



Approval No. ST75RO

Certificate No. TA131153E

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 Quenched and Tempered Rolled Steel Plates for Structures

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

On this effect, 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 until 14 April 2018.

Issued at Tokyo on 15 October 2013.

Renewal Date: 15 April 2013



T. Imamura
General Manager
Material and Equipment Department

Note: This certificate was rewritten because of addition of PARTICULARS (Ref. No.: TA131154E and TA131155E) with addition of material grades.

List of PARTICULARS OF APPROVAL

On No. 1 Steel Plate Workshop of Steel Plate Mill

	Ref. No.	Date		
1.	TA131055E	20	SEP.	2013
2.	TA131154E	15	OCT.	2013

On No. 1 Steelmaking Workshop of Hongfa Steelmaking Plant

	Ref. No.	Date		
1.	TA131056E	20	SEP.	2013

On No.2 Steel Plate Workshop of Steel Plate Mill

	Ref. No.	Date		
1.	TA131058E	20	SEP.	2013
2.	TA131155E	15	OCT.	2013

On No.2 Steelmaking Workshop of Hongfa Steelmaking Plant

	Ref. No.	Date		
1.	TA131059E	20	SEP.	2013

No. :13EW10319ROL

Date :15 October 2013

Jiangsu Shagang Group Co., Ltd.

Jinfeng Town Zhangjiagang City Jiangsu Province P.R. China

Approval of Manufacturing Process of Rolled Steels

Dear Sirs,

With regard to your request, it is our great pleasure that we now send you the relevant certificate of approval, the particulars of approval and test reports. Please also find enclosed invoice for the approval fees.

We are pleased to have been of service and look forward to a good, continued working relationship with you.

Yours faithfully,



T. Imamura

General Manager

Material and Equipment Department

Encl.:

- (1) Certificate of approval (TA131153E)
- (2) Particulars of approval (TA131154E, TA131155E)
- (3) Test reports
- (4) Invoice

Cc.: NK Shanghai Office



No. : TA131154E

Date : 15 October 2013

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 | : Steel Plates |
| 3. Grade | : KA, KB, KD, KE, KA32, KD32, KE32, KF32,
KA36, KD36, KE36, KF36, KA40, KD40,
KE40 and KF40 |
| 4. Supply Conditions | |
| (1) Deoxidation Practice | : See Table. |
| (2) System of Constituents | : See Table. |
| (3) Max. Thickness | : See Table. |
| (4) Heat Treatment | : See Table. |
| 5. Raw Material | : Steel slabs with the steel making and
casting process below, by Jiangsu Shagang
Group Co., Ltd., No. 1 Steelmaking
Workshop of Hongfa Steelmaking Plant are
to be used. |
| | (1) Basic Oxygen Furnace |
| | (2) Continuous Casting |

(to be cont.)

