भारतीय मानक

IS 5837 : 2024

Indian Standard

सॉफ्ट ड्रिंक विनिर्माण इकाइयों हेतु स्वास्थ्यकर स्थितियाँ — रीति संहिता

(पहला पुनरीक्षण)

Hygienic Conditions for Soft Drink Manufacturing Units — Code of Practice

(First Revision)

ICS 67.160

भारतीय मानक ब्यूरो

BUREAU OF INDIAN STANDARDS

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July 2024 **Price Group 5**

Drinking Water and Carbonated Beverages Sectional Committee, FAD 14

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Drinking Water and Carbonated Beverages Sectional Committee had been approved by the Food and Agriculture Division Council.

It is necessary to ensure that soft drink for human consumption is safe and has been prepared, packed and stored under hygienic conditions. Strict hygienic code in respect of layout, plant and personnel is crucial for ensuring the quality and safety of the soft drink. This standard was prepared to determine whether the facilities, methods, practices, and controls used in the manufacturing of soft drinks are in conformity with good manufacturing practices.

This standard was first published in 1970. In this revision, various guidelines for hygienic conditions for soft drink manufacturing units including clause on employee hygiene have been updated in line with the latest developments and contemporary practices by the industry. Also, following new clauses have been incorporated::

a) Clause **14** 'Quality control of finished goods';

b) Clause **15** 'Transport, storage, and handling'; and

c) Clause **16** 'Training'.

This standard is an adjunct to IS 2491 : 2013 ‘Food hygiene — General principles — Code of practice (*third revision*)’ and it covers requirements specific to the large-scale soft drinks manufacturing units.

The standard prescribes, the basic principles of hygiene underlining the technical advice to guide the manufacturers of all soft drinks manufacturing units. Manufacturers may choose to adopt further stringent measures than those specified in this code of hygienic practice.

This standard is subject to the provisions of the *Factories Act*, 1948 *and Food Safety and Standards Act*, 2006, and the Rules and Regulations framed thereunder as amended from time to time.

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

For the purpose of deciding whether a particular requirement of the 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

HYGIENIC CONDITIONS FOR SOFT DRINK MANUFACTURING UNITS — CODE OF PRACTICE

(First Revision)

1 SCOPE

This standard prescribes the hygienic conditions required for establishing and maintaining manufacturing units for soft drinks.

2 REFERENCES

The standards given below contain provisions which through reference in this text, constitute provision 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 edition of these standards:

IS No.	*Title*
IS 3025 (Part 26) : 2021	Methods of sampling and test (physical and chemical) for water and wastewater: Part 26 Chlorine, residual (*second revision*)
IS 10500 : 2012	Drinking water — Specification (*second revision*)
IS 13428 : 2024	Packaged natural mineral water — Specification (*third revision*)
IS 14543 : 2024	Packaged drinking water (other than packaged natural mineral water) — Specification (*third revision*)
IS 15000 : 2024	Hazard analysis and critical control point (HACCP) — Requirements for any organization in the food chain (*second revision*)

3 GENERAL

Any person intending to manufacture, distribute, transport or sale of soft drinks, must seek required licenses under the existing regulations by relevant government authorities, as applicable from time to time.

4 SITE

A soft drink manufacturing unit shall be situated in open, clean, and healthy surroundings, far away from cattle sheds, open sewage drains or other places, that are likely to infest the produce with breed flies or other organisms including microbial contamination. Premises shall not have objectionable odour. There shall not be accumulation of trash, garbage or similar wastes in the vicinity of the plant. Access to site shall be controlled.

5 BUILDING

5.1 Structure of the building shall be of permanent nature and shall be suitable in size, construction and design to facilitate maintenance and hygienic operations, storage of raw material and finished products and other related requisites. It should provide sufficient space for housing of equipment and storage of material as necessary for hygienic operations. The material of construction shall be washable or cleanable and shall be resistant to cleaning system applied.

