



APPROVAL CERTIFICATE FOR MANUFACTURING PROCESS

Certificate No. : SHI18909-SP001 **Initial Approval** : 4th January, 2006.
Product : Rolled Steels
Manufacturer : Baoshan Iron & Steel Co., Ltd. Core Base & Core Base Plate Line No.1
No.885, Fujin Road, Baoshan District, Shanghai, China

Product Description : Rolled Steel Plates for Hull Structure
- Grade : A(Z), B(Z), D(Z), E(Z),
AH 32(Z), DH 32(Z), EH 32(Z), FH 32(Z),
AH 36(Z), DH 36(Z), EH 36(Z), FH 36(Z),
AH 40(Z), DH 40(Z), EH 40(Z), FH 40(Z)
Boiler & Pressure Vessel Plates
- Grade : RSP42, RSP46, RSP46A, RSP49, RSP49A, RPV24, RPV32, RPV36
Semi-finished Products and Round Bars
- Grade : Carbon & Low Alloy Steels

* Supply condition : See "Appendix 1 & 2 "

Approval Condition : Individual Product Certification is required.

THIS IS TO CERTIFY that the manufacturing process for the above mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows and entered in the "List of Approved Manufacturer and Type Approved Equipment".

Pt. 2, Ch. 1, Sec. 3, Art. 301 of the Rules for Classification, Steel Ships.

This Certificate is valid until 3rd January, 2016.

Issued at Shanghai, China on 16th June, 2011.


KOREAN REGISTER OF SHIPPING

President of
CHINA KR Co., Ltd.

Note : 1 : The approval will be automatically suspended and the Certificate become invalid from the expiry date of the Certificate in the event that the extension has not been granted or the renewal of the Certificate is not underway.

2 : The manufacturer should notify this Society of any modification or changes that may affect the validity of this Certificate.

Appendix 1

Product Description and/or Approval Condition

Certificate No : SHI18909-SP001

Date of Issue : 16th June, 2011.

o Condition of Supply

- Steel making : Basic Oxygen Furnace(BOF)+Electric Arc Furnace(EAF)
- Casting process: Continuous casting(CC)& Ingot casting(IC)
- Deoxidation : Killed

<Rolled steel plates for hull structure>

Grade (1)	Grain refining elements	Max. Thickness (mm)	Condition of Supply (2)
A (Z), B (Z)	Al+Ti	50	AR
	Al	80	N
D (Z)	Al+Ti	35	AR
A (Z), B (Z) D (Z), E (Z)	Al+Ti	35	N
	Al+Nb, Al+Nb+Ti	80	N
		130	N (3)
AH32 (Z), AH36 (Z)	Al+Ti	30	CR
AH32 (Z), DH32 (Z)	Al+Ti	20	AR
		30	N
		40	CR
AH32 (Z), DH32 (Z)	Al+Nb+Ti	20	TMR
		80	TMCP, N
AH36 (Z), DH36 (Z)	Al+Ti	20	AR
		40	CR
		20	TMR
		80	TMCP, N
EH32 (Z), EH36 (Z)	Al+Nb+Ti	20	TMR
		80	TMCP, N
FH32 (Z), AH40 (Z), FH36 (Z), DH40 (Z), FH40 (Z) EH40 (Z)	Al+Nb+Ti	20	TMR
		68	TMCP
AH32 (Z), AH36 (Z) DH32 (Z), DH36 (Z) EH32 (Z), EH36 (Z)	Al+Nb+Ti+V	100	N (3)

* Remarks

(1) All with specified through thickness properties of Z25 and Z35.

(2) AR : As Rolled

CR : Controlled Rolling Condition

N : Normalized Condition

TMR : Thermo-Mechanical Rolling

TMCP(TM): Thermo-Mechanical Controlled Process

(3) Ingot Casting Process

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Appendix 2

Product Description and/or Approval Condition

Certificate No : SHI18909-SP001

Date of Issue : 16th June, 2011.

<Boiler & Pressure Vessel Plates>

Grade	Grain refining elements	Max. Thickness (mm)	Condition of Supply (1)
RSP42, RSP46, RSP46A, RPV24	Al+Ti	50	AR
	Al+Ti	35	N
	Al, Al+Ti+Nb	80	N
	Al+Ti+Nb	130	N (2)
RSP49, RSP49A, RPV32	Al+Ti	20	AR
	Al+Ti+Nb	40	CR
	Al+Ti+Nb	80	N
	Al+Ti+Nb+V	100	N (2)
RPV36	Al+Ti+Nb	40	CR
	Al+Ti+Nb	80	N
	Al+Ti+Nb+V	100	N (2)

* Remarks

- (1) AR : As Rolled, CR : Controlled Rolling Condition
 N : Normalized Condition
 (2) Ingot Casting Process

<Semi-finished Products for Rolling & Forging>

- Grade : Carbon, Carbon-manganese, Low Alloy Steels
 - Grain refining: Al, Al+Ti, Al+Nb, Al+Ti+Nb

Products	Steel making & Castin process	Max. thickness (mm)	Supply condition
Slabs	BOF+IC	500	As Rolled
Slabs	BOF+CC	300	As Casted
Blooms	EAF+CC	320	
Blooms	BOF+IC	450	As Rolled
Billets	BOF+IC	200	

<Round Bars>

- Grade : Carbon, Carbon-manganese, Low Alloy Steels
 - Grain refining : Al, Al+Ti, Al+Nb, Al+Ti+Nb

Products	Steel making & Castin process	Max. Diameter (mm)	Supply condition
Round Bars	BOF+IC	330	As Rolled
Round Bars	EAF+CC	230	

< The End >.

