

DNV GL SE • P.O. Box 11 16 06 • 20416 Hamburg • Germany

VULKAN Technologies Pvt. Ltd.
Attn. Mr. C. M. Kulkarni
S. No. 539- B Village - Kasar Amboli Pirangut Ind. Area
Taluka Mulshi, District Pune
Maharashtra 411 042
India

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Your reference	Your Letter of	Our reference	Extension	Date
		024968-I-15/CWdg	+49 40 3 61 49-5924	2015-04-23

Approval of your works for the manufacture of aluminium casting (prolongation)

Dear Mr. C. M. Kulkarni,

Thank you for your company's commitment to manufacture products with GL certification.

We refer to our Surveyor's report on the inspection of your works performed on 2015-02-20 and to his confirmation that the results of continuous delivery tests witnessed by him are in full compliance with our Rules for Materials.

Therefore the preconditions for prolongation of approval of your works granted by our letter ref. no. 007481-12 dated 2012-01-26 are complied with.

The material grades, supply conditions and dimensions / weights covered by the approval are indicated in the approval annex.

The manufacturing details covered by the approval are as follows:

1. Products

Aluminium casting alloys which are intended for the fabrication of ships' hulls and also machine construction parts and other shipbuilding components.

2. Manufacturing process

Sand Casting Process

Pattern making, pattern inspection, mould / core making, mould assembly, melting and holding by induction furnaces, vacuum treatment by mobile degassing unit, cast pouring (sand casting), cooling, cleaning and finishing such as shake out and surface cleaning, 1st inspection, cutting, heat treatment, 2nd inspection, shot blasting, machining by milling machines, lathes and / or axis machining centres, polishing, non-destructive testing (NDT) such as dye penetrant inspection (PT) and / or visual inspection (VT)

Permanent Mould Casting Process

Melting and holding by induction furnaces, vacuum treatment by mobile degassing unit, cast pouring (gravity die casting), cooling, cleaning and finishing such as shake out and surface cleaning, 1st inspection, cutting, heat treatment, 2nd inspection, shot blasting, machining by milling machines, lathes and / or axis machining centres, polishing, non-destructive testing (NDT) such as dye penetrant inspection (PT) and / or visual inspection (VT)



3. Fabrication welding

Not permitted

Our approval is granted under provision that all castings intended to be used for the construction of ships classed with our Society will comply with our Rules in all respects and will be tested in the presence of our Surveyor.

The quality of your company's manufactured products, within the valid approved scope, contributes to the safety and reputation of GL classed ships.

Your company has been added to the list of approved manufacturers, which is regularly published on the Internet. In order to view the appropriate data start the DNV GL website <http://www.dnvgl.com>, choose

"Maritime", "Exchange & Tools", menu "GL Tools", select "Approval Finder", and then "Manufacturers of Materials".

Enclosed please find our certificate of approval no. **WZ 2442 HH 1**, valid until 2018-01-31, as well as the corresponding annex.

We thank you for your cooperation and wish your company every success.

Yours faithfully,

for DNV GL SE


Stefan Röhr


Christian Wildhagen

Approval of Material Manufacturers *Zulassung von Werkstoffherstellern*

This is to certify that the works of
Hiermit wird bescheinigt, dass die Firma

**VULKAN TECHNOLOGIES PVT. LTD.
DISTRICT PUNE, MAHARASHTRA
INDIA**

has been subjected to an approval test in accordance with GL Rules with satisfactory results and is approved for the manufacture of the following products:

einer Zulassungsprüfung nach den Vorschriften des GL unterzogen wurde und für die Herstellung folgender Erzeugnisse zugelassen ist:

**Aluminium Casting Alloys
in accordance with the GL- Rules for Metallic Materials,
Chapter 3, Section 1, B.**

This approval is granted provided that all products intended to be used for the construction of ships or installations classed with DNV GL comply in every respect with GL Rules and Requirements.

