भारतीय मानक

Indian Standard

IS 18252 : 2023

पैकेट बंद कच्चे नारियल का पानी — विशिष्टि

Packed Tender Coconut Water — Specification

ICS 67.160.20

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May 2023 **Price Group 5**

Fruits, Vegetables and Allied Products Sectional Committee, FAD 10

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Fruits, Vegetables and Allied Products Sectional Committee had been approved by the Food and Agriculture Division Council.

Tender coconut water occupies an important place among the processed coconut products which are exported from India. There is ample scope for the development of external as well as the internal trade for this product. It is necessary to ensure the quality of the products, if the demand is to be maintained and further developed. In order to ensure maintenance of optimum quality, it is necessary to have strict quality control based specifications. It was, therefore, found necessary to formulate an Indian Standard for this product.

While formulating this standard, necessary consideration has been given to the relevant Rules and Regulations prescribed under the *Food Safety and Standards Act*, 2006 and *Legal Metrology* (*Packaged Commodities*) *Rules*, 2011. This standard is however, subject to the restriction imposed under these, wherever applicable.

The composition of the committee responsible for formulation of this Indian Standard is listed 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

PACKED TENDER COCONUT WATER — SPECIFICATION

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for packed tender coconut water.

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 REQUIREMENTS

3.1 Description

The term tender coconut water shall mean the undiluted natural aqueous liquid endosperm of the 7 months to 9 months old (*Cocos nucifera* L.) coconut without addition of the solid endosperm.

3.2 Food Additives

No natural or artificial substance or ingredient shall be added to the coconut water to enhance its quality or preservation. Chemicals present in the product should only be those present as a result ofthe natural development of the fruit while on the tree.

3.3 Hygienic Conditions

The material shall be manufactured and packed under hygienic conditions (*see* IS 2491).

3.4 The product shall also conform to the requirements given in Table 1 and Table 2.

4 PACKING AND MARKING

4.1 Packing

Tender coconut water shall be packed either in hermetically sealed open top sanitary cans [*see* IS 9396 (Part 1)] or in food grade plastic material or glass bottles (*see* IS 11984) or flexible packs or aseptic packages.

4.2 Marking

Each container shall be marked with the following particulars:

a) Name of the product;
b) Brand name, if any;
c) Name and address of manufacturer;
d) Batch or code number;
e) Net quantity;
f) List of ingredients in descending order of proportion;
g) Date of packaging and expiry/use by date (DD/MM/YY); and
h) Any other markings required under the *Legal Metrology* (*Packaged Commodities*) *Rules*, 2011, and the *Food Safety and Standards* (*Packaging and Labelling*) *Regulations*, 2011.

4.3 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 product(s) may be marked with the Standard Mark.

5 SAMPLING

Unless otherwise agreed to between the purchaser and the supplier, sampling for lot acceptance shall be done in accordance with **3** of IS 2860.

Table 1 Requirements for Packed Tender Coconut Water
(*Clause* 3.4)

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Total soluble solids, g per100 ml, *Max.*	4.71	IS 13815
ii)	Reducing sugar, g per 100ml, *Min.*	0.8	**7** of IS 7585
iii)	Sucrose, g per 100 ml, *Min.*	1.28	IS 11764
iv)	Total sugar, g per 100 ml, *Min.*	2.08	Annex A
v)	Ash, percent by mass, *Max.*	0.62	Annex B
vi)	*p*H	4.3 - 6.25	Annex D of IS 3881

Table 2 Microbiological Requirements for Packed Tender Coconut Water
(*Clause* 3.4)

Sl No.	Characteristic	Requirement				Method of Test, Ref to
		Sampling Plan [1)]		Limit (cfu)		
		n	***c***	***m***	***M***	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	*Salmonella*	5	0	Absent/25g	NA	IS 5887 (Part 3/Sec 1)
ii)	*Listeria monocytogenes*	5	0	Absent/25g	NA	IS 14988 (Part 1)
iii)	Sulphite Reducing Clostridia (SRC)	5	0	Absent/25g	NA	ISO 15213
iv)	*E. Coli* 0157 and Vero or Shiga toxin producing *E. coli*	5	0	Absent/25g	NA	IS 16987
v)	*Vibrio cholerae*	5	0	Absent/25g	NA	IS 5887 (Part 5/Sec 1)

[1]) For sampling plan see Annex A.

