



# APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:  
**AMMM00000MA**  
Revision No:  
**4**

This is to certify:

That

**Ilsenburger Grobblech GmbH**  
Veckenstedter Weg 10, 38871 Ilsenburg,  
Germany

is an approved manufacturer of  
**Rolled Steel Products**

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

and the following particulars:

<b>Product</b>	<b>Hot rolled steel plates</b>
<b>Grade(s)</b>	<b>Rolled steel for structural application</b>
	<b>Rolled steel for boilers, pressure vessels and special applications</b>
<b>Steelmaking</b>	<b>Basic oxygen converter</b>
	<b>Continuous casting</b>
<b>Deoxidation</b>	<b>Killed</b>
<b>Fine grain elements</b>	<b>see annex</b>
<b>Heat treatment conditions</b>	<b>see annex</b>
<b>Max. thickness</b>	<b>see annex</b>
<b>Additional approval conditions</b>	<b>see annex</b>

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 **2022-12-21**

for **DNV**

This Certificate is valid until **2025-12-31**.

DNV local unit: **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

### Normal strength steel

Grade	Product	Steel making <sup>1)</sup>	Fine grain elements	Max. thickness [mm]	Heat treatment condition <sup>2)</sup>	Z- quality
NV A, NV B, NV D	Plate	BOC, CC	Al	40	NR	-
NV A, NV B, NV D, NV E	Plate	BOC, CC	Al, Al+Nb, Al+Nb+V	150 <sup>3)</sup>	N	-
	Plate	BOC, CC	Al, Al+Nb	25	TM	-

### High strength steel

Grade	Product	Steel making <sup>1)</sup>	Fine grain elements	Max. thickness [mm]	Heat treatment condition <sup>2)</sup>	Z- quality
NV A27S, NV D27S, NV E27S, NV A32, NV D32, NV E32, NV A36, NV D36, NV E36	Plate	BOC, CC	Al, Al+Nb	80	NR	Z35
	Plate	BOC, CC	Al+Nb, Al+Nb+V	150 <sup>3)</sup>	N	-
	Plate	BOC, CC	Al+V+Ti, Al+Nb+Ti, Al+Nb+V, Al+V+Nb+Ti	130 <sup>4)</sup>	TM	Z35
NV F32, NV F36	Plate	BOC, CC	Al+Nb	150 <sup>3)</sup>	N	-
	Plate	BOC, CC	Al+V+Ti, Al+Nb+Ti, Al+Nb+V, Al+V+Nb+Ti	130 <sup>4)</sup>	TM	Z35
NV A40, NV D40, NV E40	Plate	BOC, CC	Al+Nb+V	20	N	-
	Plate	BOC, CC	Al+Nb+V, Al+V+Nb+Ti	130 <sup>4)</sup>	TM	Z35
NV F40	Plate	BOC, CC	Al+V+Nb+Ti	130 <sup>4)</sup>	TM	Z35

**Extra high strength steel <sup>5)</sup>**

Grade	Product	Steel making <sup>1)</sup>	Fine grain elements	Max. thickness [mm]	Heat treatment condition <sup>2)</sup>	Z-quality
NV A420, NV D420, NV E420, NV F420, NV A460, NV D460, NV E460, NV F460,	Plate	BOC, CC	Al+Nb+V, Al+Nb, Al+Nb+V+Ti	120 <sup>4)</sup>	TM	Z35
	Plate	BOC, CC	Cr, Ni, Mo, V, Nb, Ti, B	120 <sup>4)</sup>	QT	Z35
NV A500, NV D500, NV E500, NV F500, NV A550, NV D550, NV E550, NV F550	Plate	BOC, CC	Cr, Ni, Mo, V, Nb, Ti, B	120 <sup>4)</sup>	QT	Z35
NV A620, NV D620, NV E620, NV F620, NV A690, NV D690, NV E690, NV F690	Plate	BOC, CC	Cr, Ni, Mo, V, Nb, Ti, B	120 <sup>4)</sup>	QT	Z35

