

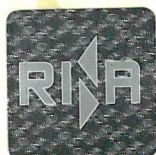


**CERTIFICATE OF APPROVAL OF MANUFACTURERS OF
MATERIALS**
No. FAB126419PU

This is to certify that the manufacture of the product identified below is in compliance with the applicable requirements of the RINA Rules for the Approval of Manufacturers of Materials.

<i>Description</i>	Normal strength and higher strength hull steel plates
<i>Type</i>	Grades A - B - D - E - AH32/36/40 - DH32/36/40 -; EH32/36/40-FH32/36
<i>Manufacturer</i>	DONGKUK STEEL MILL CO., LTD. - DANGJIN WORKS
<i>Place of manufacture</i>	25, GODAEGONGDAN 1(IL)-GIL, SONGAK-EUP 343-823 DANGJIN-SI, CHUNGNAM REPUBLIC OF KOREA
<i>Reference standards</i>	RINA Rules for the approval of manufacturers of materials

Issued in **BUSAN** on **September 23, 2019**. This Certificate is valid until **September 9, 2024**




RINA Services S.p.A.
Dong-Hun Lee

This certificate consists of this page and 1 enclosure



CERTIFICATE OF APPROVAL OF MANUFACTURERS OF MATERIALS

No. **FAB126419PU**

Enclosure - Page 1 of 1

Grades A - B - D - E - AH32/36/40 - DH32/36/40 -
EH32/36/40-FH32/36

APPROVAL CONDITIONS

Steel making process: slabs produced by approved manufacturers by basic oxygen converter

Casting process: Continuous casting

Deoxidation practice, condition of supply and thickness:

Steel grades	Deoxidation practice and fine grained elements	Condition of supply and max. thickness
A - B	Si+Al killed	AR - 50mm, CR - 50mm, TMCP - 83mm, N-100mm
D	Si+Al killed Al fine grained	AR - 35mm, CR - 50mm, TMCP - 83mm, N-100mm
E	Si+Al killed, Al+Nb/Ti fine grained	TMCP - 83mm, N - 83mm
AH32/36	Si+Al killed, Al+Nb/Ti or Al+V or Al+Nb+Ti+V fine grained	AR - 35mm, CR - 50mm TMCP - 83mm, N - 70mm
DH32/36	Si+Al killed, Al+Nb/Ti or Al+V or Al+Nb+Ti+V fine grained	AR - 25mm, CR - 50mm TMCP - 83mm, N - 83mm
EH32/36	Si+Al killed, Al+Nb/Ti or Al+V or Al+Nb+Ti+V fine grained	TMCP - 83mm, N - 70mm
AH40,DH40,EH40	Si+Al killed, Al+Nb/Ti or Al+Nb+Ti+V fine grained	TMCP - 83mm
FH32/36	Si+Al killed, Al+Nb+Ti fine grained	TMCP - 50mm

AR : As rolled

CR : Controlled rolling

TMCP : Thermo-Mechanical Rolling

N : Normalizing



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Through thickness properties : Z25,Z35

***)The approval generally covers thickness not less than 15mm**



Survey conditions:

The plates are to be in compliance in all respects with the relevant RINA rules and are to be tested accordingly.

General conditions for the approval

- The approval is granted on condition that the RINA Rules for the approval, manufacture, testing and certification of materials are complied with in all respects.
- RINA is to be notified of any change of materials, manufacturing process, quality control routines that may affect the validity of this certificate.



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BUSAN September 23, 2019