



**SLOVENSKI STANDARD**  
**SIST EN 10339:2007**

**01-maj-2007**

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**Jeklene cevi za cevovode v zemlji in pod vodo – Notranje, iz tekoče epoksidne smole izdelane obloge za antikorozijsko zaščito**

Steel tubes for onshore and offshore water pipelines - Internal liquid applied epoxy linings for corrosion protection

Stahlrohre für erd- und wasserverlegte Wasserleitungssysteme - Innenauskleidung mit Epoxidharzen als Korrosionsschutz

Tubes pour canalisations d'eau enterrées et immergées - Revêtements internes en résine époxyde appliquée à l'état liquide pour la protection contre la corrosion

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**Ta slovenski standard je istoveten z: EN 10339:2007**

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**ICS:**

23.040.10	Železne in jeklene cevi	Iron and steel pipes
25.220.60	Organske prevleke	Organic coatings

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EUROPEAN STANDARD

EN 10339

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2007

ICS 23.040.99; 25.220.60

English Version

## Steel tubes for onshore and offshore water pipelines - Internal liquid applied epoxy linings for corrosion protection

Tubes pour canalisations d'eau enterrées et immergées -  
Revêtements internes en résine époxyde appliquée à l'état  
liquide pour la protection contre la corrosion

Stahlrohre für erd- und wasserlegte  
Wasserleitungssysteme - Innenauskleidung mit  
Epoxidharzen als Korrosionsschutz

This European Standard was approved by CEN on 20 December 2006.

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 Management Centre 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 CEN Management Centre has the same status as the official versions.

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

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
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<b>Contents</b>	<b>Page</b>
1	Scope .....4
2	Normative references .....4
3	Terms and definitions .....5
4	Symbols and abbreviations .....5
5	Lining materials .....5
5.1	General.....5
5.2	Technical specification .....5
5.3	Packaging .....8
6	Information to be supplied by the purchaser .....8
6.1	Mandatory .....8
6.2	Options to be indicated by the purchaser.....8
7	Surface preparation and application of the lining .....8
7.1	Surface preparation .....8
7.2	Application of the lining .....9
8	Requirements of the applied lining .....10
8.1	General.....10
8.2	Appearance and continuity.....10
8.3	Minimum dry film thickness of the lining .....10
8.4	Hardness measured by Buchholz indentation .....11
8.5	Non porosity.....11
8.6	Adhesion.....11
8.7	Cut back lengths .....11
8.8	Summary of the required properties .....12
9	Repairs .....12
10	Marking .....13
11	Handling, transportation and storage.....13
11.1	Handling and transportation to the storage area .....13
11.2	Storage.....13
11.3	Loading of tubes for delivery .....13
Annex A (normative)	Adhesion test - Resistance to removal .....14
A.1	General.....14
A.2	Apparatus .....14
A.3	Procedure .....14
A.4	Results .....15
Bibliography	.....16

## Foreword

This document (EN 10339:2007) has been prepared by Technical Committee ECISS/TC 29 “Steel tubes and fittings for steel tubes”, the secretariat of which is held by UNI.

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 August 2007, and conflicting national standards shall be withdrawn at the latest by August 2007.

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

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**EN 10339:2007 (E)****1 Scope**

This European Standard specifies the requirements for the application of liquid applied epoxy internal linings, for the corrosion protection of steel tubes.

This type of lining is generally used in the transport and distribution, under pressure or by gravity, of water intended for human consumption and industrial use, sea water, waste water and also in fire water. The temperature of the water transported generally does not exceed 50 °C.

The choice of the lining and its limits of use depend on the type of product used, the pipe laying conditions, the temperature and the chemical composition of the fluid. The choice of the product for the medium to be transported and its qualification are not part of this European Standard.

The lining consists normally of one layer of liquid product, applied by spray airless technique after surface preparation.

All or some of the requirements of this European Standard can apply to the internal linings of fittings, if agreed by the purchaser and the coater.

The lining in this European Standard can be applied to longitudinally or spirally welded tubes and to seamless steel tubes used for the construction of pipelines for conveying liquids.

These tubes are not intended to be bent after the epoxy lining has been applied.

This European Standard does not cover in-situ applied or rehabilitation linings.

The constituent materials of epoxy linings, when used under the conditions for which they are designed, in permanent or temporary contact with water intended for human consumption, should not change the quality of that water to such an extent that it fails to comply with the requirements of European regulations at the end user. For this purpose, reference should be made to the relevant national standards transposing EN standards when available, dealing with the influence of materials on water quality.

