

APPROVAL OF MANUFACTURER CERTIFICATE

This is to certify:

That

Edelstahlwerke Schmees GmbH
Pirna, Germany

is an approved manufacturer of
Steel Castings

in accordance with
DNV GL rules for classification – Ships
DNV GL offshore standards

and the following particulars:

Application area	Castings for hull structures and equipment Castings for machinery Castings for propellers Castings for boilers, pressure vessels and piping systems Ferritic steel castings for low temperature service Stainless steel castings
Steel type(s)	Carbon and carbon-manganese, Alloy, Ferritic stainless, Martensitic stainless, Austenitic stainless, 22Cr duplex stainless, 25Cr duplex stainless
Max. weight	See page 2 ff.
Heat treatment condition	See page 2 ff.

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 **2018-11-26**

for **DNV GL**

This Certificate is valid until **2021-12-31**.

DNV GL local station: **Magdeburg**

Approval Engineer: **Stefan Röhr**

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Thorsten Lohmann
Head of Section



Particulars of the approval

Castings for hull structure and equipment

Steel type	Grade ^{3) 4)}	Casting method ¹⁾	Max. weight [kg]	Delivery condition ²⁾
C and C-Mn	VL C400UW, VL C440UW, VL C480UW, VL C520UW, VL C560UW, VL C600UW	SC	10 000	N, NT, QT
Alloy	VL C550AW, VL C620AW	SC	10 000	QT

Castings for machinery

Steel type	Grade ^{3) 4)}	Casting method ¹⁾	Max. weight [kg]	Delivery condition ²⁾
C and C-Mn	VL C400U, VL C440U, VL C480U, VL C520U, VL C560U, VL C600U	SC	10 000	N, NT, QT
Alloy	VL C550A, VL C600A, VL C690A	SC	10 000	QT

Castings for propellers (propellers/blades/hubs/bosses)

Steel type	Grade ^{3) 4)}	Casting method ¹⁾	Max. weight [kg]	Delivery condition ²⁾
Martensitic	VL C12Cr1Ni, VL C13Cr4Ni, VL C16Cr5Ni	SC	10 000	QT
Austenitic	VL C19Cr11Ni	SC	10 000	SHT

Job Id: **263.11-004896-2**
Certificate No: **AMMM00002BS**

Castings for boilers, pressure vessels and piping systems

Steel type	Grade ^{3) 4)}	Casting method ¹⁾	Max. weight [kg]	Delivery condition ²⁾
C and C-Mn	VL C450H	SC	10 000	N, NT, QT
	VL C490H	SC	10 000	N, NT, QT
Alloy	VL C0.5Mo	SC	10 000	NT, QT
	VL C1Cr0.5Mo	SC	10 000	NT, QT
	VL C2.25Cr1Mo	SC	10 000	NT, QT

Ferritic steel castings for low temperature service

Steel type	Grade ^{3) 4)}	Casting method ¹⁾	Max. weight [kg]	Delivery condition ²⁾
C and C-Mn	VL C450L	SC	10 000	N, NT, QT
	VL C490L	SC	10 000	N, NT, QT
Alloy	VL C2.25Ni	SC	10 000	N, NT, QT
	VL C3.5Ni	SC	10 000	N, NT, QT

Stainless steel castings

Steel type	Grade ³⁾	Casting method ¹⁾	Max. weight [kg]	Delivery 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	10 000	SHT
22 Cr Duplex	GX 2 CrNiMoN 22 5 3	SC	10 000	SHT
25 Cr Duplex	GX 2 CrNiMoCuN 25 6 3 3	SC	10 000	SHT

Remarks:

- 1) SC: Sand Casting
- 2) N: Normalized; NT: Normalized and tempered; QT: Quenched and tempered;
SHT: Solution Heat Treated (Solution Annealing)
- 3) Certification of any material applied to classed object shall fulfill the applicable material requirements in the DNV GL class rules
- 4) Incl. equivalent grades in acc. to other standards