

Approval of Material Manufacturers
Zulassung von Werkstoffherstellern



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

**ELVAL
HELLENIC ALUMINIUM INDUSTRY S.A.
OINOFITA, GREECE**

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

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

***Wrought Aluminium Alloys
in accordance with the GL-Rules for Metallic Materials,
Chapter 3, Section 1.A***

This approval is granted provided that all products intended to be used for the construction of ships or installations classed with Germanischer Lloyd comply in every respect with the Society's Rules and Requirements.

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

Certificate of approval No.
Zulassungsbescheinigung Nr.

WZ 886 HH 5

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

2016-01-31

Part of the approval is our letter of approval ref. no. 049631-13 of 2013-05-21.
Bestandteil der Zulassung ist das Zulassungsansprechen, Tgb.-Nr. 049631-13 vom 2013-05-21.

Hamburg, 2013-05-21

Germanischer Lloyd

i.v. Kühn
Michael Kühnel

i.A. Krömer
Oliver Krömer

ELVAL
Hellenic Aluminium Industry S.A.
Attn. Mr. V. Hinopoulos
57 KM National Rd. Athens-Lamia
320 11 Oinofita
Greece

Head Office Hamburg
Brooktorkai 18
20457 Hamburg/Germany

Phone +49 40 36149-0
Fax +49 40 36149-200
headoffice@gl-group.com
www.gl-group.com

Your reference	Your Letter of	Our reference	Extension	Date
		049631-13/OKoe	+49 40 3 61 49-4561	2013-05-21

Approval of your works for the manufacture of wrought aluminium alloys (prolongation)

Dear Mr. Hinopoulos,

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 2013-05-21 and to his confirmation that the results of continuous delivery tests witnessed by him are in full compliance with our Rules for Materials.

Therefore the preconditions for prolongation of approval of your works granted by our letter ref. no. 018459-10 dated 2010-02-12 are complied with.

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

Plates, sheets and / or coils made of wrought aluminium alloys which are intended for the fabrication of ships' hulls, superstructures and other ship structures as well as for pipelines

2. Manufacturing process

Melting Process

Refining bauxite to produce alumina by Bayer Process, production of pre-baked anodes, dissolving alumina in molten cryolite and electrolyzing the molten salt bath to obtain pure aluminium metal by Hall-Héroult Process in electrolytic cells, melting of primary aluminium by melting furnaces incl. dross processing, alloying and degassing by holding furnace incl. cleaning and mixer system with integrated degassing impeller and ceramic foam filter system, vertical semi-continuous casting process by Direct Chill (DC) casting with rolling max. ingot dimension of 600 mm x 2,500 mm x 9,000 mm, cooling, finishing such as scalping, sawing etc., marking, stamping, final inspection, despatch

Hot Rolling Process

Inspection and preparation of raw material, reheating of ingots by pusher-type and / or soaking pit furnace, hot rolling process by Hot Rolling Mill Unit, shearing by crop shear, trimming by rotary side trimmer, shearing by dividing shear, heat treatment, straightening by plate leveller, surface checking and clearance, cutting to length, weight testing, identification, marking, stamping, final inspection, despatch



Cold Rolling Process

Inspection and preparation of wide strip in coils, cold rolling process by Cold Rolling Mill Unit, shearing by crop shear, trimming by rotary side trimmer, shearing by dividing shear, heat treatment, straightening by plate leveller, surface checking and clearance, cutting to length, weight testing, identification, marking, stamping, final inspection, despatch

3. Prematerial suppliers

Only material manufacturers which are approved by GL for the relevant products

Our approval is granted under provision that all plates, sheets and / or coils intended to be used for the outfit 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 GL website <http://www.gl-group.com> , from the menu "GL Tools" select "Approval Finder", and then "Manufacturers of Materials".

Enclosed please find our certificate of approval no. **WZ 886 HH 5**, valid until 2016-01-31, as well as the corresponding annex.

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

Yours faithfully,

Germanischer Lloyd


i. 
Michael Kühnel


i.A. 
Oliver Krömer

Ref. no.: 049631-13



Manufacturer: ELVAL

Hellenic Aluminium Industry S.A.

List 6: Aluminium and Copper Alloys

Grade	Key	Supply Condition (1)	max. Thickness, mm	max. Weight	Casting Method (2)	Remarks
GL AW-5083	BD-AL	O, H111, H112	12,7		DC	
GL AW-5083	BL-AL	O, H111, H112	12,7		DC	
GL AW-5083	BD-AL	H116	12,7		DC	
GL AW-5083	BL-AL	H116	12,7		DC	
GL AW-5083	BD-AL	H32, H321	12,7		DC	
GL AW-5083	BL-AL	H32, H321	12,7		DC	
GL AW-5086	BD-AL	O, H111, H112	12,7		DC	
GL AW-5086	BL-AL	O, H111, H112	12,7		DC	
GL AW-5086	BD-AL	H116	12,7		DC	
GL AW-5086	BL-AL	H116	12,7		DC	
GL AW-5086	BD-AL	H32, H321	12,7		DC	
GL AW-5086	BL-AL	H32, H321	12,7		DC	

Key: -AL Aluminium BD Strip BL Plates -CU Copper, Copper Alloys FF Hammer Forgings G Castings
 GE Die Forgings HZ Prematerial PR Sections RO Pipes

(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