



Marine & Offshore

Certificate number: 18549/C0 BV

File number: MAT 1543-2006

Product code: 9007I

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

thyssenkrupp Steel Europe AG
Duisburg - GERMANY

for the type of product

HIGHER STRENGTH HULL STEEL ROLLED PRODUCTS

Hot rolled plates, strips and plates from strip in steel grades AH32/36, DH32/36 and EH32/36

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: 16 Nov 2023

For Bureau Veritas Marine & Offshore,

At BV HAMBURG, on 16 Nov 2018,

Jens Bauermeister



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 :

1.1 Hot rolled plates:

Steel grade	Deoxydation practice & Refining	Delivery conditions
AH32, DH32, EH32 AH36, DH36, EH36	Killed and fine grain treated with Al or Al+Nb	As Rolled (AR) with thickness up to 100mm
		Normalised (N) with thickness up to 100mm
		Normalizing Rolled (NR) with thickness up to 100mm
		Thermomechanical Rolling (TMCP) with thickness up to 31mm
		Thermomechanical Rolling + Intensive Cooling (TMCP+ICC) with thickness up to 70mm

1.2 Hot rolled strips and plates from strip:

Steel grade	Deoxydation practice & Refining	Delivery conditions
AH32 / DH32	Killed and fine grain treated with Al or Al+Nb	Normalised (N) with thickness up to 25mm
AH36 / DH36		Normalizing Rolled (NR) with thickness up to 25mm

Steelmaking by Basic Oxygen Converter. Continuous Casting or Ingot Casting.
Slabs supplied by Beeckerwerth, Bruckhausen and HKM steel works.

2. DOCUMENTS AND DRAWINGS :

As per documents issued Thyssenkrupp Steel Europe AG:

- "EH36 Thermomechanically rolled - Documentation of the test results", submitted November 2008.
- QSA report No 143 + 148 (TM).

3. TEST REPORTS :

As per documents issued Thyssenkrupp Steel Europe AG:

- "TKS - PCG Evidence of production competence - Normal and higher strength hull structural steel" dated April 2008.
- "EH36 Thermomechanically rolled - Documentation of the test results", submitted November 2008.

4. APPLICATION / LIMITATION :

As per Bureau Veritas Rules for Classification.

5. PRODUCTION SURVEY REQUIREMENTS :

5.1 - The steel products are to be supplied by Thyssenkrupp Steel Europe AG 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 number AR/D-02-10-245 dated 25 August 1992, AR/D-02-10-245/ind.a dated 16 July 1993, AR/D-02-01-1 dated 14 May 1996; 18549/A0 BV dated 24 November 2008 and 18549/B0 BV dated 11 November 2013.

*** END OF CERTIFICATE ***