



Marine & Offshore

Certificate number: 14545/D0 BV

File number: MAT 11240

Product code: 9019I

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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APPROVAL CERTIFICATE for MATERIALS

This certificate is issued to

SeAH Besteel Corporation
Jeollabuk-do - KOREA (REPUBLIC OF)

for the type of product

ROUND BARS FOR OFFSHORE MOORING CHAIN CABLE

Round bar in steel grade QR3, QR3S and QR4.

Requirements:

Bureau Veritas Rules on Materials and Welding for the Classification of Marine Units

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 19 Feb 2026

For Bureau Veritas Marine & Offshore,

At BV PUSAN, on 19 Feb 2021,

Chang-Uk HONG



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

Round bars for the manufacture of offshore anchor chain cables.

Steel grade	Deoxydation practice & refining	Delivery conditions
QR3	Killed and fine grain treated with Al	As Rolled (AR) up to 190mm
QR3S	Killed and fine grain treated with Al	As Rolled (AR) up to 190mm
QR4	Killed and fine grain treated with Al	As Rolled (AR) up to 190mm

Steelmaking by Electric Arc Furnace (EAF), Ladle furnace (LF) and vacuum degassing by VD or RH. Continuous casting.

2. DOCUMENTS AND DRAWINGS :

2.1-Chemical composition specification on ladle for round bar grade QR3:

Element (wt.%)	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Al	V	Nb
Min.	-	0.15	1.00	-	-	-	-	-	-	0.020	-	-
Max.	0.33	0.35	1.90	0.035	0.035	0.40	0.25	0.08	0.35	0.065	0.10	0.050

2.2-Chemical composition specification on ladle for round bar grade QR3S

Element (wt.%)	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Al	Sn	B	Sb/As
Min.	0.20	0.15	1.40	-	-	0.40	0.50	0.20	-	-	-	-	-
Max.	0.26	0.35	1.60	0.030	0.030	0.60	0.70	0.30	0.30	0.050	0.04	0.0008	0.01

2.3-Chemical composition specification on ladle for round bar grade QR4

Element (wt.%)	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Al	Sn	B	Sb/As
Min.	0.20	0.15	1.40	-	-	0.50	0.90	0.20	-	-	-	-	-
Max.	0.26	0.35	1.60	0.030	0.030	0.70	1.10	-	0.30	0.050	0.04	0.0008	0.01

2.4-Documents issued by SeAH Besteel Corporation:

- "Material testing related inquiries N° 0911-02" dated 12 November 2009.
- "Technical document" dated 20 January 2020.
- Procedures Ref.SB-QM-1116-2; Ref.SB-QM-1116-3.

3. TEST REPORTS :

3.1-Documents issued by SeAH Besteel Corporation:

- "Approval Test Report - Rolled steel bars for anchor chain cables of grade Q3 & Q2" dated 18 June 2004.
- "Report of type approval test" dated 17 December 2009.
- "Report of works approval tests" submitted on 12 May 2020: MT reports dated 02/04/2020.

4. APPLICATION / LIMITATION :

As per Bureau Veritas Rules for Classification. Offshore round bars used for the manufacture of offshore mooring chain cables by Dai Han Anchor Chain Mfg. – Korea and Vicinay - Sestao.

5. PRODUCTION SURVEY REQUIREMENTS :

5.1 - The round bars are to be supplied by SeAH besteel Corporation in compliance with the type and the requirements described in this certificate.

5.2 - This type of product is within the category IBV of Bureau Veritas Rule Note NR320.

5.3 - BV product certificate is required.

6. MARKING OF PRODUCT :

As per Bureau Veritas Rules for Classification.

7. OTHERS :

This certificate replaces approvals from No.14545/A0 BV to No.14545/C0 BV.

***** END OF CERTIFICATE *****