

DNV GL SE • P.O. Box 11 16 06 • 20416 Hamburg • Germany

Shanxi Taigang Stainless Steel Co., Ltd.  
 Linfen Plate Plant  
 Qiaodong Street No.3  
 Shanxi Province  
 Linfen  
 China

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Your reference	Your Letter of	Our reference	Extension	Date
		026615-15/OKoe	+49 40 3 61 49-4561	2015-04-20

**Approval of your works for the manufacture of rolled steel products (prolongation)**

Dear Mr. Gao Jianbing,

Thank you for your company's commitment to manufacture products with GL certification.

We refer to our Surveyor's report on the inspection of your works performed on 2015-02-04 incl. approval tests carried out on hot rolled steel plates made of austenitic stainless steel 316L acc. to ASTM A240 as well as austenitic-ferritic stainless steel UNS S31803 acc. to ASTM A240 each for the supply condition "solution annealed + quenched" (S+Q) in accordance with the test plan "The Testing Plan for GL Replacing Certificate Approval of Austenitic and Duplex Stainless Steel Plate for Ships (LINFEN PLATE PLANT)" dd. October 2014 examined by our letter with ref. no. 009099-15 dd. 2015-02-06 which reveals that the preconditions for the approval are further given.

Herewith we prolong the approval of your works granted by our letter ref. no. 041065-12 dated 2012-04-17 until 2018-02-28.

The material grades, supply conditions and dimensions / weights covered by the approval are indicated in the approval annex.

The manufacturing details covered by the approval are as follows:

**1. Products**

Hot rolled steel plates made of austenitic stainless steels with specified low temperature properties for the fabrication of cargo tanks and process pressure vessels for carrying liquefied gases as well as hot rolled steel plates made of austenitic and austenitic-ferritic stainless steels intended for the fabrication of cargo tanks of chemical tankers, pressure vessels and other vessels, for which chemical stability in relation to the cargo or operating fluid

**2. Manufacturing process**

Steel Making Process

Electric arc furnace (EAF), converter refining process by Argon Oxygen Decarburization (AOD), secondary metallurgy by ladle furnace (LF), continuous casting by vertical-type continuous slab caster for con-cast slab dimensions of 180 - 220 x 1,050 - 1,700 x 1,600 - 2,700 mm, cutting, grinding, marking, stamping, final inspection, despatch

Linfen Plate Plant

Inspection and preparation of raw material, reheating of con-cast slabs by walking beam and / or pusher-type furnace, descaling by high water pressure, hot rolling process by Linfen Plate Plant incl. 4-high reversible roughing and finishing mill, straightening by 11-roll hot plate leveller, cool-



ing by cooling bed, surface checking and clearance, non-destructive testing (NDT) by ultrasonic testing (UT), magnetic particle inspection (MT), penetrant testing (PT) and / or visual inspection (VT), heat treatment, straightening by hydraulic press cold plate leveller, shearing by crop shear, trimming by rotary side trimmer, shearing by dividing shear, marking, stamping, final inspection, despatch

**3. Prematerial suppliers**

Only material manufacturer which are approved for the relevant products

**4. Fabrication welding**

Not permitted

Our approval is granted under provision that all plates intended to be used for the construction of ships classed with our Society will comply with our Rules in all respects and will be tested in the presence of our Surveyor.

The quality of your company's manufactured products, within the valid approved scope, contributes to the safety and reputation of GL classed ships.

Your company has been added to the list of approved manufacturers, which is regularly published on the Internet. In order to view the appropriate data start the DNV GL website <http://www.dnvgl.com>, choose "Maritime", "Exchange & Tools", menu "GL Tools", select "Approval Finder", and then "Manufacturers of Materials".

Enclosed please find our certificate of approval no. **WZ 1949 HH 3**, valid until 2018-02-28, as well as the corresponding annex.

We thank you for your cooperation and wish your company every success.

