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Green coffee — Defect reference chart

[Revision of first edition (ISO 10470:1993)]

Café vert — Table de référence des défauts

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ISO/DIS 10470

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DRAFT INTERNATIONAL STANDARD
ISO 10470
GREEN COFFEE – DEFECT REFERENCE CHART

1. SCOPE

This International Standard provides a table which lists the main five different categories of defects which are considered to be potentially present in green coffee as marketed throughout the world, whatever its variety, for washed [fully and semi] and unwashed coffees.

This table shows the influence of such defects on the loss of mass and on the sensorial concern by using values (0), (0.5) and (1). Each defect is given one of these numbers depending on how seriously it affects the above mentioned characteristics. Thus, the final assessment can become a useful tool for the trading parties involved, giving also a good indication to the final purchaser about the quality of the green coffee he is dealing with.

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The definitions can be used to specify terms of bilateral purchasing contracts or to classify coffee lots for their presentation to green coffee buyers or at a Stock Exchange.

Compared to the previous standard the presentation has been simplified.

2. NORMATIVES REFERENCES.

The following normative documents contain provisions, which, through reference in this text constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. Members of ISO and IEC maintain registers of currently valid International Standards.

| | |
|----------|--|
| ISO 3509 | Coffee and its products – Vocabulary |
| ISO 4072 | Green coffee in bags - Sampling |
| ISO 4149 | Green coffee – Olfactory and visual examinations and determination of foreign matter and defects |
| ISO 6667 | Green coffee – Determination of proportion of insect-damaged beans |

3. TERMS AND DEFINITIONS.

For the purposes of this International Standard, the definitions given in ISO 3509 and the following apply:

- 3.1 Loss of mass: Any loss that can occur to the raw material during the coffee processing, bringing at the end an output loss of a coffee lot.

This standard assesses the influence of the defects on the loss of mass taking into account that possibilities to sort out defects exist and are used everywhere. Further revisions will introduce new elements if appropriate techniques are developed to also remove other defects and if special techniques are made available on a broader basis.

- 3.2 Sensorial concern: This column shows the influence of a defect on the organoleptic properties of the cup as well as the visual properties of the coffee presented to the final consumer. When only relevant to whole roast bean selling, the respective physical loss on removal is marked with an asterisk (*).

- 3.3 Normal coffee: Good commercial quality coffee as generally agreed upon with the ultimate goal of producing a coffee beverage that meets with consumer's satisfaction: the good trade practice agrees that a sound coffee lot is homogeneously constituted by coffee seeds, excluding the categories of defects written in 3.5.

- 3.4 Defect

Anything divergent from the regular, naked sound green coffee beans expected in a coffee lot. They can be measured as percent weight of defective items in the lot.

3.5 Categories of green coffee defects:

Foreign materials of

- Non-coffee or
- Non-bean origin, and

Coffee beans that are divergent from the average well-known normal coffee,

- in shape regularity/integrity,
- in visual appearance (colour and surface texture) or
- in taste of the cup after proper roasting and brewing

Thus, five categories of defects are distinguished, with different handling:

3.5.1 *Non-coffee defects.*

Foreign matter not originating from the coffee fruit. It is to be removed at an appropriate stage, for example during green coffee cleaning by sieving, classifying or by metal removal. The correct removal of these defects leads to a physical loss. Their accidental or fraudulent remaining up to the final production of roast and ground or soluble coffee may result in damage of the grinder or even a fraud against the consumer.

3.5.2. *Defects of non-bean origin:*

Coffee matter not originating from the bean. Defects of this type like skins/ husks/ hulls or dried unpulped cherries are in general removed by air classifying, leading to a physical loss. Their accidental or fraudulent remaining may result in product contamination, consumer deception, and trade distortion.

3.5.3. Irregular formed beans:

Beans divergent in form, shape and integrity. They may become a defect for those who sell roast coffee in whole beans. Although there might be a loss when removed and a sensorial concern after inappropriate roasting, the overall relevance is small.

