



APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00002AS
Revision No:
1

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 2018 (Amended August 2021)

and the following particulars:

Product	Ingots for chain cables
Grade	R3S
Steelmaking	Electric arc furnace, Vacuum degassing, Ingot casting
Deoxidation	Killed
Fine grain elements	Al
Remarks	See particulars of the approval

Manufacturer approved by this certificate is 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 **Høvik** on **2021-12-20**

for **DNV**

This Certificate is valid until **2024-12-31**.

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

Approval Engineer: **Dechun Lou**

Sondre Løken
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

Table S1 - Specification for chemical composition - Ingots for chain cables												
Grade		C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Al	N
R3S	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.