

Protection of metallic materials against corrosion - Guidance on the assessment of corrosion likelihood in water distribution and storage systems - Part 3: Influencing factors for hot dip galvanised ferrous materials

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 12502-3:2005 sisaldab Euroopa standardi EN 12502-3:2004 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 22.02.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 12502-3:2005 consists of the English text of the European standard EN 12502-3:2004.</p> <p>This document is endorsed on 22.02.2005 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>This document gives a review of influencing factors of the corrosion likelihood of hot dip galvanized steel and cast iron, used as tubes, tanks and equipment, unalloyed and low alloy ferrous materials in water distribution and storage systems as defined in EN 12502-1.</p>	<p>Scope:</p> <p>This document gives a review of influencing factors of the corrosion likelihood of hot dip galvanized steel and cast iron, used as tubes, tanks and equipment, unalloyed and low alloy ferrous materials in water distribution and storage systems as defined in EN 12502-1.</p>
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ICS 23.040.99, 77.060, 91.140.60

Võtmesõnad: iron, iron alloys, lists, materials, materials testing, metallic materials, metals, piping, probability, protective coatings, specification (approval), specifications, steels, surveys, testing, unalloyed, water pipelines, water practice

ICS 77.060; 23.040.99; 91.140.60

English version

**Protection of metallic materials against corrosion - Guidance on
the assessment of corrosion likelihood in water distribution and
storage systems - Part 3: Influencing factors for hot dip
galvanised ferrous materials**

Protection des matériaux métalliques contre la corrosion -
Recommandations pour l'évaluation du risque de corrosion
dans les installations de distribution et stockage d'eau -
Partie 3 : Facteurs à considérer pour les métaux ferreux
galvanisés à chaud

Korrosionsschutz metallischer Werkstoffe - Hinweise zur
Abschätzung der Korrosionswahrscheinlichkeit in
Wasserverteilungs- und speichersystemen - Teil 3:
Einflussfaktoren für schmelztauchverzinkte Eisenwerkstoffe

This European Standard was approved by CEN on 22 November 2004.

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 Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This document (EN 12502-3:2004) has been prepared by Technical Committee CEN/TC 262 "Metallic and other inorganic coatings", 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 June 2005, and conflicting national standards shall be withdrawn at the latest by June 2005.

This standard is in five parts:

Part 1: General;

Part 2: Influencing factors for copper and copper alloys;

Part 3: Influencing factors for hot dip galvanized ferrous material;

Part 4: Influencing factors for stainless steels;

Part 5: Influencing factors for cast iron, unalloyed and low alloyed steels.

Together these five parts constitute a package of interrelated European Standards with a common date of withdrawal (dow) of 2005-06.

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

Introduction

This document results mainly from investigations into and experience gained of the corrosion of hot dip galvanized ferrous materials, used as steel tubes and cast iron fittings (galvanized products), in drinking water distribution systems in buildings. However, it can be applied analogously to other water systems.

The corrosion likelihood of galvanized products depends on the formation of a corrosion product layer, which begins to form as soon as the galvanized surface comes in contact with water. The more this layer prevents ionic and electronic exchanges between the metal and water, the more protective it will be and the higher the durability of the galvanized products.

Drinking water systems with galvanized products, although showing visible corrosion effects, are, in general, resistant to corrosion damage in normal use. However, there are conditions under which they will sustain corrosion damage.

As a result of the complex interactions between the various influencing factors, the extent of corrosion can only be expressed in terms of likelihood. This document is a guidance document and does not set explicit rules for the use of hot dip galvanized ferrous materials in water systems. It can be used to minimize the likelihood of corrosion damages occurring by:

- assisting in designing, installing and operating systems from an anti-corrosion point of view;
- evaluating the need for additional corrosion protection methods for a new or existing system;
- assisting in failure analysis, when failures occur in order to prevent repeat failures occurring.

However, a corrosion expert, or at least a person with technical training and experience in the corrosion field is required to give an accurate assessment of corrosion likelihood or failure analysis.

1 Scope

This document gives a review of influencing factors of the corrosion likelihood of hot dip galvanized steel and cast iron, used as tubes, tanks and equipment, unalloyed and low alloy ferrous materials in water distribution and storage systems as defined in EN 12502-1.

2 Normative references

The following referenced documents are indispensable for the application 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 ISO 8044:1999, *Corrosion of metals and alloys — Basic terms and definitions (ISO 8044:1999)*.

EN 12502-1:2004, *Protection of metallic materials against corrosion — Guidance on the assessment of corrosion likelihood in water distribution and storage systems — Part 1: General*.

3 Terms, definitions, and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 8044:1999 and EN 12502-1:2004 apply.

3.2 Symbols

$c(\text{HCO}_3^-)$	Concentration of hydrogen carbonate ions in mmol/l
$c(\text{Cl}^-)$	Concentration of chloride ions in mmol/l
$c(\text{SO}_4^{2-})$	Concentration of sulphate ions in mmol/l
$c(\text{NO}_3^-)$	Concentration of nitrate ions in mmol/l
$c(\text{Ca}^{2+})$	Concentration of calcium ions in mmol/l