



APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00000GV
Revision No:
3

This is to certify:

That

A.W. Schumacher GmbH
Heilenbecker Straße 223,
58256 Ennepetal,
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	Phosphor bronze, Gunmetal, Leaded gunmetal, Leaded bronze, Al-bronze, Sn-bronze, Pb-Sn Bronze
Manufacturing method	Sand casting
Max. weight	See page 2
Max. wall thickness	See page 2
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 **2025-06-10**

This Certificate is valid until **2028-04-30**.

DNV local unit: **Essen**

Approval Engineer: **Andreas Koch**



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

Alloy type / grade	Casting method ¹⁾	Max. weight [kg]	Max. wall thickness [mm]	Heat treatment condition ²⁾
Phosphor bronze	SC, IC	1 000	40	AC
Gunmetal	SC, IC	1 000	40	AC
Leaded gunmetal	SC, IC	1 000	40	AC
Leaded bronze	SC, IC	1 000	40	AC
Al-bronze	SC, IC	1 000	40	AC
Sn-bronze	SC, IC	1 000	40	AC
Pb-Sn Bronze	SC, IC	1 000	40	AC

Remarks:

- ¹⁾ SC: Sand Casting
 IC: Investment casting
²⁾ AC: As cast

Additional approval conditions

Including the cast copper alloy grades:

- CuSn5Zn5Pb2 acc. to DIN EN 1982
- CuAl10Fe5Ni5 acc. to DIN EN 1982
- CuSn10 acc. to DIN EN 1982