5.2 No portion of building shall be used for any purposes other than manufacturing of beverages and foods. However, when other foods and beverages are manufactured at the same site, there should be proper separation between different category of products, by suitable partitions or locations or other effective mean to avoid contamination of the product with undesirable micro-organisms, odour, chemicals, filth or other foreign material.

5.3 Separate rooms of sufficient size should be provided for manufacture and storage of soft drink washing and sanitization of containers and utensils, and storage of raw materials, finished goods and other requisites.

5.4 Floors

5.4.1 The floor of areas where ingredients are handled, compounded, mixed, or processed (flavour room, syrup room and bottling area) or where containers or equipment are washed shall be constructed of impervious and easily cleanable smooth material. It shall not be affected by weak acids, alkalis or steam.

5.4.2 The floors shall be properly sloped and shall be provided with trap drains which shall be prevented from clogging. The floors shall be kept

clean and in good conditions, by proactively repairing the eroded surfaces.

5.4.3 The junction of the floor with the walls and the junction between the two walls should be rounded to prevent accumulation of dust.

5.5 Walls and Ceilings

Internal walls and units should have smooth, non-absorbent light-coloured surface, free from crevices and sharp angles, to facilitate their efficient cleaning. The walls in the flavour room, syrup room, washing area, bottling, or packaging area shall have tiling up, epoxy or any other material imparting smooth, washable surfaces, to the height reached by splash or water spray. The interior walls of storage areas may be of good construction material.

5.6 Doors and Windows

5.6.1 Flavour room, syrup room, filling area shall be provided with effective means to prevent entry of flies and insects. Such effective means may be screens, fans, etc. Windows in this area shall be glazed.

5.6.2 Doors in syrup room and toilet room shall be self-closing. All the doors and windows in the operational areas shall open outwards unless the design and occupational safety requires otherwise.

5.6.3 The manufacturing unit shall be made fly proof, rodent proof and bird proof and should be provided with self-closing double doors. The doors and windows shall be covered with fly proof wire gauze, and they shall open outwards.

5.7 Lighting and Ventilation

The manufacturing unit shall have adequate lighting and ventilation keeping in mind the number of workers, their hours of work and nature of operation. Ventilation and adequate lighting should be provided in accordance with *Food Safety and Standard* (*Licensing and Registration*) *Regulations*, 2011 as well as *Factories Act*, 1948, as amended from time to time. Proper ventilation is essential to prevent condensation and drippage. Exhaust fans shall be provided where necessary. The lighting bulbs or tubes shall have shatter proof covering to avoid contamination from glass pieces in case of accidental breakage.

5.8 Maintenance and Repairs

The building shall be maintained in a proper state of repair and cleanliness. Whenever required, it shall be lime-washed, painted, disinfected, and deodorized.

6 FACTORY AND PROCESSING HYGIENE

6.1 Bottle Blowing

The movement of pre-form to bottle blowing area and then to filling shall be unidirectional so that no external contamination of the bottles takes place.

6.2 Bottle Washing

In case the returnable bottles are used in the unit, all such bottles shall be thoroughly cleaned and sanitized immediately before the new filling. In large units, this may be accomplished by means of automatic mechanical washing machines having arrangements for pre-rinse caustic jet and soaking or both, and final rinse or similar alternative processes. In small units the bottle washer shall have arrangements for pre-rinse, soaking tank and final rinse.

6.2.1 All the bottles shall be exposed to a minimum of 3 percent alkali solution of which not less than 60 percent is caustic (sodium hydroxide), for a period of no less than 5 minutes at a temperature not less than 55 °C (*see* 6.2.2). The water used for final rinse shall be of potable quality (*see* IS 10500) otherwise, it shall be chlorinated and shall have 0.5 ppm to 1.0 ppm residual chlorine. The residual chlorine shall be determined as per IS 3025 (Part 26). After the final rinse, it shall be ensured that the bottles are free from any caustic residue; it can be detected by testing the rinse of the bottles with phenolphthalein indicator solution which turns pink in presence of alkali.

