

# APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:  
**AMMM00000MA**  
Revision No:  
**2**

**This is to certify:**

**That**

**Ilseburger Grobblech GmbH**  
**ILSENBURG, Germany**

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

in accordance with  
**DNV GL rules for classification – Ships**  
**DNVGL-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>Delivery conditions</b>	<b>see annex</b>
<b>Max. thickness</b>	<b>see annex</b>
<b>Remarks</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 GL classed object shall fulfill the material requirements in the applicable DNV GL class rules.

Issued at **Hamburg** on **2020-03-19**

for **DNV GL**

This Certificate is valid until **2022-12-31**.

DNV GL local station: **Hamburg**

Approval Engineer: **Stefan Röhr**

**Thorsten Lohmann**  
**Head of Section**

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## 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
VL A, VL B, VL D	Plate	BOC, CC	Al	40	NR	-
VL A, VL B, VL D, VL 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
VL A27S, VL D27S, VL E27S, VL A32, VL D32, VL E32, VL A36, VL D36, VL 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
VL F32, VL 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
VL A40, VL D40, VL 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
VL F40	Plate	BOC, CC	Al+V+Nb+Ti	130 <sup>4)</sup>	TM	Z35

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**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
VL A420, VL D420, VL E420, VL F420, VL A460, VL D460, VL E460, VL 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
VL A500, VL D500, VL E500, VL F500, VL A550, VL D550, VL E550, VL F550	Plate	BOC, CC	Cr, Ni, Mo, V, Nb, Ti, B	120 <sup>4)</sup>	QT	Z35
VL A620, VL D620, VL E620, VL F620, VL A690, VL D690, VL E690, VL 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
VL 2-2, VL 2-3, VL 2-4, VL 2-4L, VL 4-2, VL 4-3, VL 4-4, VL 4-4L, VL 360-2FN	Plate	BOC, CC	Al+Nb, Al+Nb+Ti	60	N	-
		BOC, CC	Al+Nb+Ti	60	TM	-
VL 0.5 Ni/a, VL 0.5 Ni/b	Plate	BOC, CC	Al+Ni+Nb	50	N	-
VL 1.5 Ni, VL 3.5 Ni, VL 5 Ni, VL 9 Ni	Plate	BOC, CC	Al+Ni, Al+Ni+V, Al+Ni+Nb	50	QT	-
VL 3.5 Ni, VL 5 Ni	Plate	BOC, CC	Al+Ni+V	40	N	-
VL 9 Ni	Plate	BOC, CC	Al+Ni	40	NNT	-

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### 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
VL 360-0N VL 360-1FN VL 410-0N	Plate	BOC, CC	Al	40 100	NR N	- -
VL 410-1FN VL 460-0N, VL 460-1FN VL 490-0N, VL 490-1FN VL 510-1FN	Plate	BOC, CC	Al Al+Nb Al+Nb+Ti, Al+Nb+V	30 100 60	NR N TM	- - -
VL 0.3	Plate	BOC, CC	Al	50	N	-
VL 1 Cr 0.5 Mo VL 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	-
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	-

#### 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 VL offshore steel grades (with designation O; e.g. VL DO 460)
- 6) Including equivalent grades to other standards



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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**