No. : TA131154E

Date : 15 October 2013

Grade	Deoxidation Practice	System of Constituent	Max. Thickness (mm)	Heat Treatment	Note
KA	Fine-grained killed	Si-Mn-Al	40	AR	-
			60	N	
		Si-Mn-Al-Ti	100	N	(1),(2)
KB	Fine-grained killed	Si-Mn-Al	40	AR	-
			60	TMCP(AcC)	
		Si-Mn-Al-Ti	100	N	(1),(2)
KD	Fine-grained killed	Si-Mn-Al	40	AR	-
			60	TMCP(AcC)	
		Si-Mn-Al-Nb-Ti	100	N	(1),(2)
KE	Fine-grained killed	Si-Mn-Al	60	TMCP(AcC)	-
		Si-Mn-Al-Nb-Ti	100	N	(1),(2)
KA32	Fine-grained killed	Si-Mn-Al-Ti	30	AR	-
		Si-Mn-Al-Ti	40	CR	(1)
		Si-Mn-Al-Nb	40	TMCP(AcC)	-
		Si-Mn-Al-Nb-V	60		
		Si-Mn-Al-Nb-Ti	100	N	(1),(2)
KD32	Fine-grained killed	Si-Mn-Al-Ti	40	CR	(1)
		Si-Mn-Al-Nb	40	TMCP(AcC)	-
		Si-Mn-Al-Nb-V	60		
		Si-Mn-Al-Nb-Ti	100	N	(1),(2)
KE32	Fine-grained killed	Si-Mn-Al-Nb	40	TMCP(AcC)	-
		Si-Mn-Al-Nb-V	60		
		Si-Mn-Al-Nb-Ti	100	N	(1),(2)
KF32	Fine-grained killed	Si-Mn-Al-Nb-V	60	TMCP(AcC)	-
		Si-Mn-Al-Nb-Ti	100	N	(1),(2)
KA36	Fine-grained killed	Si-Mn-Al-Ti	30	AR	-
		Si-Mn-Al-Nb-Ti	40	CR	(1)
		Si-Mn-Al-Nb	40	TMCP(AcC)	-
		Si-Mn-Al-Nb-V	60		
		Si-Mn-Al-Nb-V-Ti	100	N	(1),(2)
KD36	Fine-grained killed	Si-Mn-Al-Nb-Ti	40	CR	(1)
		Si-Mn-Al-Nb	40	TMCP(AcC)	-
		Si-Mn-Al-Nb-V	60		
		Si-Mn-Al-Nb-V-Ti	100	N	(1),(2)
KE36	Fine-grained killed	Si-Mn-Al-Nb	40	TMCP(AcC)	-
		Si-Mn-Al-Nb-V	60		
		Si-Mn-Al-Nb-V-Ti	100	N	(1)

(to be cont.)

No. : TA131154E
Date : 15 October 2013

Grade	Deoxidation Practice	System of Constituent	Max. Thickness (mm)	Heat Treatment	Note
KF36	Fine-grained killed	Si-Mn-Al-Nb-V	60	TMCP(AcC)	-
		Si-Mn-Al-Nb-V-Ti	100	N	(1),(2)
KA40	Fine-grained killed	Si-Mn-Al-Nb-V	60	TMCP(AcC)	-
		Si-Mn-Al-Nb-V-Ti	100	N	(1),(2)
KD40	Fine-grained killed	Si-Mn-Al-Nb-V	60	TMCP(AcC)	-
		Si-Mn-Al-Nb-V-Ti	100	N	(1),(2)
KE40	Fine-grained killed	Si-Mn-Al-Nb-V	60	TMCP(AcC)	-
		Si-Mn-Al-Nb-V-Ti	100	N	(1),(2)
KF40	Fine-grained killed	Si-Mn-Al-Nb-V	60	TMCP(AcC)	-
		Si-Mn-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.


T. Imamura

T. Imamura
General Manager
Material and Equipment Department



No. : TA131155E

Date : 15 October 2013

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 : Steel Plates
3. Grade : KA, KB, KD, KE, KA32, KD32, KE32, KF32,
KA36, KD36, KE36, KF36, KA40, KD40,
KE40 and KF40
4. Supply Conditions
 - (1) Deoxidation Practice : See Table.
 - (2) System of Constituents : See Table.
 - (3) Max. Thickness : See Table.
 - (4) Heat Treatment : See Table.
5. Raw Material : Steel slabs with the steel making and
casting process below, by Jiangsu Shagang
Group Co., Ltd., No. 2 Steelmaking
Workshop of Hongfa Steelmaking Plant are
to be used.
 - (1) Basic Oxygen Furnace
 - (2) Continuous Casting

(to be cont.)