6.2.2 Bottle washing may be accomplished by any other chemical agent which would ensure equivalent cleaning and sanitizing described above.

6.2.3 The effectiveness of sanitization of the bottles shall be periodically checked by internationally acceptable methods.

6.3 Filling and Sealing

Product containers shall be filled and sealed in a hygienic manner. In case of large-scale units, the filling and sealing shall be carried out by automatic filler and sealer. In small scale units the filling and sealing may be carried out by hand filler and sealer. Beverage falling on the floor due to over-filling or breakage of the bottles shall be immediately cleaned with water. Personnel involved in filling and sealing shall observe good house-keeping practices so as not to contaminate the product during this operation.

7 SYRUP HANDLING EQUIPMENT

All syrup handling equipment like syrup tanks, pipelines, filter press, plate coolers, etc shall be constructed of a suitable non-corrosive material, preferably stainless steel. This equipment shall not contribute metallic ions in the beverage in excess of standards prescribed for potable drinking water. The syrup tanks should have mechanical agitation facilities for mixing purpose and shall be provided with cover or lid. The construction of the equipment shall be such that all the surfaces are easily accessible for proper cleaning and sanitizing operations.

7.1 Filling Area and Syrup Room

The filling area and syrup room shall be separated from other areas of plant like storage area of bottles, crowns, chemicals, etc. Both these areas shall have adequate ventilation and lighting facilities. Also, the entry of flies, insects and dust shall be prevented by suitable means.

7.2 Waste and rubbish shall be collected in covered receptacles and shall not be allowed to lie about on the floor. Suitable facilities for the collection and removal of refuse, floor sweepings and for disposal of wastes shall he provided. It shall be disposed of in a manner which is not detrimental to the hygiene of the surroundings of the disposal.

7.3 Adequate measures shall be taken to prevent growth of mould on equipment and internal structures of processing and storage rooms.

7.4 Adequate steps shall be taken to prevent infestation of cockroaches and other household pests. Adequate pest control facility with trained in-house person shall be available or the pest control shall be outsourced for a periodical pest control procedure.

7.5 When pesticides and disinfectants or both are used, care shall be exercised to prevent contamination of equipment, raw materials and packing materials. Under no circumstances shall pesticides be used during processing.

7.6 Floors and drains shall be kept clean. In the processing room, drains shall be provided with detachable covers.

7.7 Sinks and troughs used for washing ingredients and utensils shall not be used for washing of hands.

7.8 No lavatory, sink, cesspool, or garbage shall be so situated or maintained that odours or fumes therefrom pervade any room where the product or raw materials are prepared or stored.

7.9 The factory effluents shall be disposed of in a hygienic manner and shall not be let off on road on adjacent fields.

7.10 Window glass and light fittings shall be maintained clean and dust-free at all times.

7.11 There shall be no cob-webs in any part of the unit. Birds and domestic animals shall not be allowed in any part of the unit.

8 EQUIPMENT AND CONTAINER CLEANLINESS

8.1 Construction of Equipment

All the equipment, piping and utensils used in the manufacturing shall be smooth, impervious, corrosion resistant, non-toxic and in good condition. All these equipments shall be fixed so that the sanitation of all the parts that come in contact with the material may be ensured. All the welding shall be ground smooth. Dead ends in the pipelines shall be avoided and joints shall be flush.

8.2 Cleaning and Sanitation of the Equipment

8.2.1 All the equipment used in the manufacturing shall be thoroughly cleaned immediately after use and shall be sanitized with steam, chlorine solution (available chlorine 50 ppm) or any approved bactericidal process prior to use. Equipment, pipelines, etc shall have no residue of cleaning or sanitizing agent after sanitizing. The cleaning or sanitizing agents used in the plant shall have the labels to identify the contents and shall be properly stored when not in use. Alternatively, clean-in-place (CIP) practices should be followed as per the HAACP principles (*see* IS 15000).

