

APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00001F8
Revision No:
2

This is to certify:

That

Mira Alloy Steels Pvt.Ltd.
123, Sathy Road, Kurumbapalayam, Coimbatore-641107, Tamil Nadu,
India

is an approved manufacturer of
Steel Castings

in accordance with
DNV GL rules for classification – Ships

and the following particulars:

Application area	Castings for hull structures and equipment Castings for machinery Castings for boilers, pressure vessels and piping systems Ferritic steel castings for low temperature service Stainless steel castings
Steel type	Carbon and carbon-manganese, Alloy, Austenitic stainless, Ferritic-austenitic (Duplex) stainless, See page 2
Casting method	Sand casting
Max. weight	See page 2
Max. wall thickness	See page 2
Heat treatment condition	See page 2
Additional approval conditions	Including austenitic stainless steel for low-temperature applications, see page 2

Manufacturer(s) approved by this certificate is/are accepted to deliver according to DNV GL, DNV and GL rules. Materials to be applied to DNV GL classed object shall fulfill the material requirements in the applicable DNV GL class rules.

Issued at **Hamburg** on **2020-10-16**

for **DNV GL**

This Certificate is valid until **2023-06-30**.

DNV GL local station: **Visakhapatnam**

Approval Engineer: **Christian Wildhagen**

Thorsten Lohmann
Head of Section

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Job Id: **263.11-007636-3**
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Particulars of the approval

Castings for hull structure and equipment

Steel type	Grade ³⁾	Casting method ¹⁾	Max. weight [kg]	Max. wall thickness [mm]	Heat treatment condition ²⁾
C and C-Mn	VL C400UW, VL C440UW, VL C480UW, VL C520UW, VL C560UW, VL C600UW	SC	1 650	200	N, NT, QT
Alloy	VL C550AW, VL C620AW	SC	1 650	200	QT

Castings for machinery

Steel type	Grade ³⁾	Casting method ¹⁾	Max. weight [kg]	Max. wall thickness [mm]	Heat treatment condition ²⁾
C and C-Mn	VL C400U, VL C440U, VL C480U, VL C520U, VL C560U, VL C600U	SC	1 650	200	N, NT, QT
Alloy	VL C550A, VL C600A, VL C690A	SC	1 650	200	QT

Castings for boilers, pressure vessels and piping systems

Steel type	Grade ³⁾	Casting method ¹⁾	Max. weight [kg]	Max. wall thickness [mm]	Heat treatment condition ²⁾
C and C-Mn	VL C450H, VL C490H	SC	1 650	200	N, NT, QT
Alloy	VL C0.5Mo, VL C1Cr0.5Mo, VL C2.25Cr1Mo	SC	1 650	200	QT

Ferritic steel castings for low temperature service

Steel type	Grade ³⁾	Casting method ¹⁾	Max. weight [kg]	Max. wall thickness [mm]	Heat treatment condition ²⁾
C and C-Mn	C450L, C490L	SC	1 650	200	N, NT, QT
Alloy	VL C2.25Ni, VL C3.5Ni	SC	1 650	200	N, NT, QT

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Stainless steel castings

Steel type	Grade ³⁾	Casting method ¹⁾	Max. weight [kg]	Max. wall thickness [mm]	Heat treatment condition ²⁾
Austenitic	GX 2 CrNi 18 10 (304L) GX 5 CrNi 19 9 (304) GX 6 CrNiNb 19 10 (347) GX 2 CrNiMo 19 11 2 (316L) GX 5 CrNiMo 19 11 2 (316) GX 5 CrNiMo 19 11 3 (317)	SC	1 650	150	SHT
22 Cr Duplex	GX 2 CrNiMoN 22 5 3	SC	1 650	150	SHT
25 Cr Duplex	GX 2 CrNiMoCuN 25 6 3 3	SC	1 650	150	SHT
26Cr duplex	GX 2 CrNiMoN 26 7 4	SC	1 650	150	SHT

Remarks:

- 1) SC: Sand Casting
- 2) SHT: Solution Heat Treated (Solution Annealing)
N: Normalized
QT: Quenched and tempered
NT: Normalized and tempered
- 3) Incl. equivalent grades in acc. to other standards

Special conditions:

- Including austenitic stainless steel for low-temperature applications