



Certificate No. NKR-136ROL

APPROVAL OF MANUFACTURING PROCESS

This is to certify that

**Aleris Aluminum Koblenz GmbH
Carl-Spaeter-Str., Koblenz
Germany**

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 5, Part 1 of the Society's "Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use".


MATERIALS : Aluminium Alloys

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

On this effects, the products for the ships classed with the Society will be manufactured, tested and inspected complying with the Rules.

This certificate is valid until the 4th day of January, 2012.
Issued at Tokyo on the 5th day of January, 2007.

Last Renewal Date : 5th January 2007


T. Tokishige
General Manager
Material and Equipment Department





No. : 07EW008ROL
 Date : 5 January 2007

PARTICULARS OF APPROVAL

Approval Condition for Manufacturing Process of Aluminium Alloys

1. Manufacturer : Aleris Aluminum Koblenz GmbH
2. Kind of Products : Aluminium Alloy Rolled Plates
3. Grades : 5083P-H321, 5083P-O,
 "ALUSTAR™"H321, H116, H111 and O
4. Supply Conditions : Aluminium alloys to be supplied under the
 And Specifications following condition (Tables below)

Table 1 : Supply Conditions

Grade	System of Constituent	Heat Treatment	Max. Thickness
5083P-H321	Al-Mg	Stabilization treatment after work hardening	77mm
5083P-O		Annealing	77mm
ALUSTAR-H321	Al-Mg-Mn-Zn	Stabilization treatment after work hardening	40mm
ALUSTAR-H116		Work hardening	40mm
ALUSTAR-H111		Work hardening	40mm
ALUSTAR-O		Annealing	40mm

(to be cont.)

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Table 2 : Chemical Composition

Grade	Element (%)	Mg	Mn	Zn	Zr	Cr	Cu	Fe	Si	Ti	Al
ALUSTAR-H321	Min.	5.0	0.6	0.4	0.05	-	-	-	-	-	Rest
ALUSTAR-H116											
ALUSTAR-H111	Max.	6.0	1.2	1.5	0.25	0.3	0.4	0.5	0.5	0.2	
ALUSTAR-O											

Table 3 : Mechanical Properties

Grade	Thickness t (mm)	Min. Yield Point (N/mm ²)	Min. Tensile Strength (N/mm ²)	Min. Elongation (%)
ALUSTAR-H321	t < 20	270	370	10
	20 ≤ t ≤ 40	260	360	10
ALUSTAR-H116	t < 20	270	370	10
	20 ≤ t ≤ 40	260	360	10
ALUSTAR-H111	t ≤ 40	160	330	24
ALUSTAR-O				



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