भारतीय मानक **IS 3633 : 2024**

Indian Standard

काली चाय — विशिष्टि

(तीसरा पुनरीक्षण)

Black Tea — Specification

(Third Revision)

ICS 67.140.10

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October 2024 **Price Group 6**

Stimulant Foods Sectional Committee, FAD 06

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Stimulant Foods Sectional Committee had been approved by the Food and Agriculture Division Council.

Black tea is a popular beverage consumed all over the world. It is an important commodity in the International trade and India is one of the major black tea producing and exporting countries in the world. The objective of this standard is to specify the plant source from which black tea is to be manufactured and to set requirements for certain chemical characteristics which, if met, are an indication that the black tea has been subjected to recognized good production practices. However, for commercial purpose and to save time and expenses, black tea is also assessed for quality by tasters, who from their previous experience can assess whether a given black tea would meet the requirements of the standards or not.

This standard was first published in 1966 and then revised in 1972. The second revision was published in 2003 to incorporate the requirements of metallic contaminants, iron filings and pesticidal residues and delete the provisions of green tea for which a separate standard IS 15344 : 2003 'Green tea — Specification' was formulated. A scheme for labelling environment friendly products known as ECO-Mark was introduced in the second revision at the instance of the Ministry of Environment and Forests (MEF), Government of India. The ECO-Mark shall be administered by the Bureau of Indian Standards (BIS) under the *BIS Act*, 1986 as per the Resolution No. 71 dated 20 February 1991 as published in the Gazette of the Government of India vide GSR No. 85(E) dated 21 February 1991. For a product to be eligible for the ECO-Mark, it shall also carry the Standard Mark of ISI for quality besides meeting additional environment friendly (EF) requirements. In this standard, the environment friendly requirements for black tea have also been included, which are based on the Gazette Notification No. 678(E) dated 30 August 1994 for labelling edible oils and coffee as environment friendly products, published by the Ministry of Environment and Forests, Government of India.

This third revision has been brought out to align the product specifications with the *Food Safety and Standards* (*Food Products Standards and Food Additives*) *Regulations*, 2011 and *Food Safety and Standards* (*Contaminants, Toxins and Residues*) *Regulations*, 2011. Major changes include:

a) Product description has been updated;

b) For use of permitted flavors and processing aids, *FSSAI Regulations* have been referred;

c) For limits of pesticides and contaminants, *FSSAI Regulations* have been referred; and

d) Limits of heavy metals and contaminants have been updated.

In the preparation of this standard, due consideration has been given to the *Food Safety and Standards Act*, 2006 and *Regulations* framed thereunder and *Legal Metrology Act*, 2009 and *Rules* framed thereunder. This standard is, however, subject to the restrictions imposed under these, wherever applicable.

The composition of the Committee responsible for formulation of the standard is given in Annex D.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

BLACK TEA — SPECIFICATION

(Third Revision)

1 SCOPE

1.1 This standard prescribes the requirements, methods of test and sampling for black tea.

1.2 It does not cover the requirements for teas grown in *Kangra* valley.

2 REFERENCES

The standards listed in Annex A contain provisions, which through reference in this text constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

3 TERMINOLOGY

For the purpose of this standard, the following definition shall apply.

3.1 Black Tea — Black tea means tea derived solely and exclusively, and produced by acceptable processes, notably withering, leaf maceration, aeration/oxidation (fermentation) and drying, from the tender shoots of varieties of the cultivated species of *Camellia sinensis* (L.) O. Kuntze, known to be suitable for making black tea for consumption as a beverage.

4 REQUIREMENTS

4.1 Description

4.1.1 Black tea shall produce a liquor of characteristic flavour, colour and taste and shall be evaluated in accordance with the procedure prescribed in Annex B (cup test). Black tea shall have no taint, off odour and mustiness and shall be free from extraneous matter and harmful substances. Black tea shall be free from living insects, mould, dead insects, insect fragments and rodent contamination. The product shall be free from any added colouring matter when tested as per **3.5** of IS 15642 (Part 1).

4.1.2 Packaged black tea may contain natural flavours and natural flavouring substances.

NOTE — Natural flavours and natural flavouring substances are flavour preparations and single substance respectively, acceptable for human consumption, obtained exclusively by physical processes from materials of plants origin either in their natural state or after processing for human consumption in packaged tea only.

4.1.3 Black tea may contain permitted processing aids within the limits as specified under the *Food Safety and Standards* (*Food Products Standards and Food Additives*) *Regulations*, 2011.

4.1.4 Black tea used in manufacture of flavoured tea shall conform to the requirement of black tea. The flavoured tea manufacturers shall register themselves with the tea board before marketing flavoured tea.

4.2 Iron filings in the product shall not exceed the limit of 250 mg/kg, and their size shall not be greater than 2.0 mm when tested by the method given in Annex C.

