# INTERNATIONAL STANDARD 3720

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# Black tea — Specification

*Thé noir — Spécifications*

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## FOREWORD

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 3720 was developed by Technical Committee ISO/TC 34, *Agricultural food products,* and was circulated to the member bodies in August 1975.

It has been approved by the member bodies of the following countries :

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Sri Lanka
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# Black tea — Specification

## 0 INTRODUCTION

The quality of teas is usually assessed by tea tasters, who base their judgements on their previous experience of tea from the producing area and their knowledge of national or regional conditions and preferences in the consuming country. Account may be taken of characteristics such as the appearance of the tea before preparation of a liquor, the appearance of the infused leaf and the appearance, odour and taste of the liquor, but chemical analysis is not carried out unless it is suspected that the product has been adulterated, or unless the product exhibits abnormal characteristics.

The content of caffeine and the content of polyphenolic constituents are important chemical characteristics of black tea, but it has not been possible to include limits for either of them in the specification. In the case of caffeine, agreement has not yet been reached on a standard method for the determination. In the case of polyphenolic constituents, knowledge about test methods is not sufficiently developed to justify the standardization of any one of the methods in existence; moreover, information on the content of these constituents is only available for a few types of tea.

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a minimum standard for black tea, defined by certain limits of requirements.

## 2 REFERENCES

ISO 1572, *Tea — Preparation of ground sample of known dry matter content.*

ISO 1573, *Tea — Determination of loss in mass at* 103 °C.

ISO 1574, *Tea — Determination of water extract.*

ISO 1575, *Tea — Determination of total ash.*

ISO 1576, *Tea — Determination of water-soluble ash and water-insoluble ash.*

ISO 1577, *Tea — Determination of acid-insoluble ash.*

ISO 1578, *Tea — Determination of alkalinity of water-soluble ash.*

ISO 1839, *Tea sampling*

- *Part I : Sampling from large containers.*
- *Part II : Sampling from small containers.*
- *Part III : Sampling from containers in the range* 1 *to* 20 kg.[1)]

## 3 DEFINITION

**black tea :** Tea derived solely and exclusively, and produced by acceptable processes, notably fermentation and drying, from the leaves, buds and tender stems of varieties of the species *Camellia sinensis* (Linnaeus) O. Kuntze known to be suitable for making tea for consumption as a beverage.

## 4 REQUIREMENTS

### 4.1 General requirements

The tea shall be clean and reasonably free from extraneous matter.

### 4.2 Chemical requirements

**4.2.1** The tea shall comply with the requirements specified in the table, in which all the figures given are calculated on the basis of the material oven-dried to constant mass at 103 ± 2 °C.

1) At present at the stage of draft.

**4.2.2** No limit is specified for the "moisture" content of the tea. If desired, the actual loss in mass at 103 °C of the sample under test may be determined and the result recorded in the test report. The determination shall be carried out by the method described in ISO 1573.

TABLE – **Chemical requirements for black tea**

| Characteristic | Requirement | Reference to method of test |
|---|---|---|
| Water extract, % (*m/m*) minimum | 32 | ISO 1574 |
| Total ash, % (*m/m*) maximum<br>minimum | 8<br>4 | ISO 1575 |
| Water-soluble ash, as percentage of total ash, minimum | 45 | ISO 1576 |
| Alkalinity of water-soluble ash (as KOH), % (*m/m*) minimum<br>maximum | 1,0*<br>3,0 | ISO 1578 |
| Acid-insoluble ash, % (*m/m*) maximum | 1,0 | ISO 1577 |
| Crude fibre, % (*m/m*) maximum | 16,5 | Annex |

* When the alkalinity of water-soluble ash is expressed in terms of milli-equivalents per 100 g of ground sample, the limits are
- *minimum* 17,8
- maximum 53,6

## 5 SAMPLING

See ISO 1839.

## 6 METHODS OF TEST

**6.1** The samples of tea shall be tested for conformity with the chemical requirements of this specification by the methods of test mentioned in the table.

**6.2** The determinations specified in the table shall be carried out on a ground sample, prepared as described in ISO 1572.

## 7 PACKING AND MARKING

### 7.1 Packing

The tea shall be packed in suitable clean and dry containers, made of material which does not affect the tea.

### 7.2 Marking

The packages of tea shall be marked in accordance with any relevant legal requirements and agreements between the interested parties.

ANNEX

# METHOD FOR THE DETERMINATION OF CRUDE FIBRE IN TEA

## A.1 PRINCIPLE

Digestion of the material with dilute sulphuric acid solution; filtration and washing of the residue, followed by digestion with sodium hydroxide solution; filtration, washing, drying and weighing of the residue remaining after the second digestion, followed by ashing, weighing of the ash and hence determination of the loss in mass on ashing.

