



Marine & Offshore

Certificate number: 73895/A0 BV

File number: MAT 1391-2022

Product code: 9008I

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

INDUSTEEL BELGIUM SA - GROUPE ARCELORMITTAL
CHARLEROI - BELGIUM

for the type of product

SPECIAL ALLOY ROLLED PRODUCTS

Hot rolled plates made of steel grade CryEIso 201LN

Requirements:

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

IMO MSC.1/Circ.1622 "Guidelines for the acceptance of alternative metallic materials for cryogenic service in ships carrying liquefied gases in bulk and ships using gases or other low-flashpoint fuels"

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: 21 Dec 2027

For Bureau Veritas Marine & Offshore,

At BV ANTWERP, on 21 Dec 2022,

Nele Appels

This certificate was created electronically and is valid without signature



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 :

Hot rolled plates for cargo tanks, secondary barriers and process pressure vessels for design temperatures down to -165°C.

Steel grade	Dimension range	Delivery condition
CryElso 201 LN	Thickness up to 40mm	Solution annealing treatment at 1050°Cmin. followed by water or air quenching

Steelmaking by Electric Arc Furnace. Ladle treatment by Vacuum Oxygen Decarburization (VOD), Vacuum Degassing (VD), Thyssen Niederrhein (TN) , as applicable. Continuous casting.

2. DOCUMENTS AND DRAWINGS :

2.1-Documents issued by Industeel Belgium SA - Group Arcelor:

- Document NR 480 Section 2 – 201LN BV Marine dated December 2020.
- Procedure No. P1453A rev.3 dated 14 June 2022.
- Approval test program – 201LN Rev.2 dated 26/09/2022.
- Manufacturing procedure summary 201LN dated 17/10/2022.

2.2-Chemical composition (weight %) on ladle for steel grade 201LN CryElso:

C	Si	Mn	P	S	Cr	Ni	Cu
0.03 max.	0.75 max.	6.4 max. 7.5 max.	0.045 max.	0.015 max.	16.0 min. 17.0 max.	4.0 min. 5.0max.	1.0 max.
N	Ti	Mo					
0.15 min. 0.20 max.	0.1 max.	0.75 max.					

2.3-Mechanical properties for steel grade 201LN CryElso:

	Yield strength		Tensile strength (N/mm ²)	Elongation A5(%)	Charpy V-notch impact test Average absorbed energy (J) (Test temp.)
	Rp0,2 (N/mm ²)	Rp1,0 (N/mm ²)			
201LN	310 min.	370 min.	655 - 850	45min.	Trans. 35 J min. (at -196 °C)

3. TEST REPORTS :

3.1-Documents issued by Industeel Belgium SA - Group Arcelor:

- Document NR 480 Section 2 – 201LN BV Marine dated December 2020, tests Ref.348787 and Ref.348790 dated 16/12/2020. Ref.NT-CRMC-2019-053_12-04-2019. Final report for 201LN Rev.1 dated 26/09/2022.

3.2-Report Ref.CET0183144_PV_partiel_01-b dated 30/07/2020 issued by Cetim.

4. APPLICATION / LIMITATION :

4.1-As per Bureau Veritas Rules for Classification.

4.2-As far as Classification is concerned, the steel grade CryElso 201LN is approved as alternative metallic material according to IMO Guidelines MSC.1/Circ.1622 for applications involving the storage and handling of liquefied gases that refer to IGC Code and IGF Code, for design temperature down to -165°C.

4.3-Suitability of steel grade CryElso 201LN for use in storage and handling equipment to be used with gases subject to special requirements listed in column "i" of the table of the IGC Code, chapter 19 of IGC is not covered by this approval. In particular, approval for use for anhydrous ammonia and carbon dioxide applications is not covered by this certificate.

5. PRODUCTION SURVEY REQUIREMENTS :

5.1-The hot rolled plates are to be supplied by Industeel Belgium SA - Group Arcelormittal 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 No.12474/C0 BV.

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