

APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00000X6
Revision No:
8

This is to certify:

That

NLMK Dansteel A/S
Frederiksværk, Hovedstaden,
Denmark

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:

Application area	Normal strength steel, High strength steel, Extra high strength steel Z-grade steels (plates with through thickness properties)
Product	Plates
Manufacturing method	Basic oxygen converter, Continuous casting
Max. thickness / diameter	See particulars of the approval
Heat treatment condition	See particulars of the approval
Remarks	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 **2021-01-14**

for **DNV GL**

This Certificate is valid until **2022-08-31**.

DNV GL local station: **Copenhagen**

Approval Engineer: **Christian Wildhagen**

Thorsten Lohmann
Head of Section



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Particulars of the approval

Normal strength steel

Grade ³⁾	Product	Steel making ¹⁾	Fine grain elements	Delivery conditions ²⁾	Max. thickness [mm]	Z-quality
VL A, VL B	Plate	BOC, CC	Al	AR	50	Z25
			Al or Al+Nb	N	100	Z25
			Al+Nb+V ⁴⁾	N	150	Z35
VL D	Plate	BOC, CC	Al or Al+Nb	N	100	Z35
			Al+Nb+V ⁴⁾	N	150	Z35
VL E	Plate	BOC, CC	Al or Al+Nb	N	50	Z35
			Al+Nb+V ⁵⁾	N	150	Z35
VL A, VL B, VL D	Plate	BOC, CC	Al	NR	35	-

High strength steel

Grade ³⁾	Product	Steel making ¹⁾	Fine grain elements	Delivery conditions ²⁾	Max. thickness [mm]	Z-quality
VL A27S	Plate	BOC, CC	Al+V+Ti	AR	12.5	Z35
			Al+Nb	N	60	Z35
				TM	60	Z35
			Al+Nb+V+Ti	TM	60	Z35
VL A27S, VL D27S	Plate	BOC, CC	Al+V	AR	25	-
VL A27S, VL D27S	Plate	BOC, CC	Al+Nb	NR	35	-
VL D27S, VL E27S	Plate	BOC, CC	Al+Nb	N	60	Z35
				TM	60	Z35
			Al+Nb+V+Ti	TM	60	Z35
VL A27S, VL D27S, VL E27S	Plate	BOC, CC	Al+Nb+V ⁵⁾	N	150	Z35
VL F27S	Plate	BOC, CC	Al+Nb+V+Ti	TM	60	Z35
VL AW27, VL DW27, VL EW27	Plate	BOC, CC	Al+Nb	TM	60	Z35
			Al+Nb+V+Ti	TM	60	Z35
VL A32, VL A36	Plate	BOC, CC	Al+V+Ti	AR	12.5	-
VL A32, VL A36	Plate	BOC, CC	Al+Nb	AR	20	Z35
VL A32, VL D32, VL E32	Plate	BOC, CC	Al+Nb	N	60	Z35
				TM	60	Z35
			Al+Nb+V+Ti	TM	60	Z35
VL A32, VL D32	Plate	BOC, CC	Al+V	AR	25	-
VL A32, VL D32	Plate	BOC, CC	Al+Nb	NR	35	-
VL A32, VL D32, VL E32	Plate	BOC, CC	Al+Nb+V ⁵⁾	N	150	Z35

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Grade ³⁾	Product	Steel making ¹⁾	Fine grain elements	Delivery conditions ¹⁾	Max. thickness [mm]	Z-quality
VL F32	Plate	BOC, CC	Al+Nb+V+Ti	TM	60	Z35
VL AW32, VL DW32, VL EW32	Plate	BOC, CC	Al+Nb	TM	60	Z35
			Al+Nb+V+Ti	TM	60	Z35
VL A36, VL D36	Plate	BOC, CC	Al+V	AR	25	-
VL A36, VL D36	Plate	BOC, CC	Al+Nb	NR	35	-
VL A36, VL D36, VL E36	Plate	BOC, CC	Al+Nb	N	60	Z35
				TM	60	Z35
			Al+Nb+V+Ti	TM	60	Z35
VL A36, VL D36, VL E36	Plate	BOC, CC	Al+Nb+V ⁵⁾	N	150	Z35
VL F36	Plate	BOC, CC	Al+Nb+V+Ti	TM	60	Z35
VL AW36, VL DW36, VL EW36	Plate	BOC, CC	Al+Nb	TM	60	Z35
			Al+Nb+V+Ti	TM	60	Z35
VL A40	Plate	BOC, CC	Al+V	AR	12.5	-
VL A40, VL D40, VL E40	Plate	BOC, CC	Al+Nb	TM	60	Z35
			Al+Nb+V+Ti	TM	60	Z35
VL F40	Plate	BOC, CC	Al+Nb+V+Ti	TM	35	Z35
VL A36, VL D36, VL A40, VL D40	Plate	BOC, CC	Al+Nb+V	NR	55	Z35
			Al+Nb			
VL A36, VL D36, VL E36	Plate	BOC, CC	Al+Nb+Ti	TM+ACC	80	Z35
VL AW36, VL DW36, VL EW36						

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Extra high strength steel

Grade ³⁾	Product	Steel making ¹⁾	Fine grain elements	Delivery conditions ¹⁾	Max. thickness [mm]	Z-quality
VL A420, VL D420, VL E420	Plate	BOC, CC	Al+Nb+V	N	150	Z35
VL AO420, VL DO420, VL EO420						
VL A420, VL D420, VL E420, VL F420, VL A460, VL D460, VL E460, VL F460, VL A500, VL D500, VL E500, VL F500	Plate	BOC, CC	Al+Nb+V+Ti	TM	35	Z35
VL AO420, VL DO420, VL EO420, VL FO420, VL AO460, VL DO460, VL EO460, VL FO460, VL AO500, VL DO500, VL EO500, VL FO500						
VL AW420, VL DW420, VL EW420, VL FW420, VL AW460, VL DW460, VL EW460, VL FW460, VL AW500, VL DW500, VL EW500, VL FW500						

Remarks

- 1) BOC: Basic oxygen converter
CC: Continuous casting
- 2) AR: As-rolled
N: Normalised
NR: Normalising rolling
TM: Thermo-mechanical rolling
ACC: accelerated cooling
- 3) Certification of any material applied to classed object shall fulfil the applicable material requirements in the DNV GL class rules
- 4) Minimum plate thickness applicable is 101 mm
- 5) Minimum plate thickness applicable is 51 mm