



APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM000011E
Revision No:
3

This is to certify:

That

Hüttenwerke Krupp Mannesmann GmbH
Ehring Strasse 200, 47259 Duisburg,
Germany

is an approved manufacturer of
Steelmaking

in accordance with

DNV rules for classification – Ships
DNV-OS-B101 – Metallic materials
DNV class programme – DNV-CP-0242 Semi-finished steel products

and the following particulars:

Application area	Steelmaking
Products	Semi-finished products Slabs and rounds for forging stock Slabs and rounds for rolling stock
Steel type	Carbon and carbon-manganese, Alloy, Nickel alloy, see page 2
Manufacturing method	Basic oxygen converter, continuous casting
Deoxidation	Killed
Heat treatment condition	See page 2

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 **2023-02-09**

for **DNV**

This Certificate is valid until **2026-02-28**.

DNV local unit: **Essen**

Approval Engineer: **Stefan Röhr**

Thorsten Lohmann
Head of Section

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Particulars of the approval

Semi-finished products (Slabs and rounds for forging stock)

Steel grade ³⁾	Steelmaking ¹⁾	Fine grain treatment	Heat treatment condition ²⁾	Max. thickness [mm]
Carbon and carbon-manganese	BOC, CC	Al or Al+Nb	AC	Not applicable
Alloy	BOC, CC	Al or Al+Nb	AC	Not applicable

Semi-finished products (Slabs for rolling stock)

Steel grade ³⁾	Steel making ¹⁾	Fine grain treatment	Heat treatment condition ²⁾	Max. thickness [mm]
Hull structural steel				
Normal strength steels	BOC, CC	Al	AC	Not applicable
High Strength steels	BOC, CC	Al+Nb+Ti or Al+V+Nb+Ti or Al+Nb	AC	Not applicable
Extra high strength steels	BOC, CC	Al+Nb+Ti or Al+Nb	AC	Not applicable
Boiler and pressure vessel steel				
Carbon and carbon-manganese	BOC, CC	Al+Nb+Ti or Al+Nb	AC	Not applicable
Alloy	BOC, CC	Al+Ti	AC	Not applicable
Steel for low temperature service				
Carbon and carbon-manganese	BOC, CC	Al+V+Nb+Ti or Al+Nb	AC	Not applicable
Alloy	BOC, CC	Al+Nb+Ti or Al	AC	Not applicable
Nickel alloy	BOC, CC	Al+Nb+Ti or Al	AC	Not applicable

Remarks:

- 1) BOC: Basic Oxygen Converter
CC: Continuous Casting
- 2) AC: As cast
- 3) Normal and high strength hull structural steel grades including equivalent structural steel grades to other standards