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 3881 : 1993	Tomato Juice — Specification (*first revision*)
IS 5887	Methods for detection of bacteria responsible for food poisoning:
(Part 3/Sec 1) : 2020 ISO 6579-1 : 2017	Horizontal method for the detection, enumeration and serotyping of Salmonella, Section 1 Detection of *Salmonella* spp. (*third revision*)
(Part 5/Sec 1) : 2023 ISO 21872-1 : 2017	Horizontal method for the determination of *Vibrio spp*., Section 1 Detection of potentially enteropathogenic *Vibrio parahaemolyticus*, *Vibrio cholerae* and *Vibrio vulnificus* (*second revision*)
IS 7585 : 1995	Wines — Methods of analysis (*first revision*)
IS 9396 (Part 1) : 1987	Specification for round open top sanitary cans for foods and drinks: Part 1 tinplate (*first revision*)
IS 11764 : 2005/ ISO 2911 : 2004	Sweetened condensed milk — Determination of sucrose content — Polarimetric method (*first revision*)
IS 11984 : 1986	Specification for glass bottles for free flowing liquids
IS 13815 : 2010	Fruit and vegetable products — Determination of soluble solids content — Refractometric method (*first revision*)
IS 14988 (Part 1) : 2020	Microbiology of the Food Chain — Horizontal Method for Detection and enumeration of *Listeria monocytogenes* and of *Listeria spp*. Part 1 Detection method (*first revision*)
IS 16987 : 2018 ISO/TS 13136:2012	Microbiology of food and animal feed — Real time polymerase chain reaction (PCR) based method for the detection of food borne pathogens — Horizontal method for the detection of Shiga toxin producing *Escherichia Coli* (STEC) and the determination of O157, O111, O26, O103 and O145 serogroups
ISO 15213 : 2003	Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of sulfite-reducing bacteria growing under anaerobic conditions

ANNEX B
[*Table* 1, *Sl No.* (iv)]

DETERMINATION OF TOTAL SUGAR

B-1 PRINCIPLE

When the mixed Fehling's solutions are boiled with reducing sugar, the blue colour (cupric tartarate) is discharged and a red precipitate is formed (cuprous oxide).

B-2 APPARATUS

B-2.1 Burette

B-2.2 Pipettes

B-2.3 Conical Flasks

B-2.4 Burner

B-3 REAGENTS

B-3.1 Fehling's A and B Solutions

B-3.2 Methylene Blue Indicator

B-3.3 Hydrochloric Acid — 35 percent to 37 percent pure, concentrated

B-3.4 Anhydrous Sodium Carbonate

B-3.5 Purified Dextrose Anhydride

B-3.6 Distilled Water

B-4 PROCEDURE

B-4.1 Invert Sugar

Weigh about 5 g sample into a 250 ml flask. Add 10 ml to 20 ml water and 2.5 ml of concentrated hydrochloric acid. Heat at low temperature or in a water bath for 30 minutes. Neutralize by adding anhydrous sodium carbonate (if it becomes alkaline, add a little amount of 1 N hydrochloric acid). Make up the volume upto the mark with distilled water. Filter through absorbent cotton into the burette. Take 5 ml each of Fehling's solution A and B into 250 ml conical flask. Heat vigorously, titrate against solution from the burette. Add methylene blue indicator, then add solution from the burette drop by drop until the blue colour just disappears.

B-4.2 Reducing Sugar

Weigh about 2.5 g of sample into a 100 ml volumetric flask and make up the volume up to the mark with distilled water. Filter and take in a burette. Take 5 ml each of Fehling's Solution A and B in the conical flask and titrate it against sample solution.

