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MICROBILOGICAL CRITERIA FOR FOOD STUFFS - PART 1

EMIRATES AUTHORITY FOR STANDARDIZATION & METROLOGY
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FOREWORD

This Gulf standard is concerned with the microbiological criteria for some foodstuffs and food ingredients used as raw materials in food processing. These limits are based on those proposed by the international commission of microbiological specifications for foods (ICMSF). Components of microbiological criterion in particular food are chosen according to the following factors:

1) The seriousness of the type of health hazard on consuming a contaminated food.
2) Available information on treatments the food products was subjected to, and the conditions of its handling and storage expected.
3) Type of changes or spoilage to the foodstuffs.
4) The environmental conditions within which the food product was produced or circulated.

These limits were formulated in the form of a system known as working of sample, including levels of acceptance and the number of samples to be analyzed.

This system shows stringency according to the type of food product, and the purpose for which it is used; for instance, the food products intended for consumer groups with increased susceptibility e.g. children, infants, aged people, or dietetic foods and relief foods, such as low sugar foods low fat, in such cases the microbial sampling plans employed are more stringent. Precautions are being taken that these limits be within attainable limits in production units by following good manufacturing practice.

MICROBIOLOGICAL CRITERIA FOR FOODSTUFFS – PART 1

1- SCOPE AND FIELD OF APPLICATION

This Gulf standard is concerned with microbiological limits for some foodstuffs intended for human consumption and for some food ingredients used in food industry.

2- COMPLEMENTARY REFERENCES

2.1 GS concerned with microbiological methods for food examination.

2.2 GS concerned with sampling.

2.3 GS concerned with the foods and food ingredients specified in this standard.

3- DEFINITIONS

3.1 **Sampling plan**

A laboratory plan defining the number of product sample units "n" that should be examined and acceptance or rejection levels and tolerance values. It comprises the following:

n = Number of sample units to be examined.

m = Value or level of microbiological criterion to be met in the food product.

c = The maximum number of sample units allowed to have a microbiological criterion value greater than m and below the value of M.

M = The maximum criterion value that should not achieved or exceeded any of n units.

Sample unit = A sample from the food product examined as one unit from "n". It is either a single or a part of a package or a mixed compound of the product.

3.2 **Defect sample**

The Sample unit that gives a microbiological criterion value equal to or higher than value of "M".

3.3 **Marginally acceptable**

Sample have a value in excess of "m" but less than M.

3.4 **Staphylococcus aureus bacteria**

When mentioned it means that it is (coagulase + ve).

3.5 **Ropiness bacteria in bread and some other bakery products**

Spore-forming bacteria belonging to genus bacillus, sticky disintegration of the gread caused by hydrolysis of bread proteins or carbohydrates or both.

3.6 **"Flat-sour" bacteria in canned foods**

Spore-forming bacteria are capable of growing on food inside can and produces acid and no gas, spoiled cans do not swell and the contents are deteriorated.

4- REQUIREMENTS

4.1Microbiological criteria for foodstuffs and food ingredients shall be as indicated against each in the table.

5- CRITERIA OF TECHNICAL CONFORMITY

5.1 Sample are considered unacceptable in the following cases

5.1.1 When the microbiological criterion value exceeds M in one or more sample units n.

5.1.2 If the number of marginally acceptable samples is higher than c value set in the sampling plan.

5.2 Test shall be carried out on one sample and if the microbiological criterion showed 80% form the maximum allowable level (M) the test shall be carried out again according to the number of the samples stated in the standard.

