TYPE APPROVAL CERTIFICATE

Certificate No:
TAS0000130
Revision No:
1

This is to certify:

That the Sacrificial Anode Material for Corrosion Protection

with type designation(s)
BERALIN

Issued to
BAC Corrosion Control Denmark A/S
Herfølge, Sjælland, Denmark

is found to comply with
DNV class programme DNV-CP-0107 – Type approval – Sacrificial anode materials
DNV recommended practice DNV-RP-B401 – Cathodic protection design, May 2021

Application :

The mean current capacity of the sacrificial anode material after 12 months free running testing is 2651 Ah/kg.
The mean closed circuit potential is -1100 mV vs. Ag/AgCl seawater.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at **Høvik** on **2022-06-27**
This Certificate is valid until **2027-06-26**.
DNV local station: **Copenhagen Fleet In Service**

Approval Engineer: **Gisle Hersvik**

for **DNV**

Gustav Heiberg
Head of Section

Product description

BERALIN; Aluminium alloy sacrificial anode material.

Chemical composition [%]:

Zn	In	Mn	Fe	Si	Cu	Al
3.5 – 6.5	0.01 – 0.03	0.01 max	0.13 max	0.10 max	0.006 max	remainder

Application/Limitation

Approval is given for the sacrificial anode material, not for anode design.

The mean current capacity of the sacrificial anode material after 12 months free running testing was calculated to be:
- 2651 Ah/kg. The mean closed circuit potential is -1110 mV vs. Ag/AgCl seawater (with 20-ohm resistors), and
- 2623 Ah/kg. The mean closed circuit potential is -1130 mV vs. Ag/AgCl seawater (with 200-ohm resistors).

The recommended design electrochemical capacity for aluminium based alloys in seawater is 2000 Ah/kg (ref. DNV-RP-B401) for use in seawater at temperatures up to 30ºC.

DNV-RP-B401, Edition May 2021, Table 8-6, gives recommended design electrochemical capacity and design closed circuit potential for anode materials at seawater ambient temperatures:

Anode material	Anode surface temperature [ºC]	Seawater exposure	
		Closed circuit potential [V]	Electrochemical capacity [Ah/kg]
Al-Zn-In	≤30	-1.050	2,000
	60	-1.050	1,500
	80	-1.000	720

Place of manufacture

BAC Corrosion Control A/S, Færøvej 7-9, 4681 Herfølge, Denmark

Type Approval documentation

Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**, refer to Technical Report from DNV Bergen, Report No. R796004, Rev. 02, dated 1999-01-18, for details on testing performed.

Testing has been performed with basis in DNV-RP-B401 (1993).

Marking of product

Product/package shall be marked with *manufacturer's name*; **BAC Corrosion Control A/S, Denmark** and *type designation*.

The marking is to be carried out in such a way that it is visible, legible and indelible. The marking of product is to enable traceability to the DNV Type Approval Certificate.

Periodical assessment

The scope of the Periodical Assessment is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials.

Periodical assessments (for Certificate Retention / Certificate Renewal) shall be performed according to DNV-CP-0338.

This certificate is only valid if required Periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in https://approvalfinder.dnv.com

END OF CERTIFICATE