

# APPROVAL OF MANUFACTURER CERTIFICATE

**This is to certify:**

That  
**TRINECKÉ ŽELEZÁRNY, a.s.**  
**KLADNO-DŘÍŇ, CZECH REPUBLIC**

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

in accordance with  
**DNV GL rules for classification – Ships**  
**DNVGL-OS-E302 – Offshore mooring chain, Edition July 2018**

and the following particulars:

|                              |   |
|------------------------------|---|
| <b>Product</b>               | <b>Round bars for machinery applications,<br/>Semis for forging and rolling stock,<br/>Semi-finished products (Blooms, billets or round bars) intended for<br/>steel forgings for chain cable accessories</b> |
| <b>Steel types or Grades</b> | <b>Carbon and carbon-manganese, Alloy,<br/>R3S, R4, R4S, R5</b>   |
| <b>Steelmaking</b>           | <b>Basic Oxygen Converter,<br/>Continuous Casting or Ingot casting</b>  |
| <b>Deoxidation</b>           | <b>Killed</b>   |
| <b>Fine grain elements</b>   | <b>See page 2</b>   |
| <b>Delivery conditions</b>   | <b>See page 2</b>   |
| <b>Max. thickness/diam.</b>  | <b>See page 2</b>   |
| <b>Remarks</b>               | <b>See page 2</b>   |

Manufacturer approved by this certificate is 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 **Høvik** on **2019-05-02**

This Certificate is valid until **2022-04-12**.

DNV GL local station: **Prague**

for **DNV GL**

Approval Engineer: **Dechun Lou**

.....  
**Hanne Anita Hjerpetjønn**  
**Head of Section**



Job Id: **263.11-005780-2**  
 Certificate No: **AMMM00000H4**  
 Revision No: **2**

**Particulars of the approval**

| <b>Rolled round bars intended to be machined into components</b> |                           |                     |                     |                    |
|--|---------------------------|---------------------|---------------------|--------------------|
| Steel type   | Steelmaking <sup>1)</sup> | Fine grain elements | Delivery conditions | Max. diameter (mm) |
| Carbon and carbon-manganese                                      | BOC, VD, CC               | Al or Al+V          | N                   | 300 <sup>2)</sup>  |
| Alloy  | BOC, VD, CC               | Al or Al+V          | QT                  | 300 <sup>2)</sup>  |

Remarks:

- <sup>1)</sup> Basic Oxygen Converter; VD: Vacuum Degassing; CC: Continuous Casting.
- <sup>2)</sup> Minimum rolling reduction ratio 3.5:1.

| <b>Semi-finished products: Blooms, billets, round bars intended for steel forgings for chain accessories</b> |                           |                     |  |                                   |   |
|--|---------------------------|---------------------|--|-----------------------------------|---|
| Grades <sup>1)</sup>   | Steelmaking <sup>2)</sup> | Fine grain elements | Max. diameter or thickness <sup>3)</sup> | Delivery conditions <sup>3)</sup> | Raw material manufacturer <sup>4)</sup>               |
| R3S, R4, R4S, R5   | BOC, VD, CC or IC         | Al                  | NA                                       | NA                                | <b>Trinecke Zelezarny a. s.</b><br>Trinec-Stare Mesto |

Remarks:

- <sup>1)</sup> For approval material specification see Table S1
- <sup>2)</sup> Basic Oxygen Converter; VD: Vacuum Degassing; IC: Ingot Casting.
- <sup>3)</sup> Not applicable.
- <sup>4)</sup> The steelmaking is carried out at mother factory Trinecke zelezarny, plant Trinec.