Microbiological criteria for foods and food ingredients

1. Dairy products

Item	Microorganisms	Limit per ml or gram			
		n	c	m	M
Pasteurized milk	– Aerobic plate count	5	1	$3x10^4$	10^5
	– Coliforms (MPN)	5	0	5	–
	– Escherichia coli	5	0	0	–
	– Staphylococcus aureus toxins*				
Fermented milk products: yoghurt – laban – labena	– Coliforms	5	1	10	10^2
	– Escherichia coli	5	0	0	–
	– Yeast and moulds	5	1	10^2	10^3
Fermented milk products with added flavour	– Coliforms	5	1	10	10^2
	– Yeast and moulds	5	1	10^2	10^3
	– Salmonella	5	0	0	–
	– Escherichia coli	5	0	0	–
UHT milk	– Incubation at 30°C for 5 days*:-				
	– Aerobic plate count	5	0	10^2	–
	– coliforms	5	0	0	–
UHT milk with added flaovour	– (30°C, 5 days incub*.				
	– Aerobic plate count	5	0	10^2	–
	– Salmonella	10	0	0	–
	– coliforms	5	0	0	–
Condensed and sweeten condensed milk	– Aerobic plate count	5	2	10^4	10^5
	– Staphylococcus aureus	5	2	0	10
Evaporated milk	– Aerobic plate count	5	0	50	–
	– Coliforms	5	0	0	–
Pasteurized cream	– Aerobic plate count	5	1	$5x10^4$	10^5
	– Coliforms (MPN)	5	0	10	–
	– Yeasts and moulds	5	1	20	10^2
	– Escherichia coli	5	0	0	–
	– Staphylococcus aureus toxins*				
Pasteurized cream with added flavour	– Aerobic plate count	5	1	$3x10^4$	10^5
	– Coliforms (MPN)	5	0	10	–
	– Yeasts and moulds	5	1	20	10^2
	– Salmonella	5	0	0	–
	– Escherichia coli	5	0	0	–

* Optional

Item	**Microorganisms**	**Limit per ml or gram**			
		n	c	m	M
Whipped cream	– Aerobic plate count	5	2	$5x10^4$	$5x10^5$
	– Coliforms (MPN)	5	1	10	20
	– Staphylococcus aureus	5	1	10	10^2
	– Salmonella (25 gm)	5	0	0	–
	– Escherichia coli	5	0	0	–
	– Staphylococcus aureus toxins*				
Fermented cream	– Coliforms	5	1	10	20
	– Staphylococci	5	1	10	10^2
	– Yeast and moulds	5	1	10	10^2
	– Escherichia coli	5	0	0	–
Sterilized cream	Requirements for canned products (item 7) shall be applied				
Butter	– Aerobic plate count	5	1	10^2	$5x10^2$
	– Coliforms	5	1	10	20
	– Yeast and moulds	5	1	10	10^2
	– Escherichia coli	5	0	0	–
Edible ices (Ice cream – ice milk – water ice)	– Aerobic plate count	5	2	$5x10^5$	10^5
	– Coliforms	5	1	10	10^2
	– Escherichia coli	5	0	0	–
	– Staphylococcus aureus	5	1	10	10^2
	– Salmonella (25g)	10	0	0	–
Ice cream mixes, Dehydrated	– Aerobic plate count	5	2	$3x10^4$	$3x10^5$
	– Coliforms	5	1	10	10^2
	– Salmonella	10	0	0	–
	– Escherichia coli	5	0	0	–
Soft cheese	– Escherichia coli	5	0	0	–
	– Staphylococcus aureus	5	2	10^2	10^3
	– Salmonella	5	0	0	–
	– Listeria monocyctogenes	5	0	0	–
Hard and semi–hard cheese	– Staphylococcus aureus	5	2	10^2	10^3
	– Salmonella	5	0	0	–
	– Coliforms	5	2	10^2	10^3
	– Listeria monocytogenes	5	0	0	–
	– Escherichia coli	5	0	0	–

* Optional

Item	**Microorganisms**	**Limit per ml or gram**			
		n	c	m	M
Processed cheese packed in non-metal containers	– Aerobic plate count	5	2	10^4	$5x10^4$
	– Staphylococci	5	1	10	10^2
	– Escherichia coli	5	0	0	–
	– Salmonella (25 gm)	5	0	0	–
	– Listeria monocytogenes	5	0	0	–
– Powdered milk (skimmed, semi-skimmed)	– Aerobic plate count	5	2	$5x10^4$	$3x10^5$
	– Coliforms	5	1	10	10^2
	– Escherichia coli	5	0	0	–
	– Salmonella	10	0	0	–
– Whey, dried or powdered condensed whey	– Staphylococcus aureas	5	1	10	10^2
Caseinate	– Aerobic plate count	5	2	$2x10^4$	$2x10^5$
	– Coliforms	5	1	10	10^2
	– Staphylococci	5	0	0	–
	– Salmonella	10	0	0	–
	– Escherichia coli	5	0	0	–
Ghee (Butter oil)	– Coliforms	5	1	0	10
Fats form milk	– Staphylococcus aureus	5	1	0	10