No. : TA131155E
Date : 15 October 2013

Grade	Deoxidation Practice	System of Constituent	Max. Thickness (mm)	Heat Treatment	Note
KA	Fine-grained killed	Si-Mn-Al	40	AR	(1)
			60	N	(1)
		Si-Mn-Al-Ti	100	N	(1),(2)
KB	Fine-grained killed	Si-Mn-Al	40	AR	(1)
			60	N	(1)
		Si-Mn-Al-Ti	100	N	(1),(2)
KD	Fine-grained killed	Si-Mn-Al	40	AR	(1)
			60	TMCP(AcC)	(1)
		Si-Mn-Al-Nb-Ti	100	N	(1),(2)
KE	Fine-grained killed	Si-Mn-Al	60	TMCP(AcC)	(1)
		Si-Mn-Al-Nb-Ti	100	N	(1),(2)
KA32	Fine-grained killed	Si-Mn-Al-Ti	30	AR	-
		Si-Mn-Al-Ti	40	CR	(1)
		Si-Mn-Al-Nb	60	TMCP(AcC)	(1)
		Si-Mn-Al-Nb-Ti	100	N	(1),(2)
KD32	Fine-grained killed	Si-Mn-Al-Ti	40	CR	(1)
		Si-Mn-Al-Nb	60	TMCP(AcC)	(1)
		Si-Mn-Al-Nb-Ti	100	N	(1),(2)
KE32	Fine-grained killed	Si-Mn-Al-Nb	60	TMCP(AcC)	(1)
		Si-Mn-Al-Nb-Ti	100	N	(1),(2)
KF32	Fine-grained killed	Si-Mn-Al-Nb	60	TMCP(AcC)	(1)
		Si-Mn-Al-Nb-Ti	100	N	(1),(2)
KA36	Fine-grained killed	Si-Mn-Al-Ti	30	AR	-
		Si-Mn-Al-Nb-Ti	40	CR	(1)
		Si-Mn-Al-Nb	60	TMCP(AcC)	(1)
		Si-Mn-Al-Nb-V-Ti	100	N	(1),(2)
KD36	Fine-grained killed	Si-Mn-Al-Nb-Ti	40	CR	(1)
		Si-Mn-Al-Nb	60	TMCP(AcC)	(1)
		Si-Mn-Al-Nb-V-Ti	100	N	(1),(2)
KE36	Fine-grained killed	Si-Mn-Al-Nb	60	TMCP(AcC)	(1)
		Si-Mn-Al-Nb-V-Ti	100	N	(1),(2)
KF36	Fine-grained killed	Si-Mn-Al-Nb	60	TMCP(AcC)	(1)
		Si-Mn-Al-Nb-V-Ti	100	N	(1),(2)

(to be cont.)

No. : TA131155E

Date : 15 October 2013

Grade	Deoxidation Practice	System of Constituent	Max. Thickness (mm)	Heat Treatment	Note
KA40	Fine-grained killed	Si-Mn-Al-V-Ti	60	TMCP(AcC)	(1)
		Si-Mn-Al-Nb-V-Ti	100	N	(1),(2)
KD40	Fine-grained killed	Si-Mn-Al-V-Ti	60	TMCP(AcC)	(1)
		Si-Mn-Al-Nb-V-Ti	100	N	(1),(2)
KE40	Fine-grained killed	Si-Mn-Al-V-Ti	60	TMCP(AcC)	(1)
		Si-Mn-Al-Nb-V-Ti	100	N	(1),(2)
KF40	Fine-grained killed	Si-Mn-Al-V-Ti	60	TMCP(AcC)	(1)
		Si-Mn-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.


T. Imamura

T. Imamura
General Manager
Material and Equipment Department



Approval No. ST75RO

Certificate No. TA131053E

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 Quenched and Tempered Rolled Steel Plates for Structures

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

On this effect, 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 until 14 April 2018.

Issued at Tokyo on 20 September 2013.

Renewal Date: 15 April 2013



T. Imamura

General Manager

Material and Equipment Department

ClassNK

List of PARTICULARS OF APPROVAL

On No. 1 Steel Plate Workshop of Steel Plate Mill

	Ref. No.	Date		
1.	TA131054E	20	SEP.	2013
2.	TA131055E	20	SEP.	2013

On No. 1 Steelmaking Workshop of Hongfa Steelmaking Plant

	Ref. No.	Date		
1.	TA131056E	20	SEP.	2013

On No.2 Steel Plate Workshop of Steel Plate Mill

	Ref. No.	Date		
1.	TA131057E	20	SEP.	2013
2.	TA131058E	20	SEP.	2013

On No.2 Steelmaking Workshop of Hongfa Steelmaking Plant

	Ref. No.	Date		
1.	TA131059E	20	SEP.	2013



No. : TA131055E

Date : 20 September 2013

PARTICULARS OF APPROVAL

Approval Conditions for Manufacturing Process of High Strength Quenched and Tempered Rolled Steel Plates for Structures

