



Approval No. ST75RO

Certificate No. TA24288E

## APPROVAL OF MANUFACTURING PROCESS

*This is to certify that*

**Jiangsu Shagang Steel Co., Ltd.**

Jinfeng Town, Zhangjiagang City, Jiangsu Province P.R.China

*has been approved for the manufacturing process of undermentioned materials by the NIPPON KAIJI KYOKAI in accordance with the requirements of 1.2, Part K of the Society's "Rules for the Survey and Construction of Steel Ships" and Chapter 1, Part 1 of the Society's "Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use".*

**MATERIALS : Rolled Steels for Hull**

**High Strength Rolled Steels for Offshore Structures**

**Rolled Steels for Low Temperature Service**

The details of the relevant approval conditions are given in the PARTICULARS OF APPROVAL listed in the reverse of this certificate.

The products for the ships classed with the Society are to be manufactured, tested and inspected in compliance with the Rules.

This certificate is valid from 4 March 2024 until 14 April 2028.

Issued at Tokyo on 12 March 2024.

Y. Takao

General Manager

Material and Equipment Department



Note: This certificate was rewritten because of change of the company name.

### List of PARTICULARS OF APPROVAL

#### On No. 1 Steel Plate Workshop of Steel Plate Mill

	Ref. No.	Date
1.	TA24291E	12 MAR. 2024
2.	TA24292E	12 MAR. 2024

#### On No. 1 Steelmaking Workshop of Hongfa Steelmaking Plant

	Ref. No.	Date
1.	TA24293E	12 MAR. 2024

#### On No.2 Steel Plate Workshop of Steel Plate Mill

	Ref. No.	Date
1.	TA24294E	12 MAR. 2024
2.	TA24296E	12 MAR. 2024
3.	TA24297E	12 MAR. 2024
4.	TA24295E	12 MAR. 2024

#### On No.2 Steelmaking Workshop of Hongfa Steelmaking Plant

	Ref. No.	Date
1.	TA24289E	12 MAR. 2024
2.	TA24298E	12 MAR. 2024

#### On 3500mm Medium Plate Workshop of Steel Plate Mill

	Ref. No.	Date
1.	TA24290E	12 MAR. 2024

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No. : TA24289E

Date : 12 March 2024

## PARTICULAR OF APPROVAL

### Approval Conditions for Manufacturing Process of Rolled Steels for Hull

1. Manufacturer : Jiangsu Shagang Steel Co., Ltd.,  
No. 2 Steelmaking Workshop of Hongfa Steelmaking  
Plant
2. Kind of Product : Slabs
3. Type of Steel : Normal Strength Steel and Higher Strength Steel
4. Deoxidation Practice : Fine-grained Killed
5. Grain Refining Elements : Normal Strength Steel : Al and Al-Nb-Ti  
Higher Strength Steel : Al-Nb, Al-V-Ti, Al-Ti,  
Al-Nb-Ti and Al-Nb-V-Ti
6. Max. Thickness : 320mm
7. Steel Making Process : Basic Oxygen Furnace
8. Casting Process : Continuous Casting
9. Remarks : The individual users of these semi-finished  
products are to be approved by the Society for the  
manufacturing process of the specific grade of  
rolled steel products which are manufactured with  
these semi-finished products.

Y. Takao

General Manager

Material and Equipment Department







No. : TA24290E  
Date : 12 March 2024

## PARTICULARS OF APPROVAL

## Approval Conditions for Manufacturing Process of Rolled Steels for Hull



- |                            |   |
|----------------------------|---|
| 1. Manufacturer            | : Jiangsu Shagang Steel Co., Ltd.,<br>3500mm Medium Plate Workshop of Steel Plate<br>Mill   |
| 2. Kind of Product         | : Plates  |
| 3. Grade                   | : KA, KB, KD, KE, KA32, KD32, KA36 and KD36<br>Including Z25/35 through thickness properties  |
| 4. Deoxidation Practice    | : Fine-grained Killed   |
| 5. Grain Refining Elements | : See Table   |
| 6. Max. Thickness          | : See Table   |
| 7. Condition of Supply     | : See Table   |
| 8. Remarks                 | : Steel slabs manufactured by Jiangsu Shagang<br>Steel Co., Ltd., No.2 Steelmaking Workshop of<br>Hongfa Steelmaking Plant approved by the<br>Society are to be used. |

(to be cont.)