2. Infants, children and certain categories of dietetic foods

Item	Microorganisms	Limit per ml or gram			
		n	c	m	M
Biscuits, simple, plain, dried	– Coliforms	5	1	0	10^2
	– Salmonella	5	0	0	–
	– Escherichia coli 0157	5	0	0	–
	– Staphylococcus aureus toxins*	5	0	0	–
Coated or filled dried shelf–stable biscuits	– Coliforms	5	2	10	10^2
	– Salmonella	30	0	0	–
	– Escherichia coli 0157	5	0	0	–
	– Staphylococcus aureus toxins*	5	0	0	–
Dried and instant products requiring Reconstitution, e.g. infant milk	– Aerobic plate count	5	1	10^3	–
	– Coliforms	5	1	0	–
	– Salmonella	60	0	0	–
	– Staphylococcus aureus	5	0	0	–
	– Escherichia coli* 0157	5	0	0	–
Dried products requiring heating to boiling before consumption	– Aerobic plate count	5	3	10^4	10^5
	– Coliforms	5	2	0	10^2
	– Salmonella	15	0	0	–
	– Bacillus cereus*	10	1	0	$5x10^1$
	– Clostridium perfringens*	10	1	0	0
Thermally processed products in sealed containers	– Shall meet the microbiological requirements for canned foods specified in this standard				
Dietetic foods to be eaten by high risk category of consumers (according to the type of the product)	– Aerobic plate count	5	1	10^3	10^4
	– Escherichia coli	5	2	0	10
	– Staphylococcus aureus	10	1	10	10^2
	– Bacillus cereus	10	1	10^2	10^3
	– Clostridium perfringens	10	1	10^2	10^3
	– Salmonella	60	0	0	–
	– Listeria monocytogenes	5	0	0	–
	– Escherichia coli*	5	0	0	–
	– Thermophilic campylobacter	5	0	0	–
	– Vibrio parahaemolyticus	5	0	0	–
	– Bacteria toxins*				

* optional

3. Meat, poultry and its products

Item	Microorganisms	Limit per ml or gram			
		n	c	m	M
Frozen meat; whole or half carcasses; pieces with or without bones	– Aerobic plate count – Salmonella – Escherichia coli 0157	5 5 5	0 0 0	10^6 0 0	– – –
Fresh meat, chilled, whole or half carcasses pieces with or without bones	– Aerobic plate count – Salmonella	5 5	3 0	10^6 0	10^7 –
– Raw minced meat, chilled	– Aerobic plate count – Staphylococcuss aureus – Salmonella	5 5 5	3 2 0	10^6 $5x10^2$ 0	10^7 10^3 –
– Frozen minced meat	– Salmonella – Escherichia coli 0157 (25 g for sample)	5 5	0 0	0 0	– –
Un-cooked chilled and frozen meat Raw minced meat with soy; kubba; beef meat balls, fresh sausage, meat burgers	– Staphylococcuss aureus – Aerobic plate count – Salmonella – Escherichia coli 0157	5 5 5 5	2 3 0 0	$5x10^5$ 10^6 0 0	10^3 10^7 – –
Edible offal: Liver, testes, kidney, gizzard Frozen	– Aerobic plate count – Salmonella	5 5	3 0	$5x10^5$ 0	10^7 –
Cured and/or smoked meat; mortadella; luncheon, pastevma	– Staphylococcus aureus – Salmonella – Escherichia coli 0157	10 10 5	2 0 0	10^2 0 0	10^3 – –
Dehydrated meat or meat components; protein concentrates from meat	– Clostridium perfringens – Staphylococcus aureus – Salmonella	5 5 10	1 1 0	10^2 10^2 0	10^3 10^3 –

Item	Microorganisms	Limit per ml or gram			
		n	c	m	M
Meat soups	– Aerobic plate count	5	1	10^4	10^6
	– Coliforms	5	2	10	10^2
	– Clostridium perfringens	5	0	10^2	–
	– Salmonella	10	0	0	–
Poultry; frozen or chilled	– Aerobic plate count	5	0	10^6	–
	– Salmonella	5	1	0	–
Cured and/or smoked poultry meat; mortadella, frankfurters, turkey, pastrami, smoked turkey breast	– Staphylococcus aureus	10	1	10^3	10^4
	– Salmonella	10	0	0	–
Cooked poultry meat, frozen to be reheated before eating (e.g. Prepared frozen meals; chicken burgers; chicken liver pate: chicken loaf)	– Staphylococcus aureus	5	1	10^3	10^4
	– Salmonella	5	0	0	–
	– Escherichia coli 0157	5	0	0	–
Cooked poultry meat, frozen; ready-to-eat (e.g. Turkey rolls and chicken)	– Aerobic plate count	5	3	10^4	10^5
	– Staphylococcus aureus	10	1	10^2	10^3
	– Salmonella	10	0	0	–
Dehydrated poultry products	– Salmonella	10	0	0	–

