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**Cork — Visual anomalies of cork  
stoppers for still wines**

*Liège — Anomalies visuelles des bouchons de liège pour vins tranquilles*

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## Foreword

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ISO 16419 was prepared by Technical Committee ISO/TC 87, *Cork*.

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# Cork — Visual anomalies of cork stoppers for still wines

## 1 Scope

This International Standard applies to both

- semi-elaborated natural cork stoppers and colmated natural cork stoppers at the definitive dimensions stage, and
- finished natural cork stoppers and colmated natural cork stoppers ready to use.

It describes the anomalies of cork stoppers that can be detected by visual examination of the manufacturer or the end-user.

These anomalies, according to their size, can have functional or not functional consequences being able to alter, more or less, the cork stoppers' sealing capacity.

On the basis of a common sampling example, this International Standard proposes for all these anomalies some specifications for stoppers.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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*

## 3 Designation for the different requirement levels

For natural cork stoppers for still wines, the following notion of range with three decreasing levels of requirement is introduced:

- superior range;
- standard range;
- entry of range.

Besides the commercial reference of the lot of cork stoppers, it belongs

- to the end-user to clarify what are his/her needs in relation to these three specifications (or range) levels, and
- to the manufacturer to define to which range the lot of cork stoppers belongs.

The definite ranges do not necessarily include the total amount of usable cork stoppers for sealing; there can also be other unanimous transactions that are out of the scope of this International Standard.

## 4 List of anomalies taken into account

Only the following will be considered cork stoppers' anomalies:

- longitudinal crack;
- transversal crack;

- parasite gallery;
- green corkwood stain;
- folded corkwood;
- dry vein;
- bevel and/or bevelled cork stopper;
- back;
- colmation excess;
- machining defects (asymmetries, tool bumps, gutters);
- belly.

Other aspect irregularities are not considered as anomalies since they only affect the cork stoppers' presentation and will be taken into account in the cork stoppers' visual classification.

In the case of having more than one anomaly with functional consequence in the same cork stopper, only the most important will be considered (penalized).

## 5 Anomalies of natural corkwood stoppers and colmated natural cork stoppers for still wines

Both [Table 1](#) and [Table 2](#) present the anomalies in relation to the raw material and to the fabrication process respectively, being:

- **columns 1 and 2** – The name and definition of the anomaly in accordance with ISO 633 (Vocabulary).
- **columns 3 and 4** – The threshold relates to the size and/or the position of the anomaly to be considered in order to assess whether it is likely to have a functional or not functional consequence (if the threshold is not reached, the observed visual irregularity does not count as an anomaly).
- **columns 5, 6, and 7** – The acceptance quality limit (AQL) specifications according to the cork stoppers' range.

These tables are considered for a working sample of 80 selected cork stoppers, which are considered a representative sample of a lot.

This value, which is given as an example, corresponds to day-to-day practices in the enterprises.

Table 1 — Anomalies of raw material

Name of the anomaly	Anomaly definition (given in ISO 633)	Potential functional consequence threshold taken into account	Not functional consequence threshold taken into account	Specifications for superior cork stoppers' range	Specifications for standard cork stoppers' range	Specifications for entry cork stoppers' range
Longitudinal crack	<p><b>Crack</b> (6.6.3): cork stopper presenting a (or several) hole of variable shape, lengthwise, or crosswise, which can occur on the back side of the reproduction cork.</p> <p>A crack is called <b>longitudinal</b> whenever it touches or its projection meets the cork's end. In the remaining cases, it is called <b>transversal</b>.</p>	<p>A width <math>\geq 1,5</math> mm and/or with a level difference between the two parts <math>\geq 1,5</math> mm and <math>&gt; 50</math> % length from (and touching) one of the ends.</p>	<p>A width <math>\geq 1,5</math> mm and/or with a level difference between the two parts <math>\geq 1,5</math> mm and from 20 % to 50 % length touching one of the ends or <math>&gt; 50</math> % length not from (and not touching) one of the ends.</p>	(AQL=1,0) <b>A2/R3</b>	(AQL=1,5) <b>A3/R4</b>	(AQL=4,0) <b>A7/R8</b>
Transversal crack		<p>A width higher than 1,5 mm and/or with a level difference between the two parts higher than 1,5 mm and <math>&gt; 50</math> % of the circumference.</p>		(AQL=1,0) <b>A2/R3</b>	(AQL=1,5) <b>A3/R4</b>	(AQL=6,5) <b>A10/R11</b>

Table 1 (continued)

Parasite gallery	<p><b>Worm hole (6.6.6):</b> cork stopper showing an (or several) obturated gallery caused by the larvae of <i>Coroebus undatus</i> Fabr., usually following an annual layer and affecting the whole or part of the stopper diameter or length and that may extend up to one or both stopper ends. Two orifices are visible on the cork stopper's surface.</p>	An orifice situated on one end and > 50 % of the length between the two orifices.	Two orifices situated at less than 10 mm from the ends and not from (not touching) any of the ends.	(AQL=1,0) <b>A2/R3</b>	(AQL=1,5) <b>A3/R4</b>	(AQL=2,5) <b>A5/R6</b>
	<p><b>Ant hole (6.6.7):</b> cork stopper showing a (or several) clear and clean gallery caused by ants <i>Crematogaster scutellaris</i> Oliv., affecting the stopper diameter or roule and that may extend up to one or both stopper ends. Two orifices are visible on the cork stopper's surface.</p>	An orifice situated on one end and > 50 % of the length between the two orifices.	Two orifices situated at less than 10 mm from the ends and not from (not touching) any of the ends.	(AQL=1,0) <b>A2/R3</b>	(AQL=1,5) <b>A3/R4</b>	(AQL=2,5) <b>A5/R6</b>
	<p><b>Green corkwood stain (6.6.4):</b> cork stopper showing a (or several) deformed dried green corkwood stain which may affect the whole or part of the stopper roule on the belly side and/or</p>	Surface depression higher than 1 cm <sup>2</sup> .	Surface depression between 0,5 cm <sup>2</sup> and 1 cm <sup>2</sup> .	(AQL=1,0) <b>A2/R3</b>	(AQL=4,0) <b>A7/R8</b>	(AQL=6,5) <b>A10/R11</b>
Green corkwood	<p>cork stopper showing a (or several) green corkwood stain {corkwood with a belly side showing a translucent appearance as the cells are still filled up with sap [<b>Green corkwood (2.3.15)</b>] which may affect the whole or part of the stopper roule on the belly side.</p>			(AQL=1,5) <b>A3/R4</b>	(AQL=2,5) <b>A5/R6</b>	(AQL=4,0) <b>A7/R8</b>

Table 1 (continued)

Folded cork-wood	<b>Folded corkwood</b> (2.3.6): cork stopper showing a (or several) veins with two autumn layers touching each other, which can (or might) lead to a local separation of layers in the suberous tissue.	Disjoining of the cork stopper in two parts under manual action.	(AQL=1,0) A2/R3	(AQL=1,5) A3/R4	(AQL=4,0) A7/R8
Dry vein	<b>Dry vein</b> (6.6.8): cork stopper which shows a lignified autumn layer with an abnormal over-thickness.	Disjoining of the cork stopper in two parts under manual action.	(AQL=1,0) A2/R3	(AQL=1,5) A3/R4	(AQL=4,0) A7/R8