## A.2 REAGENTS

The reagents used shall be of recognized analytical reagent quality. The water used shall be distilled water or water of equivalent purity.

**A.2.1 Sulphuric acid,** 0,255 N standard solution (12,5 g/l).

**A.2.2 Sodium hydroxide,** 0,313 N standard solution (12,5 g/l).

**A.2.3 Hydrochloric acid,** 10 g/l solution.

**A.2.4 Ethanol.**

**A.2.5 Diethyl ether.**

## A.3 APPARATUS

Usual laboratory apparatus not otherwise specified, and the following items :

**A.3.1 Analytical balance.**

**A.3.2 Beaker,** 600 ml, without a spout.

**A.3.3 Round-bottom flask,** 500 ml.

**A.3.4 Filter,** of fine linen or other suitable material which will not allow the passage of a significant amount of solid particles; the filter may conveniently be supported on a Buchner funnel.

**A.3.5 Gooch crucible,** containing a thin but compact layer of asbestos, prepared using the ashing procedure described in A.4.5, repeating it until the difference between successive weighings is not more than 0,001 g.

**CAUTION — Safety precautions shall be taken to avoid inhalation of asbestos dust.**

**A.3.6 Muffle furnace,** capable of being maintained at 525 ± 20 °C.

## A.4 PROCEDURE

### A.4.1 Test portion

Weigh, to the nearest 0,001 g, about 2,5 g of the sample prepared in accordance with ISO 1572.

### A.4.2 Acid digestion

Transfer the material to the 600 ml beaker (A.3.2) and add 200 ml of boiling sulphuric acid solution (A.2.1). Immediately place the condenser [consisting of the 500 ml round-bottom flask (A.3.3) filled with cold water] in position on top of the beaker and heat the solution so that it commences to boil within 1 min. Maintain an intermittent swirling movement to remove adhering particles from the sides of the beaker and continue boiling for exactly 30 min. A small volume of antifoaming agent may be added if required.

Remove the source of heat, add 50 ml of cold water to the solution in the beaker and filter it through the filter (A.3.4). The filtration should be completed in not more than 10 min. Wash the residue on the filter with boiling water until the washings are no longer acid to litmus.

### A.4.3 Alkaline digestion

Return the residue on the filter to the beaker (A.3.2) used for the digestion and add 200 ml of boiling sodium hydroxide solution (A.2.2). Place the condenser in position and allow the contents of the vessel to boil within 1 min. Continue boiling for exactly 30 min, observing the precautions specified in A.4.2.

Filter immediately through the Gooch crucible (A.3.5). Wash out any material remaining in the flask with hot water. Wash the residue in the Gooch crucible with boiling water, hydrochloric acid solution (A.2.3) and then with boiling water until the washings are no longer acid to litmus. Finally, wash the residue with ethanol (A.2.4) and then with diethyl ether (A.2.5). Apply suction to remove the last traces of solvent.

### A.4.4 Drying

Dry the crucible and contents at 103 to 105 °C, allow to cool and then weigh. Repeat this procedure until the difference between successive weighings is not more than 0,001 g. Record the final mass to the nearest 0,001 g.

### A.4.5 Ashing

Ash the contents of the crucible in the muffle furnace (A.3.6) at 525 ± 20 °C to destroy all the carbonaceous material. Cool the crucible and the material remaining and weigh them to the nearest 0,001 g.

### A.4.6 Note on procedure

In the determination of crude fibre in many food products the material is subjected to an extraction with light petroleum to remove fat. For products containing less than 10 % of fat, including tea, such an extraction is not necessary.

## A.5 EXPRESSION OF RESULTS

The percentage, by mass, of crude fibre content on the dry basis is equal to

$$\frac{100\,(m_2 - m_3)}{m_1}$$

where

$m_1$ is the mass, in grams, of the test portion (A.4.1);

$m_2$ is the mass, in grams, of the crucible, asbestos and contents before ashing (A.4.4);

$m_3$ is the mass, in grams, of the crucible containing asbestos and ash (A.4.5).

## A.6 REPEATABILITY

The difference between crude fibre contents obtained from two determinations carried out simultaneously or in rapid succession by the same analyst shall not exceed 0,5 (absolute value).

## A.7 TEST REPORT

The test report shall show the method used and the result obtained. It shall also mention all operating details not mentioned in this annex, or regarded as optional, as well as any circumstances that may have influenced the result.

The report shall include all details required for complete identification of the sample.