هيئة التقييس لدول مجلس التعاون لدول الخليج العربية
GCC STANDARDIZATION ORGANIZATION (GSO)

مشروع: نهائي

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مياه الشرب المعبأة
Bottled drinking water

إعداد

اللجنة الفنية الخليجية لقطاع المنتجات الغذائية والزراعية

هذه الوثيقة مشروع لمواصفة قياسية خليجية تم توزيعها لإبداء الرأي والملحوظات بشأنها، لذلك فإنها عرضة للتغير والتبديل، ولا يجوز الرجوع إليها كمواصفة قياسية خليجية إلا بعد اعتمادها من مجلس إدارة الهيئة.

ICS : 67.160

تقديم

هيئة التقييس لدول مجلس التعاون لدول الخليج العربية هيئة إقليمية تضم في عضويتها الأجهزة الوطنية للمواصفات والمقاييس في دول الخليج العربية ، ومن مهام الهيئة إعداد المواصفات القياسية الخليجية بواسطة لجان فنية متخصصة .

وقد قامت هيئة التقييس لدول مجلس التعاون لدول الخليج العربية ضمن برنامج عمل اللجنة الفنية رقم (٥) " اللجنة الفنية الخليجية لمواصفات قطاع المنتجات الغذائية والزراعية " بتحديث المواصفة القياسية الخليجية رقم ٢٠٠٩/١٠٢٥ " مياه الشرب المعبأة " وقامت المملكة العربية السعودية بإعداد مشروع هذه المواصفة .

وقد اعتمدت هذه المواصفة كلائحة فنية خليجية في اجتماع مجلس إدارة الهيئة رقم ( ) الذي عُقد بتاريخ / / هـ ، الموافق / / م .

Foreword

Standardization Organization for GCC (GSO) is a regional Organization which consists of the National Standard Bodies of GCC member States.

One of GSO main functions is to issue Gulf Standard/ Technical regulation through specialized technical committees (TCs).

GSO through the technical program of committee TC No: (5) "Technical Gulf committee for food and agriculture product standards" has updated the GSO standard No. 1025/2009" **bottled drinking water" The draft standard has been prepared by (State of Qatar).**

This standard has been approved as Gulf Technical regulation by GSO Board of Directors in its meeting No…../…….held on / / H, / /

Bottled drinking water

1. Scope and field of application:

This GSO standard is concerned with bottled drinking water fit for human consumption, and not include natural mineral water.

2. Complementary references:

2.1 GSO 9 : "Labelling of prepackaged foods".

2.2 GSO 21: "Hygienic regulations in food plants and their personnel".

2.3 GSO 111: "Methods of test for drinking and mineral water - Part 1: Sampling"

2.4 GSO 112: "Methods of test for drinking and mineral water – Part 2: determination of physical properties".

2.5 GSO 378: "Methods of test for drinking and mineral water - third Part: Routine microbiological tests".

2.6 GSO 818: "Methods of test for drinking and mineral water – Part 15: Non-routine microbiological tests".

2.7 GSO 839: "Food packages – Part 1: General requirements".

2.8 GSO 1016: "Microbiological criteria for foodstuffs – Part 1".

2.9 GSO 1928: Code of hygienic practice for bottled drinking water (other than natural mineral water)".

2.10 GSO standards approved concerning methods of test for drinking and mineral Water – Chemical tests .

3. Definitions:

3.1 Bottled drinking water**:** Treated drinking water intended for human consumption, bottled in suitable tightly sealed containers and complying with all the requirements mentioned in this standard

3.2 Treated drinking water **:** Water which has passed through treatment process, depending on the contamination degree of its resource, in order to protect the consumer from all detriments to health. Such processes include water gathering and initial purification, precipitation, filtration, final purification processes and desalination treatment.

3.3 Water source**:** A source of water supply whether it is an artesian well, drilled well, a spring, public or private water distribution system or any other source containing water suitable for human consumption.

3.4 Artesian water**:** Is water from a well tapping a confined aquifer in which the water level stands at some height above the top of the aquifer.

Artesian water may be collected with the assistance of external force to enhance the natural underground pressure so long as such measures do not alter the physical properties, composition, and quality of water.

3.5 Well water**:** Is water from a hole bored, drilled, or otherwise constructed in the ground which taps the water of an aquifer.