B-4.3 Standardization of Fehling's Solution

Weigh 1 g of purified dextrose anhydride in to a 100 ml standard flask, and make up the volume upto the mark with distilled water. Pipette out 20 ml from the above solution into another 100 ml flask and make up to the volume upto the mark with distilled water. Take the dextrose solution in the burette. Take 5 ml each of Fehling's Solution A and B in the conical flask and titrate against the dextrose solution with vigorous boiling. Add 3 drops to 4 drops of methylene blue indicator andcontinue the titration with boiling untill the blue colour disappears.

B-5 CALCULATION

Factor, F =

$$\frac{Weight\ of\ Dextrose\ X\ Dilution\ Factor\ X\ Titre\ Value}{100}$$

Total sugar, per cent by mass, (invert sugar)

$$= F \times \frac{250}{V1} \times \frac{100}{W1}$$

Reducing sugar percent (before inversion)

$$= \frac{F}{V2} \times \frac{100}{W2} \times 100$$

Percent sucrose = percent total reducing sugar - percent of reducing sugar before inversion

where

$V1$ = Titre value for invert sugar;
$V2$ = Titre value for reducing sugar;
$W1$ = mass or volume of sample used for invert sugar analysis (in this case 5 g); and
$W2$ = mass or volume of sample used for reducing sugar analysis (in this case 2.5 g).

ANNEX C
[*Table* 1, *Sl No.* (v)]

DETERMINATION OF TOTAL ASH

C-1 PRINCIPLE

The ash determination is a measure of the organic and extraneous inorganic material present after ignition of the sample. All the other components except minerals in the sample are charred, and the total Ash is calculated on the basis of weight difference.

C-2 APPARATUS AND REAGENTS

C-2.1 Muffle Furnace

C-2.2 Silica Crucibles

C-2.3 Weighing Balance — readable to 0.1 mg

C-2.4 Water Bath

C-2.5 Desiccator

C-2.6 Pipette — 25 ml

C-3 PROCEDURE

Keep the silica crucible in muffle furnace at 525 °C ± 5 °C for 30 minutes and cool in a desiccator. Record the empty weight of the dish. Pipette out 25 ml of sample into the silica crucible. Evaporate to dryness on water or steam bath. After the contents are almost dry, keep in a muffle furnace for ashing at 525 °C ± 5 °C for 1 hour. Break up the charred mass in the dish and add hot water. Filter through ash less filter paper and wash thoroughly with water. Return paper and contents to dish, dry and heat for 30 minutes at 525 °C ± 5 °C, or until all carbon is burned off. Add filtrate, evaporate to dryness and heat for 15 minutes at 525 °C ± 5 °C and cool for 1 hour in desiccator containing efficient desiccant. Repeat heating and cooling to constant weight.

C-4 CALCULATION

Total ash, per cent by mass $= 100 \times \frac{M2-M}{M1-M}$

where

$M2$ = lowest mass, in g, of the dish with the ash;

$M1$ = mass, in g, of the dish with the dried material taken for the test; and

M = mass, in g, of the empty dish.

ANNEX D

(*Foreword*)

COMMITTEE COMPOSITION

Fruits, Vegetables and Allied Products Sectional Committee, FAD 10

Organization	*Representative*(*s*)
ICAR — Indian Institute of Horticultural Research, Bengaluru	DR DEBI SHARMA **(*Chairperson*)**
Agricultural and Processed Food Products Export Development Authority, New Delhi	DR SASWATI BOSE SHRI DEVENDRA PRASAD (*Alternate*)
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Food Safety and Standards Authority of India, New Delhi	REPRESENTATIVE
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Organization	*Representative*(*s*)
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BIS Directorate General	SHRIMATI SUNEETI TOTEJA , SCIENTIST 'E'/DIRECTOR AND HEAD (FOOD AND AGRICULTURE) [REPRESENTING DIRECTOR GENERAL (*Ex- officio*)]

Member Secretary
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Bureau of Indian Standards

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