

Bangladesh Standard
Specification For
Chewing Gum
(Draft for Second Revision)

ICS 67.060



BANGLADESH STANDARDS AND TESTING
INSTITUTION
MINISTRY OF INDUSTRIES
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BSTI

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Foreword

This Bangladesh Standard was adopted by the Bangladesh Standards and Testing Institution on, after the draft finalized by the Bakery and Confectionary Products Technical Committee had been approved by the Agricultural and Food Products Divisional Committee.

A wide variety of chewing gum is produced, imported and marketed in the country. In order to ensure that the product conforms to safety and quality requirements, it was necessary to prepare this standard so as to safeguard the consumer which mainly comprise of children.

This standard was first published in 1995 and revised in 2012. Considering the existing trade practices, the committee felt that this standard required further revision. Earlier this standard was titled as 'BDS 1498 Chewing gum, Ball gum and Bubble gum'. Upon review, the committee agreed to update this into a comprehensive and user-friendly standard and revised the title to 'BDS 1498 Chewing gum' to align with international nomenclature. Major modifications in this version are as follows:

- a) types for various chewing gum have been incorporated;
- b) the ingredient lists have been modified;
- c) requirements for gum base, moisture and acid insoluble ash have been updated;
- d) requirements for 'reducing sugar' and 'ash sulphated' have been omitted;
- e) a table for microbiological and heavy metal limits has been included;
- f) clauses for 'hygienic requirements' and 'legal requirements' have been included; and
- g) requirements for labeling have been modified according to the current practice.

This standard has been finalized following a comprehensive review process, taking into account the comments and recommendations received from representative groups of producers, consumers, technologists, manufacturers, association and user agencies. It is subject to periodic review and amendment, if necessary. Any suggestions for improvement will be recorded and placed before the committee in due course.

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 BDS 103. The number of significant places retained in the rounded off value should be the same as that of the specified value in the standard.

This standard BDS 1498:YYYY Chewing gum (2nd Rev.) cancels and replaces BDS 1498:2012 Chewing gum, Ball gum and Bubble gum (1st Rev.) that has been technically revised.

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1. Scope

1.1 This standard prescribes the requirements and methods of sampling and test for chewing gum.

2. Normative References

2.1 The relevant standards listed in Annex-C are necessary adjuncts to this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

3. Definitions and Types

For the purpose of this standard the following definitions apply.

3.1 Chewing Gum- Product made from natural or synthetic gum base containing flavours, sweeteners (nutritive or non-nutritive), aroma compounds and one or more of the other permitted additives (clause 4), then mixed and processed using various appropriate methods in different shapes. It is a soft, cohesive substance designed to be chewed for long periods of time but not swallowed.

3.1.1 Bubble gum- Product manufactured from a strong, flexible gum base to be able form a bubble when filled with air insufflated through the mouth by the consumer.

3.1.2 Sugar-free chewing gum- As in item number 3.1 without adding nutritive sweeteners.

3.1.3 Breath freshening chewing gum- Chewing gum used to freshen the breath of mouth and teeth.

3.2 Based on texture or forms, chewing gum may be of following types.

3.2.1 Stick/Tab/Slab/Chunk- Chewing gums in various shapes and sizes like stick/tab/slab/chunk. Sticks are usually flat. Tabs/slabs are thicker than sticks. Chunks are thicker than tabs/slabs.

3.2.2 Ball gum- Product shaped into small, round balls typically with a hard, glossy outer coating and a soft, chewable gum center inside.

3.2.3 Pellet- Pellet chewing gum, also called 'pellet gum' or simply 'pellet', is a chewing gum with a heart of gum base surrounded with a coating.

3.2.4 In roller- Chewing gum-in-roller is sold in a distributing device named chewing gum roller. Chewing gum in the roller is in fact a long slab enrolled around a single axe.