Die Zulassung erfolgt unter der Voraussetzung, dass alle Erzeugnisse, die zum Bau von Schiffen und Anlagen mit Klasse der DNV GL SE bestimmt sind, die Vorschriften des GL in jeder Hinsicht erfüllen.

Certificate of approval No.
Zulassungsbescheinigung Nr.

WZ 2442 HH 1

This Certificate is valid until:
Diese Bescheinigung ist gültig bis:

2018-01-31

Part of the approval is our letter of approval ref. no. 024968-I-15 of 2015-04-23.
Bestandteil der Zulassung ist das Zulassungsansprechen, Tgb.-Nr. 024968-I-15 vom 2015-04-23.

Hamburg, 2015-04-23

DNV GL SE


Stefan Röhr


Christian Wildhagen

Ref. no.: 024968-I-15

Manufacturer: VULKAN Technologies Pvt. Ltd.

List 6: Aluminium and Copper Alloys

Grade	Key	Supply Condition (1)	max. Thickness, mm	max. Weight	Casting Method (2)	Remarks
EN AC-42000 acc. to EN 1706	G-AL	AC, T6	100	20 kg	sand cast	
EN AC-42000 acc. to EN 1706	G-AL	AC, T6, T64	100	20 kg	chill cast	
EN AC-42100 acc. to EN 1706	G-AL	T6	100	20 kg	sand cast	
EN AC-42100 acc. to EN 1706	G-AL	T6, T64	100	20 kg	chill cast	
EN AC-42200 acc. to EN 1706	G-AL	T6	100	20 kg	sand cast	
EN AC-42200 acc. to EN 1706	G-AL	T6, T64	100	20 kg	chill cast	
EN AC-43000 acc. to EN 1706	G-AL	AC, T6	100	60 kg	sand cast	
EN AC-43000 acc. to EN 1706	G-AL	AC, T6, T64	100	60 kg	chill cast	
EN AC-43100 acc. to EN 1706	G-AL	AC, T6	100	60 kg	sand cast	
EN AC-43100 acc. to EN 1706	G-AL	AC, T6, T64	100	60 kg	chill cast	
EN AC-43200 acc. to EN 1706	G-AL	AC, T6	100	60 kg	chill cast	
EN AC-43200 acc. to EN 1706	G-AL	AC, T6	100	60 kg	sand cast	
EN AC-43300 acc. to EN 1706	G-AL	T6	100	60 kg	sand cast	
EN AC-43300 acc. to EN 1706	G-AL	T6, T64	100	60 kg	chill cast	
EN AC-44000 acc. to EN 1706	G-AL	AC	50	30 kg	chill cast	
EN AC-44000 acc. to EN 1706	G-AL	AC	50	30 kg	sand cast	
EN AC-44100 acc. to EN 1706	G-AL	AC	50	30 kg	chill cast	
EN AC-44100 acc. to EN 1706	G-AL	AC	50	30 kg	sand cast	
EN AC-44200 acc. to EN 1706	G-AL	AC	50	30 kg	sand cast	
EN AC-44200 acc. to EN 1706	G-AL	AC	50	30 kg	chill cast	
EN AC-44400 acc. to EN 1706	G-AL	AC	50	30 kg	chill cast	
EN AC-44400 acc. to EN 1706	G-AL	AC	50	30 kg	sand cast	

Key: -AL Aluminium BD Strip BL Plates -CU Copper, Copper Alloys FF Hammer Forgings G Castings
 GE Die Forgings HZ Prematerial PR Sections RO Pipes

(1):

AC, AF, AR = as cast, as forged, as rolled
 CR = controlled rolled
 F = ferritized
 HF = hot formed
 N = normalized

N+T = normalized + tempered
 Q+T = quenched + tempered
 SH = surface hardened
 S+Q = solution annealed + quenched
 TM = thermomechanically rolled

(2):

CC = continuous casting
 IC = ingot casting