INTERNATIONAL STANDARD

ISO 3632-1

Second edition
2011-09-01

Spices — Saffron (*Crocus sativus* L.) —

Part 1: Specification

*Épices — Safran (*Crocus sativus *L.) —*

Partie 1: Spécifications

Reference number
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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 3632-1 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 7, *Spices, culinary herbs and condiments*.

This second edition cancels and replaces ISO/TS 3632-1:2003, which has been technically revised.

ISO 3632 consists of the following parts, under the general title *Spices — Saffron* (Crocus sativus *L.*):

— *Part 1: Specification*

— *Part 2: Test methods*

Spices — Saffron (*Crocus sativus* L.) —

Part 1: Specification

1 Scope

This part of ISO 3632 establishes specifications for dried saffron obtained from the pistils of *Crocus sativus* L. flowers.

It applies to saffron in both of the following forms:

a) filaments and cut filaments;

b) powder.

NOTE The saffron plant is depicted in Figure 1, the saffron flower in Figures 2 and 3, the saffron pistil in Figure 4, and some examples of floral waste in Figure 5.

2 Normative references

The following referenced documents are indispensable for the application 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 928, *Spices and condiments — Determination of total ash*

ISO 930, *Spices and condiments — Determination of acid-insoluble ash*

ISO 941, *Spices and condiments — Determination of cold water-soluble extract*

ISO 948, *Spices and condiments — Sampling*

ISO 3632-2, *Spices — Saffron* (Crocus sativus *L.*) *— Part 2: Test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3632-2 and the following apply.

3.1
stigma
section of the aerial part of the pistil

EXAMPLE In the *Crocus sativus* L. flower, the stigma is dark red in colour and trumpet shaped, serrated or indented at the top and joined to the style at the end.

NOTE See Figure 4.

3.2
style
part of the pistil between the stigma and the ovary

NOTE See Figure 4.

3.3
stamen
male reproductive organ of a flower

NOTE In the *Crocus sativus* L. flower, stamens are yellow.

3.4
extraneous matter
all matter which belongs to a plant but which is not retained for use as a spice or herb

EXAMPLE In the *Crocus sativus* L. flower, the origin of extraneous matter can be floral waste (e.g. petals, separated styles, stamen, pollen grains and ovary parts) and plant waste which is waste other than floral waste.

3.5
foreign matter
all matter that is not part of the plant to which the spice or herb belongs

EXAMPLE In the *Crocus sativus* L. flower, the origin of foreign matter can be animal (e.g. living insects, dead insects, fragments of insects, contamination from rodents) or non-animal foreign matter. Non-animal foreign matter can be from other plants (e.g. other vegetable matters, leaves, stems, straw) or others (e.g. mineral, plastic).

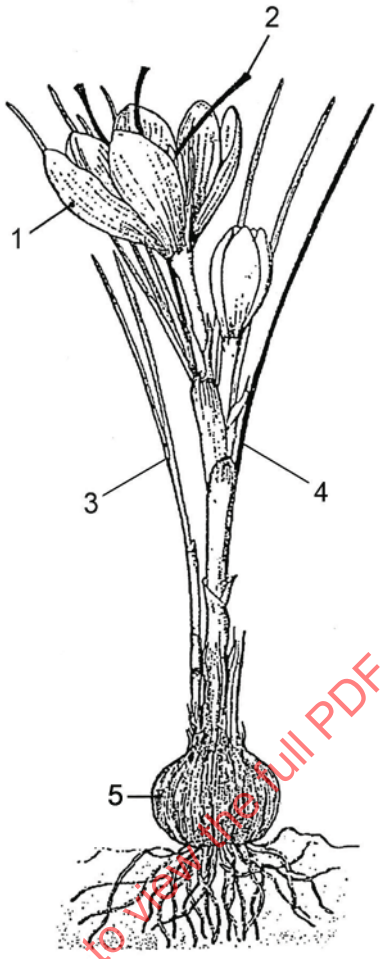
3.6
saffron in filaments
dried stigmas with a part of style of the *Crocus sativus* L. flower

NOTE The stigmas can be separated or joined in groups of two or three at the tip of a part of the style which is yellow-white in colour (about 20 mm to 40 mm in length).