3.2.5 Powdered/Granulated- Powdered chewing gum is a type of granulated chewing gum generally sold in a small size bag or pack, forming one serving per bag or pack. The powdered particles of chewing gum will reconstitute a piece of chewing gum after a few moment of mastication of the powdered chewing gum under the effect of the moisture present in the saliva of the consumer.

3.2.6 Compressed- Compressed chewing gum is a chewing gum product which is formed by one or more layers of chewing gum and eventually other confectionery part. Compressed chewing gum products can have infinity of different shapes from a pastille -like shape to any figurine-like shape.

3.2.7 Center-filled/Filled Gums/Gums with Toppings-Chewing gum prepared with filling or topping or layering having the combination of ingredients as permitted in clause 4.

3.2.8 Liquid Gum- The gums made with ingredients as permitted under clause 4, having liquid or semi-solid consistency.

3.2.9 Candy Coated Gum- This shall be made from chewing gum base at the center, which shall be coated with sugar syrup, colored or uncolored and flavored as desired.

4. Ingredients

4.1 All ingredients shall conform to the relevant Bangladesh Standard specifications, where available. All materials shall be food grade, halal and free from foreign matter, harmful microorganisms, insect infestation, objectionable flavours and odours, food additives and processing aids.

4.2 Gum base- Non-nutritive chewable substance natural or synthetic (fully or partial) and non-toxic, made of one or several substances. List of recommended ingredients or sources thereof are given in Annex-A.

4.3 Sweeteners- It may contain one or more sweeteners such as:
a) Nutritive Sweeteners- Sugar, Palm sugar, Cane sugar, Invert sugar, Honey, Sorbitol, Liquid glucose, Lactose, Dextrin, Dextrose, Dextrose monohydrate, Maltose, Icing sugar;
b) Non-Nutritive Sweeteners- according to the relevant category 05.3 of the updated version of CXS 192 or permitted by national legislations.

Note- When combinations of non-nutritive sweeteners are used, the sum of the proportions of individual sweeteners, expressed as percentages of their respective maximum permitted levels, shall not exceed 100%.

4.4 Optional Ingredients - In addition to the essential ingredients specified under Clause 4.2 and 4.3, the following additional ingredients may also be used:

- a) Malt;
- b) Dairy and dairy analogues such as milk, milk products, whey, casein etc;
- c) Chocolate, chocolate derived products (for example cocoa powder (defatted or not), cocoa mass, etc) or any extract thereof;
- d) Coffee, chicory, tea or any extract thereof;
- e) Gelatin; Food grade;
- f) Glycerin;
- g) Edible starches;
- h) Edible oil seed flour;
- i) Spices and condiments and their extract thereof;
- j) Baking powder;
- k) Edible vegetable fats and oils;
- l) Protein isolates;
- m) Fruits, vegetables and their products; in any form suitable to product;
- n) Nuts and nut products;
- o) Water, potable;
- p) Nutrients such as vitamins, minerals;
- q) Edible gums;
- r) Salt;
- s) Other permitted edible fillings or ingredients.

4.3.1 In the preparation of chewing gum, the addition of flavourings, colourings, acidulants, preservatives, humectants, emulsifiers, anti-oxidants, anti-caking agents required shall be according to the relevant category 05.3 of the updated version of CXS 192 or permitted by national legislations.

5. Requirements

5.1 The material shall be in any desired shape, size or colour with pleasant taste and flavour. It shall be non-toxic and free from dirt and other harmful or injurious foreign matters. It shall not be brittle or gritty, but smooth and with characteristic chewability.

NOTE- The appearance, taste, odour shall be determined by organoleptic test.

5.2 Hygiene –During processing, handling, storage and transportation, effective measures must be taken to prevent cross contamination with chemicals, microbial or physical contaminants.

5.2.1 The product shall be processed and packed under strict hygienic conditions in premises maintained in accordance with BDS 822.

