

Cathodic protection of internal surfaces of metallic tanks, structures, equipment, and piping containing seawater

## EESTI STANDARDI EESSÕNA

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English Version

## Cathodic protection of internal surfaces of metallic tanks, structures, equipment, and piping containing seawater

Protection cathodique des surfaces internes des réservoirs, ouvrages, équipements et tuyauteries métalliques contenant de l'eau de mer

Kathodischer Schutz der inneren Oberflächen von metallischen Tanks, Strukturen, Ausrüstung und Rohrleitungen die Meerwasser enthalten

This European Standard was approved by CEN on 11 November 2019.

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

# Contents

Page

European foreword .....	3
Introduction .....	4
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions.....	5
4 Competence of personnel .....	7
5 General considerations.....	7
6 Cathodic protection criteria.....	9
7 Design.....	11
8 Galvanic anodes system.....	18
9 Impressed current systems.....	26
10 Commissioning, operation and maintenance.....	30
Annex A (informative) Environmental checklist.....	36
Annex B (informative) Guidance on design values for internal cathodic protection for seawater containing equipment .....	38
B.1 Typical design cathodic current densities.....	38
B.2 Coating breakdown factor of protective paint systems .....	39
Annex C (informative) Calculation of potential distribution inside a pipe or tube .....	40
C.1 Potential distribution inside a pipe (ignoring anode resistance).....	40
C.2 Potential distribution inside a pipe (with anode resistance).....	40
C.3 Potential distribution inside a tube .....	41
Annex D (informative) Design of galvanic anode systems .....	42
D.1 Anode resistance formulae .....	42
D.2 Calculation of the anode resistance at the end of life .....	43
D.3 Electrolyte resistivity .....	44
D.4 Galvanic anode current output .....	46
D.5 Anode life .....	47
D.6 Minimum net weight requirement .....	47
Annex E (informative) Typical electrochemical characteristics of impressed current anodes ..	48
Annex F (informative) Design of impressed current systems .....	49
F.1 Internal cathodic protection of tanks.....	49
F.2 Evaluation of the maximum length of a rod anode projecting into the water flow for mechanical integrity .....	50
Bibliography .....	52

## European foreword

This document (EN 17243:2020) 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 September 2020, and conflicting national standards shall be withdrawn at the latest by September 2020.

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## Introduction

Metallic structures containing seawater or brackish waters are exposed to the risk of corrosion. Even when a coating is applied to reduce this risk, cathodic protection (CP) is usually used to ensure corrosion control during the structure design life. This is especially important in the presence of galvanic couples between various metals and alloys because corrosion is then concentrated to the less noble material.

Cathodic protection works by supplying sufficient direct current to the internal surface of the structures in contact with water in order to change the structure to electrolyte potential to values where the corrosion rate is insignificant.

The general principles and theoretical aspects of cathodic protection in seawater are detailed in EN 12473.

## 1 Scope

This document specifies the requirements and recommendations for cathodic protection systems applied to the internal surfaces of metallic tanks, structures, equipment and piping containing natural or treated seawater or brackish waters to provide an efficient protection from corrosion.

Cathodic protection inside fresh water systems is excluded from this document. This is covered by EN 12499.

NOTE EN 12499 covers internal cathodic protection for any kind of waters, including general aspects for seawater but excluding industrial cooling water systems. This document specifically details applications in seawater and brackish waters.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12473, *General principles of cathodic protection in seawater*

EN 12496, *Galvanic anodes for cathodic protection in seawater and saline mud*

EN 12499, *Internal cathodic protection of metallic structures*

EN 13509, *Cathodic protection measurement techniques*

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

EN ISO 9606-1, *Qualification testing of welders — Fusion welding — Part 1: Steels (ISO 9606-1)*

EN ISO 15257, *Cathodic protection — Competence levels of cathodic protection persons — Basis for certification scheme (ISO 15257)*

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)*

## 3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp/ui>

### 3.1

#### **anode redundancy factor**

multiplier applied to the theoretical number of anodes to allow for anode damage and failures for ensuring that protection will continue to be achieved when one or more anodes are lost, without modifying the unit weight of anodes