3.7
saffron in cut filaments
dried stigmas of the *Crocus sativus* L. flower (with styles removed completely detached from each other)

3.8
saffron in powder form
particles obtained by crushing the filaments of the *Crocus sativus* L. flower

NOTE The particle size can vary according to the agreement between the buyer and the seller.



Key

1 flower
2 pistil
3 perianth
4 radical leaves
5 corn

Figure 1 — Saffron (*Crocus sativus* L.) plant

Figure 2 — Saffron (*Crocus sativus* L.) flower

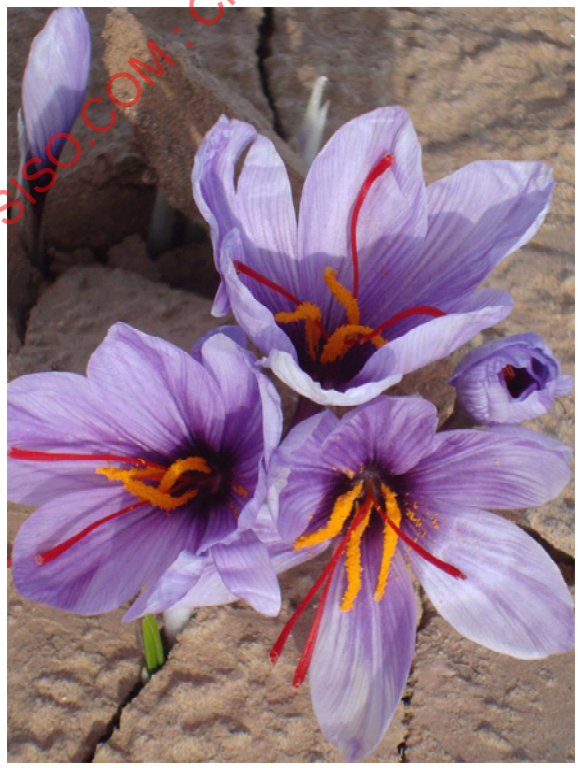
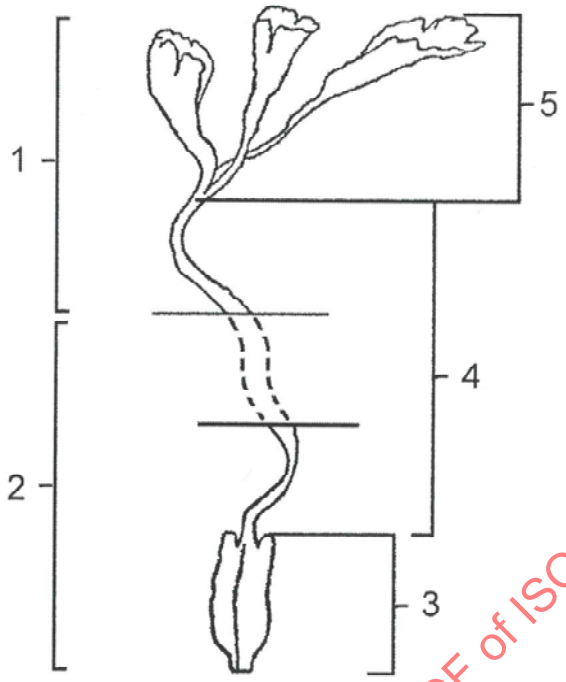


Figure 3 — Whole saffron (*Crocus sativus* L.) flower (longitudinal cut)

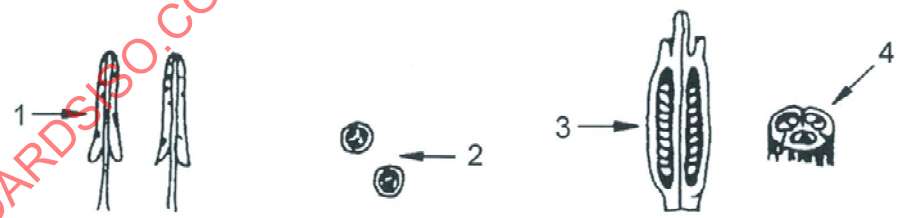


Key

1 aerial part
2 non-aerial part
3 ovary
4 style
5 stigmas (about 20 mm to 40 mm in length)

NOTE The total length of the fresh pistil is between 60 mm and 100 mm.