5.3 The product shall comply with the requirements given in Table-1 and Table-2.

Table-1 Requirements for Chewing Gum

(Sub-Clauses 5.3)

Sl. No. (1)	Characteristic (2)	Requirements (3)	Method of Test Ref. to (4)
i.	Gum Base, percent by mass, Min.	5	Annex-B of this standard
ii.	Moisture, percent by mass, Max.	10	Annex-A of BDS 1000
iii.	Acid insoluble ash, percent by mass, Max.	10	Annex-C of BDS 1000
iv.	Sucrose, percent by mass, Max.*	70	Annex-D of BDS 1000
Note- *shall not be applicable for sugar-free chewing gum			

Table-2 Microbiological and heavy metals limit for hard candy

(Sub-Clause 5.4)

Sl.No. (1)	Characteristic (2)	Limits (3)	Method of Test Ref. to (4)
i.	<i>Salmonella</i> , cfu/g	Absent	BDS ISO 6579-1
iii.	Arsenic (as As), mg/kg, max.	1	AOAC 986.15
iii.	Lead (as Pb), mg/kg, max.	1	AOAC 994.02
iv.	Cadmium (as Cd), mg/kg, max.	1	AOAC 999.11
v.	Tin (as Sn), mg/kg, max.	2	AOAC 985.16

5.4 Legal Requirement – The product shall in all other aspects comply with the requirements of the legislations enforced in the country.

6. Packing and Marking

6.1 Packing – The material, if wrapped, shall be in plain or printed cellulose film, waxed paper, aluminum foil, polyethylene or other flexible packaging materials. In the case of printed packaging material, the printing ink shall not come into direct contact with the gum. If the printing ink comes in contact, it shall be non-toxic. The wrapped or unwrapped material shall be bulk packed or further packed in clean, reasonably airtight and sound containers. Such containers shall be made of tinplate, glass, plastics, thermoplastic material, moisture-proof paper, cellulose film or any other suitable packaging material including flexible materials.

6.2 Marking – The following particulars shall be marked or labelled legibly and indelibly on each container (outer cartons or bags):

- Name and type of the product, i.e. Chewing Gum/ Bubble gum/ Ball gum/ Sugar-free chewing gum/ Breath freshening chewing gum/ Center Filled Gums/ Candy Coated Gum;
- Name and address of the manufacturer;
- Country of origin, in case of imported products;
- When non-nutritive sweeteners are added as substitutes for sugars, the statement, "with/added non-nutritive sweetener(s)" or "sugar-free", shall be included in conjunction with or in close proximity to the product name;

- e) Batch or code number;
- f) Net mass;
- g) Date of manufacture;
- h) Date of expiry;
- i) List of ingredients and additives;
- j) Allergen where necessary;
- j) Maximum Retail Price (MRP);
- a) If the product contains Aspartame, below declaration shall be used. "Not for Phenylketonurics" and
- k) Any other requirements as specified under the Packaged Commodities Rules 2021' of BSTI.

6.2.1 Each package may also be marked with the BSTI Certification Mark.

NOTE – The use of BSTI Certification Mark is governed by the provisions of Bangladesh Standards and Testing Institution Act, 2018 and the Rules and Regulations made thereunder. Details of conditions, under which a license for the use of BSTI Certification Mark may be granted to manufacturers or processors, may be obtained from the Bangladesh Standards and Testing Institution.

7. Sampling

7.1 Representative samples of the material shall be drawn as prescribed in Annex-H of BDS 1000.

8. Tests

8.1 Test shall be carried out as prescribed under clause 6.1 of this standard and in the appropriate appendices specified in col 6 of Table-1.

8.2 Quality of reagents – Unless otherwise specified, pure chemicals and distilled water (BDS 833) shall be employed in the tests.

NOTE – 'Pure chemicals' shall mean chemicals that do not contain impurities, which affect the results of analysis.

Annex - A

[Sub-Clause 3.1(a)]

List of Recommended Ingredients or Sources for Gum Base

All gum base ingredients listed must be food grade to be used in gum base.