**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 1184, *Materials and articles in contact with foodstuffs — Test methods for translucency of ceramic articles*

EN ISO 2808, *Paints and varnishes — Determination of film thickness (ISO 2808:1997)*

EN ISO 2811-1, *Paints and varnishes — Determination of density — Part 1: Pycnometer method (ISO 2811-1:1997)*

EN ISO 2815, *Paints and varnishes — Buchholz indentation test (ISO 2815:2003)*

EN ISO 3251, *Paints, varnishes and plastics — Determination of non-volatile-matter content (ISO 3251:2003)*

EN ISO 4287, *Geometrical product specification (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters (ISO 4287:1997)*

EN ISO 4624, *Paints and varnishes — Pull-off test for adhesion (ISO 4624:2002)*

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 8501-1:1988)*

EN ISO 8503-2, *Preparation of steel substrates before application of paints and related products — Surface roughness characteristics of blast-cleaned steel substrates — Part 2: Method for the grading of surface profile of abrasive blast-cleaned steel — Comparator procedure (ISO 8503-2:1988)*

EN ISO 8503-4, *Preparation of steel substrates before application of paints and related products — Surface roughness characteristics of blast-cleaned steel substrates — Part 4: Method for the calibration of ISO surface profile comparators and for the determination of surface profile — Stylus instrument procedure (ISO 8503-4:1988)*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 3.1

##### **product manufacturer**

supplier of the epoxy materials in a condition suitable for application to the product to be coated

#### 3.2

##### **coater**

company responsible for applying the lining material to the components to be coated

#### 3.3

##### **purchaser**

company that buys the coated tubes and fittings

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### 4 Symbols and abbreviations

For the purposes of this document, the following symbol applies.

$R_z$  the average roughness from five successive evaluation areas defined according to EN ISO 4287, expressed in microns ( $\mu\text{m}$ )

## 5 Lining materials

### 5.1 General

The lining material is generally composed of a base (epoxy resin) and a curing agent. A primer may be used when recommended by the product manufacturer.

The base (epoxy resin) and curing agent should have different colours allowing the verification of the correct mixing by checking the uniformity of the colour of the mixed product.

This European Standard calls for the use of substances and/or procedures that may be injurious to health if precautions are not taken. It refers only to technical suitability and in no way absolves the user from statutory obligations relating to health and safety at any stage.

### 5.2 Technical specification

The technical specification drawn up by the product manufacturer shall contain as a minimum the information detailed in Table 1. Where testing standards are mentioned in Table 1, the data supplied by the product

**EN 10339:2007 (E)**

manufacturer shall be according to these standards. Otherwise, test methods shall be given for any test detailed in Table 1. Tests shall be done to be consistent with the product manufacturer's recommendations for application.

Infrared scan of the product components shall be made available on request to the coater.

Other data or tests can be agreed between the parties at the time of enquiry and/or order.

If test certificates are required, they shall at least contain the data mentioned in Table 1.

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Table 1 — Contents of Technical data sheet and Test certificates

Elements	Technical data sheets	Test certificates
Date of issue	x	x
Name of manufacturer	x	x
Field of application	x	
Name and type of product	x	x
Type of base (epoxy resin)	x	
Type of curing agent	x	
Factory of origin		x
Batch or production lot number		x <sup>a</sup>
Use by date		x <sup>a</sup>
Colour	x <sup>a</sup>	
Methods of application	x	
Solids by volume	x	
Solids by weight of the mixed product according EN ISO 3251	x <sup>b</sup>	
Theoretical coverage per m <sup>2</sup> for nominal thickness	x	
Shelf life	x <sup>a</sup>	
Storage conditions	x	
Pot-life	x	
Surface preparation	x	
Recommended instructions for application	x	
Recommended repair method(s)	x	
Mixing instructions (induction time if applicable)	x	
Recommended dry film thickness (nominal and range)	x	
Maximum recommended dry film thickness applicable in one layer	x	
Minimum and maximum overcoating time	x	
Range of application temperature (ambient, tube and product) and humidity	x	
Specific curing requirements	x	
Hardness measured by Buchholz indentation test according to EN ISO 2815 of cured lining measured	x	
Time related to curing temperature to achieve the full curing	x	
Viscosity	x	x <sup>cd</sup>
Density according to EN ISO 2811-1	x <sup>d e</sup>	x <sup>a</sup>
Elongation at break on free film according to EN 1184	x	
Pull-off test for adhesion according to EN ISO 4624	x	
<p>a Required for the base (epoxy resin) and curing agents.</p> <p>b In contradiction to the curing cycle specified in EN ISO 3251, curing cycle of 2 days at 23 °C ± 2 °C will apply.</p> <p>c Required for the base (epoxy resin), curing agent and the mixed product.</p> <p>d The acceptable limits shall be mentioned in the test certificate.</p> <p>e Required for the base (epoxy resin), curing agent. For the mixed product, density can be calculated.</p>		