3.6 Spring water**:** The water derived from an underground formation from which water flows spontaneously to the surface of the earth. Spring water shall be collected only at the spring or through a bore hole tapping the underground formation feeding the spring. There shall be a natural force causing the water to flow to the surface through a natural orifice. The location of the spring shall be identifiable.

3.7 Water distribution system public or private**:** Means of public or private water systems providing consumers with tap water suitable for direct consumption.

4. Treatment requirements:

4.1 Be a source of water approved by the relevant official bodies, after work and analytical surveys to make sure it is fit for human consumption.

4.2 Transport process of water shall be carry out from place of source or collection to the packing places with equipment or transport lines prepared from materials of grade food not recycled not lead to contamination of the water.

4.3 Is that all production of bottled drinking water according to Gulf standards mentioned in Items (2.2)and(2.10).

4.4 treatment method whether chemical, physical or heating, singly or in combination, shall be sufficient to destroy the microbes. The treated bottled drinking water shall comply with biological and microbiological characteristics according to items (5.8),(5.9).

5. **Characteristics**:

The following shall be met in bottled drinking water:

5.1 **parameters related to quality**:

5.1.1 Bottled drinking water shall not contain any matter affecting colour, taste, smell or the appearance, and shall be completely free from extraneous matter or impurities such as dust, sand, thread or any other impurities.

5.1.2 pH for bottled drinking water shall be range between (6.5-8.5).

5.1.3 Total dissolved solids for bottled drinking water shall be between (100-500) ppm.

5.2 Chemical constituents of health significance in bottled drinking water shall be according to Tables No. 1, 2, 3, 4 , 5

Table No.(1)
Chemical substances naturally occurring in water

Chemical substance	Guideline value		Notes
Inorganic	**µg/l**	**mg/l**	
Arsenic	10	0.01	
Barium	700	0.7	
Boron	2400	2.4	
chromium	50	0.05	Total chromium
ıFluoride	1500	1.5	In bottled water supplemented with fluoride.
Manganese	400	0.4	Affect the appearance, taste or a dour of the water
Molybdenum	70	0.07	
Selenium	40	0.04	
Uranium	30	0.03	
Organic	**µg/l**	**mg/l**	
Microcystin-LR	1	0.001	

Table No.(2)
Chemical present in water from industrial sources and human dwellings

Chemical substance	Guideline value		Notes
Inorganic substances:	**µg/l**	**mg/l**	
- Cadmium	3	0.003	
- Cyanide	70	0.07	
- Mercury	6	0.006	For inorganic mercury
Organic substances:	**µg/l**	**mg/l**	
- Benzene	10	0.01	
- Carbon tetrachloride	4	0.004	
-1,2- Dichlorobenzene	1000	1	
-1,4- Dichlorobenzene	300	0.3	
-1,2- Dichloroethane	30	0.03	
-1,2- Dichloroethene	50	0.05	
- Dichloromethane	20	0.02	
-Di(2- ethylhexyl) phthalate	8	0.008	
-1,4-Dioxane	50	0.05	

- Edetic acid (EDTA)	600	0.6	Applies to the free acid
- Ethyl benzene	300	0.3	
- Hexachlorobutadiene	0.6	0.0006	
- Nitrilotriacetic acid	200	0.2	
- Pentachlorophenol	9	0.009	
- Styrene	20	0.02	
- Tetracholoroethene	40	0.04	
-Toluene	700	0.7	
- Trichloroethane	20	0.02	
- Xylenes	500	0.5	

Table No.(3)
Chemicals present in water from agricultural activities

Chemical substance	**Guideline value**		**Notes**
Non pesticide substance:	**µg/l**	**mg/l**	
- Nitrate ($asNo_3^-$)	50000	50	Short-term exposure
- Nitrite ($asNo_2^-$)	3000	3	Short-term exposure
Pesticides used in agriculture:	**µg/l**	**mg/l**	
- Alachlor	20	0.02	
- Aldicarb	10	0.01	Applies to aldicarb sulfoxide and aldicarb sulfone
- Aldrine and dieldrin	0.03	0.00003	For combined aldrin plus dieldrin
- Atrazine and its chloro-s-triazine metabolites	100	0.1	
- Carbofuran	7	0.007	
- Chlordane	0.2	0.0002	
- Chlorotoluron	30	0.03	
-chlorpyrifos	30	0.03	
- Cyanazine	0.6	0.0006	
- 2,4 – dichlorophenoxy acetic acid	30	0.03	Applies to free acid
2,4Dichlorophenoxybutyric acid.	90	0.09	