A-1 Elastomeric Substances

SI No	Family	Genus and Species
	Saponaceous	
i.	Chicle (Chiku)	<i>Manilkara zapotilla</i> Gilly and <i>Manilkara chicle</i> Gilly
ii.	Chiquibul	<i>Manilkara zapotilla</i> Gilly
iii.	Crown gum	<i>Manilkara zapotilla</i> Gilly and <i>Manilkara chicle</i> Gilly
iv.	Gutta hang kang	<i>Palaquium leiocarpum</i> Boerf and <i>Palaquium oblongifolium</i> Burck
v.	Massaranduba balata (and solvent-free resin extract of Massaranduba balata)	<i>Manilkara huberi</i> (Ducke) Chevalier
vi.	Massaranduba chocolate	<i>Manilkara solimoesensis</i> Gilly
vii.	Nispero	<i>Manilkara zapotilla</i> Gilly and <i>Manilkara chicle</i> Gilly
viii.	Rosidinha (rosadinha)	<i>Micropholis</i> (also known as <i>Sideroxylon</i>) spp.
ix.	Venezuelan chicle	<i>Manilkara williamsi</i> Standley + related spp.

	Apocynaceae	
x.	Jelutong	<i>Dyeracostulata</i> Hook, F. and <i>Dyera lowii</i> Hook, F.
xi.	Leche caspi (sorva)	<i>Couma macrocarpa</i> Barb. Rodr.
xii.	Pendare	<i>Couma macrocarpa</i> Barb. Rodr. and <i>Couma utilis</i> (Mart.) Muell. Arg.
xiii.	Perillo	<i>Couma macrocarpa</i> Barb. Rodr. and <i>Couma utilis</i> (Mart.) Muell. Arg.
	Moraceae	
xiv.	Leche de vaca	<i>Brosimum utile</i> (H.B.K.) Pittier and <i>Poulsenia</i> spp.; also <i>Lacmelieastandleyi</i> (Woodson), Monachino (Apocynaceae)
xv.	Niger gutta	<i>Ficus platyphylia</i> Del
xvi.	Tunu (tuno)	<i>Castilla fallax</i> Cook
	Euphorbiaceae	
xvii.	Chilte	<i>Cnidocolus</i> (also known as <i>Jatropha</i>) <i>elasticus</i> Lundell and <i>Cnidocolustepiquensis</i> (Cost. and Gall.) McVaugh
xviii.	Natural rubber (smoked sheet and latex solids)	<i>Hevea brasiliensis</i>
	Fabaceae	
xix.	Khair (Catechu Tree)	<i>Senegalia (Acacia) catechu</i>
xx.	Babul Kikar (Gum Arabic Tree)	<i>Vachellia (Acacia) nilotica</i>
	Combretaceae	
xxi.	Ghatti	<i>Anogeissus latifolia</i>
	Anacardiaceae	
xxii.	Jhingan (jael)	<i>Lanneacoromandelic</i>

A-1.2 Synthetic elastomeric substances

- a) Butadiene-styrene rubber (SBR);
- b) Isobutylene-isoprene copolymer (Butyl rubber);
- c) Polyisobutylene (PIB);
- d) Polyvinyl acetate (PVAc);
- e) Vinyl acetate - vinyl laurate copolymer (VAVL);
- f) Polyethylene (PE); and
- g) Polybutene (PB)

A-2 Esters of Rosins and Resins

A-2.1 Rosins Esters or "Ester Gums"

- a) Glycerol ester of wood rosin;
- b) Glycerol ester of gum rosin
- c) Glycerol ester of tall oil rosin;
- d) Glycerol ester of partially or fully hydrogenated gum rosin;
- e) Glycerol ester of partially or fully hydrogenated wood rosin;
- f) Glycerol ester of partially dimerized gum rosin;
- g) Glycerol ester of partially dimerized wood rosin;
- h) Glycerol ester of polymerized gum rosin;
- j) Glycerol ester of polymerized wood rosin;
- k) Methyl ester of partially or fully hydrogenated gum rosin;
- m) Methyl ester of partially or fully hydrogenated wood rosin;
- n) Pentaerythritol ester of gum rosin;
- p) Pentaerythritol ester of wood rosin;
- q) Pentaerythritol ester of partially or fully hydrogenated gum rosin;
- r) Pentaerythritol ester of partially or fully hydrogenated wood rosin.