3.5.4. Beans of irregular visual appearance:

Beans divergent in colour and surface appearance, with risk of influence on the cup taste; to be reduced by optical sorting techniques. Depending on the defects, sorting techniques can be sophisticated and expensive or do not exist.

Whereas applying general manufacturing practices can often eliminate non-coffee and non-bean defects, the visually identifiable defects are to be removed from the lot by special manufacturing practices.

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3.5.5. Off-taste coffee: [ISO/DIS 10470](#)

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Defect with sensory concern, to be identified after sample roasting and cup testing; also with a further risk of other contamination.

Pure organoleptic off-tastes are hardly to be sorted out. They can be identified after cupping a roast and ground coffee sample, following proper roasting and brewing.

DEFECT REFERENCE CHART

| Name of defect | Definition or Characteristics of defect | Loss of mass | Sensorial Concern |
|---|--|--------------|-------------------|
| 1. Defects associated to foreign matter | | | |
| 1.1 Stones | Stone of any diameter found in a green coffee lot | 1 | 0 |
| 1.2 Sticks | Twig of any diameter found in a green coffee lot | 1 | 0 |
| 1.3 Soil agglomerates | Granulated lump of soil particles | 1 | 0 |
| 1.4 Metallic matter | Metallic particles such as found after the coffee drying on the drying area and/or after degradation of industrial equipment | 1 | 0 |
| 1.5 Foreign matter other than described | Foreign matter as cigarette stumps, plastic particles, bag particles, strings | 1 | 0 |
| 1.6 Insect-Infested beans | Insect-infested bean: coffee bean harbouring one or more dead or live insects at any stage of development | 0 * | 0.5 * |
| https://standards.iteh.ai/catalog/standards/sist/12a7918f-2744-4f08-ba69-4d162b651172/iso-dis-10470 2. Defects associated to non bean matter coming from the coffee fruit | | | |
| 2.1 Bean in parchment (pergamino) | Coffee bean entirely or partially enclosed in its parchment (endocarp). | 0.5 | 0 |
| 2.2 Piece of parchment (pergamino) | Fragment of dried endocarp (parchment) | 0.5 | 0 |
| 2.3 Dried cherry (pod) | Dried fruit of the coffee tree, comprising its external envelopes and one or more beans. | 0.5 | 0 |
| 2.4 Husk fragment | Fragment of the dried external envelope (pericarp). NOTE: Divisible into small, medium /large fragments | 0.5 | 0 |

| 3.- Defects associated to irregular beans | | | |
|---|---|-----|---|
| 3.1 Malformed bean Shell/Ear | Coffee bean whose abnormal shape makes it clearly distinguishable. Note: This category includes: Shell – Malformed bean presenting a cavity. Ear – Malformed bean with ear shape Both are originated from the elephant bean | 0* | 0.5* |
| 3.2 Bean fragment | Fragment of a coffee bean of volume less than half a bean | 0.5 | 0.5 |
| 3.3 Broken bean | Fragment of a coffee bean of volume equal to or greater than half a bean | 0.5 | 0.5 |
| 3.4 Insect-damaged bean | Coffee bean damaged internally or externally by insect attack. | 0 | 0.5 |
| 3.5 Pulper-nipped bean; pulpercut bean | Wet-processed coffee bean cut or bruised during pulping, often with brown or blackish marks. | 0* | 0.5 (sometimes a fermented flavour may appear) |
| 4. Defects associated to visual appearance. | | | |
| 4.1 Black bean and partly black bean | Coffee bean whose interior is partly or totally black (endosperm) | 0 | 1 |
| 4.2 Black – green bean | Unripe coffee bean often with a wrinkled surface, with colour dark green almost black with glossy silverskin. | 0 | 1 |
| 4.3 Sour bean ("ardido") | Coffee bean deteriorated by excess fermentation, with a range of colours: very light brown-reddish colour, brown-black colour, yellowish green to dark reddish brown, and dark-brown internally (endosperm). In some cases it has a waxy or foxy silverskin. When roasted and infused it produces an unpleasant sour taste. | 0 | 1 |
| 4.4 Amber bean | Coffee bean with yellow colour, usually semi-transparent | 0 | 0.5 |