- 1,2 - Dibromo- 3 chloropropane	1	0.001	
- 1,2 – Dibromoethane	0.4	0.0004	
- 1,2 - Dichloropropane	40	0.04	
- 1,3 – Dichloropropene	20	0.02	
- Dichloroprop	100	0.1	
- Dimethoate	6	0.006	
- Endrin	0.6	0.0006	
-Fenoprop	9	0.009	
-Hydroxyatrazine	200	0.2	Atrazine metabolite
-Isoproturon	9	0.009	
-Lindane	2	0.002	
-MCPA	2	0.002	
-Mecoprop	10	0.01	
-Methoxychlor	20	0.02	
-Metolachlor	10	0.01	
-Molinate	6	0.006	
-Pendimethalin	20	0.02	
-Simazine	2	0.002	
-2,4,5-T	9	0.009	
-Terbuthylazine	7	0.007	
-Trifluralin	20	0.02	

Table No.(4)
Chemicals used in water treatment or materials in contact with water

Chemical substance	Guideline value		Notes
Disinfectants:	**µg/l**	**mg/l**	
Chlorine	5000	5	For effective disinfection, there should be a residual concentration of free chlorine of ≥ 0.5 mg/l after at least 30 min contact time at pH< 8.0. A chlorine residual should be maintained throughout the distribution system. At the point of delivery, the minimum residual concentration of free chlorine should be 0.2 mg/l.
Monochloramine	3000	3	
dichloroisocyanurate Sodium	50000	50	As sodium dichloroisocyanurate
	40000	40	As cyanuric acid
Disinfection by products:	**µg/l**	**mg/l**	
- Bromate	10	0.01	
- Bromodichloroethane	60	0.06	
- Bromoform	100	0.1	
- Chlorate	700	0.7	
- Chlorite	700	0.7	
- Chloroform	300	0.3	
- Cyanogen chloride	70	0.07	
- Di bromoacetonitrile	70	0.07	
- Di bromochloromethan	100	0.1	
- Di chloroacetate	50	0.05	Applies to free acid
- Di chloroacetonitrile	20	0.02	
- Monochloroacetate	20	0.02	
-N-Nitrosodimethylamine	0.1	0.0001	
- Tricholoroacetate	200	0.2	
-2,4,6- Tricholorophenol	200	0.2	
- Trihalomethanes			The sum of the ratio of the concentration of each to its respective guideline value should not exceed 1
Contaminants from treatment chemicals:	**µg/l**	**mg/l**	

- Acrylamide	0.5	0.0005	
- Epichlorohydrin	0.4	0.0004	
Contaminants from pipes and fittings:	**µg/l**	**mg/l**	
- Antimony	20	0.02	Atrazine metabolite
- Benzo (a) pyrene	0.7	0.0007	
- Copper	2000	2	Staining of laundry and sanitary Ware may occur below guideline valu.
- Lead	10	0.01	
- Nickel	70	0.07	
- Vinylchloride	03	0.0003	

Table No.(5)
pesticide residues for public health purposes

Chemical substance	**Guideline value**		
Pesticides used for public health purposes:	**µg/l**	**mg/l**	**Notes**
DDT and metabolites	1	0.001	

5.3 RADIOLOGICAL ASPECTS

5.3.1 Must not exceed the concentration of radioactivity of any of the isotopes (natural or industrial) alone in drinking water, the values in Table (6).

Table No (6)
Radionuclide

[4] Guidance level (Bq/l)	Dose coefficient (Sv/Bq)	[1]Radionuclide	Category
			[2]Naturally occurring radioactive isotope that starts the uranium decay seriesc
3	4500	Uranium-238	
2.8	4900	Uranium-234	
0.7	21000	Thorium-230	
0.5	28000	Radium-226	
0.2	69000	Lead-210	
0.1	120000	Polonium-210	
			[2]Naturally occurring radioactive isotope that starts the thorium decay series
0.6	23000	Thorium-232	
0.2	69000	Radium-228	
1.9	7200	Thorium-228	
			[3]Artificial radionuclides
7.2	1900	Caesium-134	
10.5	1300	Caesium-137	
4.9	2800	Strontium-90	
6.2	2200	Iodine-131	
			Another radionuclide
7610	0.002	Tritium	
236	0.058	Carbon-14	
0.5	25000	Plutonium-239	
0.7	20000	Americium-241	
22	0.620	potassium-40	