* optional

4. Fish and shellfish

Item	Microorganisms	Limit per ml or gram			
		n	c	m	M
Iced or chilled raw fish and frozen fish at sea, fish blocks, comminuted fish blocks fish eaten raw fresh water fish	– Aerobic plate count	5	3	$5x10^5$	10^7
	– Escherichia coli 0157	5	3	10	$5x10^2$
	– Salmonella*	5	0	0	–
	– Vibrio parahaemolyticus	5	0	10^2	–
Smoked fish including herring, cooked prior to eating and eaten uncooked	– Aerobic plate count	5	3	10^5	10^6
	– Escherichia coli	5	3	10	$5x10^2$
	– Staphylococcus aureus	5	2	10^3	10^4
	– Vibrio parahaemolyticus	5	0	10^2	–
Frozen raw crustaceans, Raw shrimp, prawns and Lobsters	– Aerobic plate count	5	0	10^6	–
	– Escherichia coli	5	3	10	$5x10^2$
	– Vibrio parahaemolyticus	5	1	10^2	10^3
	– Listeria monocytogenes	5	0	0	–
Cooked, chilled, and frozen crabmeat	– Aerobic plate count	5	2	10^5	10^6
	– Escherichia coli	5	1	10	$5x10^2$
	– Staphylococcus aureus	5	0	10^3	–
	– Vibrio parahaemolyticus	10	1	10^2	10^3
Pre–cooked breaded fish products including fish sticks (fingers), fish protein, and fish cakes	– Aerobic plate count	5	2	10^4	10^5
	– Escherichia coli	5	2	10	$5x10^2$
	– Listeria monocytogenes	5	0	0	–
	– Staphylococcus aureus	5	1	10^3	10^4
Frozen raw breaded shrimp and prawn	– Aerobic plate count	5	2	10^4	10^5
	– Escherichia coli	5	2	10	$5x10^2$
	– Staphylococcus aureus	5	1	10^3	10^4
	– Vibrio parahaemolyticus	5	1	10^2	10^3
	– Listeria monocytogenes	5	0	0	–

Dried sea food, dehydrated fish and fish protein	–	Clostridium perfringens	5	1	10^2	10^4
	–	Staphylococcus aureus	5	1	10^2	10^4
	–	Salmonella	10	0	0	–

* optional

5. Egg products, margarine and nut butters

Item	Microorganisms	Limit per ml or gram			
		n	c	m	M
Liquid egg (whole, yolk or white), chilled or frozen	– Aerobic plate count	5	2	$5x10^4$	10^6
	– Coliforms	5	2	10	10^3
	– Salmonella	10	0	0	–
Any egg product intended for special dietary purposes (infants, aged, relief foods, etc.)	– Salmonella	30	0	0	–
Pudding with egg (powders)	– Aerobic plate count	5	2	10^4	10^6
	– Escherichia coli	5	2	0	10
	– Staphylococcus aureus	5	1	10	10^3
	– Salmonella	10	0	0	–
Margarine	– Yeasts and moulds	5	1	50	10^2
	– Salmonella	5	0	0	–
Nut butters	– Salmonella	10	0	0	–
Egg mix dehydrated	– Aerobic plate count	5	2	10^4	10^6
	Salmonella	10	0	0	–
	Escherichia coli	5	0	0	–
	Staphylococcus aureus	5	0	10	–
Dried cake mixes with high egg content	– Salmonella	10	0	0	–
	– Bacillus cereus	5	0	10^2	–
	– Staphylococcus aureus	5	0	10^3	–

6. Tomato products, salad, vinegar and spices

Item	Microorganisms	Limit per ml or gram			
		n	c	m	M
Tomato ketchup, tomato juice, tomato paste, tomato puree, tomato sauce and tomato products	– Aerobic plate count	5	0	50	–
Coleslow (cabbage)	Aerobic plate count	5	1	10^5	10^6
	– Staphylococci	5	1	10^2	10^4
	Escherichia coli 0157	5	0	0	–
	Listeria monocytogenes	5	0	0	–
Salad of raw vegetable	– Escherichia coli	5	2	10	10^2
	– Salmonella	5	0	0	–
Mayonnaise, mustard, salad sauce and other sauces	– Aerobic plate count	5	1	10^3	10^5
	– Coliforms	5	1	10	10^2
	– Yeasts and moulds	5	1	20	10^2
	– Salmonella	5	0	0	–
Vinegar	– Aerobic plate count	5	1	30	10^2
Spices	– Staphylococcus aureus	5	1	10^2	10^4
	– Salmonella	5	0	0	–
	– Yeasts and moulds	5	2	10^2	10^4
	– Escherichia coli	5	2	10	10^2

7. Canned foods and ingredients for canning

Commercially sterilized canned foods shall pass sterility test described in GS No. 590/1995 “Microbiological Methods of Foods Examination, Part III: Commercial Sterility Test”. in conjunction with the total count provided that the m value shall not exceed 50.