8.2.2 The entire processing system shall be flushed out prior to its use again.

9 WATER SUPPLY

9.1 There shall be an adequate supply of safe and potable water. Running water under pressure shall be easily accessible to all rooms and areas in which syrup and beverages are prepared and equipment are washed. Similarly, adequate supply of water conforming to the standards for packaged drinking water or mineral water as per IS 14543 and IS 13428 respectively shall be ensured for use as ingredient water.

9.2 The equipment shall be so installed and used that back siphonage of liquid into the potable water lines is precluded.

9.3 Hot or cold water in ample supply shall be provided for plant clean-up needs, where necessary.

9.4 The storage tanks for water should, unless completely sealed, be kept covered with tight fitting lids, examined regularly and cleaned out at least once every six months.

9.5 The water shall be periodically examined for testing conformity to the standards for packaged drinking water or mineral water as per IS 14543 and IS 13428 respectively. A record of such examination shall be maintained.

10 EMPLOYEE HYGIENE

10.1 Every person employed in the plant shall be medically examined by an authorized registered medical practitioner and the examination shall include X-ray of the chest for tuberculosis, examination of stool for protozoal and helminthic infestation and for any kind of other communicable disease-causing organisms, urine, and blood examination for venereal diseases. Subsequently, the employee shall be medically examined once a year or more frequently, if necessary, to ensure that he or she is medically fit and free from communicable diseases. A record of such examination shall be maintained.

10.2 It shall be impressed on all employees that they should notify the medical officer and management cases of fever, vomiting, diarrhoea, typhoid, dysentery, boils, cuts and sores and ulcers (however, small), discharging ears and notifiable diseases occurring in their own homes and families.

10.3 No worker who is suspected to be suffering from any of the disorders listed in 10.2 shall be permitted to work inside the plant. The supervisor shall check the personal hygiene of the workers before the start of work and whenever they enter the manufacturing area after any absence.

10.4 Employees shall keep their fingernails shortened, clean, keep their shaves clean, and wash their hands with liquid soap or detergent and water before commencing work and after each absence, especially after using sanitary conveniences. Hand dryer or clean disposable towels shall be used for drying hand. No worker should allow his hands or any part of his body or clothing to come into direct contact with the any ingredients of finished goods. He or she should adopt strict hygienic practices to avoid adding any microbial contamination to the ingredients of finished good.

10.5 All employees shall be inoculated and vaccinated against the enteric groups of diseases once a year and in case of an epidemic all workers shall be vaccinated. A record shall be maintained. In case of an epidemic, all workers are to be vaccinated irrespective of the scheduled vaccination.

10.6 No worker shall be allowed to work without proper clothing and footwear.

10.7 Employees shall be provided with clean uniforms (preferably white) or aprons or both and clean washable caps, face masks, beard masks, gloves, where necessary.

10.8 Separate room or place for changing the clothes shall be provided. The clothes shall not be hung anywhere in the manufacturing area or processing rooms.

10.9 The uniforms shall not be worn outside the plant but put on just before starting the work and changed when leaving.

10.10 Eating, spitting, nose cleaning or the use of tobacco in any form including smoking or chewing betel leaves shall be strictly prohibited within the storage and manufacturing area of the unit. Notices to this effect shall be prominently displayed and enforced.

10.11 Sufficient and suitable sanitary conveniences shall be provided, maintained, and kept clean in every factory. The conveniences shall be properly lighted. Separate conveniences shall be provided for each gender. The conveniences should have self-closing doors which shall not open directly into any work room in the factory. The conveniences shall always be maintained clean and in good condition.

10.12 Sufficient number of toilets and urinals and wash basins, with adequate provision of nail brushes, soap, and towels, in the prescribed manner should be provided, conveniently situated and accessible to workers at all times while they are at the plant. The wash basins shall be installed in or alongside the sanitary conveniences with hand free operation faucet controls (for example, elbow, foot- or sensor-operated) to prevent direct hand contact.