4.3 Chemical Requirements

Black tea shall also comply with the requirements specified in the Table 1 in which, all the, requirements are expressed on the basis of the material oven-dried at 103 °C ± 2 °C by the method described in IS 13852.

4.4 Heavy metals, if any, in black tea shall not exceed the limits specified in Table 2.

4.5 The pesticide residues and other contaminants, if any, in black tea shall not exceed the limits as prescribed in the *Food Safety and Standards* (*Contaminants, Toxins and Residues*) *Regulations*, 2011.

4.6 Hygiene Requirements

Black tea shall be manufactured and packed under hygienic conditions as per IS 2491.

4.7 Additional Requirements for ECO-Mark

4.7.1 *General Requirements*

4.7.1.1 The product shall conform to the requirements prescribed under **4**.

4.7.1.2 The manufacturers shall produce to BIS environmental consent clearance from the concerned State Pollution Control Board as per the provisions of the *Water* (*Prevention and Control of Pollution*) *Act*, 1974; the *Air* (*Prevention and Control of Pollution*) *Act*, 198l; and the *Water*

(*Prevention and Control of Pollution*) *Cess Act*, 1977 along with the authorization, if required under the *Environment* (*Protection*) *Act*, 1986, while applying for ECO-Mark.

4.7.2 *Specific Requirements*

4.7.2.1 The product shall be free from adulterants like spent leaves, grit, sand, leaves of other plants. The product shall also be free from off odour. It shall have its characteristic flavour. It shall be free from mould growth.

4.7.2.2 No extraneous flavour shall be added, however, for exports this may be allowed as per the provisions of the *Food Safety and Standards Act*, 2006 and the Rules and Regulations framed thereunder.

4.7.2.3 The iron filings in the product shall not exceed the limit of 200 mg/kg, and their size shall not be greater than 2.0 mm when tested by the method given in Annex C.

Table 1 Requirements for Black Tea

(*Clause* 4.3)

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Water extract, percent by mass, *Min*	32.0	IS 13862
ii)	Total ash, percent by mass	4.0 to 8.0	IS 13854
iii)	Water-soluble ash, of total ash, percent by mass, *Min*	45	IS 13855
vi)	Alkalinity of water soluble ash (as KOH), percent by mass	1.0 to 3.0	IS 13856
v)	Acid-insoluble ash, percent by mass, *Max*	1.0	IS 13857
vi)	Crude fibre, percent by mass, *Max*	16.5	IS 16041

NOTE — No limit is specified for the moisture content of the black tea. If desired, the actual loss in mass at 103 °C ± 2 °C of the sample as received may be determined and the result recorded in the test report. In such cases, the determination shall be carried out by the method described in IS 13853.

Table 2 Limits of Heavy Metals in Black Tea

(*Clause* 4.4)

Sl No.	Metal Contaminant	Limit (mg/kg), *Max*	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Lead	5	IS 12074 or AOAC 2015.01*
ii)	Copper	150	IS 11123
iii)	Arsenic	1.1	IS 11124 or AOAC 2015.01*
iv)	Tin	250	**17** of IS 2860
v)	Cadmium	1.5	AOAC 2015.01
vi)	Mercury	1.0	IS 12041 or AOAC 2015.01*
vii)	Methyl mercury	0.25	*See* Note 2

NOTES

1 In case of dispute, the method indicated by '*' shall be the referee method.

2 Any validated international method may be used.

5 PACKING AND MARKING

5.1 Packing

5.1.1 Black tea shall be packed in closed, clean and dry containers made of material, which does not affect the black tea, or in accordance with the customary trade practices so as to allow the black tea to retain its freshness.

5.1.2 For ECO-Mark the product shall be packed in such packages, which are made from recyclable, reusable, or biodegradable materials, which shall be declared by the manufacturer and maybe accompanied with detailed instructions for proper use.

5.2 Marking

5.2.1 The information given in 5.2.1.1 or 5.2.1.2 shall be clearly and indelibly marked on the package.

5.2.1.1 *Retail package*

a) Name and address of the manufacturer or packer or importer;

b) Name of the product;

c) Net quantity of contents;

d) Month and year or date, month and year of manufacture/packaging;

e) Expiry date (date, month and year to be indicated);

f) Lot No. or batch code number or any other identification number;

g) Storage conditions, if applicable;

h) Tea board registration number, if flavour is added;

j) Declaration if flavors and flavouring substance added;

k) Nutritional information (if the product is flavoured);

m) Allergen declaration (may be required for flavoured products); and

n) Any other, requirements given under the *Food Safety and Standards* (*Labelling and Display*) *Regulations*, 2020 and the *Legal Metrology* (*Packaged Commodities*) *Rules*, 2011.

