

APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM000004U
Revision No:
1

This is to certify:

That

S.A.F.A.S. SpA
Altavilla Vicentina VI, Italy

is an approved manufacturer of
Steel Castings

in accordance with
DNV GL rules for classification – Ships
DNVGL-OS-B101 – Metallic materials

and the following particulars:

Application area	Castings for hull structures and equipment Castings for machinery Stainless steel castings
Steel type	Carbon and carbon-manganese, Austenitic 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

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 **2019-08-14**

This Certificate is valid until **2022-06-30**.

DNV GL local station: **Venice**

Approval Engineer: **Enno Brück**



for **DNV GL**

Digitally Signed By: Wildhagen, Christian

Location: DNV GL Hamburg, Germany

Signing Date: 2019-08-15, on behalf of

Thorsten Lohmann
Head of Section



Job Id: 263.11-005046-2
 Certificate No: AMMM000004U
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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	SC	9 000	400	N, NT, 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	SC	9 000	400	N, NT, QT

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	9 000	400	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