



**CERTIFICATE OF APPROVAL OF MANUFACTURERS OF
MATERIALS**
No. **FAB014519XD**

This is to certify that the manufacture of the product identified below is in compliance with the applicable requirements of the RINA Rules for the Approval of Manufacturers of Materials.

<i>Description Type</i>	Normal strength and higher strength hull steel plates GRADES A - B - D - E - AH32 - AH36 - AH40 - DH32 - DH36 - DH40 - EH32 - EH36 - EH40 - FH32 - FH36 - FH40 - A420 - D420 - E420 - F420 - A460 - D460 - E460 - F460 - A500 - D500 - E500 AND F500
<i>Applicant</i>	NLMK DANSTEEL A/S HAVNEVEJ 33 3300 Frederiksvaerk DENMARK
<i>Manufacturer Place of manufacture</i>	NLMK DANSTEEL A/S HAVNEVEJ 33 3300 Frederiksvaerk DENMARK
<i>Reference standards</i>	RINA Rules for the approval of manufacturers of materials

Issued in **RINA Denmark Marine** on **April 16, 2019**. *This Certificate is valid until* **November 16, 2021**



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RINA Services S.p.A.

This certificate consists of this page and 1 enclosure



FAB014519XD

APPROVAL CONDITIONS

Steel making process and deoxidation practice: basic oxygen process, fully killed, fine grained steel.

Casting process: continuous casting.

Condition of supply and thickness as per below table:

Grade ⁽¹⁾	Fine Grain Elements ⁽²⁾	Delivery Conditions	Max. Thickness (mm)
Normal Strength Steel			
A,B	Al	AR	50 (Gr.B) 100 (Gr.A)
	Al or Al+Nb	N	100
	Al+Nb+V ⁽⁴⁾	N	150
D	Al or Al+Nb	N	100
	Al+Nb+V ⁽⁴⁾	N	150
E	Al or Al+Nb	N	60
	Al+Nb+V ⁽⁴⁾	N	150
A, B, D	Al	NR	35

High Strength Steel			
AH32	Al+V+Ti	AR	12.5
	Al+Nb	AR	20
AH32 - DH32	Al+V	AR	25
	Al+Nb	NR	35
AH32 - DH32 - EH32	Al+Nb	N	60
		TM	60
	Al+Nb+V+Ti	TM	60
	Al+Nb+V	N	150 ⁽³⁾
	Al+Nb+V+Ti	TM	60
FH32	Al+Nb+V+Ti	TM	60
AH36	Al+V+Ti	AR	12.5
	Al+Nb	AR	20
AH36 - DH36	Al+V	AR	25
	Al+Nb	NR	55
	Al+Nb+V	NR	55

AH36 - DH36 - EH36	Al+Nb	N	60
		TM	60
	Al+Nb+V+Ti	TM	60
	Al+Nb+V	N	150 ⁽³⁾
FH36	Al+Nb+V+Ti	TM	60
AH40	Al+V	AR	12.5
AH40 - DH40	Al+Nb	NR	55
	Al+Nb+V	NR	55
AH40 - DH40 - EH40	Al+Nb	TM	60
	Al+Nb+V+Ti	TM	60
FH40	Al+Nb+V+Ti	TM	35

Grade ⁽¹⁾	Fine Grain Elements ⁽²⁾	Delivery Conditions	Max. Thickness (mm)
High Strength Steel for Welded Structures			
A420, D420, E420, F420	Al+Nb+V	TM	35
A460, D460, E460, F460	Al+Nb+V	TM	35
A500, D500, E500, F500	Al+Nb+V	TM	35

- 1) The approval is valid also for equivalent structural steel grades according to EN 10025-2 and steel plates intended for boilers and pressure vessels according to EN 10028-2.
2) AR: As Rolled; N: Normalised; TM: Thermo-mechanical rolling.
3) Minimum plate thickness applicable 61 mm

Survey conditions:

The plates are to be in compliance in all respects with the relevant RINA rules and are to be tested accordingly.

General conditions for the approval

- The approval is granted on condition that the RINA Rules for the approval, manufacture, testing and certification of materials are complied with in all respects.
- RINA is to be notified of any change of materials, manufacturing process, quality control routines that may affect the validity of this certificate