



APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM0000269
Revision No:
1

This is to certify:

That

Reinhard Tweer GmbH
Krackser Str. 191, 33689 Bielefeld, Germany

is an approved manufacturer of
Steel Castings

in accordance with
DNV GL rules for classification – Ships

and the following particulars:

| | |
|---------------------------------|---|
| Application area | Castings for hull structures and equipment Castings for machinery Castings for boilers, pressure vessels and piping systems Carbon and carbon-manganese, |
| Steel type | Alloy |
| Casting method | Sand casting |
| Max. weight | 5 000 kg |
| Max. wall thickness | 300 mm |
| 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 **2021-08-05**

This Certificate is valid until **2024-06-30**.

DNV local station: **Magdeburg**

Approval Engineer: **Enno Brück**



for **DNV**
Digitally Signed By: Roehr, Stefan
Location: DNV GL Hamburg, Germany
Signing Date: 06.08.2021 , on behalf of

Thorsten Lohmann
Head of Section

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Particulars of the approval

Castings for hull structure and equipment

| Steel type | Grade ³⁾ | Casting method ¹⁾ | Max. weight [kg] | Max wall thickness [mm] | Heat treatment condition ²⁾ |
|------------|--|------------------------------|------------------|-------------------------|--|
| C and C-Mn | VL C400UW, VL C440UW, VL C480UW, VL C520UW, VL C560UW, VL C600UW | SC | 5 000 | 300 | N, NT, QT |
| Alloy | VL C550AW, VL C620AW | SC | 5 000 | 300 | QT |

Castings for machinery

| Steel type | Grade ³⁾ | Casting method ¹⁾ | Max. weight [kg] | Max wall thickness [mm] | Heat treatment condition ²⁾ |
|------------|--|------------------------------|------------------|-------------------------|--|
| C and C-Mn | VL C400U, VL C440U, VL C480U, VL C520U, VL C560U, VL C600U | SC | 5 000 | 300 | N, NT, QT |
| Alloy | VL C550A, VL C600A, VL C690A | SC | 5 000 | 300 | QT |

Castings for boilers, pressure vessels and piping systems

| Steel type | Grade ³⁾ | Casting method ¹⁾ | Max. weight [kg] | Max wall thickness [mm] | Heat treatment condition ²⁾ |
|------------|--|------------------------------|------------------|-------------------------|--|
| C and C-Mn | VL C450H, VL C490H | SC | 5 000 | 300 | N, NT, QT |
| Alloy | VL C0.5Mo, VL C1Cr0.5Mo, VL C2.25Cr1Mo | SC | 5 000 | 300 | QT |

Castings acc. international standards

| Steel type | Standard | Casting method ¹⁾ | Max. weight [kg] | Max wall thickness [mm] | Heat treatment condition ²⁾ |
|-------------------|--------------------------------------|------------------------------|------------------|-------------------------|--|
| C and C-Mn, Alloy | EN 10293, EN 10213, EN 10340, SEW520 | SC | 5 000 | 300 | N, NT, QT |

Remarks:

- 1) SC: Sand casting
- 2) N: Normalised
 QT: Quenched and tempered
 NT: Normalised and tempered
- 3) Incl. equivalent grades in acc. to other standards