No. : TA24290E  
Date : 12 March 2024

Table Part of Approval Conditions

Grade	Grain Refining Elements	Max. Thickness (mm)	Condition of Supply
KA	Al	40	AR
KB	Al	40	AR
KD	Al	40	CR
	Al-Nb-Ti	40	TMCP(AcC)
KE	Al-Nb-Ti	40	TMCP(AcC)
KA32	Al-Ti	40	CR
	Al-Nb-Ti	40	TMCP(AcC)
KD32	Al-Ti	40	CR
	Al-Nb-Ti	40	TMCP(AcC)
KA36	Al-Ti	40	CR
	Al-Nb-Ti	40	TMCP(AcC)
KD36	Al-Ti	40	CR
	Al-Nb-Ti	40	TMCP(AcC)

  
  
 Y. Takao  
 General Manager  
 Material and Equipment Department

No. : TA24291E

Date : 12 March 2024

## PARTICULARS OF APPROVAL

### Approval Conditions for Manufacturing Process of High Strength Rolled Steels for Offshore Structures

- |                            |  |
|----------------------------|--|
| 1. Manufacturer            | : Jiangsu Shagang Steel Co., Ltd.,<br>No. 1 Steel Plate Workshop of Steel Plate Mill   |
| 2. Kind of Product         | : Plates   |
| 3. Grade                   | : KA460, KD460, KE460, KF460, KA620, KD620,<br>KE620, KF620, KA690, KD690, KE690 and<br>KF690<br>Including Z25/35 through thickness properties   |
| 4. Deoxidation Practice    | : Fine-grained Killed  |
| 5. Grain Refining Elements | : Al-Nb-Ti   |
| 6. Max. Thickness          | : 100mm  |
| 7. Condition of Supply     | : QT   |
| 8. Remarks                 | : (i) Steel slabs manufactured by Jiangsu<br>Shagang Steel Co., Ltd., No.1 Steelmaking<br>Workshop of Hongfa Steelmaking Plant<br>approved by the Society are to be used.<br><br>(ii) Heat treatment process is to be conducted at<br>Heat treatment workshop of Steel Plate Mill. |



Y. Takao

General Manager

Material and Equipment Department







No. : TA24292E

Date : 12 March 2024

Table: Part of Approval Conditions

Grade	Deoxidation Practice	Grain Refining Elements	Max. Thickness (mm)	Condition of Supply	Note
KA	Fine-grained Killed	Al	40	AR	-
			60	N	
		Al-Ti	100	N	(1),(2)
KB	Fine-grained Killed	Al	40	AR	-
			60	TMCP(AcC)	
		Al-Ti	100	N	(1),(2)
KD	Fine-grained Killed	Al	40	AR	-
			60	TMCP(AcC)	
		Al-Nb-Ti	100	N	(1),(2)
KE	Fine-grained Killed	Al	60	TMCP(AcC)	-
		Al-Nb-Ti	100	N	(1),(2)
KA32	Fine-grained Killed	Al-Ti	30	AR	-
		Al-Ti	40	CR	(1)
		Al-Nb	40	TMCP(AcC)	-
		Al-Nb-V	60		
		Al-Nb-Ti	100	N	(1),(2)
KD32	Fine-grained Killed	Al-Ti	40	CR	(1)
		Al-Nb	40	TMCP(AcC)	-
		Al-Nb-V	60		
		Al-Nb-Ti	100	N	(1),(2)
KE32	Fine-grained Killed	Al-Nb	40	TMCP(AcC)	-
		Al-Nb-V	60		
		Al-Nb-Ti	100	N	(1),(2)
KF32	Fine-grained Killed	Al-Nb-V	60	TMCP(AcC)	-
		Al-Nb-Ti	100	N	(1),(2)
KA36	Fine-grained Killed	Al-Ti	30	AR	-
		Al-Nb-Ti	40	CR	(1)
		Al-Nb	40	TMCP(AcC)	-
		Al-Nb-V	60		
		Al-Nb-V-Ti	100	N	(1),(2)
KD36	Fine-grained Killed	Al-Nb-Ti	40	CR	(1)
		Al-Nb	40	TMCP(AcC)	-
		Al-Nb-V	60		
		Al-Nb-V-Ti	100	N	(1),(2)
KE36	Fine-grained Killed	Al-Nb	40	TMCP(AcC)	-
		Al-Nb-V	60		
		Al-Nb-V-Ti	100	N	(1)

(to be cont.)



