



**SLOVENSKI STANDARD**  
**SIST EN 15826:2010**  
**01-marec-2010**

---

GHY\_`Ughj]b`\_YfUa ] b]`Ya U^]!`HYfa ]bc`c[ ]U

Vitreous and porcelain enamels - Terminology

Emails und Emailierungen - Terminologie

Emaux vitrifiés - Terminologie

ITIH STANDARD PREVIEW  
(standards.iteh.ai)

Ta slovenski standard je istoveten z: **EN 15826:2009**

[SIST EN 15826:2010](https://standards.iteh.ai/catalog/standards/sist/985d592c-e8c9-4082-9f92-039a0cf05e96/sist-en-15826-2010)

<https://standards.iteh.ai/catalog/standards/sist/985d592c-e8c9-4082-9f92-039a0cf05e96/sist-en-15826-2010>

**ICS:**

|           |                              |  |
|-----------|------------------------------|--|
| 01.040.25 | Izdelavna tehnika (Slovarji) | Manufacturing engineering (Vocabularies) |
| 25.220.50 | Emajlne prevleke             | Enamels                                  |

**SIST EN 15826:2010**

**en,fr,de**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 15826:2010

<https://standards.iteh.ai/catalog/standards/sist/985d592c-e8c9-4082-9f92-039a0cf05e96/sist-en-15826-2010>

EUROPEAN STANDARD

**EN 15826**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2009

ICS 01.040.25; 25.220.50

English Version

**Vitreous and porcelain enamels - Terminology**

Émaux vitrifiés - Terminologie

Emails und Emailierungen - Terminologie

This European Standard was approved by CEN on 7 November 2009.

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, Croatia, 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.

(standards.iteh.ai)

SIST EN 15826:2010

<https://standards.iteh.ai/catalog/standards/sist/985d592c-e8c9-4082-9f92-039a0cf05e96/sist-en-15826-2010>



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

## Contents

Page

|  |    |
|--|----|
| Foreword.....  | 3  |
| 1 Scope .....  | 4  |
| 2 Terms and definitions .....  | 4  |
| Annex A (informative) Cross reference index of alternative terms ..... | 28 |

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 15826:2010](https://standards.iteh.ai/catalog/standards/sist/985d592c-e8c9-4082-9f92-039a0cf05e96/sist-en-15826-2010)

<https://standards.iteh.ai/catalog/standards/sist/985d592c-e8c9-4082-9f92-039a0cf05e96/sist-en-15826-2010>

## Foreword

This document (EN 15826:2009) 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 2010, and conflicting national standards shall be withdrawn at the latest by June 2010.

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

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 the United Kingdom.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 15826:2010](#)

<https://standards.iteh.ai/catalog/standards/sist/985d592c-e8c9-4082-9f92-039a0cf05e96/sist-en-15826-2010>

**EN 15826:2009 (E)****1 Scope**

This European Standard defines a number of terms relating to vitreous and porcelain enamels and their technology. This list is not complete and only comprises those terms for which the definition is considered necessary for correct and adequate understanding in order to clarify these processes.

It should be understood that the interpretations given are those corresponding to the practical usage in this field and that they do not necessarily coincide with those used in other fields.

For purposes of clarification, the term Vitreous Enamel, used throughout this European Standard, is synonymous with Porcelain Enamel, the term favoured in the United States and some other countries.

**2 Terms and definitions**

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

NOTE Annex A lists alternative terms and cross refers to primary terms used below.

