



Marine & Offshore

Certificate number: 22703/C0 BV

File number: MAT 77914-2010

Product code: 9006I

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

www.veristar.com

APPROVAL CERTIFICATE for MATERIALS

This certificate is issued to

DONGKUK STEEL MILL CO., LTD. (DANGJIN PLANT)
DANGJIN (CHUNGNAM) - KOREA (REPUBLIC OF)

for the type of product

NORMAL STRENGTH HULL STEEL ROLLED PRODUCTS

Hot rolled plates in steel grades A, B, D and E, including Z grades

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: 04 Mar 2025

For Bureau Veritas Marine & Offshore,

At BV PUSAN, on 04 Mar 2020,

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 :

Hot rolled plates

Steel grade	Deoxydation practice & Refining	Delivery conditions
A - B	Al-Si Killed and fine grain treated with Al	As Rolled (AR) with maximum thickness 100mm* Normalising (N) with maximum thickness 100mm* Controlled Rolled (CR) with maximum thickness 50mm Thermomechanically Rolled (TMCP) with maximum thickness 83mm
D	Al-Si Killed and fine grain treated with Al	As Rolled (AR) with maximum thickness 35mm Normalising (N) with maximum thickness 100mm* Controlled Rolled (CR) with maximum thickness 50mm Thermomechanically Rolled (TMCP) with maximum thickness 83mm
E Z25/Z35	Al-Si Killed and fine grain treated with Al or Al+Ti or Al+Nb+Ti	Normalising (N) with maximum thickness 83mm Thermomechanically Rolled (TMCP) with maximum thickness 83mm

* including Z25/Z35 grades

No Steelmaking.

2. DOCUMENTS AND DRAWINGS :

As per following documents issued by Dongkuk Steel Mill Co., Ltd (Dangjin works):

- "General Information for approval of manufacturing process to steel plates",
- "Test Report (As Rolled)" dated December 2009,
- "Test report (Approval extension for NOr. D grade)" dated November 2012,
- "Test Report (Approval extension for As Rolled B grade)" dated August 2015,
- "General information for approval of manufacturing process to steel plates" submitted 27 June 2016,
- "DKS rolling parameters for certification" dated 16 June 2016.

3. TEST REPORTS :

As per following documents issued by Dongkuk Steel Mill Co., Ltd (Dangjin works):

- "Test Report (As Rolled)" dated December 2009,
- "Test Report (Normalizing)" dated September 2010,
- "Test Report (Controlled/Normalising Rolled)" dated February 2010,
- "Test Report (Thermo Mechanical Controlled Process)" dated June 2010,
- "Test report (Approval extension for NOr. D grade)" dated November 2012,
- "Test Report (Approval extension for As Rolled B grade)" dated August 2015,
- "Test report (initial approval for CSP slabs)" dated March 2017.

4. APPLICATION / LIMITATION :

As per Bureau Veritas Rules for Classification.

Semi-finished products such as slabs are to be supplied by CSP Companhia Siderurgica do Pecem or Bureau Veritas approved steelmakers.

5. PRODUCTION SURVEY REQUIREMENTS :

5.1 - The steel plates are to be supplied by Dongkuk Steel Mill Co., Ltd (Dangjin works) 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.

In addition to the material grade designation, products are to be marked with the symbol Z25-Z35, as appropriate.

7. OTHERS :

This certificate replaces approvals from No.22703/A0 BV to No.22703/B2 BV.

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



Marine & Offshore

Certificate number: 22704/C0 BV

File number: MAT 77914-2010

Product code: 90071

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

www.veristar.com

APPROVAL CERTIFICATE for MATERIALS

This certificate is issued to

DONGKUK STEEL MILL CO., LTD. (DANGJIN PLANT)
DANGJIN (CHUNGNAM) - KOREA (REPUBLIC OF)

for the type of product

HIGHER STRENGTH HULL STEEL ROLLED PRODUCTS

Hot rolled plates in steel grades AH32/36/40, DH32/36/40, EH32/36/40 and FH32/36 including Z grades.

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 is a renewal of certificate N° 22704/B1 BV expiring on 05/08/2019

This certificate will expire on: 05 Aug 2024

For Bureau Veritas Marine & Offshore,

At BV PUSAN, on 24 Jun 2019,

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 :

Hot rolled plates.

Steel grade	Delivery conditions	Deoxydation practice & Refining
AH32*	As Rolled (AR) with thickness up to 35mm	Al-Si Killed and fine grain treated with Al or Al+Ti or Al+V or Al+Nb+Ti
DH32*	As Rolled (AR) with thickness up to 25mm	
AH32-DH32*	Controlled Rolled (CR) with thickness up to 50mm	
AH32-DH32-EH32*	Normalising (N) with thickness up to 70 mm	
	Thermomechanically Rolled (TMCP) with thickness up to 83mm	
AH36*	As Rolled (AR) with thickness up to 35mm	Al-Si Killed and fine grain treated with Al or Al+Ti or Al+Nb+Ti
DH36*	As Rolled (AR) with thickness up to 25mm	
AH36-DH36*	Controlled Rolled (CR) with thickness up to 50mm	
AH36-DH36-EH36* AH40-DH40-EH40*	Thermomechanically Rolled (TMCP) with thickness up to 83mm	
AH36-DH36-EH36*	Normalising (N) with thickness up to 70 mm	Al-Si Killed and fine grain treated with Al or Al+Ti or Al+Nb+Ti or Al+Nb+Ti+V
FH32-FH36*	Thermomechanically Rolled (TMCP) with thickness up to 50 mm	Al-Si Killed and fine grain treated with Al or Al+Ti or Al+Nb+Ti

* Steel plates including Z25/Z35 properties.

No Steelmaking.

2. DOCUMENTS AND DRAWINGS :

As per following documentation issued by Dongkuk Steel Mill Co., Ltd (Dangjin works):

- "Test Report (As Rolled)" dated December 2009.
- "Test program (Approval extension of steel plates for hull structure)" dated 30 May 2011.
- "Test Report (Approval extension for FH36 grade)" dated June 2014.
- "General information for approval of manufacturing process to steel plates" submitted 27 June 2016.
- "DKS rolling parameters for certification" dated 16 June 2016.

3. TEST REPORTS :

As per following documentation issued by Dongkuk Steel Mill Co., Ltd (Dangjin works):

- "Test Report (As Rolled)" dated December 2009.
- "Test Report (Normalizing)" dated September 2010.
- "Test Report (Controlled/Normalising Rolled)" dated February 2010.
- "Test Report (Thermo Mechanical Controlled Process)" dated June 2010.
- "Test report (Approval extension for Nor. and TMCP)" dated November 2011.
- "Test Report (Approval extension for FH36 grade)" dated June 2014.
- "Test report (initial approval for CSP slabs)" dated March 2017.

4. APPLICATION / LIMITATION :

As per Bureau Veritas Rules for Classification.

Semi-finished products such as slabs are to be supplied by CSP Companhia Siderurgica do Pecem or Bureau Veritas approved steelmakers.

5. PRODUCTION SURVEY REQUIREMENTS :

- 5.1 - The steel plates are to be supplied by Dongkuk Steel Mill Co., Ltd (Dangjin works) 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.

In addition to the material grade designation, products are to be marked with the symbol Z25/Z35 as appropriate.

7. OTHERS :

This certificate replaces approval numbers from 22704/A0 BV to 22704/B1 BV.

*** END OF CERTIFICATE ***



