



APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00000DW
Revision No:
3

This is to certify:

That

BGH Edelstahl Freital GmbH
Am Stahlwerk 1, 01705 Freital,
Germany

is an approved manufacturer of
Steelmaking and Rolled Steel Products

in accordance with
DNV rules for classification – Ships

and the following particulars:

Application area	Steelmaking Rolled steel for structural application Rolled steel for boilers, pressure vessels and special applications Forgings for hull structures and equipment Forgings for shafting and machinery Forgings for gearing Stainless steel forgings Non-magnetizable steels
Products	Semi-finished products (ingots, bloom, rolled or forged bars) Rolled bars
Manufacturing method	Electric arc furnace, continuous casting or ingot casting, hot rolling
Max. thickness	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 classed object shall fulfill the material requirements in the applicable DNV class rules.

Issued at **Hamburg** on **2022-05-18**

for **DNV**

This Certificate is valid until **2025-02-24**.

DNV local station: **Magdeburg**

Approval Engineer: **Stefan Röhr**

Thorsten Lohmann
Head of Section

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Particulars of the approval

Semi-finished products

Steel type	Product	Steel making ¹⁾	Max weight [kg]	Max. thickness [mm]	Heat treatment condition ²⁾
C and C-Mn	Blooms	EAF, CC	5500	330	AC
C and C-Mn	Ingots	EAF, IC	42000	2000	AC
C and C-Mn	Semi-finished bars (forged)	EAF, IC, CC	32000	900	AF ⁴⁾
C and C-Mn	Ingots	EAF, IC, CC	2000	160	AR
Alloy	Blooms	EAF, CC	5500	330	AC
Alloy	Ingots	EAF, IC	42000	2000	AC
Alloy	Semi-finished bars (forged)	EAF, IC, CC	32000	900	AF ⁴⁾
Alloy	Semi-finished bars (rolled)	EAF, IC, CC	2000	160	AR
Stainless	Blooms	EAF, CC	5000	330	AC
Stainless	Ingots	EAF, IC	42000	2000	AC
Stainless	Semi-finished bars (forged)	EAF, IC, CC	32000	900	AF ⁴⁾
Stainless	Semi-finished bars (rolled)	EAF, IC	2000	160	AR

Forgings for hull structures and equipment (rolled bars)

Steel type	Grade ³⁾	Product ³⁾	Max. weight [kg]	Max. diameter [mm]	Heat treatment condition ²⁾
C and C-Mn	NV F400UW, NV F440UW, NV F480UW, NV F520UW, NV F560UW, NV F600UW	RB	12 000	160	N, NT, QT
Alloy	NV F550AW, NV F620AW, NV F650AW	RB	32 000	900	N, NT, QT

Forgings for shafting and machinery/forgings for gearing (rolled bars)

Steel type	Grade ³⁾	Product ³⁾	Max. weight [kg]	Max. diameter [mm]	Heat treatment condition ²⁾
C and C-Mn	NV F400U, NV F440U, NV F480U, NV F520U, NV F560U, NV F600U, NV F640U, NV F680U, NV F720U, NV F760U	RB	12 000	160	N, NT, QT
Alloy	NV F600A, NV F700A, NV F800A, NV F900A, NV F1000A, NV F1100A	RB	12 000	160	N, NT, QT

Stainless steel bars

Steel type / grade ⁴⁾	Product ³⁾	Max. weight [kg]	Max. diameter [mm]	Heat treatment condition ²⁾
NV 304L, NV 316L, NV 316LN, NV 317L, NV 317LN, NV 321, NV 347, UNS S31803, UNS S32750	RB	12 000	160	SHT

Non-magnetizable steel bars

Steel type / grade	Product ³⁾	Max. weight [kg]	Max. diameter [mm]	Heat treatment condition ²⁾
1.3964.9 acc. to WL 19364-2, 1.3964 acc. to SEW 390	RB	12 000	160	SHT

Non-alloy structural steel bars acc. to EN 10025-2

Steel type	Grade	Product ³⁾	Max. weight [kg]	Max. diameter [mm]	Heat treatment condition ²⁾
C and C-Mn	S235JR, S235J0, S235J2, S275JR, S275J0, S275J2, S355JR, S355J0, S355J2, S355K2	RB	12 000	160	AR, N

Rolled weldable fine grain structural steel bars acc. to EN 10025-3

Steel type	Grade	Product ³⁾	Max. weight [kg]	Max. diameter [mm]	Heat treatment condition ²⁾
C and C-Mn	S275N, S355N, S275NL, S355NL	RB	12 000	160	N