- 2.1 abrasive blasting**  
process for cleaning or finishing by means of an abrasive directed at high velocity against the work piece
- 2.2 abrasion resistance**  
degree of resistance of vitreous enamel to be abraded by solid materials  
[SIST EN 15826:2010](https://standards.iteh.ai/catalog/standards/sist/985d592c-e8c9-4082-9f92-039a0cf05e96/sist-en-15826-2010)
- 2.3 acid resistance**  
degree of resistance of vitreous enamel to attack by acidic corrosive chemicals  
<https://standards.iteh.ai/catalog/standards/sist/985d592c-e8c9-4082-9f92-039a0cf05e96/sist-en-15826-2010>
- 2.4 adherence (enamel-metallic substrate) adhesion**  
degree of bonding between the fused vitreous enamel and the metallic substrate
- 2.5 adherence of powder**  
ability of a vitreous enamel powder to remain attached by static attraction to a grounded substrate before firing
- 2.6 ageing**  
change in properties of vitreous enamel slips, powders, reagents, or steel with the lapse of time
- 2.7 air seal air curtain**  
flow of pressurised air across the entrance and exit of a continuous furnace that prevents heat escaping from the furnace but allows ware to pass through
- 2.8 alkali degreasing**  
removal of oil, grease, lubricants, and loose debris from the surface of the metallic substrate by immersion or spraying with an aqueous alkali degreaser in preparation for vitreous enamelling

**2.9****alkali resistance**

degree of resistance of vitreous enamel to attack by alkaline corrosive mediums

**2.10****aluminium enamel**

vitreous enamel specifically formulated for application on aluminium substrates

**2.11****anneal****annealing**

thermal treatment of metals generally made by controlled heating and subsequent cooling

NOTE Raw castings are heated in the range from 650 °C to 950 °C to relieve stresses and strains, burn off grease and in some cases to change the structure of the iron and in so doing improve the castings condition prior to coating with vitreous enamel.

**2.12****anti-scale compound**

agent that is applied to furnace tooling and other items to protect them from scaling during firing

**2.13****back emission****back ionisation (electrostatic powder)**

defect often with the appearance of localised, very heavy orange peel, due to excessive charge build-up in the powder film resulting in electrical breakdown of air (i.e. back emission)

NOTE The effect of the self-limiting characteristics of the electrostatic powder, during application.

**2.14****ball mill**

ceramic or ceramic-lined rotating cylinder in which vitreous enamel materials are either wet or dry ground, generally using alumina, porcelain or steatite balls as grinding media

**2.15****batch smelter****discontinuous smelter**

smelter which is charged, fired, and discharged according to a predetermined periodic cycle

**2.16****bead**

defect resulting from accumulation of enamel usually at the point where the enamel drains off the ware in dipping

**2.17****beading****rim enamelling**

application of ridge of vitreous enamel, along the edge or rim of ware

**2.18****beading enamel****rim enamel**

vitreous enamel specifically formulated for beading

**2.19****biocide**

anti-bacterial agent used to inhibit fermentation of organic mill additions such as gums

**EN 15826:2009 (E)****2.20****bisque**

dry unfired vitreous enamel coating

**2.21****black specks**

defect that appears as black particles at the surface of vitreous enamel coating

NOTE 1 See boiling (2.26) and carbon boil (2.34).

NOTE 2 This can be the result of reaction with the substrate or with contamination on the substrate surface.

**2.22****blank**

sized piece of untreated metal sheet that will be used in forming the finished article

**2.23****blasting**

process whereby solid metallic, mineral, synthetic resin, vegetable particles or water are projected at high velocity against a work piece for the purpose of cleaning, abrading or shot peening the surface

**2.24****blister**

defect that appears as a localised bubble under the surface of the fired vitreous enamel

**2.25****bloom**

visual exudation or efflorescence on the vitreous enamel surface

**iTeh STANDARD PREVIEW**  
(standards.itteh.ai)

NOTE See scumming (2.212).

[SIST EN 15826:2010](https://standards.itteh.ai/catalog/standards/sist/985d592c-e8c9-4082-9f92-039a0cf05e96/sist-en-15826-2010)

**2.26****boiling**

defect resembling areas of ground-coat pull-through, blisters and pinholes, visible after first cover-coat fire

<https://standards.itteh.ai/catalog/standards/sist/985d592c-e8c9-4082-9f92-039a0cf05e96/sist-en-15826-2010>

NOTE 1 See carbon boil (2.34) and black specks (2.21).

