

APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00001YR
Revision No:
2

This is to certify:

That

Raguse & Voss Metallgießerei GmbH
Grauwalling 24, 27580 Bremerhaven,
Germany

is an approved manufacturer of
Copper Alloy Castings

in accordance with

DNV rules for classification – Ships
DNV class programme – DNV-CP-0251 Copper alloy castings

and the following particulars:

| | |
|---------------------------------------|--|
| Application area | Castings for valves, fittings and general application |
| Alloy type(s) | Phosphor bronze, Gunmetal, Leaded gunmetal, Al-bronze, Ni-Al-bronze |
| Casting method | Sand casting |
| Max. weight | 2 000 kg |
| Heat treatment condition | See page 2 |
| Additional approval conditions | 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 **2024-03-05**

This Certificate is valid until **2026-12-31**.

DNV local unit: **Bremerhaven**

Approval Engineer: **Stefan Röhr**



for **DNV**

This document has been digitally signed and will
therefore not have handwritten signature

Christian Wildhagen

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Particulars of the approval

Castings for valves, fittings and general application

| Grade ³⁾ | Casting method ¹⁾ | Max. weight [kg] | Heat treatment condition ²⁾ |
|-------------------------------------|------------------------------|------------------|--|
| CuSn10-C acc. to EN 1982 | SC | 2 000 | AC |
| G-CuSn12 acc. to DIN 1705 | SC | 2 000 | AC |
| G-CuSn10Zn acc. to DIN 1705 | SC | 2 000 | AC |
| G-CuSn7ZnPb acc. to DIN 1705 | SC | 2 000 | AC |
| CuSn7ZnPb-C acc. to EN 1982 | SC | 2 000 | AC |
| CuSn7Zn4Pb7-C acc. to EN 1982 | SC | 2 000 | AC |
| CuAl10Fe5Ni5-C acc. to EN 1982 | SC | 2 000 | AC |
| G-CuAl10Ni acc. to DIN 1714 | SC | 2 000 | AC |
| CuAl9Ni7 acc. To WL 2.0967 | SC | 2 000 | AC |
| CuAl10Ni5Fe-C acc. to EN 1982 (Cu3) | SC | 2 000 | AC |

Remarks:

- 1) SC: Sand Casting
- 2) AC: As cast
- 3) Including equivalent grades to other standards

Additional approval conditions:

Repair welding is in general permitted according to approved procedure

- WPS No. RV001 dd. 2008-09-03 (WF 0810328 HH)

as well as according to other welding procedures approved by DNV. The requirements for repair welding as stated in DNV-RU-SHIP Pt.2 Ch.2 Section 11 shall be complied with.