Figure 4 — Saffron (*Crocus sativus* L.) female reproductive organ (pistil)



Key

1 stamens (about 20 mm in length)
2 pollen grains (80 µm to 100 µm in diameter)
3 ovary (longitudinal cut) (about 10 mm in length)
4 ovary (transversal cut)

Figure 5 — Some examples of floral waste

4 Characteristics

4.1 General

Saffron is considered to be pure when it complies with the requirement of this part of ISO 3632 and when no matter has been added to the natural product.

4.2 Sensory analysis

The saffron flavour shall be characteristic and slightly bitter.

The product shall be free from foreign flavours.

4.3 Foreign matter

4.3.1 From non-animal sources

4.3.1.1 From other plants

See Table 1.

4.3.1.2 Others

All forms of saffron shall be free from it.

4.3.2 From animals

All forms of saffron shall be free from it.

4.4 Extraneous matter

See Table 1.

4.5 Classification of saffron

The saffron in filaments, cut filaments and powdered forms is classified into three categories which are determined according to physical criteria (Table 1) and chemical properties (Table 2), and in accordance with the methods specified in ISO 3632-2.

5 Sampling

The sampling of saffron in filaments, cut filaments and powder forms shall be carried out in accordance with the method specified in ISO 948.

6 Test methods

Saffron samples shall be analysed to ensure they comply with the specifications of this part of ISO 3632, by following the physical and chemical analysis methods specified in ISO 3632-2.

The tests shall be carried out as quickly as possible after preparation of the test samples.

Table 1 — Classification by physical criteria of saffron in filaments and cut filaments

Characteristics	Categories			Test method
	I	II	III	
Extraneous matter (mass fraction), % max. Floral and plant waste	0,5	3	5	ISO 3632-2:2010, Clause 8
Foreign matter (mass fraction), % max. From non-animals (from other plants)	0,1	0,5	1,0	ISO 3632-2:2010, Clause 9

Table 2 — Chemical specifications of saffron in filaments, cut filaments and powder forms

Characteristics	Specifications Categories			Test method
	I	II	III	
Moisture and volatile matter content (mass fraction), % max.				
Saffron in filaments and cut filaments forms	12	12	12	ISO 3632-2:2010, Clause 7
Saffron in powder form	10	10	10	
Total ash (mass), on dry matter, % max.	8	8	8	ISO 928 and ISO 3632-2:2010, Clause 12
Acid-insoluble ash (mass fraction), %, on dry matter, max.	1,0	1,0	1,0	ISO 930 and ISO 3632-2:2010, Clause 13
Soluble extract in cold water (mass fraction), on dry matter , % max.	65	65	65	ISO 941 and ISO 3632-2:2010, Clause 11
Flavour strength (expressed as picrocrocin) $A^{1\%}_{1\,cm}$ 257 nm, on dry matter, min. (at this wavelength it has a maximum absorbance of picrocrocin)	70	55	40	ISO 3632-2:2010, Clause 14
Aroma strength (expressed as safranal) $A^{1\%}_{1\,cm}$ 330 nm, on dry matter, min. max. (at this wavelength it has a maximum absorbance of safranal)	 20 50	 20 50	 20 50	ISO 3632-2:2010, Clause 14
Colouring strength (expressed as crocin) $A^{1\%}_{1\,cm}$ 440 nm, on dry matter, min. (at this wavelength it has a maximum absorbance of crocin)	200	170	120	ISO 3632-2:2010, Clause 14
Artificial colorants	Absent	Absent	Absent	ISO 3632-2:2010, Clause 16 and/or 17
NOTE Additional analysis can be carried out, where necessary, if there is enough of the sample left.				