A-2.2 Resins

A-2.2.1 Natural resins

- a) Natural terpene resins

A-2.2.2 Synthetic resins

- a) Synthetic terpene resins

A-3 Waxes and Other Softeners

A-3.1 Waxes

- a) Paraffins;
- b) Petroleum wax (microcrystalline wax);
- c) Synthetic paraffin (that is Fischer-Tropsch paraffin);
- d) Synthetic petroleum wax (polyethylene-wax homopolymer);
- e) Lanolin;
- f) Rice branwax;
- g) Beeswax;
- h) Candelilla wax;
- j) Carnauba wax

A-3.2 Other Softeners

- a) Agar
- b) Stearic acid and other fatty acids;
- c) Sodium, potassium, magnesium or calcium stearate and salts of fatty acids (that is Sodium, potassium, magnesium or calcium salts of fatty acids);
- d) Citric acid esters of mono-and diglycerides of fatty acids;
- e) Sucrose esters of fatty acids;
- f) Propane-1,2-diol esters of fatty acids;
- g) Edible vegetable oils (including hydrogenated or fractionated),
- h) including partially hydrogenated vegetable oils;
- i) Ascorbyl palmitate (including ascorbyl diacetate; ascorbic acid; and calcium or sodium ascorbate);
- j) Mono-and diglycerides of fatty acids (for example glycerol monostearate);
- k) Glycerol tristearate (that is triacetin);
- l) Propylene glycol
- m) Acetic acid esters of mono-and diglycerides of fatty acids (that is acetylated mono- and diglycerides);
- n) Phospholipids and other lecithins;
- o) Alginates (that is alginic acid and sodium or ammonium alginate);
- p) Pectins;
- q) cocoa powder (defatted or not).

A-4 Fillers

- a) Calcium carbonate;
- b) Calcium carbonate (ground limestone);
- c) Magnesium carbonate;
- d) Talc - Asbestos free
- e) Monocalcium phosphate (that is calcium phosphate, monobasic);
- f) Dicalcium phosphate (that is calcium phosphate, dibasic);
- g) Tricalcium phosphate (that is calcium phosphate, tribasic)
- h) Calcium Sulphate

A-5 Other permitted ingredients

Annex- B

(Sub-Clauses 4.1)

Determination of Gum Base Content

B-1 Preparation of the Sample

B-1.1 Take four tablets of chewing gum and clean with a fine hair brush to remove the talc and sugar dust. Cut the sample into small pieces.

B-2 Method

B-2.1 Weigh accurately the entire sample and quantitatively transfer the sample into an extraction cartridge. Take 200 ml of chloroform in a tared 250-ml capacity round-bottom flask. Extract the sample for eight hours in a soxhlet extraction assembly. Subsequently distil off the Chloroform in a drying chamber at 105±1°C. Weigh the flask. Continue the process till a constant mass is obtained.

B-3 Calculation

B-3.1 Gum base content, percent by mass = $\frac{(M_1-M_2) \times 100}{M}$

where,

M₁ = mass in g, of the flask with extracted gum sample,

M₂ = mass in g, of the empty flask, and

M = mass in g, of the Sample taken for test.

Annex-C**(Clause-2)****List of relevant standards**

BDS No	Title
BDS 103	Methods of rounding off numerical value
BDS 822	Code of Hygienic Conditions for Food Processing Units.
BDS 833	Water for Laboratory use
BDS 1000	Soft Candy
BDS ISO 6579-1	Microbiology of the food chain - Horizontal method for the detection, enumeration and serotyping of <i>Salmonella</i> – Part 1: Detection of. <i>Salmonella</i> spp