**Steel for low temperature service**

Grade <sup>6)</sup>	Product	Steel making <sup>1)</sup>	Fine grain elements	Max. thickness [mm]	Heat treatment condition <sup>2)</sup>	Z-quality
NV 2-2, NV 2-3, NV 2-4, NV 2-4L, NV 4-2, NV 4-3, NV 4-4, NV 4-4L, NV 360-2FN	Plate	BOC, CC	Al+Nb, Al+Nb+Ti	60	N	-
		BOC, CC	Al+Nb+Ti	60	TM	-
NV 0.5 Ni/a, NV 0.5 Ni/b	Plate	BOC, CC	Al+Ni+Nb	50	N	-
NV 1.5 Ni, NV 3.5 Ni, NV 5 Ni, NV 9 Ni	Plate	BOC, CC	Al+Ni, Al+Ni+V, Al+Ni+Nb	50	QT	-
NV 3.5 Ni, NV 5 Ni	Plate	BOC, CC	Al+Ni+V	40	N	-
NV 9 Ni	Plate	BOC, CC	Al+Ni	40	NNT	-

**Rolled steels for boiler and pressure vessels**

Grade <sup>6)</sup>	Product	Steel making <sup>1)</sup>	Fine grain elements	Max. thickness [mm]	Heat treatment condition <sup>2)</sup>	Z-quality
NV 360-0N NV 360-1FN NV 410-0N	Plate	BOC, CC	Al	40	NR	-
100				N	-	
NV 410-1FN NV 460-0N, NV 460-1FN NV 490-0N, NV 490-1FN NV 510-1FN	Plate	BOC, CC	Al	30	NR	-
			Al+Nb	100	N	-
			Al+Nb+Ti, Al+Nb+V	60	TM	-
NV 0.3	Plate	BOC, CC	Al	50	N	-
NV 1 Cr 0.5 Mo NV 2.25 Cr 1 Mo	Plate	BOC, CC	Al	50	NT	-

**Steels for low temperature service acc. to other standards**

Grade	Product	Steel making <sup>1)</sup>	Fine grain elements	Max. thickness [mm]	Heat treatment condition <sup>2)</sup>	Z-quality
Steels acc. to EN 10028-4						
11MnNi5-3	Plate	BOC, CC	acc. to standard	50	N	-
13MnNi6-3	Plate	BOC, CC	acc. to standard	50	N	-
15NiMn6	Plate	BOC, CC	acc. to standard	50	QT	-
12Ni14	Plate	BOC, CC	acc. to standard	40	N	-
				50	QT	-
X12Ni5	Plate	BOC, CC	acc. to standard	40	N	-
				50	QT	-
X7Ni9	Plate	BOC, CC	acc. to standard	50	QT	-
X8Ni9 +NT640	Plate	BOC, CC	acc. to standard	40	NNT	-
X8Ni9 +QT640	Plate	BOC, CC	acc. to standard	50	QT	-
X8Ni9 +QT680	Plate	BOC, CC	acc. to standard	50	QT	-

**Rolled steel plates acc. to EN 10225-1**

Grade <sup>7)</sup>	Product	Steel making <sup>1)</sup>	Fine grain elements	Max. thickness [mm]	Heat treatment condition <sup>2)</sup>	Z-quality
S460 MLO	Plate	BOC, CC	acc. to standard	90	TM	-

Remarks:

- 1) BOC: Basic oxygen converter; CC: Continuous casting
- 2) NR: Normalising rolling; TM: Thermo-mechanical rolling; N: Normalised; NT: Normalised and tempered; NNT: Double normalized and tempered; Q+T: Quenched and tempered
- 3) Minimum reduction ratio 2.5:1
- 4) Minimum reduction ratio 2.9:1
- 5) Also applicable for corresponding NV offshore steel grades (with designation O; e.g. NV DO 460)
- 6) Including equivalent grades to other standards
- 7) For DNV approved applications

**Additional approval conditions**

Comparable equivalent steel grades (with regard to chemical composition, mechanical properties) according to EN 10025-2, -3, -4, -6, EN 10028-2, -3, -5 and EN 10225 or other standards are covered in the accordant heat treatment condition and maximum thickness approved by this AMMM

Furthermore covered:

- API 5L X52 PSL1 with max. thickness of 20 mm

**END OF CERTIFICATE**