NIPPON KAIJI KYOKAI

Approval No. ST149RO
Certificate No. TA17220E

APPROVAL OF MANUFACTURING PROCESS

This is to certify that

Outokumpu Stainless AB, Degerfors Operations
SE693 81, Degerfors
Sweden

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 Stainless Steels**

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 17 February 2017 until 16 February 2022.
Issued at Tokyo on 17 February 2017.

Initial Approval Date: 17 February 2017

T. Imamura
General Manager
Material and Equipment Department

ClassNK

2016.7.1000T

List of PARTICULARS OF APPROVAL

	Ref. No.	Issue Date
1.	TA17221E	17 FEB. 2017

ClassNK NIPPON KAIJI KYOKAI
Administration Center Annex
3-3 KIOI-CHO, CHIYODA-KU, TOKYO 102-0094, JAPAN

No. : TA17221E
Date : 17 February 2017

PARTICULARS OF APPROVAL

Approval Conditions for Manufacturing Process of Rolled Stainless Steels

1. Manufacturer : Outokumpu Stainless AB, Degerfors Operations
2. Kind of Product : Plates
3. Grade : KSUS329J3L, ASTM Type 2205, UNS S32205, UNS S31803, EN 1.4462
4. Max. Thickness : 30mm
5. Condition of Supply : Solid Solution Treatment
6. Chemical Composition : Table 1
7. Mechanical Properties : Table 2
8. Remarks :

(a) Steel slabs manufactured by Outokumpu Stainless AB, Avesta Works or Outokumpu Stainless Long Products SMACC approved by the Society are to be used.

(b) The requirements specified in 3.5, Chapter 3, Part K of the NK Rules are to be complied, excluding the requirements specified in Table 1 and Table 2.

Table 1 Chemical Composition (%)

Grade	C	Si	Mn	P	S	Ni	Cr	Mo	N
ASTM Type 2205, UNS S32205	0.030 max.	1.00 max.	2.00 max.	0.030 max.	0.020 max.	4.5 ~ 6.5	22.0 ~ 23.0	3.0 ~ 3.5	0.14 ~ 0.20
UNS S31803, EN 1.4462	0.030 max.	1.00 max.	2.00 max.	0.030 max.	0.020 max.	4.5 ~ 6.5	21.0 ~ 23.0	2.5 ~ 3.5	0.08 ~ 0.20

Table 2 Mechanical Properties

Grade	Tensile Test			Hardness Test		
	Proof Stress (N/mm^2)	Tensile Strength (N/mm^2)	Elongation (%)	HBW	HRC	HV
ASTM Type 2205, UNS S32205	450 min.	655 min.	25 min.	293 max.	31 max.	310 max.
UNS S31803, EN 1.4462	450 min.	620 min.	25 min.	293 max.	31 max.	310 max.

T. Imamura
General Manager
Material and Equipment Department