

APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00001DZ
Revision No:
2

This is to certify:

That

Schmees cast Langenfeld GmbH
Rudolf-Diesel-Weg 6-8, 40764 Langenfeld,
Germany

is an approved manufacturer of
Steel Castings

in accordance with
DNV rules for classification – Ships

and the following particulars:

Application area	Castings for hull structures and equipment Casting for machinery Castings for boilers, pressure vessels and piping systems Ferritic steel castings for low temperature service Stainless steel castings
Steel type(s)	Carbon and carbon-manganese, Alloy, Austenitic stainless Austenitic-ferritic stainless Nickel superalloy
Casting method	See page 2 ff
Max. weight	1 200 kg
Max. wall thickness	100 mm
Delivery Condition	See page 2 ff
Additional approval conditions	See page 2 ff

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 **2022-07-06**

for **DNV**

This Certificate is valid until **2023-05-31**.

DNV local station: **Essen**

Approval Engineer: **Christian Wildhagen**

Thorsten Lohmann
Head of Section

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 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	NV C400UW, NV C440UW, NV C480UW, NV C520UW, NV C560UW, NV C600UW	SC, IC	1 200	100	N, NT
Alloy	NV C550AW, NV C620AW	SC, IC	1 200	100	N, 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	NV C400U, NV C440U, NV C480U, NV C520U, NV C560U, NV C600U	SC, IC	1 200	100	N, NT, QT
Alloy	NV C550A, NV C600A, NV C690A	SC, IC	1 200	100	N, 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	NV C450H, NV C490H	SC, IC	1 200	100	N, NT
Alloy	NV C0.5Mo, NV C1Cr0.5Mo, NV C2.25Cr1Mo	SC, IC	1 200	100	QT

Ferritic steel castings for low temperature service

Steel type	Grade ³⁾	Casting method ¹⁾	Max. weight [kg]	Max. wall thickness [mm]	Heat treatment condition ²⁾
C and C-Mn	C450L, C490L	SC, IC	1 200	100	N, NT, QT
Alloy	NV C2.25Ni, NV C3.5Ni	SC, IC	1 200	100	N, NT, QT

Stainless steel castings

Steel type	Grade ³⁾	Casting method ¹⁾	Max. weight [kg]	Max. wall thickness [mm]	Heat treatment condition ²⁾
Austenitic	GX 2 CrNi 18 10 (304L), GX 5 CrNi 19 9 (304), GX 6 CrNiNb 19 10 (347), GX 2 CrNiMo 19 11 2 (316L), GX 5 CrNiMo 19 11 2 (316), GX 5 CrNiMo 19 11 3 (317)	SC, IC	1 200	100	SHT
Ferritic-austenitic	GX 2 CrNiMoN 22 5 3, GX 2 CrNiMoCuN 25 6 3 3, GX 2 CrNiMoN 26 7 4	SC, IC	1 200	100	SHT

Steel castings acc. other standards

Steel type	Grade	Casting method ¹⁾	Max. weight [kg]	Max. wall thickness [mm]	Heat treatment condition ²⁾
C and C-Mn	Acc. EN 10293	SC, IC	1 200	100	N, NT
	Acc. EN 10213	SC, IC	1 200	100	N, NT
Alloy	Acc. EN 10213	SC, IC	1 200	100	N, QT
	Acc. SEW 520	SC, IC	1 200	100	N, QT
Austenitic	Acc. EN 10283	SC, IC	1 200	100	SHT
	Acc. EN 10213	SC, IC	1 200	100	SHT
Austenitic-ferritic	Acc. EN 10283	SC, IC	1 200	100	SHT
	Acc. EN 10213	SC, IC	1 200	100	SHT
Nickel	2.4856 acc. customer specification ⁴⁾	SC, IC	1 200	100	Acc. specification

Remarks:

- 1) SC: Sand Casting
IC: Ceramic Mould Casting
- 2) N: Normalised
NT: Normalised and tempered
QT: Quenched and tempered
SHT: Solution Heat Treated (solution annealing)
- 3) Possible application and certification of any material to classed object is subject to case by case approval

Special conditions:

Production/repair welding permitted according following approved WPS:

WF 1410145 HH Page 01 WPS No. 7.624 artgleich 2, VP:02/2011 dd. 2011-12-15

WF 1410145 HH Page 02 WPS No. 7.624 artfremd 3, VP:05/2011 dd. 2011-12-15

as well as according the welding procedures approved with our letter ref. no. 074886-14 dd. 2014-08-21.

The requirements acc. DNV Rules for Ships, Part 2, Chapter 2, Section 8, 1.13 are to be observed; major repairs require case by case approval of DNV.