

APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00000D1
Revision No:
2

This is to certify:

That

Deutsche Edelstahlwerke Specialty Steel GmbH & Co. KG
Auestraße 4, 58452 Witten,
Germany

is an approved manufacturer of
Steelmaking and Rolled Steel Products

in accordance with
DNV GL rules for classification – Ships
DNV GL rules for classification – Naval vessels

and the following particulars:

Product	Semi-finished Products
Steel type	Rolled bars intended to be machined into components Carbon and carbon-manganese, Alloy, Austenitic stainless Austenitic-ferritic (Duplex) stainless Martensitic stainless, Ferritic stainless Special materials for naval ships
Manufacturing method	Electric arc furnace, continuous / ingot casting
Deoxidation	killed
Heat treatment condition	See particulars of the approval
Max. thickness/diam.	See particulars of the approval
Additional approval conditions	See particulars of the approval

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 **2020-07-23**

for **DNV GL**

This Certificate is valid until **2023-06-19**.

DNV GL local station: **Essen**

Approval Engineer: **Christian Wildhagen**

Thorsten Lohmann
Head of Section

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Job Id: **263.11-004672-7**
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Particulars of the approval

Semi-finished products

Steel type	Product	Steel making ¹⁾	Max weight [kg]	Max. thickness / diameter [mm]	Heat treatment condition ²⁾
C and C-Mn, Alloy, Ferritic stainless, Austenitic stainless, Martensitic stainless, 22Cr duplex stainless, 25Cr duplex stainless	Bloom, Billet, Slab	EAF, CC	-	340	AC
	Ingot	EAF, IC	40 000	1 850	AC
	Bar	EAF, CC or IC	-	250	AR

Rolled bars ^{4) 5)} intended to be machined into components (as a substitute for forged bars)

Steel type	Grade ³⁾	Max. Diameter [mm]	max. Length [mm]	Max. Weight [kg/m]	Heat treatment condition ²⁾
C and C-Mn	F400UW, F440UW, F480UW, F520UW, F560UW, F600UW	250	27 000	1 500	N, NT, QT
Alloy	F550AW, F600AW, F650AW	250	27 000	1 500	QT
C and C-Mn	F400U, F440U, F480U, F520U, F560U, F600U, F640U, F680U, F720U, F760U	250	27 000	1 500	N, NT, QT
Alloy	F600A, F700A, F800A, F900A, F1000, F1100A	250	27 000	1 500	QT
Austenitic	VL 304L, VL 316L, VL 316LN, VL 317L, VL 317LN, VL 321, VL 347	250	27 000	1 500	SHT
Duplex	UNS S31803, UNS S32750	250	27 000	1 500	SHT
C and C-Mn, Alloy	VL-M550, VL-M700	150	27 000	1 500	QT
	VL-M550S, VL-M700S	200			
	15NiCrMo10-6 acc. WL 1.6780-2 16NiCrMo12-6 acc. WL 1.6782-2	200			
	HY-80 acc. MIL-S-21952D HY-100 acc. MIL-S-21952D	200			
Non-magnetizable	1.3964.9 acc. WL 19364-2	160	27 000	1 500	SHT
	1.3964 acc. SEW 390	250	27 000	1 500	SHT

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Steel type	Grade ³⁾	Max. Diameter [mm]	max. Length [mm]	Max. Weight [kg/m]	Heat treatment condition ²⁾
C and C-Mn	S235JR, S235J0, S235J2, S275JR, S275J0, S275J2, S355JR, S355J0, S355J2, S355K2 acc. EN 10025-2	250	27 000	1 500	N, AR
C and C-Mn	S275N, S355N, S275NL, S355NL acc. EN 10025-3	250	27 000	1 500	N
C and C-Mn	acc. EN 10083-2	250	27 000	1 500	N, NT, QT
	acc. EN 10084				
Alloy	acc. EN 10083-3	250	27 000	1 500	QT
	acc. EN 10084				
Austenitic stainless	acc. EN 10088-3	250	27 000	1 500	SHT
	acc. EN 10272				
Duplex	acc. EN 10088-3	250	27 000	1 500	SHT
	acc. EN 10272				
Ferritic	acc. EN 10088-3	250	27 000	1 500	A
	acc. EN 10272				
Martensitic	acc. EN 10088-3	250	27 000	1 500	QT
	acc. EN 10272				
	1.4542 acc. EN 10088-3	250	2 500	1 500	PH
	Type 630 (17-4PH) acc. ASTM A564				

Remarks:

- 1) EAF: Electric arc furnace
 CC: Continuous casting
 IC: Ingot casting
- 2) AC: As cast
 AR: As rolled
 QT: Quenched and tempered
 N: Normalized
 NT: Normalized and tempered
 SHT: Solution Heat Treated (Solution Annealing)
 PH: Precipitation hardened
 A: Annealed
- 3) Incl. equivalent grades in acc. to other standards (e.g. ISO 683-1, ISO 683-2, ISO 683-3)
- 4) Minimum rolling reduction ratio 6:1
- 5) Sampling, inspection and testing requirements shall be according to Rules for ships Pt.2 Ch.2 Sec.6