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STANDARDIZATION ORGANIZATION (GSO)

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اعداد اللجنة الفنية الخليجية رقم TC05

Prepared by GSO Technical Committee No. TC05

المشروبات الغازية
Carbonated Beverages

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Carbonated Beverages

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Foreword

GCC Standardization Organization (GSO) is a regional Organization which consists of the National Standards Bodies of GCC member States. One of GSO main functions is to issue Gulf Standards /Technical regulations through specialized technical committees (TCs).

GSO through the technical program of committee TC No (5) "Technical committee for standards of food and agriculture products" has updated the GSO Technical regulation No. : GSO 18/2006 " Carbonated Beverages " by Saudi Arabia . The draft Technical regulation has been prepared based on relevant ADMO, International and National foreign Standards and references.

This Technical regulation has been approved by GSO Board of Directors in its meeting No.(20), held on / /14 h(/ /20), The approved standard will replace and supersede the standard No. GSO 18/2014 .

Carbonated Beverages

1. SCOPE AND FIELD OF APPLICATION

This standard is concerned with carbonated beverages and Carbonated Water (Soda Water) (Sparkling water).

2. COMPLEMENTARY REFERENCES

- 2.1 GSO 9 “ Labelling of Prepackaged Foods”.
- 2.2 GSO 11 “Non-Alcoholic Carbonated Beverages – Preliminary Examination and Determination of Total Acidity and Sodium Carbonate Contents”.
- 2.3 GSO 12 “Non-alcoholic carbonated beverages - Determination of carbon dioxide content ”.
- 2.4 GSO 13 “Non-Alcoholic Carbonated Beverages –Determination of Sulphur Dioxide Content”.
- 2.5 GSO 14 “Non-Alcoholic Carbonated Beverages –Determination of Phosphoric Acid Content”.
- 2.6 GSO 20 “Determination of heavy Metals in Food stuff”.
- 2.7 GSO 21 “Hygienic Regulations for Food Plants and Their Personnel”.
- 2.8 GSO 149 “Un bottled Drinking Water”.
- 2.9 GSO 150-2 “Expiration Dates For Food Products - Part 2 : Voluntary Expiration Dates”.
- 2.10 GSO 168 “Requirements of Storage Facilities for Dry and Canned Foodstuff”.
- 2.11 GSO 2500 “ Additives Permitted For Use In Food Stuffs”.
- 2.12 GSO 707 “Flavorings Permitted for Use in Foodstuff”.
- 2.13 GSO 839 “General Regulations for Food Containers”.
- 2.14 GSO 840 “Determination of Sweeteners Permitted in Use for Food Products – Part 1”
- 2.15 GSO 1016 “Microbiological Criteria for Foodstuffs – Part 1”.
- 2.16 GSO 1024 “Non-Returnable Glass Bottles for Carbonated Beverages”.
- 2.17 GSO 1409 “Non-Alcoholic Carbonated Beverages – Sampling”.
- 2.18 GSO 1410 “Non-Alcoholic Carbonated Beverages – Determination of Arsenic and Lead Contents”.
- 2.19 GSO 1411 “Non-Alcoholic Carbonated Beverages – Determination of Sugar and Saccharine Contents”.
- 2.20 GSO 1412“Non-alcoholic carbonated beverages- detection of saponine dolsine and mineral acids.
- 2.21 GSO 1413“Non-Alcoholic Carbonated Beverages –Methods of Bacteriological Examination”.

- 2.22 GSO 1793 "The two pieces aluminum round cans used for canning food (Beverages & stuff).
- 2.23 GSO 1843 "Edible Salt".
- 2.24 GSO ISO 4052:1997 "COFFEE - DETERMINATION OF CAFFEINE CONTENT (REFERENCE METHOD)"
- 2.25 GSO ISO 22855:201 "Fruit and vegetable products- Determination of benzoic acid and sorbic acid concentration- high-performance liquid chromatography method"
- 2.26 GSO Standard to be approved by GSO on "Carbon Dioxide used for food-stuff".
- 2.27 GSO 2233 "Requirements Of Nutritional Labeling"
- 2.28 GSO CODEX STAN 193 General Standard for contaminants & toxins in food
- 2.29 GSO 382 "Maximum limits for pesticide residues in agricultural food products
- 2.30 GSO 2507 "General Standard On Food Enzymes"
- 2.31 GSO 995 " Sweeteners permitted for use in food"
- 2.32 GSO 1069" General principles for the addition of essential nutrients to foods"
- 2.33 GSO 2538 "The maximum limits for residues of ethyl alcohol (ethanol) in food"
- 2.34 GSO 2333 "Requirements for nutrition and health claim in the food"

3. DEFINITIONS

- 3.1 **Carbonated Beverage:** beverage prepared from syrup and / or sweeteners free of calories (sugar substitutes) added to one or more of natural or artificial flavorings, natural or artificial colors and Permitted additives and other optional ingredients and saturated with carbon dioxide
- 3.2 **Carbonated Water (Soda Water) (Sparkling water):** water saturated with carbon dioxide and packaged in containers to prevent contamination.
- 3.3 **Gas Volume:** the amount of carbon dioxide absorbed by water or beverage under normal atmospheric pressure at 15.5 °C.

