

APPROVAL OF MANUFACTURER CERTIFICATE

This is to certify:

That

**Emil Müller GmbH Metallwerk
An der Autobahn 1, 51580 Reichshof-Hespert, Germany**

is an approved manufacturer of
Wrought Copper and Copper Alloys

in accordance with
DNV GL rules for classification – Ships

and the following particulars:

Products	Pipes
Alloy type(s)	Copper, Copper-nickel 90-10, Copper-nickel 70-30, Aluminium brass, Admiralty Brass
Process	Seamless
Dimensions	Outer diameter max. 70 mm, wall thickness max. 7,0 mm
Remarks	Including eddy current testing in place of hydraulic testing See particulars of the approval

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 GL classed object shall fulfill the material requirements in the applicable DNV GL class rules.

Issued at **Hamburg** on **2016-08-24**

for **DNV GL**

This Certificate is valid until **2019-08-31**.

DNV GL local station: **Essen**

Approval Engineer: **Christian Wildhagen**

**Thorsten Lohmann
Head of Section**

Job Id: **263.11-003301-2**
Certificate No: **AMMM00000WS**

Particulars of the approval

Cast copper alloys:

Alloy type	Grade	Supply condition	Wall thickness [mm], max.	Diameter [mm], max.
Copper	Cu-DHP acc. to EN 12449 / 12451	Acc. to standard	7	70
Copper-nickel 90-10	CuNi10Fe1Mn acc. to EN 12449 / 12451	Acc. to standard	7	70
Copper-nickel 70-10	CuNi30Mn1Fe acc. to EN 12449 / 12451	Acc. to standard	7	70
Aluminium Brass	CuZn20Al2As acc. to EN 12449 / 12451	Acc. to standard	7	70
Admiralty Brass	CuZn28Sn1As acc. to EN 12449 / 12451	Acc. to standard	7	70