



SLOVENSKI STANDARD

SIST ENV 1965-1:1998

01-februar-1998

Konstruktivna lepila - Korozija - 1. del: Ugotavljanje in klasifikacija korozivnosti na bakreni testni podlagi

Structural adhesives - Corrosion - Part 1: Determination and classification of corrosion to a copper substrate

Struktur Klebstoffe - Korrosion - Teil 1: Bestimmung und Klassifikation der Korrosion eines Kupfermaterials

Adhésifs structuraux - Corrosion - Partie 1: Détermination et classification de la corrosion d'un substrat en cuivre

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Ta slovenski standard je istoveten z: **ENV 1965-1:1995**

ICS:

| | | |
|--------|----------------|---------------------|
| 77.060 | Korozija kovin | Corrosion of metals |
| 83.180 | Lepila | Adhesives |

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EUROPEAN PRESTANDARD

ENV 1965-1

PRÉNORME EUROPÉENNE

EUROPÄISCHE VORNORM

June 1995

ICS 77.060; 83.180

Descriptors: adhesives, tests, determination, corrosion, chemical attack, copper, classifications

English version

**Structural adhesives - Corrosion - Part 1:
Determination and classification of corrosion to a
copper substrate**

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eines Kupfermaterials

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REPUBLIKA SLOVENIJA
MINISTRSTVO ZA ZNANOST IN TEHNOLOGIJO
Urad RS za standardizacijo in meroslovje
LJUBLJANA

SIST..... ENV 1965-1

PREVZET PO METODI RAZGLASITVE

-02- 1998

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Prestandard has been prepared by the Technical Committee CEN/TC 193 "Adhesives", of which the secretariat is held by AFNOR.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to announce this European Prestandard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This part of the present European Prestandard describes a method to determine the ability of a liquid adhesive to corrode a copper substrate under heat ageing conditions. Temperatures and ageing periods are chosen to ensure the maximum differentiation between the corrosivity of different adhesives and are not intended to represent any particular service condition.

2 Normative references

This European Prestandard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed here after. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Prestandard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- EN 923 1) Adhesives - Terms and definitions.
- ISO 6958 : 1984 Wrought copper and copper alloys - Drawn rectangular bars dimensions and form tolerances.

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3 Definition

For the purpose of this Prestandard, the following definition applies :

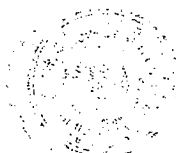
corrosion : is a destructive attack on metals which may be chemical or electrochemical in nature, the described method measures essentially only the chemical attack. The electrochemical contribution is eliminated as far as possible by ensuring that there is no electrolyte and that the copper substrate is, as far as practicable, free from metallic impurities which may result in the formation of a galvanic cell.

4 Principe

An abraded an polished copper substrate is coated with a thin film of the liquid adhesive and then aged for 24 hours in dry heat at 50 °C or 100 °C. Following this the surface is examined and the extent of tarnishing and/or decided on the basis of discolouration.

A minimum of three test specimens should be used for each evaluation.

1) In course of preparation.



5 Materials required

5.1 Solvent

Any sulphur free, hydrocarbon based solvent, which has been shown to cause no discolouration of the abraded copper substrate at 50 °C is suitable.

5.2 Copper substrate

Rectangle 12 x 2 mm, ISO 6958 E-Cu F30, produced by electrolysis.

5.3 Abrasive cloth or emery paper

Grade P240 silicon carbide as defined by FEPA-43, (Fédération Européenne des Fabricants de Produits Abrasifs).

5.4 Liquid abrasive

(Silicon carbide) grade 150.

5.5 Stainless steel tweezers

5.6 Cotton wool

6 Preparation of the copper substrate

Lay the abrasive cloth or emery paper on a flat surface and wet it with the solvent. Place the copper plate on top of this and cover with the filter paper, to ensure that the copper surface is protected from contamination by fingers. Rub the copper plate in a criss-cross pattern against the abrasive material until a uniform abraded surface is achieved.

It is necessary to abrade all six plane surfaces of the test substrate beginning with the edges and finishing with the faces. Following this abrasion, store the copper strip in solvent.

7 Liquid abrasion

Remove the copper plate from the solvent, handling only with the tweezers, and place on a clean glass plate. Coat the copper plate with the liquid abrasive and abrade with a piece of cotton wool which has been moistened with a drop of solvent. Finally, polish vigorously with clean, dry, cotton wool, repeating the polishing with fresh pieces of cotton wool until one remains clean and white following polishing.

On completion of the final abrasion, immediately immerse the copper plate in a shallow dish of the adhesive, again handling with tweezers, and place in an oven at 50 or 100 °C for 24 hours..

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Remove the copper plate from the dish with the tweezers and carefully wash in solvent to remove uncured material, then dry it with the filter paper. It is essential that the test repeated if, during any of the above procedures or testing, the copper substrate :

- a) is touched by fingers ;
- b) comes into contact with water, or ;
- c) comes into contact with any other material ;

or if the appearance of the edge of the plate is significantly different from that of the face.

8 Discolouration/corrosion

This is graded as in Table 1, on examination of the copper surface using normal vision corrected if necessary :

Table 1

| Corrosion grade | Significance | Description |
|-----------------|-------------------------|---|
| 0 | No tarnish or corrosion | Unchanged |
| 1 | Light tarnish | Weak/pale orange, hardly changed when compared with a lightly polished copper substrate, may also be dark orange. |
| 2 | Moderate tarnish | Wine-red, lavender-blue, a lot of lavender-blue and/or silver with a red-wine covering. Silver. Brass coloured or golden. |
| 3 | Heavy tarnish | Magenta with a brass coloured surface. A lot of red and green shimmer (Butterfly) but no grey. |
| 4 | Corrosion | Transparent black or dark grey or brown with the "Butterfly" with a slight green shimmer. Graphite black or dull black. Shiny or pitch black. |

9 Report

The test report shall include :

- a) a reference to this part of European Prestandard ;
- b) type and designation of the product tested ;
- c) description of the substrate preparation procedure ;
- d) description of the type and thickness of the substrates ;
- e) corrosion/discolouration grade ranking ;
- f) details of any operations not specified in this part of the European Prestandard together with details of any events likely to have had an effect on the results.

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