

APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM000016D
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
Steel Forgings

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

and the following particulars:

Product	Forged bars
Application area	Forgings for hull structures and equipment Forgings for shafting and machinery Forgings for gearing Stainless steel forgings Special materials for naval ships
Steel type	Carbon and carbon-manganese, Alloy, Austenitic stainless, Martensitic stainless, Ferritic stainless, Austenitic-ferritic (Duplex) stainless
Forging method	Open die forging
Max. weight	See particulars of the approval
Max. diameter / section	See particulars of the approval
Heat treatment condition	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: **263.11-004846-6**
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Particulars of the approval

Forgings for hull structures and equipment

Steel type	Grade ²⁾	Max. Diameter [mm]	max. Length [mm]	Max. Weight [kg/m]	Heat treatment Condition ¹⁾
C and C-Mn	F400UW, F440UW, F480UW, F520UW, F560UW, F600UW	250	11 000	1 500	N, NT, QT
Alloy	F550AW, F600AW, F650AW	250	11 000	1 500	QT

Forgings for shafting and machinery

Forgings for gearing

Steel type	Grade ²⁾	Max. Diameter [mm]	max. Length [mm]	Max. Weight [kg/m]	Heat treatment Condition ¹⁾
C and C-Mn	F400U, F440U, F480U, F520U, F560U, F600U, F640U, F680U, F720U, F760U	250	11 000	1 500	N, NT, QT
Alloy	F600A, F700A, F800A, F900A, F1000, F1100A	250	11 000	1 500	QT

Forgings of liquid quenched and tempered structural steels

Steel type	Grade ²⁾	Max. Diameter [mm]	max. Length [mm]	Max. Weight [kg/m]	Heat treatment Condition ¹⁾
C and C-Mn	VL-M550S, VL-M700S	200	11 000	1 500	QT
	15NiCrMo10-6 acc. WL 1.6780-2				
	16NiCrMo12-6 acc. WL 1.6782-2				
	HY-80 acc. MIL-S-21952D HY-100 acc. MIL-S-21952D				

Forgings of non-magnetizable steels

Steel type	Grade ²⁾	Max. Diameter [mm]	max. Length [mm]	Max. Weight [kg/m]	Heat treatment Condition ¹⁾
Non-magnetizable	1.3964.9 acc. WL 19364-2	160	11 000	1 500	SHT
	1.3964 acc. SEW 390	250	11 000	1 500	SHT

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Steels acc. other standards

Steel type	Grade	Max. Diameter [mm]	max. Length [mm]	Max. Weight [kg/m]	Heat treatment Condition ¹⁾
C and C-Mn	acc. EN 10083-2	250	11 000	1 500	NT, QT
	acc. EN 10250-2				
	acc. EN 10084				
	acc. ISO 683-1				
	acc. ISO 683-3				
Alloy	acc. EN 10083-3	250	11 000	1 500	QT
	acc. EN 10250-3				
	acc. ISO 683-2				
	acc. ISO 683-3				
	acc. EN 10084				
Austenitic stainless	acc. EN 10088-3	250	11 000	1 500	SHT
	acc. EN 10222-5				
	acc. EN 10272				
Duplex	acc. EN 10088-3	250	11 000	1 500	SHT
	acc. EN 10222-5				
	acc. EN 10272				
Ferritic	acc. EN 10088-3	250	11 000	1 500	A
	acc. EN 10272				
Martensitic	acc. EN 10088-3	250	11 000	1 500	QT
	acc. EN 10222-5				
	acc. EN 10272				
	1.4542 acc. EN 10088-3	250	11 000	1 500	PH
	Type 630 (17-4PH) acc. ASTM A564				

Remarks:

- 1) QT: Quenched and tempered
 N: Normalized
 NT: Normalized and tempered
 SHT: Solution Heat Treated (Solution Annealing)
 PH: Precipitation hardened
 A: Annealed
- 2) Incl. equivalent grades in acc. to other standards