1 These isotopes of interest in drinking water.

2 Chains of radioactive isotopes is the most natural presence in groundwater, especially isotopes of radium .

3 Nuclear fission products resulting from human activities (leakage of nuclear power stations or nuclear explosions).

4 This maximum, which applies if found alone or should be the total value of any radioactive isotope divided by the maximum (in the last column of the table above) does not exceed one, as shown in the equation below :

$$\sum \frac{Ci}{GLi} \leq 1$$

where:
Ci = the measured activity concentration of radionuclide *i*, and
GLi = the guidance level (see Tables 5) of radionuclide *i* that, at an intake of 2 litres/day1 for 1 year, will result in an effective dose of 0.1 mSv/year.

If the total radiation dose ≤ 0.1 mSv per year Vtkon drinking water unfit for consumption, and if the total radiation dose <0.1 mSv per year to consider the matter and take corrective action to reduce the dose .

-Chemical toxicity of uranium 15 times more radioactive toxicity, so the element of dissolved uranium should not exceed 30 parts per billion or micrograms per liter of drinking water .

5.3.2 Must not exceed the radioactivity concentration of radon at 150 Bq / l in drinking water.

5.8 Biological characteristics:

Bottled drinking water shall be completely free from algae, moulds, insects, their eggs, larvae, vesicles and insect parts and parasites including amoeba.

5.9 Microbiological characteristics:

Without prejudice to what is stated in the Gulf standard mentioned in (2.9),bottled drinking water during filling and marketing shall be free from:

5.9.1 Parasites and pathogenic microorganisms

5.9.2 Total coliforms including *E:coli* in any 250 ml sample examined.

5.9.3 Sulphite - reducing clostridia in any 250 ml sample examined

5.9.4 *Pseudomonas aeruginosa* in any 250 ml sample examined

5.9.5 Fecal streptococci in any 250 ml sample examined

6. Sampling:

Samples shall be taken according to Gulf standard in Item (2.3).

7. Methods of examination and test:

All necessary tests shall be carried out on the representative sample taken according to Item (6) to determine its compliance with all items of this standard

7.1 Microbiological, routine and non routine tests shall be carried out according to Gulf standards mentioned in Items (2.5, 2.6).

7.2 Tests of physical properties shall be carried out according to Gulf standard mentioned in Item (2.4).

7.3 Chemical test shall be carried out according to Gulf standard mentioned in Item (2.10).

8. Packaging:

8.1 Without prejudice to what is stated in Gulf standard mentioned in Item (2.7), bottled water shall be packed in hygienic suitable, clean and hermetically sealed containers, Made from food-grade materials that would prevent contamination of the water and preserve its physical and chemical properties.

8.2 Filling and sealing operations of containers shall be done in an aseptic atmosphere according to Gulf standard mentioned in Item (2.2)and(2.10).

9. Labeling:

Without prejudice to what is mentioned in Gulf standard in Item (2.1) the following information shall be declared on the label in case of bottled drinking water:

9.1 The name of the product shall be "bottled drinking water". Prohibits putting pictures or any health claims that would give wrong impression of the product shall not be declared on the lable.

9.2 Water content of the different anions (chloride – sulphate – nitrate – carbonate – bicarbonate – fluoride) and cations (Calcium – magnesium – sodium – potassium _ , total hardness and total dissolved solids expressed in ppm.

9.3 pH.

9.4 The net volume in metric system, unit.

9.5 Packaged water containing added fluoride shall be labelled "Fluoridated water".

9.6 Filling date and expiry date by day month and year in a non - codex manner.

9.7 The labeling information shall be written on the containers and shall not be written only on carton boxes or the like

10. Transportation, storage and handling:

10.1 **Transportation**:

Bottled drinking water shall be transported by any suitable means of transport that would protect it from damages and contamination under the same storage conditions.

10.2 **Storage and handling**:

10.2.1 Bottled drinking water shall be stored in room temperature away from any poisonous materials and as far as possible away from high temperature and contamination sources.

10.2.2 Bottled drinking water shall be stored in good and well ventilated stores free from distinctive odours.

10.2.3 Upon selling or marketing, bottled drinking water shall be protected from direct sunlight, high temperature, and other weather conditions.

References

Guiding for drinking water quality
fourth Ed. Vol. 1
Recommendations
World Health Organization 2011