Yours faithfully,

for DNV GL SE

  
Stefan Röhr

  
i.A. Oliver Krömer

Ref. no.: 026615-15

Manufacturer: **Shanxi Taigang Stainless Steel Co., Ltd.**

Linfen Plate Plant

**List 1: Plates, Strips, Sections and Bars, Prematerial**

Grade Remarks	Key	Supply Condition (1)	min. Thick- ness, mm	max. Thick- ness, mm	Casting Method (2)	Deoxidation	Microalloy
1.4301 acc. to EN 10028-7	BL	S+Q	6	40	CC	killed	acc. to standard
1.4306 acc. to EN 10028-7	BL	S+Q	6	40	CC	killed	acc. to standard
1.4307 acc. to EN 10028-7	BL	S+Q	6	40	CC	killed	acc. to standard
1.4401 acc. to EN 10028-7	BL	S+Q	6	40	CC	killed	acc. to standard
1.4404 acc. to EN 10028-7	BL	S+Q	6	40	CC	killed	acc. to standard
1.4435 acc. to EN 10028-7	BL	S+Q	6	40	CC	killed	acc. to standard
1.4436 acc. to EN 10028-7	BL	S+Q	6	40	CC	killed	acc. to standard
1.4541 acc. to EN 10028-7	BL	S+Q	6	40	CC	killed	acc. to standard
1.4550 acc. to EN 10028-7	BL	S+Q	6	40	CC	killed	acc. to standard
1.4301 acc. to EN 10088-2	BL	S+Q	6	40	CC	killed	acc. to standard
1.4306 acc. to EN 10088-2	BL	S+Q	6	40	CC	killed	acc. to standard
1.4307 acc. to EN 10088-2	BL	S+Q	6	40	CC	killed	acc. to standard
1.4401 acc. to EN 10088-2	BL	S+Q	6	40	CC	killed	acc. to standard
1.4404 acc. to EN 10088-2	BL	S+Q	6	40	CC	killed	acc. to standard
1.4435 acc. to EN 10088-2	BL	S+Q	6	40	CC	killed	acc. to standard
1.4436 acc. to EN 10088-2	BL	S+Q	6	40	CC	killed	acc. to standard
1.4541 acc. to EN 10088-2	BL	S+Q	6	40	CC	killed	acc. to standard
1.4550 acc. to EN 10088-2	BL	S+Q	6	40	CC	killed	acc. to standard
1.4362 acc. to EN 10088-2	BL	S+Q	6	40	CC	killed	acc. to standard

(1):

AC, AF, AR = as cast, as forged, as rolled  
 CR = controlled rolled  
 F = ferritized  
 HF = hot formed  
 N = normalized

N+T = normalized + tempered  
 Q+T = quenched + tempered  
 SH = surface hardened  
 S+Q = solution annealed + quenched  
 TM = thermomechanically rolled

(2):

CC = continuous casting  
 IC = ingot casting



Ref. no.: 026615-15

Manufacturer: Shanxi Taigang Stainless Steel Co., Ltd.

Linfen Plate Plant

Grade Remarks	Key	Supply Condition (1)	min. Thick- ness, mm	max. Thick- ness, mm	Casting Method (2)	Deoxidation	Microalloy
1.4462 acc. to EN 10088-2	BL	S+Q	6	40	CC	killed	acc. to standard
304 acc. to ASTM A240	BL	S+Q	6	40	CC	killed	acc. to standard
304L acc. to ASTM A240	BL	S+Q	6	40	CC	killed	acc. to standard
316 acc. to ASTM A240	BL	S+Q	6	40	CC	killed	acc. to standard
316L acc. to ASTM A240	BL	S+Q	6	40	CC	killed	acc. to standard
321 acc. to ASTM A240	BL	S+Q	6	40	CC	killed	acc. to standard
347 acc. to ASTM A240	BL	S+Q	6	40	CC	killed	acc. to standard
S31803 acc. to ASTM A240	BL	S+Q	6	40	CC	killed	acc. to standard
S32205 acc. to ASTM A240	BL	S+Q	6	40	CC	killed	acc. to standard
S32304 acc. to ASTM A240	BL	S+Q	6	40	CC	killed	acc. to standard

Key: BD Strip BF Wide Flats BL Plate FO Sections HZ Prematerial (Ingots, Slabs, Billets) ST Bars WFS Bulbflatbars

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## Approval of Material Manufacturers *Zulassung von Werkstoffherstellern*

This is to certify that the works of  
*Hiermit wird bescheinigt, dass die Firma*

**SHANXI TAIGANG STAINLESS STEEL CO., LTD.  
LINFEN PLATE PLANT  
LINFEN, SHANXI PROVINCE  
CHINA**

has been subjected to an approval test in accordance with GL Rules with satisfactory results and is approved for the manufacture of the following products:

*einer Zulassungsprüfung nach den Vorschriften des GL unterzogen wurde und für die Herstellung folgender Erzeugnisse zugelassen ist:*

**Steels for Cargo Tanks  
in accordance with the GL-Rules for Metallic Materials,  
Chapter 2, Section 1.F**

**Stainless Steels  
in accordance with the GL-Rules for Metallic Materials,  
Chapter 2, Section 1.G**

This approval is granted provided that all products intended to be used for the construction of ships or installations classed with DNV GL SE comply in every respect with GL Rules and Requirements.

*Die Zulassung erfolgt unter der Voraussetzung, dass alle Erzeugnisse, die zum Bau von Schiffen und Anlagen mit Klasse der DNV GL SE bestimmt sind, die Vorschriften des GL in jeder Hinsicht erfüllen.*

Certificate of approval No.  
*Zulassungsbescheinigung Nr.*

WZ 1949 HH 3

This Certificate is valid until:  
*Diese Bescheinigung ist gültig bis:*

2018-02-28

Part of the approval is our letter of approval ref. no. 026615-15 of 2015-04-20.  
*Bestandteil der Zulassung ist das Zulassungsanschreiben, Tgb.-Nr. 026615-15 vom 2015-04-20.*

Hamburg, 2015-04-20

**DNV GL**

  
Stefan Röhr

  
i.A. Oliver Krömer