No. : TA24292E

Date : 12 March 2024


Table: Part of Approval Conditions

Grade	Deoxidation Practice	Grain Refining Elements	Max. Thickness (mm)	Condition of Supply	Note
KF36	Fine-grained Killed	Al-Nb-V	60	TMCP(AcC)	-
		Al-Nb-V-Ti	100	N	(1),(2)
KA40	Fine-grained Killed	Al-Nb-V	60	TMCP(AcC)	-
		Al-Nb-V-Ti	100	N	(1),(2)
KD40	Fine-grained Killed	Al-Nb-V	60	TMCP(AcC)	-
		Al-Nb-V-Ti	100	N	(1),(2)
KE40	Fine-grained Killed	Al-Nb-V	60	TMCP(AcC)	-
		Al-Nb-V-Ti	100	N	(1),(2)
KF40	Fine-grained Killed	Al-Nb-V	60	TMCP(AcC)	-
		Al-Nb-V-Ti	100	N	(1),(2)

Note :

(1) Thickness properties Z25 / Z35 are included.

(2) Heat treatment process is to be conducted at Heat treatment workshop of Steel Plate Mill.



Y. Takao

General Manager

Material and Equipment Department



No. : TA24293E

Date : 12 March 2024

## PARTICULAR OF APPROVAL

## Approval Conditions for Manufacturing Process of Rolled Steels for Hull

- |                            |  |
|----------------------------|--|
| 1. Manufacturer            | : Jiangsu Shagang Steel Co., Ltd.,<br>No. 1 Steelmaking Workshop of Hongfa<br>Steelmaking Plant  |
| 2. Kind of Product         | : Slabs  |
| 3. Type of Steel           | : Normal Strength Steel and Higher Strength Steel  |
| 4. Deoxidation Practice    | : Fine-grained Killed  |
| 5. Grain Refining Elements | : Normal Strength Steel : Al<br>Higher Strength Steel : Al-Nb, Al-Nb-V, Al-Ti,<br>Al-Nb-Ti or Al-Nb-V-Ti   |
| 6. Max. Thickness          | : 320mm  |
| 7. Steel Making Process    | : Basic Oxygen Furnace   |
| 8. Casting Process         | : Continuous Casting   |
| 9. Remarks                 | : The individual users of this semi-finished<br>products are to be approved by the Society for the<br>manufacturing process of the specific grade of<br>rolled steel products which are manufactured<br>with these semi-finished products. |

Y. Takao

General Manager

Material and Equipment Department



No. : TA24294E

Date : 12 March 2024

## PARTICULARS OF APPROVAL

### Approval Conditions for Manufacturing Process of High Strength Rolled Steels for Offshore Structures

- |                            |  |
|----------------------------|--|
| 1. Manufacturer            | : Jiangsu Shagang Steel Co., Ltd.,<br>No. 2 Steel Plate Workshop of Steel Plate Mill   |
| 2. Kind of Product         | : Plates   |
| 3. Grade                   | : KA460, KD460, KE460, KF460, KA620, KD620,<br>KE620, KF620, KA690, KD690, KE690 and<br>KF690<br>Including Z25/35 through thickness properties   |
| 4. Deoxidation Practice    | : Fine-grained Killed  |
| 5. Grain Refining Elements | : Al-Nb-Ti   |
| 6. Max. Thickness          | : 100mm  |
| 7. Condition of Supply     | : QT   |
| 8. Remarks                 | : (i) Steel slabs manufactured by Jiangsu<br>Shagang Steel Co., Ltd., No.2 Steelmaking<br>Workshop of Hongfa Steelmaking Plant<br>approved by the Society are to be used.<br><br>(ii) Heat treatment process is to be conducted at<br>Heat treatment workshop of Steel Plate Mill. |



Y. Takao

General Manager

Material and Equipment Department






No. : TA24295E

Date : 12 March 2024

## PARTICULARS OF APPROVAL

### Approval Conditions for Manufacturing Process of High Strength Rolled Steels for Offshore Structures

- |                            |  |
|----------------------------|--|
| 1. Manufacturer            | : Jiangsu Shagang Steel Co., Ltd.,<br>No. 2 Steel Plate Workshop of Steel Plate Mill   |
| 2. Kind of Product         | : Plates   |
| 3. Grade                   | : KA420, KD420, KE420, KF420, KA460, KD460,<br>KE460, KF460, KA500, KD500, KE500, KF500,<br>KA550, KD550, KE550 and KF550<br>Including Z25/35 through thickness properties |
| 4. Deoxidation Practice    | : Fine-grained Killed  |
| 5. Grain Refining Elements | : Al-Nb-V-Ti   |
| 6. Max. Thickness          | : 60mm   |
| 7. Condition of Supply     | : TMCP (AcC)   |
| 8. Remarks                 | : Steel slabs manufactured by Jiangsu Shagang<br>Steel Co., Ltd., No.1 Steelmaking Workshop of<br>Hongfa Steelmaking Plant approved by the<br>Society are to be used.      |