11 HYGIENIC QUALITY OF INGREDIENTS

11.1 Water that goes into the final product shall be free from pathogenic organisms, and should meet the requirements specified in the standards for packaged drinking water or mineral water as per IS 14543 and IS 13428 respectively.

11.2 The sugar should be free from pathogenic organisms and the prepared syrup shall be treated at minimum temperature of 85 °C for 30 minutes.

11.3 Carbon dioxide should be free from pathogenic organisms and should have minimum of 99 percent purity.

11.4 Flavours, colours and other chemicals used shall be as per the relevant regulations under the *Food Safety and Standards Act*, 2006. They shall be properly treated, if required: to ensure that they are free from pathogenic microorganisms.

12 STORAGE

12.1 Store Rooms

The store rooms for raw and packing materials should be free from dampness and should be rodent-proof.

12.2 Wherever possible a separate room for storing machinery, equipment, spare parts, pesticides, etc shall be provided in a location convenient to various preparation and processing areas.

12.3 Proper places shall be provided for storage of brooms, brushes, buckets and other cleaning gear.

12.4 Raw materials, crown corks and chemicals, etc shall be stored separately in their original packing's on skid platforms. Active supply of ingredients and chemicals may be maintained in suitable bins having lids or covers.

12.4.1 All the containers of chemicals shall have the names of chemicals clearly mentioned on them.

12.4.2 No chemicals other than those required during manufacture of soft drinks shall be stored in the manufacturing unit.

13 CROWN CLOSURES

13.1 Crowns closures, if being used, shall be free from hygiene indicator microbes and food borne pathogens.

13.2 Crown closures, if being used, shall be kept clean and free from contamination before use, preferably by the use of waterproof and dust-proof packaging. The handling and storage of crown corks should be such as to prevent contamination.

13.3 Crown closures once used shall not be reused. However, the material can be used for recycling.

14 QUALITY CONTROL OF FINISHED GOODS

Finished goods shall be periodically checked for the quality parameters such as microbiological and chemical parameters and the records of such testing shall be maintained.

15 TRANSPORT, STORAGE AND HANDLING

15.1 All vehicles used for transportation of the soft drinks be so constructed and operated as to give reasonable protection to their contents from access of flies, micro-organisms, dust, rodents, and other contaminants. The vehicles should be maintained clean.

15.2 All premises where finished products of soft drinks are stored shall be fully licensed for the purpose by the local health/food safety authority. The premises shall be maintained clean and shall be so constructed as to provide reasonable protection soft drinks from access of flies, dust and other contaminants.

16 TRAINING

16.1 Adequate periodical training shall be imparted to all the employees and vendors, preferably by a food safety supervisor trained under FoStaC (Food Safety Training and Certification) programme. Records of such training shall be maintained in the plant.

16.2 Hazard analysis and critical control point (HACCP) (*see* IS 15000) program shall be implemented for prevention of food safety hazards from time to time for all employees and vendors.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Drinking Water and Carbonated Beverages Sectional Committee, FAD 14