NOTE 2 This can be the result of excessive ground-coat activity during cover-coat fire, as the ground-coat boils up through the cover-coat it maybe accompanied by a release of gases.

**2.27****bolt-hole brush**

specially designed round brush used to remove vitreous enamel bisque from in and around small openings in the ware

**2.28****box furnace**

furnace in which ware is fired according to a predetermined periodic cycle

**2.29****break out**

defect characterised by areas of blisters, having well-defined boundaries

**2.30****bubble structure**

size and spatial distribution of voids within the fired vitreous enamel layer



**2.31****burn-off**

defect that appears as a localised area of rough oxides erupting through the enamel coating

NOTE This can be caused by too thin an application of enamel, allowing excessive oxidation of the metal substrate during firing, leading to super saturation of the enamel coating with metal oxides.

**2.32****burning bar****burning point****burning tool**

tool used to suspend or support ware during firing operations

**2.33****button test****fusion button test**

control test to determine the relative fusibility of vitreous enamel frit or powder

NOTE 1 See fusion flow test (2.126).

NOTE 2 The completed test specimen resembles a button.

**2.34****carbon boil**

defect resembling areas of blisters, pinholes, or black specks, visible in fired vitreous enamel

NOTE 1 See boiling (2.26) and black specks (2.21).

NOTE 2 Result of the oxidation of carbides and free carbon at or near the surface of the steel substrate during firing, resulting in evolution of gasses.

[SIST EN 15826:2010](https://standards.iteh.ai/catalog/standards/sist/985d592c-e8c9-4082-9f92-039a0cf05e96/sist-en-15826-2010)

**2.35****cascading**

<electrostatic powder> defect that starts with a few particles of powder detaching themselves after application and as they cascade down the ware they gather more and more powder leaving a trail of thinner and thinner coating

NOTE Excess powder, inadequate powder adhesion and vibration contribute to this defect.

**2.36****cast iron enamel**

vitreous enamel specifically formulated for application on cast iron substrate

**2.37****cermet****ceramic-metal coating**

mixture of one or more ceramic materials in combination with a metallic phase applied to a metallic substrate

**2.38****chalkboard enamel****blackboard enamel**

special type of matt vitreous enamel, used to provide a writing surface for chalk

**2.39****chalky surface**

surface defect where the vitreous enamel surface has lost its gloss and taken on a powdery appearance

NOTE See scumming (2.212).

**EN 15826:2009 (E)****2.40****chemical resistance**

degree of resistance of vitreous enamel to attack by corrosive chemicals

**2.41****chipping**

defect characterised by fracturing and detachment of irregular enamel particles from the vitreous enamel surface

**2.42****cleanability**

relative ease with which soils or stains can be removed from a fused vitreous enamel surface

**2.43****cleaner**

pre-treatment solution, usually alkaline, used to remove oil, grease, lubricants, and loose debris from the surface of metal substrate in preparation for vitreous enamelling

**2.44****cleaning****degreasing****vapour degreasing**

removal of foreign materials, such as abraded metallic particles from pressing or blasting, grease, oil, oxides, scale, rust, swarf, etc. from the surface

**2.45****clear frit****transparent frit**

vitreous enamelling frit that remains essentially transparent or non-opaque when fused

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

**2.46****coefficient of expansion**

rate at which a material will expand under the influence of increasing temperature

[SIST EN 15826:2010](https://standards.iteh.ai/catalog/standards/sist/985d592c-e8c9-4082-9f92-039c0cf05e96/sist-en-15826-2010)

<https://standards.iteh.ai/catalog/standards/sist/985d592c-e8c9-4082-9f92-039c0cf05e96/sist-en-15826-2010>

**2.47****cold-rolled steel**

low carbon, cold-reduced and annealed sheet steel, not necessarily enamelling quality