  
Y. Takao  
General Manager  
Material and Equipment Department







No. : TA24296E

Date : 12 March 2024

Table Part of Approval Conditions

Grade	Deoxidation Practice	Grain Refining Elements	Max. Thickness (mm)	Condition of Supply	Note
KA	Fine-grained Killed	Al	40	AR	(1)
			60	N	(1)
		Al-Ti	100	N	(1),(2)
		Al-Nb-Ti	100	TMCP(AcC)	(1)
KB	Fine-grained Killed	Al	40	AR	(1)
			60	N	(1)
		Al-Ti	100	N	(1),(2)
		Al-Nb-Ti	100	TMCP(AcC)	(1)
KD	Fine-grained Killed	Al	40	AR	(1)
			60	TMCP(AcC)	(1)
		Al-Nb-Ti	100	N	(1),(2)
				TMCP(AcC)	(1)
KE	Fine-grained Killed	Al	60	TMCP(AcC)	(1)
		Al-Nb-Ti	100	N	(1),(2)
				TMCP(AcC)	(1)
KA32	Fine-grained Killed	Al-Ti	30	AR	-
		Al-Ti	40	CR	(1)
		Al-Nb	60	TMCP(AcC)	(1)
		Al-Nb-Ti	100	N	(1),(2)
				TMCP(AcC)	(1)
		Nb-V-Ti	70	TMCP(AcC)	(1)
KD32	Fine-grained Killed	Al-Ti	40	CR	(1)
		Al-Nb	60	TMCP(AcC)	(1)
		Al-Nb-Ti	100	N	(1),(2)
				TMCP(AcC)	(1)
		Nb-V-Ti	70	TMCP(AcC)	(1)
KE32	Fine-grained Killed	Al-Nb	60	TMCP(AcC)	(1)
		Al-Nb-Ti	100	N	(1),(2)
				TMCP(AcC)	(1)
		Nb-V-Ti	70	TMCP(AcC)	(1)
KF32	Fine-grained Killed	Al-Nb	60	TMCP(AcC)	(1)
		Al-Nb-Ti	100	N	(1),(2)

(to be cont.)



No. : TA24296E  
Date : 12 March 2024

Table Part of Approval Conditions (Continued)

Grade	Deoxidation Practice	Grain Refining Elements	Max. Thickness (mm)	Condition of Supply	Note
KA36	Fine-grained Killed	Al-Ti	30	AR	-
		Al-Nb-Ti	40	CR	(1)
			100	TMCP(AcC)	(1)
		Al-Nb	60	TMCP(AcC)	(1)
		Al-Nb-V-Ti	100	N	(1),(2)
		Nb-V-Ti	70	TMCP(AcC)	(1)
KD36	Fine-grained Killed	Al-Nb-Ti	40	CR	(1)
			100	TMCP(AcC)	(1)
		Al-Nb	60	TMCP(AcC)	(1)
		Al-Nb-V-Ti	100	N	(1),(2)
		Nb-V-Ti	70	TMCP(AcC)	(1)
KE36	Fine-grained Killed	Al-Nb	60	TMCP(AcC)	(1)
		Al-Nb-Ti	100	TMCP(AcC)	(1)
		Al-Nb-V-Ti	100	N	(1),(2)
		Nb-V-Ti	70	TMCP(AcC)	(1)

(to be cont.)

