



Certificate no.:  
**TAS00004XX**

# TYPE APPROVAL CERTIFICATE

---

## This is to certify:

that the **Sacrificial Anode Material for Corrosion Protection**

with type designation(s)  
**Zn-Anode (Normal Temperature)**

issued to

**Taicang Kaide Anti-Corrosion Technology Co., Ltd.**  
**Taicang, China**

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 galvanostatic control testing is 793 Ah/kg. The mean closed circuit potential is -1043 mV vs. Ag/AgCl/Seawater. The approval is given for use in sea water at temperatures below 50°C.**

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

Issued at **Hamburg** on **2025-07-22**

This Certificate is valid until **2030-07-21**.

for **DNV**

DNV local unit: **Shanghai**

Approval Engineer: **Gisle Hersvik**

.....

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.  
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

## Product description

**Zn-Anode:** Zinc alloy sacrificial anode material.

Chemical Composition (%):

| Al      | Cd        | Fe        | Cu        | Pb        | Si        | Zn        |
|---------|-----------|-----------|-----------|-----------|-----------|-----------|
| 0.3-0.6 | 0.05-0.12 | 0.005 max | 0.005 max | 0.006 max | 0.125 max | Remainder |

Other elements : Not applicable

## Place of manufacture

Taichang Kaide Anti-Corrosion Technology Co., Ltd., Wulu Road, Xinming Village, Huangjing Town, Taichang City, China

## 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 galvanostatic control testing is **793 Ah/kg**.  
The mean closed circuit potential is  $-1043 \text{ mV vs. Ag/AgCl}_{(\text{seawater})}$ .

The recommended design electrochemical capacity for zinc-based alloys in seawater at temperatures up to max. 50°C is 780 Ah/kg (ref. DNV-RP-B401).

Ref. DNV-RP-B401, Edition May 2021:

- The recommended design electrochemical capacity for zinc-based alloys in seawater at temperatures up to max. 50°C is 780 Ah/kg.
- Table 8-6, gives recommended design electrochemical capacity and design closed circuit potential for anode materials at seawater ambient temperatures:

| Seawater temperature<br>[°C] | Design electrochemical capacity<br>[Ah/kg] |                              | Reference   |
|------------------------------|--------------------------------------------|------------------------------|-------------|
|                              | Immersed in seawater                       | Buried in seawater sediments |             |
| ≤30                          | 780                                        | 700                          | DNV-RP-B401 |
| 30                           | 780                                        | 750                          | ISO 15589-2 |
| 40                           | 780                                        | 580                          |             |
| 50                           | 780                                        | 580                          |             |

\* ISO 15589-2:2012 *Petroleum, petrochemical and natural gas industries -- Cathodic protection of pipeline transportation systems -- Part 2: Offshore pipelines.*

## Type Approval documentation

### Tests carried out

Type Testing carried out in accordance **Type Approval documentation**. Ref. Test Report No. JQ2537161XY "Zn Sacrificial Anode" from Qingdao Ship Materials Testing Station for Corrosion and Protection of China Shipbuilding Industry of 2025-07-07.

Testing has been performed with basis in DNV-RP-B401 (May 2021).

## Marking of product

Product shall be marked with *manufacturer's name or logo*: **Taichang Kaide Anti-Corrosion Technology Co., Ltd.** and *type designation, heat number, weight* etc.

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



Job ID: **262.1-041578-1**  
Certificate no.: **TAS00004XX**

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