



Marine & Offshore

Certificate number: 10512/D0 BV

File number: MAT 2451/01

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*

**COMPANHIA BRASILEIRA DE AMARRAS - 'BRASILAMARRAS'**

Niteroi - RJ - BRAZIL

*for the type of product*

### OFFSHORE MOORING CHAIN CABLE

Studless links made in steel grade QR4, QR4S  
Enlarged and End links made in steel grades QR3S, QR4, 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: 22 Apr 2026**

**For Bureau Veritas Marine & Offshore,**

At BV RIO DE JANEIRO, on 22 Apr 2021,

Lando Ribeiro



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](http://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 :**

| <b>Chain Cable Grade</b> | <b>Diameter Range</b> | <b>Round Bars Specification for chemical analysis on ladle</b> | <b>Round Bars suppliers</b>                                   |
|--------------------------|-----------------------|--|---|
| Enlarged link-QR3S       | up to 132mm           | EC-Gr.3a Rev.16 dated 25/01/2018                               | Gerdau S.A. – Pindamonhangaba Plant (diameter up to 135mm)    |
| End link-QR3S            | up to 144mm           | EC-Gr.3a Rev.16 dated 25/01/2018                               | Gerdau S.A. – Pindamonhangaba Plant (diameter up to 146,05mm) |
| Studless link-QR4        | up to 120mm           | EC-Gr.4a Rev.14 dated 16/01/2018                               | Gerdau S.A. – Pindamonhangaba Plant (diameter up to 123mm)    |
| Enlarged link-QR4        | up to 132mm           | EC-Gr.4a Rev.14 dated 16/01/2018                               | Gerdau S.A. – Pindamonhangaba Plant (diameter up to 135mm)    |
| End link-QR4             | up to 144mm           | EC-Gr.4a Rev.14 dated 16/01/2018                               | Gerdau S.A. – Pindamonhangaba Plant (diameter up to 146,05mm) |
| Studless link-QR4S       | up to 120mm           | EC-R4S Rev.03 dated 03/07/2020                                 | Gerdau S.A. – Pindamonhangaba Plant (diameter up to 123mm)    |
| Enlarged link-QR4S       | up to 132mm           | EC-R4S Rev.03 dated 03/07/2020                                 | Gerdau S.A. – Pindamonhangaba Plant (diameter up to 135mm)    |
| End link-QR4S            | up to 144mm           | EC-R4S Rev.03 dated 03/07/2020                                 | Gerdau S.A. – Pindamonhangaba Plant (diameter up to 146,05mm) |

Links are manufactured by hot bending of round bars, flash butt-welding, trimming, stud inserting (except for studless link) and heat treated by austenitizing followed by water quenching and tempering followed by water cooling.

### **2. DOCUMENTS AND DRAWINGS :**

- 2.1 – Documents issued by BRASILAMARRAS:  
 - "Procedures and data reports" submitted on June 2020.  
 - Ref.PAM-42 Rev.03 dated 10/07/2020; Ref.PAM-09 Rev.14 dated 10/07/2020.

### **3. TEST REPORTS :**

- 3.1 – Documents issued by BRASILAMARRAS:  
 - "Approval of enlarged and end links-RQ3S" dated December 2019.  
 - "Approval of enlarged and end links-RQ4" dated May 2019.  
 - "Approval of grade R4S for offshore mooring chains Rev.2" dated March 2020,"Procedures and data reports" submitted on June 2020.  
 - "Pre-production R4 to SBM" submitted on January 2021, CTOD tests dated 26 January 2021.

### **4. APPLICATION / LIMITATION :**

As per Bureau Veritas Rules for Classification. Round bars to be supplied with Bureau Veritas certificates by above mentioned approved manufacturers.

### **5. PRODUCTION SURVEY REQUIREMENTS :**

- 5.1 - The offshore mooring chain cables are to be supplied by Companhia Brasileira De Amarras (Brasilamarras) 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 approval from No.10512/A0 BV to No.10512/C0 BV.

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