No. : TA24296E

Date : 12 March 2024



Table Part of Approval Conditions (Continued)

Grade	Deoxidation Practice	Grain Refining Elements	Max. Thickness (mm)	Condition of Supply	Note
KF36	Fine-grained Killed	Al-Nb	60	TMCP(AcC)	(1)
		Al-Nb-V-Ti	100	N	(1),(2)
KA40	Fine-grained Killed	Al-V-Ti	60	TMCP(AcC)	(1)
		Al-Nb-Ti	100	TMCP(AcC)	(1)
		Al-Nb-V-Ti	100	N	(1),(2)
KD40	Fine-grained Killed	Al-V-Ti	60	TMCP(AcC)	(1)
		Al-Nb-Ti	100	TMCP(AcC)	(1)
		Al-Nb-V-Ti	100	N	(1),(2)
KE40	Fine-grained Killed	Al-V-Ti	60	TMCP(AcC)	(1)
		Al-Nb-Ti	100	TMCP(AcC)	(1)
		Al-Nb-V-Ti	100	N	(1),(2)
KF40	Fine-grained Killed	Al-V-Ti	60	TMCP(AcC)	(1)
		Al-Nb-V-Ti	100	N	(1),(2)

Note :

(1) Thickness properties Z25 / Z35 are included.

(2) Heat treatment process is to be conducted at Heat treatment workshop of Steel Plate Mill.

  
  
 Y. Takao  
 General Manager  
 Material and Equipment Department



No. : TA24297E

Date : 12 March 2024

## PARTICULARS OF APPROVAL

### Approval Conditions for Manufacturing Process of Rolled Steels for Low Temperature Service

- |                            |   |
|----------------------------|---|
| 1. Manufacturer            | : Jiangsu Shagang Steel Co., Ltd.<br>No. 2 Steel Plate Workshop of Steel Plate Mill   |
| 2. Kind of Product         | : Plates  |
| 3. Grade                   | : KL24A, KL24B, KL27, KL33, KL37 and<br>KL9N60<br>Including "Z25" or "Z35" through thickness<br>properties                        |
| 4. Deoxidation Practice    | : Fine-grained Killed   |
| 5. Grain Refining Elements | : See Table   |
| 6. Max. Thickness          | : See Table   |
| 7. Condition of Supply     | : See Table   |
| 8. Remark                  | : Steel slabs manufactured by No.2 Steelmaking<br>Workshop of Hongfa Steelmaking Plant<br>approved by the Society are to be used. |

( to be cont. )




No. : TA24297E  
Date : 12 March 2024


Table Part of Approval Conditions

Grade	Grain Refining Elements	Max. Thickness (mm)	Condition of Supply	Note
KL24A KL24B KL27 KL33 KL37	Al-Nb-Ti	40	TMCP(AcC)	—
KL9N60	Al	50	QT	(1), (2)

Notes :

- (1) Mechanical properties and chemical composition of steel plates with thickness above 40mm are to comply with the relevant requirements for the steel plate with 40mm in thickness specified in 3.4, Chapter 3, Part K of the NK Rules.
- (2) The welding heat input is to be 30kJ/cm or below in the actual welding work.

  
Y. Takao  
General Manager  
Material and Equipment Department





No. : TA24298E

Date : 12 March 2024

Table Part of Approval Conditions

Grade	Grain Refining Elements
KL24A KL24B KL27 KL33 KL37	Al-Nb-Ti
KL9N60	Al



Y. Takao  
General Manager  
Material and Equipment Department







No. : 24EW0820ROL

Date : 12 March 2024

## Weldability Confirmation Records

We, Nippon Kaiji Kyokai, have recognized that the weldability confirmation for the following rolled steels under the following welding conditions are conducted with satisfactory results in accordance with the requirements of Chapter 1A, Part 1 of the Society's "Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use".

1. Manufacturer : Jiangsu Shagang Steel Co., Ltd.,  
No. 2 Steel Plate Workshop of Steel Plate Mill
2. Grade : KA32, KD32, KE32, KA36, KD36 and KE36
3. Deoxidation Practice : Fine-grained Killed
4. Grain Refining Elements : Nb-V-Ti
5. Condition of Supply : TMCP (AcC)
6. Thickness of Test Assemblies : See Table.
7. Welding Method : See Table.
8. Welding Heat Input : See Table.
9. The identification number of "Particulars of Approval Conditions" for the manufacturing process of the steels : TA24288E

The validity of this record will be maintained for the duration of approval of manufacturing procedure of the rolled steels.


(to be cont.)

No. : 24EW0820ROL

Date : 12 March 2024

Table Part of Approval Conditions

Thickness (mm)	Welding Method	Welding Heat Input (kJ/cm)
70	Submerged Arc Welding	100
35, 16	Flux Copper Backing Welding	200

  
Y. Takao  
General Manager  
Material and Equipment Department

