Std. (ASTM)	Designation (Grade)	Remarks
1	DIN EN 10088-1:2014	1.4306	A 743/A743 M - 19 (2019)	CF-3	
2	EN 10213:2016	1.4308	A 743/A743 M - 19 (2019)	CF-8	
3	EN 10283:2019	1.4408	A 743/A743 M - 19 (2019)	CF-8M	
4	EN 10283:2019	1.4409	A 743/A743 M - 19 (2019)	CF-3M	
5	EN 10283:2019	1.4588	A 743/A743 M - 19 (2019)	CK3MCuN	
6	EN 10283:2019	1.4469	A 995-A995M-2020	CE3MN(5A)	Minimum PREN of 40
7	EN 10283:2019	1.4417	A 995-A995M-2020	CD3MWCuN(6A)	
8	EN 10283:2019	1.4470	A 995-A995M-2020	CD3MN (4A)	
9	SEW 410-8:2017	1.4593	A 995-A995M-2020	CD4MCuN(1B)	Minimum PREN of 34
10	EN 10213:2016	1.0619	A 216/A216A - 18 (2018)	WCB	
11	EN 10283:2019	1.4527	A 351/A351M	CN7M	
12	-	-	A 494 / A494M - 18a	CZ-100	
13	-	-	A 532/A532M-10 (2019)	Class III Type A	
14	EN 1561:2012	EN-GJL-200	A 48/A48M - 03 (2016)	30B	
15	EN 1561:2012	EN-GJL-250	A 48/A48M - 03 (2016)	40B	
16	EN 1563:2019	EN-GJS-400-15	A 536 - 84 (2019)	60-40-18	
17	EN 1563:2019	EN-GJS-500-7	A 536 - 84 (2019)	70-50-05	
18	-	-	SEW 410-8:2017	1.4340	
19	EN 10283:2019	1.4468	A 995/A995M-2020	CD6MN(3A)	
20	EN 10283:2019	1.4552	A 743/A743 M - 19	CF-8C	

DIMENSION

As per ISO 8062 (unless otherwise mentioned in drawing)	Method	Steel	Iron
	Sand Cast, hand moulding	DCTG-11	DCTG-11
	Sand Cast, machine moulding and shell moulding	DCTG-10	DCTG-10
	Investment Casting	DCTG-6	-



Material Reference Guide for Castings

Revision 00_ Dated 01-07-2024.

GEOMETRY

As per ISO 8062 (unless otherwise mentioned in drawing)	Method	Steel	Iron
	Sand Cast, hand moulding	GCTG-7	GCTG-6
	Sand Cast, machine moulding and shell moulding	GCTG-6	GCTG-5
	Investment Casting	GCTG-6	-

VISUAL

Evaluation of Surface Irregularities	Method	Steel	Iron
	Sand Cast, hand moulding	MSS-SP-55	MSS-SP-55
	Sand Cast, machine moulding and shell moulding	MSS-SP-55	MSS-SP-55
	Investment Casting	ASTM A997-08	-

NDT

Inspection	ASTM		DIN	Area of Coverage
	Method	Acceptance Criteria		
Radiography	ASME Section V, Article 2 and 22	ASME Section VIII, Division 1, Appendix 7	-	100% (or) Critical, will be specified in PO
Liquid Penetrant	ASME Section V, Article 6 and 24	ASME Section VIII, Division 1, Appendix 7	EN 1371-1(SAND) EN 1371-2 (IVC)	100 % Accessible
Magnetic Particle	ASME Section V, Article 7 and 25	ASME Section VIII, Division 1, Appendix 7	-	100 % Accessible

3: MANDATORY DOCUMENTATION TO PROVIDE ALONG WITH SUPPLY (unless specified otherwise in PO)

- 1.) Material Testing Certificate according to EN 10204 3.1 as per specified grade mentioned in PO. Chemical Analysis, Mechanical properties of Tensile strength (ISO 6892) Elongation (ISO 6892) Yield strength 0.2% (ISO 6892) along with heat treatment report and chart.
- 2.) Liquid Penetrant/Magnetic Penetrant Report as per specified standard (as applicable)
- 3.) Radiography report with shooting sketch (if mentioned in PO)

4: MANDATORY PROCESS TO FOLLOW

- 1.) To get an acceptable surface finish of the raw parts, it's necessary that all the parts must be Shot-blasted with Stainless steel balls or Steel Balls followed by Acid Pickling and Passivation. Should be unpainted-homogeneous and free of defects.
- 2.) Rust oil shall be applied, if necessary, only for carbon steel.
- 3.) For CI/SG iron, recommended first coat shall be painted (if mentioned in PO)
- 4.) Heat no & Material code to be imprinted on all castings without fail for traceability
- 5.) As cast surfaces should not be grinded, unless if really required so, for removing the minor defects (if any)
- 6.) Heat Samples & Test Bar to be delivered along with parts for our audit purpose (if mentioned in PO)
- 7.) CI/SG Iron parts/Hardened parts to be handled with extra care by using separations, avoid loose packings, avoid impact between the castings while handling/transit etc.