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**Cork stoppers — Determination of  
releasable 2,4,6-trichloroanisol (TCA)**

*Bouchons en liège — Dosage du 2,4,6-trichloroanisole (TCA)  
relargable*

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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 document 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](http://www.iso.org/directives)).

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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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO TC 87, *Cork*.

This third edition cancels and replaces the second edition (ISO 20752:2014), which has been technically revised.

The main changes are as follow:

- [Clauses 1, 2, 3, 4, 5, 10, 11](#) and [12](#) were modified.

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](http://www.iso.org/members.html).

# Cork stoppers — Determination of releasable 2,4,6-trichloroanisol (TCA)

## 1 Scope

This document specifies a test method to determine releasable 2,4,6-trichloroanisole (TCA) from all types of cork stoppers and their constituents.

## 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.

ISO 633, *Cork — Vocabulary*

ISO 17727, *Cork — Cork stoppers for still wine — Sampling plan for the quality control of cork stoppers*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 633 and the following apply.

ISO and IEC maintain terminology 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 simulant

solution that intends to simulate the wine

### 3.2

#### internal standard

compound of known concentration added to a sample to facilitate the qualitative identification and/or quantitative determination of the sample components

## 4 Symbols and abbreviated terms

PDMS	polydimethylsiloxane
GC/ECD	gas chromatography/electron capture detector
GC-MS	gas chromatography/mass spectrometry
SPME	solid phase microextraction
TCA	2,4,6-trichloroanisol

## 5 Principle

Determination of releasable TCA from cork stoppers, previously subjected to maceration in a wine simulant, using solid-phase microextraction followed by the detection and quantification of this compound by GC-MS or GC/ECD.

## 6 Test conditions

The test shall be carried out in an environment free of odours at an ambient temperature of  $(21 \pm 4) ^\circ\text{C}$

## 7 Reagents

Use only reagents of recognized analytical grade.

**7.1 Hydro-alcoholic solution**, 12 % (volume fraction) (wine simulant) previously analysed.

**7.2 Ethanol**, with a minimum purity of 95 % (volume fraction).

**7.3 Pure desionized water**, filtered water type III or of higher quality.

**7.4 Sodium chloride** (NaCl) p.a.

**7.5 Internal standard for GC/MS analysis**, 2,4,6-trichloroanisole (TCA)-d5 purity 98 % (volume fraction) or 2,3,6-trichloroanisole purity 99 % (volume fraction).

**7.6 Internal standard for GC/ECD analysis**, 2,6-dibromoanisole purity 99 % (volume fraction) or 2,3,6-trichloroanisole purity 99 % (volume fraction).

## 8 Apparatus

The usual laboratory apparatus and, in particular, the following:

**8.1 Balance**, with a resolution of, at least, 0,1 mg.

**8.2 Glass maceration flasks**, with a stopper made of glass, metal, or any other material not absorbing TCA and an appropriate capacity to the sample size.

**8.3 Glass flasks** (vial), with 10 ml minimum capacity (solution shall occupy at least 50 % of the vial capacity) with a septum and an appropriate stopper suitable for SPME.

**8.4 SPME fibre.**

EXAMPLE 100  $\mu\text{m}$  PDMS.

**8.5 Heating source**, for the vial (8.3), set between 30  $^\circ\text{C}$  and 50  $^\circ\text{C}$ .

**8.6 Automatic stirring system**, for the SPME.

**8.7 Appropriate gas**, of chromatographic purity.

**8.8 Gas chromatograph**, with a mass detector, MS, or an electron capture detector, ECD.