1. Manufacturer : Jiangsu Shagang Group Co., Ltd.,
No. 1 Steel Plate Workshop of Steel Plate Mill
2. Kind of Product : Steel Plates
3. Grade : KA460, KD460, KE460, KF460, KA620,
KD620, KE620, KF620, KA690, KD690,
KE690 and KF690
4. Supply Conditions
 - (1) Deoxidation Practice : See Table.
 - (2) System of Constituents : See Table.
 - (3) Max. Thickness : See Table.
 - (4) Heat Treatment : See Table.
5. Raw Material : Steel slabs with the steel making and
casting process below, by Jiangsu Shagang
Group Co., Ltd., No. 1 Steelmaking
Workshop of Hongfa Steelmaking Plant are
to be used.
 - (1) Basic Oxygen Furnace
 - (2) Continuous Casting

No. : TA131055E

Date : 20 September 2013

Grade	Deoxidation Practice	System of Constituent	Max. Thickness (mm)	Heat Treatment	Note
KA460	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KD460	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KE460	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KF460	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KA620	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KD620	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KE620	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KF620	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KA690	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KD690	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KE690	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KF690	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(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.

T. Imamura

T. Imamura
General Manager
Material and Equipment Department

No. : TA131056E

Date : 20 September 2013

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 | : Steel Slabs |
| 3. Type of Steel | : Normal Strength Steel and
Higher Strength Steel |
| 4. Supply Conditions | |
| (1) Deoxidation Practice | : Fine-grained killed |
| (2) System of Constituents | : Normal Strength Steel : Si-Mn-Al
Higher Strength Steel : Si-Mn-Al-Nb,
Si-Mn-Al-Nb-V,
Si-Mn-Al-Ti,
Si-Mn-Al-Nb-Ti or
Si-Mn-Al-Nb-V-Ti |
| (3) Max. Thickness | : 320mm |
| 5. Steel Making Process | : Basic Oxygen Furnace |
| 6. Casting Process | : Continuous Casting |
| 7. 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. | |

T. Imamura

General Manager

Material and Equipment Department





No. : TA131058E

Date : 20 September 2013

PARTICULARS OF APPROVAL

Approval Conditions for Manufacturing Process of High Strength Quenched and Tempered Rolled Steel Plates for Structures

- | | |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Manufacturer | : Jiangsu Shagang Group Co., Ltd.,
No. 2 Steel Plate Workshop of Steel Plate Mill |
| 2. Kind of Product | : Steel Plates |
| 3. Grade | : KA460, KD460, KE460, KF460, KA620,
KD620, KE620, KF620, KA690, KD690,
KE690 and KF690 |
| 4. Supply Conditions | |
| (1) Deoxidation Practice | : See Table. |
| (2) System of Constituents | : See Table. |
| (3) Max. Thickness | : See Table. |
| (4) Heat Treatment | : See Table. |
| 5. Raw Material | : Steel slabs with the steel making and
casting process below, by Jiangsu Shagang
Group Co., Ltd., No. 2 Steelmaking
Workshop of Hongfa Steelmaking Plant are
to be used. |
| | (1) Basic Oxygen Furnace |
| | (2) Continuous Casting |

No. : TA131058E

Date : 20 September 2013

Grade	Deoxidation Practice	System of Constituent	Max. Thickness (mm)	Heat Treatment	Note
KA460	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KD460	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KE460	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KF460	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KA620	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KD620	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KE620	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KF620	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KA690	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KD690	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KE690	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(1),(2)
KF690	Fine-grained killed	Si-Mn-Al-Nb-Ti	100	QT	(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.

T. Imamura

General Manager

Material and Equipment Department



No. : TA131059E
Date : 20 September 2013

PARTICULAR OF APPROVAL

Approval Conditions for Manufacturing Process of Rolled Steels for Hull

1. Manufacturer : Jiangsu Shagang Group Co., Ltd.,
No. 2 Steelmaking Workshop of Hongfa Steelmaking Plant
2. Kind of Product : Steel Slabs
3. Type of Steel : Normal Strength Steel and
Higher Strength Steel
4. Supply Conditions
 - (1) Deoxidation Practice : Fine-grained killed
 - (2) System of Constituents : Normal Strength Steel : Si-Mn-Al
Higher Strength Steel : Si-Mn-Al-Nb,
Si-Mn-Al-V-Ti,
Si-Mn-Al-Ti,
Si-Mn-Al-Nb-Ti or
Si-Mn-Al-Nb-V-Ti
 - (3) Max. Thickness : 320mm
5. Steel Making Process : Basic Oxygen Furnace
6. Casting Process : Continuous Casting
7. 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.