| | | | |
|---|--|---|---|
| 4.5 Immature bean; - “quaker” bean. | Unripe coffee bean often with a wrinkled surface having a greenish or metallic silverskin. Cell walls and internal structure are not fully developed. | 0 | 0.5 (sometimes a fermented flavour may appear) |
| 4.6 Waxy bean | Coffee bean with translucent waxy appearance. Range of colours from yellowish green to dark reddish brown, the latter being the most typical. Cell and surface have a decayed fibrous appearance. | 0 | 0.5 (sometimes a fermented flavour may appear) |
| 4.7 Bean with foxy silverskin (“melado”) | Coffee bean with range of colours from yellowish green to dark reddish brown, with reddish visual colour. | 0 | 0.5 (sometimes a fermented flavour may appear) |
| 4.8 Blotchy bean Spotted bean | Coffee bean showing irregular greenish, whitish or sometimes yellow patches | 0 | 0.5 |
| 4.9 Withered bean | Coffee bean which is wrinkled and light in weight. | 0 | 0.5 |
| 4.10 Spongy bean | Coffee bean of consistency analogous to the one of cork, i.e. whose tissue can be indented by pressure of fingernail. It is generally whitish in colour. | 1 | 0.5 |
| 4.11 White bean | Coffee bean with white surface. | 0 | 0.5 |
| 5.- Defects mostly evident in cupping | | | |
| 5.1 Beans producing stinker or fermented flavours | The bean presents a normal appearance. A very unpleasant flavour is detected in the cup like fermented, sour, stinker or rotten fish. On being freshly cut or scratched, the bean presents a very unpleasant odour. | 0 | 1 |
| 5.2 Beans producing other current off- flavours | The bean presents a normal appearance but it can be detected in the cup unpleasant musty, foul, dirty, earthy, woody, Rio, phenolic or jute-bag-like flavours. | 0 | 1 |

*: defect mostly evident to whole bean customers.

ANNEX A (Informative)

Main causes of defects, their effect on roasting-brew flavour, and possibilities of removal

| C a u s e s | Effects on roasting / Brew flavour | Removal |
|---|---------------------------------------|---------|
| 1. Defects associated to foreign matter | | |
| 1.1 Stones | | |
| Inadequate separation/cleaning. | Effect mainly economic. | B |
| 1.2 Sticks | | |
| Inadequate separation/cleaning. | Non-specific downgrading of flavour. | B |
| 1.3 Soil agglomerates | | |
| Inadequate separation/cleaning. | Effect mainly economic. | B |
| 1.4 Metallic matter | | |
| Inadequate separation/cleaning. | Effect mainly economic. | B |
| 1.5 Foreign matter other than described | | |
| Inadequate separation/cleaning. | Effect mainly economic. | B |
| 1.6 Insect-infested bean | | |
| Attack on cherries by <i>Hypothenemus haempei</i> (coffee berry borer) by <i>Araecerus</i> insect during storage, due to inadequate storage controls, or by any other kind of pest. | | A |
| 2. Defects associated to non bean matter coming from the coffee fruit | | |
| 2.1 Bean in parchment (pergamino) | | |
| In WPA coffees: Faulty hulling and separation of the dry parchment. In DPA and DPR coffees it is not expected as parchment is removed with the total dried husk. | Non-specific downgrading of flavour | B |
| 2.2 Piece of parchment (pergamino) | | |
| WPA coffees: Inadequate separation after hulling the parchment. Not expected neither in DPA nor DPR coffees as parchment is removed with total dried husk. | Non-specific downgrading of flavour | B |