

No. : 18EW07177ROL

Date: 27 June 2018

Jiangsu Shagang Group Co., Ltd.  
Jinfeng Town, Zhangjiagang City,  
Jiangsu Province,  
China

Approval of Manufacturing Process of Rolled Steels

Dear Sirs,

This is to inform that the captioned manufacturing process has been approved.

Enclosed please find the certificate of approval, particulars of approval, test reports and invoice.

Due to issuing the attached certificate, you are kindly requested to return the previous certificate (Certificate No. TA17230E) and particulars (No. TA131055E, TA131154E, TA131056E, TA131058E, TA131155E) to NK Shanghai office.

We appreciate the opportunity to work with your company.

Yours faithfully,



H. Kobayashi

General Manager

Material and Equipment Department

Encl.:

- (1) Certificate of approval (TA18633E)
- (2) Particulars of approval  
(TA18634E, TA18635E, TA18636E, TA18637E, TA18638E, TA18639E)
- (3) Approved test reports
- (4) Invoice

Cc: NK Shanghai Office



Approval No. ST75RO

Certificate No. TA18633E

## APPROVAL OF MANUFACTURING PROCESS

*This is to certify that*

**Jiangsu Shagang Group Co., Ltd.**  
**Zhangjiagang, Jiangsu**  
**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 15 April 2018 until 14 April 2023.

Issued at Tokyo on 27 June 2018.

Renewal Date: 15 April 2018

  
 H. Kobayashi  
 General Manager  
 Material and Equipment Department



## List of PARTICULARS OF APPROVAL

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

	Ref. No.	Date		
1.	TA18634E	27	JUN.	2018
2.	TA18635E	27	JUN.	2018

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

	Ref. No.	Date		
1.	TA18636E	27	JUN.	2018

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

	Ref. No.	Date		
1.	TA18637E	27	JUN.	2018
2.	TA18638E	27	JUN.	2018
3.	TA16960E	28	SEP.	2016
4.	TA18639E	27	JUN.	2018

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

	Ref. No.	Date		
1.	TA17231E	21	FEB.	2017
2.	TA16961E	28	SEP.	2016

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

	Ref. No.	Date		
1.	TA17232E	21	FEB.	2017

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No. : TA18634E

Date : 27 June 2018

## PARTICULARS OF APPROVAL

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

- |                            |  |
|----------------------------|--|
| 1. Manufacturer            | : Jiangsu Shagang Group 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 Group 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. |



H. Kobayashi  
General Manager  
Material and Equipment Department





No. : TA18635E

Date : 27 June 2018

## PARTICULARS OF APPROVAL

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

1. Manufacturer : Jiangsu Shagang Group Co., Ltd.,  
No. 1 Steel Plate Workshop of Steel Plate Mill
2. Kind of Product : Plates
3. Grade : KA, KB, KD, KE, KA32, KD32, KE32, KF32,  
KA36, KD36, KE36, KF36, KA40, KD40,  
KE40 and KF40
4. Deoxidation Practice : See Table
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 Group Co., Ltd., No.1 Steelmaking  
Workshop of Hongfa Steelmaking Plant  
approved by the Society are to be used.

(to be cont.)

No. : TA18635E  
Date : 27 June 2018

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. : TA18635E

Date : 27 June 2018

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.

*H. H. Boyer*

H. Kobayashi

General Manager

Material and Equipment Department



No. : TA18636E

Date : 27 June 2018

## PARTICULAR OF APPROVAL

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

1. Manufacturer : Jiangsu Shagang Group Co., Ltd.,  
No. 1 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  
Higher Strength Steel : Al-Nb, Al-Nb-V, Al-Ti,  
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  
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.



H. Kobayashi

General Manager

Material and Equipment Department





No. : TA18637E

Date : 27 June 2018

## PARTICULARS OF APPROVAL

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

- |                            |  |
|----------------------------|--|
| 1. Manufacturer            | : Jiangsu Shagang Group 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 Group 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. |



H. Kobayashi  
General Manager  
Material and Equipment Department





No. : TA18638E

Date : 27 June 2018

## PARTICULARS OF APPROVAL

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

1. Manufacturer : Jiangsu Shagang Group Co., Ltd.,  
No. 2 Steel Plate Workshop of Steel Plate Mill
2. Kind of Product : Plates
3. Grade : KA, KB, KD, KE, KA32, KD32, KE32, KF32,  
KA36, KD36, KE36, KF36, KA40, KD40,  
KE40 and KF40
4. Deoxidation Practice : See Table
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 Group Co., Ltd., No.2 Steelmaking  
Workshop of Hongfa Steelmaking Plant  
approved by the Society are to be used.

(to be cont.)

No. : TA18638E  
Date : 27 June 2018

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)
KB	Fine-grained Killed	Al	40	AR	(1)
			60	N	(1)
		Al-Ti	100	N	(1),(2)
KD	Fine-grained Killed	Al	40	AR	(1)
			60	TMCP(AcC)	(1)
		Al-Nb-Ti	100	N	(1),(2)
KE	Fine-grained Killed	Al	60	TMCP(AcC)	(1)
		Al-Nb-Ti	100	N	(1),(2)
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)
KD32	Fine-grained Killed	Al-Ti	40	CR	(1)
		Al-Nb	60	TMCP(AcC)	(1)
		Al-Nb-Ti	100	N	(1),(2)
KE32	Fine-grained Killed	Al-Nb	60	TMCP(AcC)	(1)
		Al-Nb-Ti	100	N	(1),(2)
KF32	Fine-grained Killed	Al-Nb	60	TMCP(AcC)	(1)
		Al-Nb-Ti	100	N	(1),(2)
KA36	Fine-grained Killed	Al-Ti	30	AR	-
		Al-Nb-Ti	40	CR	(1)
		Al-Nb	60	TMCP(AcC)	(1)
		Al-Nb-V-Ti	100	N	(1),(2)
KD36	Fine-grained Killed	Al-Nb-Ti	40	CR	(1)
		Al-Nb	60	TMCP(AcC)	(1)
		Al-Nb-V-Ti	100	N	(1),(2)
KE36	Fine-grained Killed	Al-Nb	60	TMCP(AcC)	(1)
		Al-Nb-V-Ti	100	N	(1),(2)
KF36	Fine-grained Killed	Al-Nb	60	TMCP(AcC)	(1)
		Al-Nb-V-Ti	100	N	(1),(2)

(to be cont.)



No. : TA18638E

Date : 27 June 2018

Table: Part of Approval Conditions

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

H. Kobayashi

General Manager

Material and Equipment Department



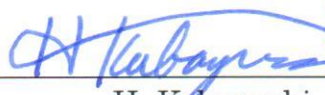
No. : TA18639E

Date : 27 June 2018

## PARTICULARS OF APPROVAL

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

- |                            |  |
|----------------------------|--|
| 1. Manufacturer            | : Jiangsu Shagang Group 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>Group Co., Ltd., No.1 Steelmaking Workshop of<br>Hongfa Steelmaking Plant approved by the<br>Society are to be used.      |



H. Kobayashi

General Manager

Material and Equipment Department