Organization	*Representative*(s)
CSIR - Central Food Technological Research Institute, Mysuru	DR SRIDEVI ANNAPURNA SINGH **(*Chairperson*)**
All India Association of Natural Mineral Water Industry, Ahmedabad	SHRI BEHRAM MEHTA
All India Food Processors Association, New Delhi	SHRI K. GANESH SHRI VENKATESH SOSLE (*Alternate* I) SHRI MOHIT CHAUDHARY (*Alternate* II)
All India Network Project on Pesticide Residues, New Delhi	DR VANDANA TRIPATHY
Bhabha Atomic Research Centre, Food Technology Division (BARC), Mumbai	DR SANJAY KUMAR JHA DR SUNIL KUMAR SAHOO (*Alternate*)
Bhavan's Research Center (Microbiology), Mumbai	DR SANDHYA SHRIVASTAVA DR NISHITH DESAI (*Alternate*)
Bureau of Indian Standard, New Delhi	MS SHUBHANJALI UMRAO
Central Ground Water Board (CGWB), Faridabad	SHRI YASHVIR SINGH
Central Pollution Control Board (CPCB), New Delhi	SHRI P. K. MISHRA
Centre for Science and Environment (CSE), New Delhi	MS SUNITA NARAIN SHRI AMIT KHURANA (*Alternate*)
Confederation of Indian Food Trade & Industry (CIFTI)-FICCI, New Delhi	SHRI DEEPAK JASYAL MS VARSHA YADAV (*Alternate*)
Confederation of Indian Industry, New Delhi	MS NEHA AGGARWAL MS MAMTA ARORA BUDHIRAJA (*Alternate*)
Consumer Education and Research Centre, Ahmedabad	SHRI H. S. TRIPATHI DR DOLLY A. JANI (*Alternate*)
Consumer Research, Education, Action, Training and Empowerment (CREATE), Paramakudi	DR P. DURAISINGAM
CSIR - Central Food Technological Research Institute (CSIR - CFTRI), Mysuru	DR MUKESH KAPOOR MS VANAJAKSHI (*Alternate*)
CSIR - Indian Institute of Toxicology Research, Lucknow	DR BHASKAR NARAYAN DR KAUSAR M. ANSARI (*Alternate*)
CSIR - National Environment Engineering Research Institute, Nagpur	DR P. K. LABHASETWAR DR NOOR AFSHAN KHAN (*Alternate*)
Delhi Jal Board, New Delhi	DR SANJAY SHARMA DR ANIL KUMAR MISHRA (*Alternate*)
Envirocare Laboratories Private Limited, Thane	DR NILESH AMRITKAR DR PRITI AMRITKAR (*Alternate*)
Federation of All India Packaged Drinking Water Manufacturers Association (FIPMA), Mumbai	SHRI APURVA NARENDRA DOSHI SHRI NAVEEN GOEL (*Alternate* I) MS CHARU GUSAIN (*Alternate* II)

Organization	*Representative*(*s*)
Food Research and Analysis Centre, New Delhi	SHRI ANIL KUMAR MS KAVITA RANA (*Alternate*)
ICMR - National Institute of Cholera and Enteric Diseases, Kolkata	DR SHANTA DUTTA DR RANJAN KUMAR NANDY (*Alternate*)
ICMR - National Institute of Nutrition, Hyderabad	DR N. ARLAPPA DR C. S. SURYA GOUD (*Alternate*)
Indian Beverage Association, New Delhi	SHRI J. P. MEENA SHRI RAJENDRA MOHAN DOBRIYAL (*Alternate*)
Ministry of Jal Shakti, Department of Drinking Water and Sanitation, New Delhi	SHRI SUMIT PRIYADARSHI
Mohan Meakins Limited, Ghaziabad	DR CHAUDHARY SHALU SINGH SHRI SUDEEP TYAGI (*Alternate*)
Safe Water Network, New Delhi	SHRI RAVINDRA SEWAK MS POONAM SEWAK (*Alternate*)
The Greater Chennai Packaged Drinking Water Manufacturers Association, Chennai	SHRI J. AANTHNARAYANAN SHRI V. MURALI (*Alternate*)
Water Quality India Association, Mumbai	SHRI V. A. RAJU DR SATHISH KUMAR (*Alternate*)
World Health Organization, New Delhi	SHRI MANJEET SINGH SALUJA
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Member Secretary
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Panel on Hygienic Conditions for Manufacturer of Soft Drink, Ice and Refrigerated Drinking Water, FAD 14/Panel 05

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CSIR - Central Food Technological Research Institute, Mysuru	MS VANAJAKSHI
Envirocare Laboratories Private Limited, Thane	DR NILESH AMRITKAR
ICMR - National Institute of Nutrition, Hyderabad	DR A. LAXMAIAH

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This Indian Standard has been developed from Doc No.: FAD 14 (24042).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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Published by BIS, New Delhi