4. REQUIREMENTS

The following requirements shall be met in Carbonated Beverages and carbonated water:

- 4.1 Produced and prepared according to GSO standard requirements mentioned in Item (2.7)
- 4.2 The water used in the preparation of carbonated beverages and carbonated water shall be potable and complying with the Gulf standard mentioned in (2.8).
- 4.3 The Carbon dioxide used the preparation of carbonated beverages and carbonated water shall comply with the Gulf standard mentioned in (2.26).
- 4.4 Shall be free of exotic sediment, smells of mold and fermentation, insects and their parts and their secretions, cork and glass pieces, and any other impurities.
- 4.5 Shall not add any substance to the carbonated water other than carbonate or

bicarbonate sodium by no more than one gram per liter (1 g/ L) and Stannous Chloride (in the case of canned soda water only) at a rate not exceeding 20 parts per million (20 ppm), calculated as “Tin”.

- 4.6 The food additives used shall comply with the following:
 - 4.6.1 Additives Permitted in Use for Food shall be comply with the standard mentioned in Item (2.11) according to the food category No. 14.1.4
 - 4.6.2 Allowed nutritive sweeteners include sucrose, transformed sugars, glucose, fructose, and honey.
 - 4.6.3 Flavors and flavor enhancers (natural or artificial) shall comply with GSO standard mentioned in Item (2.12):
 - 4.6.3.1 Fruit juice (natural, concentrated, dehydrated)
 - 4.6.3.2 Extracts of natural flavor of any fruit, vegetable, floral buds, bark, roots or leaves of plant.
 - 4.6.4 Edible salt (Sodium Chloride) shall comply with GSO standard mentioned in Item (2.23).
 - 4.6.5 Allowable levels of Caffeine as set out in Table (1).
 - 4.6.6 Allowable levels of Quinine as set out in Table (1).
 - 4.6.7 Enzymatic Preparation Glucose-oxidase-catalase preparation shall comply with GSO standard mentioned in Item (2.30).
 - 4.6.8 Optional Ingredients
 - 4.6.8.1 Herbal Extract, Root Extract, Botanical Extract, Plant Extract (e.g. aloe vera)(Coffee Extracts(Green & Black)).
 - 4.6.8.2 Cereal Extracts e.g., oat,
 - 4.6.8.3 Seeds & Seed Extracts (e.g., chia, basil, and black sesame seed extract)
 - 4.6.8.4 Spices & Spice Extracts.
 - 4.6.8.5 Protein from sources of legumes, dairy products, nuts.
- 4.7 Without prejudice to provisions of GSO Standard mentioned in Items (2.28) The concentrations of heavy metals in carbonated beverages shall not exceed the limits mentioned below:

Arsenic*	0.1 ppm
Lead	0.2 ppm
Cadmium	0.01 ppm
Mercury	0.01 ppm
Inorganic Arsenic	0.1 ppm

* If the total arsenic (organic and inorganic) exceeds the value set above, the maximum concentration of inorganic arsenic shall be determined.

- 4.8 The allowable limits of specific constituents in carbonated water and carbonated beverages are set out in Table (1).
- 4.9 The Microbiological Criteria shall be in accordance to GSO standard mentioned in Item (2.15).
- 4.10 The percentage of ethyl alcohol (ethanol) resulting from natural accidental fermentation shall not exceed 0.1% according to the Gulf Standard mentioned in item (33.2).

Table (1) : Constituents of the product

Constituent	Maximum Permissible Levels (ppm)
Soluble gas inside the can	According to good manufacturing process
Concentration of soluble materials	According to good manufacturing process
Organic acids as Anhydrous Citric acid	According to good manufacturing process
Phosphoric Acid (in beverages which contain cola and ginger)	1000 mg / kg
EDTA (Ethylene Diamine Tetra Acetates):	200 mg /Kg
Glycerol Ester of Wood Resin:	150 mg /Kg
Caffeine	145 mg /Kg
Quinine	85
Saponine	80
Constituent	Minimum Permissible Levels (ppm)
Quinine (In the case to suggest that the presence of quinine)	60

5- SAMPLING:

Samples shall be taken according to GSO standard mentioned in Item (2.17).