5.2.1.2 *Wholesale package*

Every packaged food meant for non-retail sale shall provide the following mandatory information either on the container or pasted on the label thereto:

a) Name and address of the manufacturer or packer or importer;

b) Name of the product;

c) Net quantity of contents;

d) Month and year of manufacture/packaging;

e) Expiry date (date, month and year to be indicated);

f) Lot No. or batch, code number or any other identification number;

g) A statement ‘NON-RETAIL CONTAINER’;

h) Declaration of total number of packages in terms of number and weight; and

j) Any other requirement as stipulated under *Food Safety and Standards* (*Labelling and Display*) *Regulations*, 2020 and the *Legal Metrology* (*Packaged Commodities*) *Rules*, 2011.

5.2.2 *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

5.2.3 The product may also be marked with ECO-Mark. The following additional information shall also be marked on the label for ECO-Mark:

a) List of identified critical ingredients in descending order of compositions, percent by mass; and

b) The criteria for which the product has been labelled as ECO-Mark.

6 SAMPLING

The ground sample of the material shall be prepared in accordance with the procedure outlined in IS 13852 before undertaking the analysis for various chemical characteristics. The method of drawing representative samples of the material and the criteria for conformity shall be as prescribed in IS 3611.

ANNEX A

(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*
IS 2491 : 2013	Food hygiene — General principles — Code of practice (*third revision*)
IS 2860 : 1964	Methods of sampling and test for processed fruits and vegetables
IS 3611 : 2000/ ISO 1839 : 1980	Tea — Sampling (*second revision*)
IS 4541 : 1986	Glossary of tea terms (*first revision*)
IS 6273 (Part 1) : 2024	Sensory evaluation of foods — Guide: Part 1 Optimum requirements (*first revision*)
IS 6400 : 2023/ ISO 3103 : 2019	Tea — Preparation of liquor for use in sensory tests (*second revision*)
IS 11123 : 1984	Method for determination of copper by atomic absorption spectrophotometry
IS 11124 : 1984	Method for atomic absorption spectrophotometric determination of arsenic
IS 12041 : 1987	Method for the determination of mercury by atomic absorption spectrophotometer
IS 12074 : 1987	Method for determination of lead by atomic absorption spectrophotometer
IS 13852 : 1994/ ISO 1572 : 1980	Tea — Preparation of ground sample of known dry matter content
IS 13853 : 1994/ ISO 1573 : 1980	Tea — Determination of loss in mass at 103 °C
IS 13854 : 1994/ ISO 1575 : 1987	Tea — Determination of total ash
IS 13855 : 1993/ ISO 1576 : 1988	Tea — Determination of water-soluble ash and water-insoluble ash
IS 13856 : 1993/ ISO 1578 : 1975	Tea — Determination of alkalinity of water-soluble ash
IS 13857 : 1993/ ISO 1577 : 1987	Tea — Determination of acid-insoluble ash
IS 13862 : 1999/ ISO 9768 : 1994	Tea — Determination of water extract (*first revision*)
IS 15642 (Part 1) : 2006	Quick methods of adulterants/ contaminants in common food products: Part 1 Physical methods
IS 16041 : 2012/ ISO 15598 : 1999	Tea — Determination of crude fibre content

ANNEX B

(*Clause* 4.1.1)

CUP TEST

B-1 GENERAL CONDITIONS

B-1.1 The general conditions for sensory evaluation of teas shall be as given in IS 6273 (Part 1).

B-1.2 Cup test should be conducted by a panel consisting of 3, 5 or 7 members.

B-2 PRECAUTIONS

B-2.1 The cup test should preferably be conducted an hour after breakfast and an hour before lunch. The panelists should not smoke, 30 min before the tasting session and should also refrain from using perfumes before tasting.

B-2.2 The panelists should record their reactions in the proforma immediately after evaluating an attribute.

B-2.3 In one session not more than 8 samples should be tested.

B-3 SAMPLING AND PREPARATION OF INFUSION

B-3.1 Sampling

A representative sample should be drawn from the lot. Precaution should be taken to avoid extraneous contamination in drawing, handling and preparing samples in the laboratory.

B-3.2 Preparation of Infusion

Infusion for black or green tea shall be prepared in accordance with provisions of IS 6400. In the case of instant tea in solid form, the infusion shall be prepared as per the procedure (direction for use) given by the manufacturer.

B-3.3 Coding

Coding of samples should be done as recommended in **7** of IS 6273 (Part 1).

B-4 EVALUATION

Teas shall be evaluated for its sensory attribute in accordance with the card given in Table 3.

B-5 RESULT

Teas shall be considered having a particular defect if majority of the panel members agree to it.

