

APPROVAL OF MANUFACTURER CERTIFICATE

This is to certify:**That****Gienanth GmbH
Ramsener Straße 1, 67304 Eisenberg, Germany**is an approved manufacturer of
Iron Castingsin accordance with
DNV GL rules for classification – Ships

and the following particulars:

Iron type(s)	Grey cast iron, Nodular cast iron
Max. weight	6 000 kg
Remarks	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 **2017-04-12**This Certificate is valid until **2020-03-31**.
DNV GL local station: **Augsburg**Approval Engineer: **Christian Wildhagen**for **DNV GL**

**Thorsten Lohmann
Head of Section**

Particulars of the approval

Cast iron

Iron type	Grade	Casting method ¹⁾	Max. weight [kg]	Max. section / wall thickness [mm]	Heat treatment condition ²⁾
Grey	EN-GJL-200 acc EN 1561	SC	6 000	80	-
	EN-GJL-250 acc EN 1561				
	EN-GJL-300 acc EN 1561				
Nodular	VL NCI 400	SC	6 000	80	-
	VL NCI 500				
	VL NCI 600				
	EN-GJS-400-15 acc. to EN 1563 ³⁾				
	EN-GJS-450-10 acc. to EN 1563 ³⁾				
	EN-GJS-500-7 acc. to EN 1563 ³⁾				
	EN-GJS-600-3 acc. to EN 1563 ³⁾				

Remarks:

- 1) SC: Sand Casting
IC: Investment Casting
- 2) F: Ferritizing
SR: Stress relieving
- 3) Certification of any material applied to classed object shall fulfill the applicable material requirements in the DNV GL class rules

Special conditions:

Subject to case-by-case approval, production welding permitted according following approved WPS:

- WF 1410060 HH Page 01 WPS GJS-500-7 dd. 2014-03-04
- WF 1410060 HH Page 02 WPS GJL300 dd. 2014-03-04

Prior to welding DNVGL is to be informed about type and location of welding.