8. Cereals and cereal products

Item	Microorganisms	Limit per ml or gram			
		n	c	m	M
Cereals by–products flours, bran	– Bacillus cereus*	5	1	10^3	10^5
	– Clostridium perfringens*	5	0	10^2	–
Soya flours, concentrates and isolates	– Moulds*	5	2	10^2	10^5
	– Salmonella*	5	0	0	–
	– Escherichia coli*	5	0	0	–
	– Bacillus cereus*	5	0	10^2	–
Cakes and bakery products	– Staphylococcus aureus	5	2	10	10^2
(ready–to–eat) toppings	– Salmonella	20	0	0	–
	– Escherichia coli	5	0	0	–
	– Bacillus cereus	5	0	10^2	–
Pizza, meat pies, frozen doughs with fillings or	– Staphylococcus aureus	5	1	10^2	10^3
	– Salmonella	10	0	0	–
Puffed, flaked cereal products	– Aerobic plate count	5	1	$5x10^4$	10^5
	– Bacillus cereus	5	2	10^4	10^5
– Potatoes, dried and Processed	– Salmonella	5	0	0	–
	– Clostridium perfringens	5	0	10^2	–
	– Escherichia coli	5	0	0	–
Bread	– Coliforms	5	1	50	10^2
	– Yeast and moulds	5	1	$2x10^3$	10^4

* optional

Item	Microorganisms	Limit per ml or gram			
		n	c	m	M
Special breads, sweet with egg or milk	– Coliforms	5	1	50	10^2
	– Yeasts and moulds	5	1	10^3	$2x10^3$
	– Staphylococcus aureus	5	1	10	10^2
	– Salmonella	10	0	0	–
Macaroni/pasta, dry, with or without filling	– Sulphite-reducing Clostridia*	5	2	20	10^2
	– Coliforms*	5	2	10	10^2
	– Yeasts and moulds*	5	2	10^2	10^3
	– Salmonella*	15	0	0	–
	– Escherichia coli*	5	0	0	–
Starch	– Aerobic plate count	5	2	10^4	10^5
	– Yeasts and moulds	5	2	10^2	10^3
	– Staphylococcus aureus	5	2	10	10^2
	– Salmonella	5	0	0	–
Topping, dessert and bakery products, frozen	– Aerobic plate count	5	2	10^4	10^6
	– Escherichia coli	5	2	0	10
	– Staphylococcus aureus	5	2	10	10^3
	– Salmonella	5	0	0	–
Malt, Malt derivatives	– Aerobic plate count	5	2	$5x10^4$	10^5
	– Yeasts and moulds	5	2	10^3	$5x10^3$
	– Staphylococcus aureus	5	2	10^2	10^3
	– Salmonella	5	0	0	–

* optional

9. Vegetables and fruits

Item	Microorganisms	Limit per ml or gram			
		n	c	m	M
Fresh vegetables (to be consumed raw)	– Eacherichia coli 0157 – Eacherichia coli – Salmonella	5 5 10	0 2 0	0 10 0	– 10^2 –
Dried vegetables	– Eacherichia coli	5	2	10^2	10^3
Dried fruits;; dates, figs, apricot	– Osmophilic yeasts – Moulds – Escherichia coli	5 5 5	2 2 2	10 10^2 0	10^2 10^3 10
Frozen vegetables and frozen fruits, pH equal or higher than 4.5	– Escherichia coli	5	2	10^2	10^3
Frozen vegetables and frozen fruits, pH less than 4.5.	opH measured at the time of sampling	opH values shall be less than 4.5 in all tested samples			

10. Jelly and jam products

Item	Microorganisms	Limit per ml or gram			
		n	c	m	M
Jam jelly and marmalade	– Yeasts and moulds – Packages shall be incubated at 35°C for 10 days	5	1	10^3	10^4
		– No sings of microbial alteration on packages or, – On physical, chemical or organoleptic, characteristics of the product			