Table 3 Evaluation Card for Teas

(*Clause* B-4)

Name ---------- **Date** ----------

Batch No. ---------- **Time** ----------

Sl No.	Characteristic	Desirable	Undesirable	
			Defects	Tick (√)
1.	Dry leaf appearance		a) Dust	
			b) Extraneous matters	
2.	Dry leaf aroma		a) Baggy	
			b) Chesty	
			c) Stale	
3.	Dry leaf colour		Dull	
4.	Liquor taste		a) Dull	
5.			b) Baggy	
6.			c) Flat	
7.			d) Sour	
8.			e) Burnt	
9.			f) Raw	
10.			g) Smoky	
11.			h) Taint	
12.			j) Thin	
13.	Liquor colour		a) Dull	
14.			b) Pale (not in green tea)	
15.	Infused leaf appearance		a) Dull	
16.			b) Black	
17.	Infused leaf aroma		a) Burnt	
18.			b) Taint	

NOTES

1 In the case of instant tea in solid form, the evaluation shall be carried out for liquor taste and liquor colour.

2 For the purpose of this test, the terminology given in IS 4541 shall apply. Sample shall be assessed tor the parameters mentioned. Defects shall be indicated by ticking.

ANNEX C

(*Clauses* 4.2 *and* 4.7.2.3)

DETERMINATION OF CONTENT AND SIZE OF IRON PARTICLES

C-1 DETERMINATION OF IRON PARTICLE CONTENT

C-1.1 Procedure

Weigh accurately (to the nearest 0.000 1 g) 25 g of homogeneous ground tea sample (using porcelain mortar) which is passed through 500 micron mesh (*see* IS 13852). Spread it uniformly on a thick white sheet or paper. Run a powerful magnet (rare earth magnet, min 5 000 Gauss), wrapped by butter paper, over the sample. Iron filings which are present in tea will stick on the magnet. Transfer all the iron filings into a porcelain mortar. Repeat the process until no iron filings stick on the magnet. Grind the collected iron filings. Spread all the iron filings on a white sheet or paper and separate the iron filings using magnet again. Transfer all the iron filings into a clean, dry and previously weighed china dish. Weigh the iron filings and express the mass of iron filings as per the formula given at **C-1.2**.

C-1.2 CALCULATION

$$\text{Iron filings, mg/kg} = \frac{M_1 - M_0}{M_2} \times 10^6$$

where

M_1 = mass, in g, of iron filings with china dish;

M_0 = mass, in g, of empty china dish; and

M_2 = mass, in g, of sample taken for the test.

C-2 DETERMINATION OF SIZE OF IRON PARTICLES

C-2.1 Procedure

C-2.1.1 Calibrate an ocular scale against a known stage-micrometer scale. This is done by placing an ocular scale in the eye-piece of a microscope. Focus the stage micrometers under the desired magnification. Count the number of ocular scale covering the number of stage micrometer scale and calculate the factor.

Example:

If *x* number of ocular number scales = *y* number of stage micrometer scales, then one ocular stage (factor) = *y*/*x* mm.

C-2.1.2 Place iron particles under question on a glass light and focus same magnification. Bring individual particles under the ocular scale. Count the number of ocular scale covering the too farthest points of the particle. Multiply this number by the factor in order to get the size of the iron particles.

ANNEX D

(*Foreword*)

COMMITTEE COMPOSITION

Stimulant Foods Sectional Committee, FAD 06

Organization	*Representative(s)*
Tea Board India, Kolkata	SHRI S. SOUNDARARAJAN **(*Chairperson*)**
Coffee Board, Bengaluru	DR MANDAPPA I. M. DR TILUTOMA MUDOI (*Alternate*)
Confederation of Indian Food Trade and Industry, New Delhi	MS RANJEET KAUR MS VARSHA YADAV (*Alternate*)
Consumer Research, Education, Action, Training and Empowerment, Paramakudi	DR P. DURAISINGAM SHRI K. SURESH KANNA (*Alternate*)
CSIR - Central Food Technological Research Institute, Mysuru	DR PUSHPA S. MURTHY DR DEVENDRA J. HEWARE (*Alternate*)
Directorate of Cashewnut and Cocoa Development, Kochi	DR FEMINA SHRI DADASAHEB DESAYI (*Alternate*)
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National Tea Research Foundation, Kolkata	DR AMRIT CHANDRA BARBORA
Nestle India Limited, Gurugram	MS SHREYA PANDEY MS DICKSHA MATHUR (*Alternate*)
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Tea Association of India, Kolkata	SHRI PRABIR KUMAR BHATTACHARJEE SHRI GITOPAM HAZARIKA (*Alternate*)
Tea Board India, Kolkata	DR MAHIPAL SINGH DR ANIRBAN BASU MAJUMDER (*Alternate*)
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Member Secretary
DR BHAWANA
SCIENTIST 'D'/JOINT DIRECTOR
(FOOD AND AGRICULTURE), BIS

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