**2.48****colour matching**

comparison of two or more samples of products that are notionally the same colour

**2.49****colouring oxide**

calcined mixture of inorganic material used as a mill addition to impart colour to a vitreous enamel

**2.50****coloured frit**

vitreous enamel frit containing a colorant in order to produce a strong colour in the fired vitreous enamel

**2.51****consistency**

rheological properties of a vitreous enamel slip that control its draining, flowing, and spraying behaviour

**2.52****continuity of coating**

degree to which a vitreous enamel is free from defects such as bare spots, boiling, blisters, or copperheads, etc. that could reduce its protective and/or its aesthetic properties

NOTE See discontinuity (2.82).

### 2.53

#### **continuous furnace**

furnace through which ware is fed continuously and from which the fired product is discharged continuously

### 2.54

#### **continuous smelter**

smelter from which the molten product is discharged continuously

### 2.55

#### **conventional enamelling**

application of vitreous enamel ground coat(s) and cover coat(s), each one followed by a firing operation

### 2.56

#### **cooling zone**

exit part of a continuous furnace in which the ware is allowed to cool after firing

### 2.57

#### **copper enamels**

vitreous enamels specifically formulated for application on copper substrate

### 2.58

#### **copperheads**

defect resembling small freckle or pimple-like reddish brown spots occurring in ground-coats, or direct-on enamels on iron substrates, in principle in an isolated round burn-off

NOTE See burn-off (2.31).

### 2.59

#### **cover coat enamel**

vitreous enamel with specific chemical, physical and/or aesthetic properties applied as either intermediate or final coat

### 2.60

#### **covering power**

degree to which a vitreous enamel coating obscures the underlying surface

### 2.61

#### **crack**

#### **cracking**

defect caused by laminar interruptions in the fused coating running vertical to the surface

NOTE 1 Cracking can also occur at different angles.

NOTE 2 The causes are mainly the result of mechanical or thermal tensile stresses within the enamel coating.

### 2.62

#### **crawling**

#### **curling**

incomplete formation of the enamel layer on the substrate with the appearance of agglomerates or irregularly spaced islands in the vitreous enamel during firing

### 2.63

#### **crazing**

defect resembling a network of fine cracks in the vitreous enamel coating

**EN 15826:2009 (E)****2.64****cross-bend test**

determination of the resistance of bisque or fused vitreous enamel coating to cracking by progressively distorting the coated panels by bending

**2.65****cup spray gun****cup-gun**

spray gun with a fluid container as an integral part

**2.66****cupping**

pouring of vitreous enamel slip over areas of a component during draining, to improve coverage in certain areas

**2.67****curtains**

defect with the appearance of a draped pattern of darkened areas that sometimes blisters

## NOTE

Curtains occur mainly in ground-coats and direct-on enamels but may also be seen in cover coats.

**2.68****decal****transfer**

design or wording printed on paper with ceramic ink and transferred to a fired enamel surface and then refired to form an integral part of the vitreous enamel coating

**2.69****decarburised steel****zero carbon steel**

special type of steel sheet of extremely low carbon content

## NOTE 1

This type of steel is suitable for direct-on white cover-coat application after acid pickle and nickel flash.

## NOTE 2

De-carburised steel does not undergo a permanent phase change during firing hence it is sag resistant and is therefore suitable for large panels, etc.

**2.70****de-beading**

removal of excess vitreous enamel slip from the edge of dipped ware

**2.71****decking**

multiple layer loading of ware for drying and/or firing

**2.72****de-enamelling**

removal of fired vitreous enamel from the metallic substrate

**2.73****de-setting agent**

electrolytes that reduce the viscosity of the vitreous enamel slip

**2.74****delayed fish-scale**

small half-moon shaped defects occurring in the vitreous enamelled surface which are not immediately apparent on cooling

## NOTE

See fish-scale (2.116).