T. Imamura

General Manager

Material and Equipment Department



No. :13EW9559ROL

Date :20 September 2013

Jiangsu Shagang Group Co., Ltd.

Jinfeng Town Zhangjiagang City Jiangsu Province P.R. China

Approval of Manufacturing Process of Rolled Steels

Dear Sirs,

With regard to your request, it is our great pleasure that we now send you the relevant certificate of approval, the particulars of approval and test reports. Please also find enclosed invoice for the approval fees.

We are pleased to have been of service and look forward to a good, continued working relationship with you.

Yours faithfully,

T. Imamura
General Manager
Material and Equipment Department

Encl.: (1) Certificate of approval (TA131053E)
(2) Particulars of approval (TA131054E, TA131055E, TA131056E,
TA131057E, TA131058E, TA131059E)
(3) Test reports
(4) Invoice

Cc.: NK Shanghai Office



Approval No. ST75RO

Certificate No. TA17230E

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 Quenched and Tempered Rolled Steel Plates for Structures

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 21 February 2017 until 14 April 2018.

Issued at Tokyo on 21 February 2017.

Renewal Date: 15 April 2013



T. Imamura

General Manager

Material and Equipment Department

Note: This certificate was rewritten because of change of approval condition for PARTICULARS (ex. Ref. No. TA131059E superseded by TA17231E) with the addition of grain refining elements and addition of PARTICULARS (Ref. No.: TA17232E).

List of PARTICULARS OF APPROVAL

On No. 1 Steel Plate Workshop of Steel Plate Mill

	Ref. No.	Date		
1.	TA131055E	20	SEP.	2013
2.	TA131154E	15	OCT.	2013

On No. 1 Steelmaking Workshop of Hongfa Steelmaking Plant

	Ref. No.	Date		
1.	TA131056E	20	SEP.	2013

On No.2 Steel Plate Workshop of Steel Plate Mill

	Ref. No.	Date		
1.	TA131058E	20	SEP.	2013
2.	TA131155E	15	OCT.	2013
3.	TA16960E	28	SEP.	2016

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

No. : TA17231E

Date : 21 February 2017

PARTICULAR OF APPROVAL

Approval Conditions for Manufacturing Process of Rolled Steels for Hull

1. Manufacturer : Jiangsu Shagang Group 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.



T. Imamura

General Manager

Material and Equipment Department

No. : TA17232E

Date : 21 February 2017

PARTICULARS OF APPROVAL

Approval Conditions for Manufacturing Process of Rolled Steels for Hull

- | | |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Manufacturer | : Jiangsu Shagang Group Co., Ltd.,
3500mm Medium Plate Workshop of Steel Plate
Mill |
| 2. Kind of Product | : Plates |
| 3. Grade | : KA, KB, KD, KE, KA32, KD32, KA36 and KD36
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
Group Co., Ltd., No.2 Steelmaking Workshop of
Hongfa Steelmaking Plant approved by the
Society are to be used. |

(to be cont.)

No. : TA17232E
Date : 21 February 2017

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)



T. Imamura
General Manager
Material and Equipment Department

No. : 17EW01901ROL

Date: 21 February 2017

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 we have approved the captioned manufacturing process.

Enclosed please find the certificate of approval and invoice together with relevant documents.

Apart from the above, your company is kindly requested to return the previous certificate (Certificate No. TA16959E) and particulars (No. TA131153E) to NK Shanghai office.

We appreciate the opportunity to work with your company.

Yours faithfully,



T. Imamura

General Manager

Material and Equipment Department

Encl.:

- (1) Certificate of approval (TA17230E)
- (2) Particulars of approval (TA17231E, TA17232E)
- (3) Approved test report
- (4) Invoice

Cc: NK Shanghai Office