



APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00002AS
Revision No:
2

This is to certify:

That

Metalcam S.p.A.

**Via Leonardo da Vinci 3, 25043 Breno BS,
Italy**

is an approved manufacturer of
Steelmaking

in accordance with

DNV-OS-E302 – Offshore mooring chain, Edition July 2022

DNV class programme – DNV-CP-0237 Offshore mooring chain and accessories

and the following particulars:

Application area	Offshore mooring chain
Product	Ingots for chain cable accessories
Grade	R3S, R4
Steelmaking	Electric arc furnace, Vacuum degassing, Ingot casting
Deoxidation	Killed
Fine grain elements	Al
Heat treatment condition	See page 2
Max. thickness/diam.	See page 2
Remarks	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 **2025-03-06**

This Certificate is valid until **2027-12-31**.

DNV local unit: **Italy/Malta CMC**

Approval Engineer: **Dechun Lou**



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

Ingots for chain cable accessories as per OS-E302 and CP-0237			
Grade ¹⁾	Steelmaking ²⁾	Fine grain elements	Heat treatment condition ³⁾
R3S, R4	EAF, VD, IC	Al	AC

Remarks:

- ¹⁾ Specification for chemical composition according to table S1
- ²⁾ EAF: Electric Arc Furnace; VD: Vacuum Degassing; IC: Ingot Casting.
- ³⁾ AC: As Cast

Table S1 - Specification for chemical composition - Ingots for chain cables												
Grade		C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Al	N
R3S, R4	Min	.05	.30	-	-	-	2.00	-	.87	-	.020	-
	Max	.15	.60	.50	.015	.006	2.50	.50	1.13	.20	.045	.010

Remarks:

The content of Sn, Sb, As and B may be required. In such cases, the maximum content shall be 0.010 % for Sn, 0.005 % for Sb, 0.015% As and 0.0005% for B.