



Marine & Offshore

Certificate number: 21334/B1 BV

File number: MAT 5302-2013

Product code: 6440I

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

Jiangsu Asian Star Anchor Chain Co., Ltd.

Jingjiang (Jiangsu Province) - CHINA

for the type of product

OFFSHORE MOORING CHAIN CABLE

Offshore mooring stud link, end link and studless chain cables in steel grades QR3, QR3S, QR4 and QR4S

Requirements:

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

Bureau Veritas Rules for the Classification of Offshore 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: 10 Dec 2023

For Bureau Veritas Marine & Offshore,

At BV SHANGHAI, on 22 Jan 2022,

Jennifer Zhang



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 :

Offshore mooring equipment: Common Stud and Studless links, End links.

Steel grade	Chain type	Nominal diameter	Delivery condition	Round bar supplier
QR3	Stud link and studless	max. 157mm	Quenched and Tempered (QT)	Jiangyin Xingcheng Special Steel Co., Ltd. (bars with max. diameter 180mm)
	End link	max. 132mm		
	Studless link	max. 220mm	Double Quenched and Tempered (QQT)	Jiangyin Xingcheng Special Steel Co., Ltd. (bars with max. diameter 225mm)
	End link	max. 184mm		
QR3	Stud link and studless	max. 157mm	Quenched and Tempered (QT)	Jiangyin Xingcheng Special Steel Co., Ltd. (bars with max. diameter 160mm)
	End link	max. 132mm		
	Studless link	max. 220mm	Double Quenched and Tempered (QQT)	Jiangyin Xingcheng Special Steel Co., Ltd. (bars with max. diameter 225mm)
	End link	max. 184mm		
QR4	Stud link	max. 124mm	Quenched and Tempered (QT)	Jiangyin Xingcheng Special Steel Co., Ltd. (bars with max. diameter 127mm)
	Studless link	max. 147mm		
	Studless link	max. 220mm	Double Quenched and Tempered (QQT)	Jiangyin Xingcheng Special Steel Co., Ltd. (bars with max. diameter 150mm)
	End link	max. 184mm		
QR4S	Studless link	max. 200mm	Double Quenched and Tempered (QQT)	Jiangyin Xingcheng Special Steel Co., Ltd. (bars with max. diameter 225mm)
	End link	max. 184mm		

Chain cables manufactured by flash butt welding.

2. DOCUMENTS AND DRAWINGS :

2.1 - Chemical composition (wt%) specification on ladle of steel grades QR3, QR3S and QR4 - Round bar from Jiangyin Xingcheng Special Steel Co., Ltd:

Grade	Nominal D (mm)	C	Si	Mn	P	S	Cr	Mo	Ni	Nb	Cu	Alt
QR3 (2)	132 ; 157	0.27 0.33	0.15 0.35	1.40 1.90	max 0.025	max 0.025	max 0.25 ₍₁₎	max 0.2	max 0.30	max 0.05	max 0.20	0.020 0.050
	184 ; 220	0.27 0.33	0.15 0.35	1.40 1.90	max 0.025	max 0.020	max 0.60	max 0.2	max 0.30		max 0.20	0.020 0.050
QR3S (2)	132 ; 157	0.20 0.31	0.15 0.30	1.20 1.60	max 0.025	max 0.025	0.40 0.70	0.20 0.50	0.10 0.20	0.02 0.06	max 0.20	0.020 0.050
	184 ; 220	0.20 0.25	0.15 0.30	1.20 1.60	max 0.025	max 0.020	0.70 1.30	0.20 0.50	0.10 0.70	0.01 0.05	max 0.20	0.020 0.050
QR4 (2)	124 ; 147	0.22 0.26	0.15 0.30	1.20 1.60	max 0.025	max 0.025	0.80 1.30	0.40 0.60	0.70 1.00	0.02 0.06	max 0.20	0.020 0.050
	220 ; 184	0.22 0.26	0.15 0.30	1.20 1.60	max 0.025	max 0.020	0.80 1.30	0.40 0.60	0.70 1.00	0.02 0.06	max 0.20	0.020 0.050
QR4S	184 ; 200	0.20	0.15	1.00	max	max	0.90	0.30	0.70	0.02	max	0.020

(2)		0.25	0.30	1.80	0.025	0.020	1.90	0.65	1.20	0.06	0.20	0.050
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(1) For round bars having diameter above 130mm the specified maximum Cr content is 0.6%.

