

APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMM-7349
File No:
S-SM-RSP
Job Id:
263.11-002463-7

This is to certify:

That

Jiangsu Shagang Group Co., Ltd
Zhangjiagang, Jiangsu, China

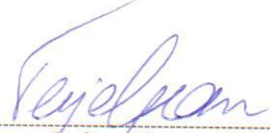
is an approved manufacturer of
Steelmaking and Rolled Steel Products

in accordance with
Det Norske Veritas' Rules for Classification Pt. 2
Offshore Standard DNV-OS-B101

and the following particulars:

Product Grades	Slabs, Plates Hull structural steels, see page 2, Boiler and pressure vessel steels, see page 3
Steelmaking	Basic oxygen converter, Continuous casting
Deoxidation	Killed
Fine grain elements	See pages 2 and 3
Delivery conditions	See pages 2 and 3
Max. thickness	See pages 2 and 3

Høvik, 2015-03-12
for **DNV GL**

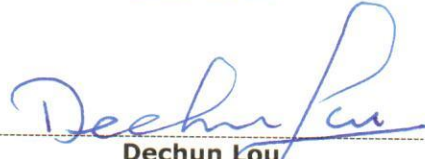


Hanne Anita Hjerpetjønn
Head of Section



DNV GL local office:
Jiangyin

This Certificate is valid until
2018-12-31



Dechun Lou
Surveyor

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Particulars of the approval for production lines No.1 and No.2:

Semis for rolling stock: Slabs

Grade	Steelmaking ¹⁾	Fine grain treatment	Max. thickness (mm)
NV A, NV B, NV D, NV E	BOC, CC	Al, Nb, V or Ti either singly or in any combination	Not applicable
NV A32, NV A36, NV A40, NV D32, NV D36, NV D40, NV E32, NV E36, NV E40, NV F32, NV F36, NV F40	BOC, CC		
NV A620, NV A690, NV D620, NV D690, NV E620, NV E690	BOC, LF, RH; CC	Al+Nb+Ti	

Remarks:

- 1) BOC: Basic Oxygen Converter; LF: Ladle Furnace; RH: Ruhrstahl Heraeus; CC: Continuous Casting.

Final products: Steel Plates

Normal Strength Steels:					
Grade	Steelmaking ¹⁾	Fine grain treatment	Delivery condition ²⁾	Max. thickness (mm)	Z-quality
NV A, NV B	BOC, CC	Al	AR	40	-
NV A, NV B	BOC, CC	Al+Ti	NR	60	Z35
			N	100	Z35
NV D	BOC, CC	Al or Al+Ti	AR	35	Z35
NV E	BOC, CC	Al	TM	40	-
NV D, NV E	BOC, CC	Al+Nb+Ti	TM	60	Z35
			N	100	Z35
High Strength Steels:					
Grade	Steelmaking ¹⁾	Fine grain treatment	Delivery condition ²⁾	Max. thickness (mm)	Z-quality
NV A32, NV A36, NV D32, NV D36, NV E32, NV E36, NV F32, NV F36	BOC, CC	Al+Nb or Al+Nb+Ti	TM	60	Z35
NV A32, NV D32, NV E32, NV F32	BOC, LF, RH; CC	Al+Nb+V+Ti	N	100	Z35
NV A32, NV D32	BOC, CC	Al+Ti	NR	40	Z35
NV A36, NV D36		Al+Nb+Ti			
NV A32, NV A36	BOC, CC	Al+Nb+Ti	AR	30	-
NV A40, NV D40, NV E40, NV F40	BOC, CC	Al+Nb+Ti or Al+Nb+V+Ti	TM	60	Z35
NV A36, NV D36, NV E36, NV F36, NV A40, NV D40, NV E40, NV F40	BOC, LF, RH; CC	Al+Nb+V+Ti	N	100	Z35

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Final products: Steel Plates (Continued)

Extra High Strength Steels:					
Grade	Steelmaking ¹⁾	Fine grain treatment	Delivery condition ²⁾	Max. thickness (mm)	Z-quality
NV A420, NV A460 NV D420, NV D460 NV E420, NV E460	BOC, LF, RH; CC	Al+Nb+Ti	QT	100	Z35
NV A550, NV A620, NV D550, NV D620, NV E550, NV E620	BOC, LF, RH; CC	Al+Nb+Ti	QT	100	Z35
NV A690, NV D690, NV E690 ³⁾	BOC, LF, RH; CC	Al+Nb+Ti	QT	85	Z35

Remarks:

¹⁾ BOC: Basic Oxygen Converter; LF: Ladle Furnace; RH: Ruhrstahl Heraeus; CC: Continuous Casting.

²⁾ AR: As Rolled; NR: Normalising Rolling; N: Normalising; TM: Thermo-Mechanical rolling;
 QT: Quenching and Tempering.

³⁾ Maximum welding heat input is 3.8 kJ/mm.

Steel Plates

Boiler and Pressure Vessel Steels:					
Grade	Steelmaking ¹⁾	Fine grain treatment	Delivery condition ²⁾	Max. thickness (mm)	Z-quality
NV 360-0N, NV 360-1FN, NV 410-0N, NV 410-1FN, NV 460-0N	BOC, CC	Al+Ti	NR	40	Z35
NV 490-0N, NV 490-1FN	BOC, CC	Al+Nb+Ti	NR	40	Z35

Remarks:

¹⁾ BOC: Basic Oxygen Converter; CC: Continuous Casting.

²⁾ NR: Normalising Rolling