



SLOVENSKI STANDARD
oSIST prEN ISO 17895:2023

01-marec-2023

Barve in laki - Določevanje hlapnih organskih spojin (VOC) - Metoda plinske kromatografije s "headspace" injiciranjem za določevanje hlapnih organskih spojin (ISO/DIS 17895:2023)

Paints and varnishes - Determination of volatile organic compound (VOC) - Gas-chromatographic method with headspace injection for VOC determination (ISO/DIS 17895:2023)

Beschichtungsstoffe - Bestimmung des Gehaltes an flüchtigen organischen Verbindungen in wasserverdünnbaren Dispersionsfarben (In-can VOC) (ISO/DIS 17895:2023)

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Peintures et vernis - Détermination de la teneur en composés organiques volatils (COV) - Méthode par chromatographie en phase gazeuse avec injection dans l'espace de tête pour la détermination des COV (ISO/DIS 17895:2023)

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87.040

Barve in laki

Paints and varnishes

oSIST prEN ISO 17895:2023

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Paints and varnishes — Determination of volatile organic compound (VOC) — Gas-chromatographic method with headspace injection for VOC determination

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Reference number
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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*.

This second edition cancels and replaces the first edition (ISO 17895:2005) which has been technically revised.

The main changes compared to the previous edition are as follows:

— xxx xxxxxxxx xxx xxxx

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

ISO/DIS 17895:2022(E)**Introduction**

Due to the revision of ISO 11890-2, a revision of ISO 17895 and ISO 11890-1 became necessary in order to avoid overlapping scopes. Additionally the new Technical Specification (ISO/TS 24257) was created as a guidance document to help users selecting the appropriate analytical method for their analytical problem.

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Paints and varnishes — Determination of volatile organic compound (VOC) — Gas-chromatographic method with headspace injection for VOC determination

WARNING — The use of this document can involve hazardous materials, operations and equipment. This Standard does not purport to address all of the safety problems associated with its use. It is the responsibility of users of this document to take appropriate measures to ensure the safety and health of personnel prior to the application of the standard, and to determine the applicability of any other restrictions for this purpose.

1 Scope

This document is dealing with the sampling and testing of low VOC coating materials and their raw materials.

This part specifies a gas-chromatographic method of quantitatively determining the volatile organic compound (VOC) content (i.e. the content of organic compounds with boiling points up to 250 °C) under standard conditions (101,325 kPa). It is applicable to VOC contents between 0,01 % and 0,1 % by mass.

ISO 17895 cannot be used for the determination of the SVOC content. For the determination of SVOC content ISO 11890-2 can be used.

Volatile organic and volatile inorganic compounds that cannot be determined by gas chromatography are not considered in this document. However, the latter compounds could contribute to the VOC content determined by ISO 11890-1. These types of compounds could be determined with alternative methods and accounted for in the calculation as it is specified for water in ISO 11890-1.

The main purpose of the method is to qualify low-VOC coating materials and their raw materials, not routine quality control.

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.

TS 24257, *Paints and varnishes — Determination of volatile organic compound (VOC) and /or semi-volatile organic compound (SVOC) content — Guidance for the selection of test methods*

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

ISO 2811-2, *Paints and varnishes — Determination of density — Part 2: Immersed body (plummet) method*

ISO 2811-3, *Paints and varnishes — Determination of density — Part 3: Oscillation method*

ISO 2811-4, *Paints and varnishes — Determination of density — Part 4: Pressure cup method*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

3 Terms and definitions

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

ISO/DIS 17895:2022(E)

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 volatile organic compound VOC

any organic liquid and/or solid that evaporates spontaneously at the prevailing temperature and pressure of the atmosphere with which it is in contact

Note 1 to entry: As to current usage of the term VOC in the field of coating materials, see volatile organic compound content (*VOC content*, 3.4).

Note 2 to entry: Under US government legislation, the term VOC is restricted solely to those compounds that are photochemically active in the atmosphere (see ASTM D3960). Any other compound is then defined as being an exempt compound.

[SOURCE: ISO 4618:2014, 2.270]

3.2 semi-volatile organic compound SVOC

any organic liquid and/or solid that evaporates spontaneously but slower in comparison to VOC at the prevailing temperature and pressure of the atmosphere with which it is in contact

Note 1 to entry: As to current usage of the term SVOC in the field of coating materials, see semi-volatile organic compound content (*SVOC content*, 3.5).

3.3 non-volatile organic compound NVOC

any organic liquid and/or solid not classified as *VOC* or *SVOC*

3.4 volatile organic compounds content VOC content VOCC

mass of the *volatile organic compounds* present in a coating material, as determined under specified conditions

Note 1 to entry: The properties and the amounts of the compounds to be taken into account will depend on the field of application of the coating material. For each field of application, the limiting values and the methods of determination or calculation are stipulated by regulations or by agreement.

Note 2 to entry: If the term VOC refers to compounds with a defined maximum boiling point, the compounds considered to be part of the VOC content are those with boiling points below and including that limit, and compounds with higher boiling points are considered to be semi-volatile or non-volatile organic compounds.

[SOURCE: ISO 4618:2014, 2.271 modified — Note 2 to entry has been added.]

3.5 semi-volatile organic compounds content SVOC content

mass of the *semi-volatile organic compounds* present in a coating material, as determined under specified conditions

Note 1 to entry: The properties and the amounts of the compounds to be taken into account will depend on the field of application of the coating material. For each field of application, the limiting values and the methods of determination or calculation are stipulated by regulations or by agreement.

Note 2 to entry: If the term SVOC refers to compounds with a defined maximum boiling point and minimum boiling point, the compounds considered to be part of the SVOC content are those with boiling points below and including the upper and above the lower limit, and compounds with higher boiling points are considered to be non-volatile organic compounds.

3.6

exempt compound

organic compound that does not participate in atmospheric photochemical reactions

Note 1 to entry: This expression is only relevant in some countries.

3.7

ready for use

state of a product when it is mixed in accordance with the manufacturer's instructions in the correct proportions and thinned if required using the correct thinners so that it is ready for application by the approved method

3.8

full evaporation

method of transferring the VOCs in a liquid sample from the liquid to the vapour phase

Note 1 to entry: Although a headspace injector with septum-sealable vials is used for introduction of a test portion of the vapour phase into the chromatographic column, the full evaporation method differs substantially from conventional headspace analysis in which equilibrium is established. Since the vial contains very small amounts of sample, virtually all the VOCs enter the vapour phase when heated to a certain temperature [3].

3.9

surrogate standard

compound of known purity which is used to quantify unidentified VOCs and SVOCs

3.10

marker compound

compound which is used to differentiate between VOC and SVOC, or SVOC and NVOC if the differentiation has to be made on the basis of retention time

3.11

retention time

t_R

time elapsed from injection of the sample component to the recording of the peak maximum

3.12

non-volatile organic compound

NVOC

any organic liquid and/or solid not classified as VOC or SVOC

3.13

coating material

product, in liquid, paste or powder form, that, when applied to a substrate, forms a layer possessing protective, decorative and/or other specific properties

[SOURCE: EN ISO 4618:2015-02, 2.51]

3.14

water-dilutable coating material

coating material whose viscosity is reduced by the addition of water

Note 1 to entry: The term "water paint" is deprecated.

Note 2 to entry: In this document only the term "water-dilutable coating material" is used. It includes the terms "water-borne coating material", "water-based coating material", "water-reducible coating material" and "water-thinnable coating material".