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Coil coated metals - Test methods - Part 3: Colour difference and metamerism - Instrumental comparison

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>See Eesti standard EVS-EN 13523-3:2024 sisaldab Euroopa standardi EN 13523-3:2024 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 24.04.2024.</p> <p>Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN 13523-3:2024 consists of the English text of the European standard EN 13523-3:2024.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 24.04.2024.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
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EUROPEAN STANDARD

EN 13523-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2024

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Supersedes EN 13523-3:2021

English Version

Coil coated metals - Test methods - Part 3: Colour difference and metamerism - Instrumental comparison

Tôles prélaquées - Méthodes d'essai - Partie 3 :
Différence de couleur et métamérisme - Comparaison
au moyen d'instruments

Bandbeschichtete Metalle - Prüfverfahren - Teil 3:
Farbabstand und Metamerie - Farbmetrischer
Vergleich

This European Standard was approved by CEN on 1 January 2024.

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.

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-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 13523-3:2024) has been prepared by Technical Committee CEN/TC 139 “Paints and varnishes”, the secretariat of which is held by DIN.

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 October 2024, and conflicting national standards shall be withdrawn at the latest by October 2024.

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

This document supersedes EN 13523-3:2021.

EN 13523-3:2024 includes the following significant technical changes with respect to EN 13523-3:2021:

- a) calculating colour differences according to the CIEDE2000 formula has been added;
- b) the text has been editorially revised and the normative references have been updated.

The EN 13523 series, *Coil coated metals — Test methods*, consists of the following parts:

- *Part 0: General introduction*
- *Part 1: Film thickness*
- *Part 2: Gloss*
- *Part 3: Colour difference and metamerism — Instrumental comparison*
- *Part 4: Pencil hardness*
- *Part 5: Resistance to rapid deformation (impact test)*
- *Part 6: Adhesion after indentation (cupping test)*
- *Part 7: Resistance to cracking on bending (T-bend test)*
- *Part 8: Resistance to salt spray (fog)*
- *Part 9: Resistance to water immersion*
- *Part 10: Resistance to fluorescent UV radiation and water condensation*
- *Part 11: Resistance to solvents (rubbing test)*
- *Part 12: Resistance to scratching*
- *Part 13: Resistance to accelerated ageing by the use of heat*
- *Part 14: Chalking (Helmen method)*
- *Part 16: Resistance to abrasion*

- *Part 17: Adhesion of strippable films*
- *Part 18: Resistance to staining*
- *Part 19: Panel design and method of atmospheric exposure testing*
- *Part 20: Foam adhesion*
- *Part 21: Evaluation of outdoor exposed panels*
- *Part 22: Colour difference — Visual comparison*
- *Part 23: Resistance to humid atmospheres containing sulfur dioxide*
- *Part 24: Resistance to blocking and pressure marking*
- *Part 25: Resistance to humidity*
- *Part 26: Resistance to condensation of water*
- *Part 27: Resistance to humid poultice (Cataplasma test)*
- *Part 29: Resistance to environmental soiling (Dirt pick-up and striping)*

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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1 Scope

This document specifies procedures for determining the instrumental colour difference (CIELAB ΔE_{Lab}^* or ΔE_{00}) of an organic coating on a metallic substrate compared to another one used as a reference (usually called reference) and the metamerism depending on the illuminant.

When two colour specimens have identical spectral reflectance curves, they are matching under any illuminant irrespective of its spectral characteristics. This is termed a “spectral match”. It is also possible for two colour specimens having different spectral reflectance curves to match visually under a given light source but not to match under another light source with different spectral characteristics; such matches are termed “metameric”.

One quantitative description of metamerism is the so-called “metamerism index”.

Information on the metamerism index is of limited value where ΔE (instrumental colour difference for a given illuminant) is $> 0,5$. The metamerism index is not suited for determining the absolute colour difference or colour consistency of a given specimen at change of illuminant.

The colour difference under the reference illuminant is to be measured in colour coordinates L^* , a^* and b^* .

Excluded from this method are organic coatings producing fluorescence and/or which are multicoloured, pearlescent or metallic.

Establishing a reference as well as the magnitude of an acceptable colour difference are not covered by this method.

Two methods are given in this document:

- a) instrumental colour difference measurement using a tristimulus colourimeter;
- b) instrumental colour difference measurement using a spectrophotometer or equivalent.

It is advised that care is taken when measuring e.g.

- textured surfaces;
- fluorescent coatings;
- metameric coatings;
- multi-coloured, pearlescent, metallic or special colour effect coatings.

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 13523-0:2021, *Coil coated metals — Test methods — Part 0: General introduction*

EN 23270, *Paints and varnishes and their raw materials — Temperatures and humidities for conditioning and testing (ISO 3270)*

EN ISO/CIE 11664-4, *Colorimetry — Part 4: CIE 1976 $L^*a^*b^*$ colour space (ISO/CIE 11664-4)*

EN ISO/CIE 11664-6, *Colorimetry — Part 6: CIEDE2000 colour-difference formula (ISO/CIE 11664-6)*