6- METHOD OF TESTS:

Test shall be carried out on the representative sample taken according to Item (5) to determine its compliance with the following testing methods:

- 6.1 Visual inspection, flavor, color and odor in accordance to GSO standard mentioned in Item (2.2).
- 6.2 Determination of organic acids as anhydrous citric acid according GSO standard mentioned in Item (2.2).
- 6.3 Determination of soluble gas volume accordance to GSO standard mentioned in Item (2.3).
- 6.4 Determination of Phosphoric Acid (in beverages which contain cola and ginger) accordance to GSO standard mentioned in Item (2.5).

- 6.5 Determination of Caffeine concentration accordance to GSO standard mentioned in Item (2.24).
- 6.6 Determination of Quinine concentration where a product is deemed to contain quinine
- 6.7 Determination of Saponine concentration accordance to GSO standard mentioned in Item (2.20).
- 6.8 Detection of heavy metals accordance to GSO standard mentioned in Item (2.18).
- 6.9 Determination of Sorbic Acid or one of its salts accordance to GSO standard mentioned in Item (2.25).
- 6.10 Determination of Benzoic Acid accordance to GSO standard mentioned in Item (2.25).
- 6.11 Determination of Sulphur Dioxide Content or any of Sulfuric acid salts (determined as Sulphur Dioxide gas) accordance to GSO standard mentioned in Item (2.4).
- 6.12 Determination of concentration of Sweeteners Permitted in Use for Food Products accordance to GSO standard mentioned in Item (2.14).
- 6.13 Determination of concentration of soluble solid materials by using Brix degree estimation instrument.

7- PACKAGING, TRANSPORTATION AND STORAGE:

The packaging, transportation and storage shall be as the following:

7.1 Packaging:

Without prejudice to provisions of GSO Standard mentioned in Items (2.13, 2.16 and 2.22):

- 7.1.1 The product shall be packaged in containers which will safeguard the hygienic quality and integrity of the beverage, so that the containers are sterile, clean, withstand temperatures and do not lead to any undesirable change in taste, smell or color.
- 7.1.2 The edges of the glass container nozzle shall have a continuous smooth surface. The crowns shall be new, free from rust, and lined with cork or plastic discs to prevent gas leakage and disintegration.
- 7.1.3 Containers made of material other than glass shall comply with GSO standard mentioned in Item (2.22).

7.2 Transportation:

The packaged containers shall be transported in boxes made of plastic, wood, or any other material specifically to protect against breakage or damage during transportation and trading. The boxes shall not be contaminated by any toxic, caustic or harmful materials.

7.3 Storage:

The filled containers shall be stored away from any toxic, potentially explosive or flammable material. The filled containers shall also be stored in an environment

that minimizes high moisture and temperature and according to GSO standard mentioned in Item (2.10).

8- LABELING:

Without prejudice to provisions of GSO Standard mentioned in Item (2.1) shall be declared on the label of the product.

- 8.1 Product name " carbonated beverage "
- 8.2 Packer or Producer name or its trade mark shall be clearly shown on the outer surface of the glass containers with the mention of (Made in (Country Name)) In the case of local production.
- 8.3 The name of the carbonated beverage or its trade mark or both shall be clearly shown on the glass container in a way it cannot be removed during trading.
- 8.4 If the beverage contains caffeine:
 - 8.4.1 It shall be mentioned as contents.
 - 8.4.2 The concentration of caffeine shall be written in the table of nutritional Information.
- 8.5 Expiration periods according to GSO standard mentioned in Item (2.9)..
- 8.6 Nutritional Information according to GSO standard mentioned in Item (2.۷7)..
- 8.7 Concentration of artificial sweeteners if used with its cautions and notifications and shall be according to GSO standard mentioned in Item (2.31).
- 8.8 The label should be devoid of any real pictures of the type of fruit, and a graphic of the fruit can be used to show the type of fruit flavour.
- 8.9 The quantity and type of vitamins and minerals, if added, and that it conforms to the Gulf technical regulations mentioned in item (27.2) (32.2).
- 8.10 In the event of any health or nutritional claim on the food label, it must be in accordance with what is stated in the Gulf Technical Regulations mentioned in item (34.2).
- 8.11 In the case of carbonated water, the product can be called: (carbonated water), (soda water) or (sparkling water)

References:

Food Standards Australia New Zealand (FSANZ)

<https://www.foodstandards.gov.au/consumer/generalissues/Pages/Caffeine.aspx>