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Standards

Irish Standard  
I.S. EN 12496:2013

# Galvanic anodes for cathodic protection in seawater and saline mud

## I.S. EN 12496:2013

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English Version

## Galvanic anodes for cathodic protection in seawater and saline mud

Anodes galvaniques pour la protection cathodique dans l'eau de mer et les boues salines

Galvanische Anoden für den kathodischen Schutz in Seewasser und salzhaltigem Schlamm

This European Standard was approved by CEN on 25 April 2013.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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## **Foreword**

This document (EN 12496:2013) has been prepared by Technical Committee CEN/TC 219 “Cathodic protection”, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2013, and conflicting national standards shall be withdrawn at the latest by December 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## **Introduction**

The anticipated performance, including design life, of the cast galvanic anodes for use in sea water and saline mud is determined by their composition and the quality of their manufacture.

This European Standard specifies the minimum requirements for the galvanic anodes quality levels and verification procedures.

## 1 Scope

This European Standard specifies the minimum requirements and gives recommendations for the chemical composition, the electrochemical properties, the physical tolerances, and the test and inspection procedures for cast galvanic anodes of aluminium, magnesium and zinc based alloys for cathodic protection in sea water and saline mud.

This European Standard is applicable to the majority of galvanic anodes used for seawater and saline mud applications, i.e. cast anodes of trapezoidal, "D", or circular cross section and bracelet type anodes.

The general requirements and recommendations of this European Standard may also be applied to other anode shapes, e.g. half-spherical, button, etc., which are sometimes used for seawater applications.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 287-1, *Qualification test of welders — Fusion welding — Part 1: Steels*

EN 12473, *General principles of cathodic protection in sea water*

EN ISO 8044, *Corrosion of metals and alloys — Basic terms and definitions (ISO 8044)*

EN ISO 8501-1, *Preparation of steel substrates before application of paints and related products — Visual assessment of surface cleanliness — Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings (ISO 8501-1)*

EN ISO 15607, *Specification and qualification of welding procedures for metallic materials — General rules (ISO 15607)*

EN ISO 15609-1, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 1: Arc welding (ISO 15609-1)*

ISO 10474:1991, *Steel and steel products — Inspection documents*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 8044 and EN 12473 and the following apply.

### 3.1

#### **acidity**

presence of an excess of hydrogen ions over hydroxyl ions (pH <7)

### 3.2

#### **active surface**

surface condition where corrosion occurs

### 3.3

#### **anode consumption rate**

mass consumption rate

amount of anode material consumed for a current output of one ampere during one year

Note 1 to entry: The anode consumption rate is expressed in kilograms per amp year (kg/A.y).

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