11. Chocolate and candy products

Item	Microorganisms	Limit per ml or gram			
		n	c	m	M
Chocolate; plain, bitter, liquor, sweet, sweet coating, milk, milk coating, nuts, discs, bullercrunch or toffee	– Salmonella	10	0	0	–
Dehydrated desserts, (bonbons, caramels and other similar products)	– Aerobic plate count	5	2	10^4	10^6
	– Staphylococcus aureus	5	2	10	10^3
	– Salmonella	5	0	0	–
	– Escherichia coli	5	0	0	–
Cocoa	– Escherichia coli	5	0	0	–
	– Yeasts and moulds	5	2	10^2	10^4
	– Salmonella	10	0	0	–
Coconut, desiccated apricot	– Coliforms	5	2	10^2	10^4
	– Moulds	5	2	10	10^2
	– Salmonella	10	0	0	–
Nuts	– Moulds	5	2	10^2	10^4
	– Escherichia coli	5	2	0	10
Chewing gum	– Yeasts and moulds	5	1	$5x10^2$	10^3
	– Escherichia coli	5	0	0	–
Honey	– Clostridium botulinum*	5	0	0	–
	– Yeasts and moulds	5	1	10^2	10^3
Molasses, hard brown sugar, debs	– Yeasts and moulds	5	1	$5x10^2$	10^3
	– Escherichia coli	5	1	0	10
	– Salmonella	5	0	0	–

* optional

12. Ingredients for food industries

Item	Microorganisms	Limit per ml or gram			
		n	c	m	M
Enzymes	– Escherichia coli	5	2	0	10
	– Salmonella	10	0	0	–
Dyes (food clours)	– Aerobic plate count	5	2	10^4	10^6
	– Salmonella	10	0	0	–
Gums	– Aerobic plate count	5	2	10^4	10^6
	– Coliforms	5	2	10	10^3
Eggs products	– Aerobic plate count	5	2	10^4	10^6
	– Salmonella	10	0	0	–
Yeasts	– Spores of rope-forming bacteria	5	1	10^2	10^3
	– Escherichia coli	5	2	0	10
	– Salmonella	10	0	0	–
Gelatin	– Aerobic plate count	5	3	$5x10^3$	10^5
	– Clostridium perfringens	5	1	10^2	10^4
	– Staphylococcus aureus	5	1	10^2	10^4
	– Salmonella	5	0	0	–

13. Drinking water, beverages

Item	Microorganisms	Limit per ml or gram n c m M
Bottled drinking water a) Non-carbonated	- Coliforms	5 0 0 – Analytical units of 250 ml should be examined
	Pseudomonas aeruginosa	5 0 0 –
b) Carbonated waters	pH	5 0 3.5 – If any sample units is greater than pH 3.5, proceed with the above sampling plans for non-carbonated waters
Water for human consumption; at source, bottling operation	– Coliforms – Fecal streptococci – Sulphite-reducing clostridia	10 1 0 10/100 ml absent in 100 ml of sample

Natural mineral water first examination			Decision
E. *coli* or thermotolerant coliforms	1 x 250 ml		must not be detectable in any sample
Total coliform bacteria	1 x 250 ml	if ≥ 1 or ≤	second examination is
Fecal streptococci	1 x 250 ml	2	carried out
Pseudomonas aeruginosa	1 x 250 ml	if > 2	rejected
Sulphite-reducing anaerobes	1 x 50 ml		

Second Examination

	n	c	m	M
Total coliform bacteria	4	1	0	2
Fecal streptococci	4	1	0	2
Sulphite-reducing anaerobes	4	1	0	2
Pescudomonas aeruginosa	4	1	0	2

14. Carbonated beverages, fruit juices and drinks

Item	Microorganisms	Limit per ml or gram			
		n	c	m	M
Carbonated beverages	– Aerobic plate count (at 37°C/24 hrs)	5	1	10^2	$3x10^2$
	– Coliforms	5	1	0	10
	– Yeast and moulds	5	1	2	10
Fruit juice and drink	– Aerobic plate count	5	2	$5x10^3$	10^4
	– Coliforms	5	3	5	10^2
	– Yeast and moulds	5	2	10^2	10^3

15. Tea and coffee

Tea and derivatives	– Coliforms	5	1	10	10^2
Coffee, instant or roasted	– Coliforms	5	1	10	10^2
	– Yeasts and moulds	5	2	10^2	10^3