Rolled steel bars acc. other standards

Steel type	Grade	Product ³⁾	Max. weight [kg]	Max. diameter [mm]	Heat treatment condition ²⁾
C and C-Mn	EN 10083-2, EN 10084	RB	12 000	160	N, NT, QT
Alloy	EN 10083-3, EN 10084	RB	12 000	160	QT
Austenitic stainless	EN 10088-3, EN 10272	RB	12 000	160	SHT
Duplex stainless	EN 10088-3, EN 10272	RB	12 000	160	SHT
Ferritic stainless	EN 10088-3, EN 10272	RB	12 000	160	A
Martensitic stainless	EN 10088-3, EN 10272	RB	12 000	160	QT

Remarks:

- 1) EAF: Electric arc furnace; CC: Continuous casting; IC: Ingot casting
- 2) AR: As rolled; AC: As cast; AF: As forged; N: Normalized; NT: Normalized and tempered; QT: Quenched and tempered; SHT: Solution heat treated (solution annealed); A: Annealed
- 3) RB: Rolled bars
- 4) Semi-finished steel products by forging process are produced by BGH Freital GmbH approved with certificate no. AMMM00000DX



APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00000DX
Revision No:
4

This is to certify:

That

BGH Edelstahl Freital GmbH
Am Stahlwerk 1, 01705 Freital,
Germany

is an approved manufacturer of
Steel Forgings

in accordance with
DNV rules for classification – Ships

and the following particulars:

Application area	Forgings for hull structures and equipment Forgings for shafting and machinery Forgings for gearing Stainless steel forgings
Steel type	Carbon and carbon-manganese, Alloy, Austenitic stainless, Martensitic stainless, Ferritic stainless, Austenitic-ferritic (Duplex) stainless
Forging method	Open die forging including forged bars and rolled rings
Max. weight	See page 2 ff.
Max. diameter	See page 2 ff.
Heat treatment condition	See page 2 ff.

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Issued at **Hamburg** on **2022-05-23**

for **DNV**

This Certificate is valid until **2025-02-24**.

DNV local station: **Magdeburg**

Approval Engineer: **Christian Wildhagen**

Thorsten Lohmann
Head of Section

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Particulars of the approval

Forgings for hull structures and equipment

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. diameter [mm]	Heat treatment condition ²⁾
C and C-Mn	NV F400UW, NV F440UW, NV F480UW, NV F520UW, NV F560UW, NV F600UW	OD/RR	32 000	900	N, NT, QT
Alloy	NV F550AW, NV F620AW, NV F650AW	OD/RR	32 000	900	N, NT, QT

Forgings for shafting and machinery Forgings for gearing

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. diameter [mm]	Heat treatment condition ²⁾
C and C-Mn	NV F400U, NV F440U, NV F480U, NV F520U, NV F560U, NV F600U, NV F640U, NV F680U, NV F720U, NV F760U	OD/RR	32 000	900	N, NT, QT
Alloy	NV F600A, NV F700A, NV F800A, NV F900A, NV F1000A, NV F1100A	OD/RR	32 000	900	N, NT, QT

Steels acc. other standards

Steel type	Grade	Forging method ¹⁾	Max. weight [kg]	Max. diameter [mm]	Heat treatment condition ²⁾
C and C-Mn	EN 10083-2, EN 10250-2, EN 10084, SEW 550	OD/RR	32 000	900	N, NT, QT
Alloy	EN 10083-3, EN 10250-3, EN 10084, SEW 550	OD/RR	32 000	900	QT

Stainless steel forgings

Steel type / grade ⁴⁾	Forging method ¹⁾	Max. weight [kg]	Max. diameter [mm]	Heat treatment condition ²⁾
Austenitic stainless	OD/RR	32 000	900	SHT
Martensitic stainless	OD/RR	32 000	900	QT
Ferritic stainless	OD/RR	32 000	900	A
Austenitic-ferritic (duplex) stainless	OD/RR	32 000	900	SHT



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Remarks:

- 1) OD: Open die forgings including forged bars; RR: Rolled rings
- 2) N: Normalized
NT: Normalized and tempered
QT: Quenched and tempered;
SHT: Solution Heat Treated (Solution Annealing)
A: Annealed
- 3) Including equivalent grades to other standards
- 4) Stainless steel forgings shall be in accordance with recognized standards, e.g. EN 10222, ASTM A473/A965/A1049 and JIS G 3214. Recognition of other standards is subject to submission to the Society for evaluation