(2) Others elements are not to exceed the following per cent/ppm limits: Sn max.=0.030%; Sb max.= 0.015%; As max.= 0.030%; N max.=90ppm; H max.= 2.0ppm; O max.=25ppm.

- "Jiangying Xingcheng Special Steel Works Co., Ltd. Standard" document No. QB/XCT002-2008-04 dated 02/12/2008.
- "Specification for R3, R3S, R4 mooring chain steel" document No. ASAC-SP-CS-130716S01-V0 dated 16/07/2013.

2.2 - As per documents issued by Jiangsu Asian Star Anchor Chain Co., Ltd. (AsAc):

- As per Drawings Revision No.0 named "diameter 157 R3 studless link mooring chain", "diameter 157 R3S studless link mooring chain" dated 25/06/2013, "diameter 157 R3 stud link mooring chain" dated 26/07/2013, "diameter 147 R4 studless link mooring chain", "diameter 132 R3 End link", "diameter 132 R3S End link" dated 01/07/2013, and, Revision No.1 named "diameter 157 R3S stud link mooring chain", "diameter 124 R4 stud link mooring chain" dated 26/07/2013.
- "Manufacture summary of offshore mooring chain cables (QR3, QR3S & QR4 stud/studless link)" - Document No. ASAC-MS-BV-120401S01-MC-V0 dated 01/04/2012.
- "Work Instruction for surface treatment" document No. YX/WJ03-54 dated 20/02/2012.
- "Equipment description" document No. ASAC-MS-BV-130205S01-157MC-V0 dated 05/02/2013.
- "MT procedure" document No. ASAC-PD-BV-130205S04-157MC-V0 and "UT procedure" - Document No. ASAC-PD-BV-130201S05-157MC-V0 dated 05/02/2013.
- "ASAC's chain making technology list" references No. 157R3-1206-05003, No. 157R3S-1206-05002, No.124R4-1207-0501, No.147R4-1206-07001, No. 132ER3-1206-05001 and No. 132ER3S-1206-05002.
- "AsAc's heat treatment technology list for anchor chain" references No. 157R3-120809, No. 157R3-120715, No. 132R3-120810, No. 132R3S-120811, No. 157R3S-120717, No. 157R3S-120716, No. 147R4-120718 and No. 124R4-120812.
- "MT procedure" document No. YX/WJ04-23 A.3 and "UT procedure" - Document No. YX/WJ04-24 A.3 dated 12/08/2016.
- "Technical documentation for B1 approval extend" dated January 2022.

3. TEST REPORTS :

As per documents issued by Jiangsu Asian Star Anchor Chain Co., Ltd. (AsAc):

- "Approval test report of mooring chain - Grade R3 & R3S - Diameter 157mm" dated 22/08/2012,
- "Approval test report of mooring chain - Grade R3: Stud link diameter 157mm & End link diameter 132mm; Grade R3S: End link diameter 132mm; Grade R4: Stud link diameter 124mm & Studless link diameter 147mm" dated 24/09/2012,
- As per Testing and Verifying reports, No. C120606-0344-1, No. C120606-0344-2 dated 05/09/2012, No. C120606-0402-1 dated 11/10/2012, No. C120606-0531 dated 12/12/2012, No. C120606-0402-2 dated 11/10/2012, No. C120606-0402-4 dated 24/09/2012, No. C120606-0402-3 dated 11/10/2012, No. C120606-0344-3 dated 15/10/2012, No. C120606-0402-4 dated 11/10/2012, No. C120606-0531 dated 15/11/2012, No. C120606-0402-3 dated 11/10/2012.
- Approval test reports of mooring chain for B1 extent: No.E21806418XX_220R3_184R3, E22004263XA_220R3S_184R3S, E11704802XX_220R4_184R4, E21900524TX_200R4S_184R4S dated 18/12/2020.

4. APPLICATION / LIMITATION :

As per Bureau Veritas Rules for Classification.

Round bars used for chain cables are to be manufactured by Jiangyin Xingcheng Special Steel Co., Ltd. Round bars used for chain cables are to be supplied with Bureau Veritas product certificates.

5. PRODUCTION SURVEY REQUIREMENTS :

- 5.1 - The offshore mooring chain cables are to be supplied by Jiangsu Asian Star Anchor Chain Co., Ltd. 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 N° 21334/A0 BV to N° 21334/B0 BV.

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