List of PARTICULARS OF APPROVAL

Heavy Plate Mill of Medium and Heavy Plate Plant

	Ref. No.	Date		
1.	TA14589E	22	MAY	2014
2.	TA14590E	22	MAY	2014

Medium Plate Mill of Medium and Heavy Plate Plant

	Ref. No.	Date		
1.	TA14591E	22	MAY	2014

ClassNK NIPPON KAIJI KYOKAI
4-7KIOI-CHO, CHIYODA-KU,
TOKYO, 102-8567, JAPAN

No. : TA14589E
Date : 22 May 2014

PARTICULARS OF APPROVAL

Approval Condition for Manufacturing Process of

Rolled Steels for Hull

1.	Manufacturer	: Angang Steel Company Limited Heavy Plate Mill of Medium and Heavy Plate Plant
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.	Steel Making Process	: Basic Oxygen Furnace
6.	Casting Process	: Continuous Casting

(to be cont.)

ClassNK

NIPPON KAIJI KYOKAI

No. : TA14589E

Date : 22 May 2014

Table Supply Conditions

Grade	Deoxidation Practice	System of Constituents	Max. Thickness (mm)	Heat treatment	Note
KA	Killed	Si-Mn	40	AR	
	Fine-grained Killed	Si-Mn-Al	100	TMCP (AcC)	(1)
KB	Fine-grained Killed	Si-Mn-Al	40	AR	
			100	TMCP (AcC)	(1)
KD	Fine-grained Killed	Si-Mn-Al	40	CR	
			100	TMCP (AcC)	(1)
KE	Fine-grained Killed	Si-Mn-Al	40	N	
			100	TMCP (AcC)	(1)
KA32 KD32	Fine-grained Killed	Si-Mn-Al-Nb-V	40	CR	
			100	TMCP (AcC)	(1)
KE32	Fine-grained Killed	Si-Mn-Al-Nb-V	40	N	
			100	TMCP (AcC)	(1)
KF32	Fine-grained Killed	Si-Mn-Al-Nb-V	100	TMCP (AcC)	(1)
KA36 KD36	Fine-grained Killed	Si-Mn-Al-Nb-V	40	CR	
			100	TMCP (AcC)	(1)
KE36	Fine-grained Killed	Si-Mn-Al-Nb-V	40	N	
			100	TMCP (AcC)	(1)
KF36	Fine-grained Killed	Si-Mn-Al-Nb-V	100	TMCP (AcC)	(1)
KA40 KD40 KE40 KF40	Fine-grained Killed	Si-Mn-Al-Nb-V	100	TMCP (AcC)	(1)

Note :

(1) Including "Z35" through thickness properties.

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[redacted]

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No. : TA14590E
Date : 22 May 2014

PARTICULARS OF APPROVAL

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

1.	Manufacturer	: Angang Steel Company Limited Heavy Plate Mill of Medium and Heavy Plate Plant
2.	Kind of Product	: Steel Plates
3.	Grade	: KA420, KD420, KE420, KF420, KA460, KD460, KE460, KF460, KA500, KD500, KE500, KF500, KA550, KD550, KE550, KF550, 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.	Steel Making Process	: Basic Oxygen Furnace
6.	Casting Process	: Continuous Casting

(to be cont.)

ClassNK

NIPPON KAIJI KYOKAI

No. : TA14590E

Date : 22 May 2014

Table Supply Conditions

Grade	Deoxidation Practice	System of Constituents	Max. Thickness (mm)	Heat treatment	Note
KA420 KD420 KE420 KF420 KA460 KD460 KE460 KF460 KA500 KD500 KE500 KF500 KA550 KD550 KE550 KF550	Fine-grained Killed	Si-Mn-Al-Nb	80	TMCP (AcC)	(1)
KA620 KD620 KE620 KF620	Fine-grained Killed	Si-Mn-Al-Nb-V	32	TMCP (AcC)	(1), (2)
KA690 KD690 KE690 KF690	Fine-grained Killed	Si-Mn-Al-Nb-V	50	TMCP (AcC)	(1), (2)

Note :

(1) Including "Z35" through thickness properties.

(2) Welding heat input to the steel plates in question is to be less than or equal to 15kJ/cm.

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Material and Equipment Department

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No. : TA14591E
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PARTICULARS OF APPROVAL

Approval Condition for Manufacturing Process of Rolled Steels for Hull

1. Manufacturer : Angang Steel Company Limited
   Medium Plate Mill of Medium and Heavy Plate Plant
2. Kind of Product : Steel Plates
3. Grades : KA, KB, KD, KA32, KD32, KA36 and KD36
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. Steel Making Process : Basic Oxygen Furnace
6. Casting Process : Continuous Casting

Table Supply Conditions

Grade	Deoxidation Practice	System of Constituents	Max Thickness (mm)	Heat Treatment
KA KB	Killed	Si-Mn	40	AR
KD	Killed	Si-Mn-Al	20	CR
	Fine-grained killed	Si-Mn-Al	40	
KA32 KA36	Fine-grained killed	Si-Mn-Al-Nb-V	40	CR
KD32 KD36	Fine-grained killed	Si-Mn-Al-Nb-V	40	CR

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