

### Microbiological Guidelines for In-flight Catering

Sr.No	Food Products	Regular Parameters	Max. Limits	Optional Parameters	Max. Limits
1	Poultry: (Raw)  Whole birds, portions, minced poultry, sausages, marinated products	Aerobic Plate Count	1 x 10 <sup>6</sup> / gm	Pseudomonas Spp.	5 x 10 <sup>3</sup> / gm
		Salmonella	Absent in 25 gm	Enterobacteriaceae	10 <sup>2</sup> / gm
		E. coli (Quantitative)	10 <sup>5</sup> / gm	Escherichia coli O157( Minced poultry)	Not detected in 25 gm
		Clostridium perfringens (vacuum packed)	10 <sup>2</sup> / gm	Yeasts (Marinated Products)	5 x 10 <sup>4</sup> / gm
		Campylobacter ( Minced poultry)	Absent in 25 gm	-	-
		Staphylococcus aureus ( Minced poultry)	10 <sup>2</sup> / gm	-	-
2	Meat: (Raw)  Joints, mince, diced meats, burgers, sausages, bacon, kibbeh, marinated - products, cured products.	Aerobic Plate Count	1 x 10 <sup>6</sup> / gm	Listeria monocytogenes	N.D / 25 gm
		Salmonella	Absent in 25 gm	Yeasts (Marinated Products)	5 x 10 <sup>3</sup> / gm
		E. coli(Quantitative)	10 <sup>5</sup> / gm	Escherichia coli O157	Not detected in 25 gm
		Clostridium perfringens (vacuum packed)	10 <sup>2</sup> / gm	-	-
		Staphylococcus aureus ( Minced meat)	5 x 10 <sup>2</sup> / gm	-	-
	Raw edible offal (chilled/frozen) e.g. liver, testes, kidney, gizzard.	Aerobic Plate Count	1 x 10 <sup>6</sup> / gm	-	-
	Salmonella	Absent in 25 gm	-	-	
3	Fish and Shell Fish: (Raw)  Fish, shrimps, prawns, mussels, oysters, crab meat, cold/ smoked/ marinated/ pickled	Aerobic Plate Count	1 x 10 <sup>6</sup> / gm	Salmonella	Absent in 25 gm
		Vibrio parahaemolyticus	ND in 25 gm	Escherichia coli O157	Absent in 25 gm
				Clostridium perfringens (vacuum packed)	10 <sup>2</sup> / gm
				Listeria monocytogenes(smoked)	Absent in 25 gm
				Staph. aureus (Cold Smoked)(crustaceans)	10 <sup>2</sup> / gm
		E. coli(Quantitative)	10 <sup>5</sup> / gm	Yeast (Pickled) Marinated	5 x 10 <sup>4</sup> / gm

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4	<b>Pasteurized Frozen Whole Egg and Egg Products:</b>	Aerobic Plate Count	10 <sup>4</sup> / gm	Listeria monocytogenes (pudding with egg)	Absent in 25 gm
		Salmonella	Absent in 25 gm	Staph. Aureus (pudding with egg)	20 / gm
		Bacillus cereus	10 <sup>2</sup> / gm	Campylobacter (whole egg & liquid pasteurized egg)	Absent in 25 gm
		Enterobacteriaceae	10 / gm	-	-
		E. coli	N.D / gm	-	-
5	<b>Dried Food to be cooked:</b> Rice, pulses, cereals, grain, flour, pasta, dry mixes.	Bacillus cereus	10 <sup>5</sup> / gm	Yeasts & moulds (pasta and starchy foods)	10 <sup>2</sup> / gm
		Aerobic Plate Count (starchy)	10 <sup>4</sup> / gm	Salmonella	Absent in 25 gm
		E. coli (pasta)	N.D / gm or ml.	Clostridium perfringens (cereal flour and byproductslike bran)	10 <sup>2</sup> / gm
6	<b>U.H.T. Milk, Cream Dairy Products :</b> Long life milks including flavoured products, milk shakes, sterilized milk	Aerobic Plate Count	10 / ml.	Incubate at 30 ° C for 5 days and perform A.P.C	-
		Coliforms	N.D / ml.		
		Salmonella	Absent in 25 gm	Enterobacteriaceae	<1/ gm
		E. coli	N.D / ml.	-	-
7	<b>Cream and Dairy Products:</b> Butter, dairy desserts, yogurt, and other Fermented products – laban, labneh.	Salmonella	Absent in 25 gm	Aerobic Plate Count	10 <sup>2</sup> / gm or ml.
		Staph. aureus	20 / gm or ml.	Listeria monocytogenes	Absent in 25 gm
		Enterobacteriaceae	10 / gm or ml.	Salmonella	Absent in 25 gm
		E. coli	N.D / gm or ml.	-	-
8	<b>Pasteurized Milk and Cream. Other Pasteurized Milk Products:</b>	Aerobic Plate Count	2 x 10 <sup>4</sup> / ml.	Staph. aureus	20 / ml.
		Enterobacteriaceae	10 / ml.	Salmonella	Absent in 25 gm
		E. coli	N.D / ml.	-	-

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9	Cream with added flavours:	Aerobic Plate Count	2 x 10 <sup>4</sup> / gm	Salmonella	Absent in 25 gm
		Enterobacteriaceae	10 / gm		
		Yeast&mould	100/ gm or ml.	-	-
		E. coli	N.D / gm		
		Staph. aureus	20 / gm		
10	Whipped Cream :	Aerobic Plate Count	5 x 10 <sup>4</sup> / gm		
		Enterobacteriaceae	10 / gm		
		Staph. aureus	20 / gm	-	-
		E. coli	N.D / gm		
		Salmonella	Absent in 25 gm		
11	Fermented Cream:	Enterobacteriaceae	10 / ml.	Salmonella	Absent in 25 gm
		E. coli	N.D / gm		
		Staph. aureus	20 / gm	-	-
		Yeasts & Moulds	100 / gm		
12	Ice - Cream:	Aerobic Plate Count	2.5 x 10 <sup>4</sup> / gm	Mould (Nuts)	100/ gm
		Enterobacteriaceae	10 / gm		
		E. coli	N.D / gm		
		Staph. aureus	20 / gm	-	-
		Salmonella	Absent in 25 gm		

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13	Processed Cheese:	Aerobic Plate Count	10 <sup>5</sup> / gm	-	-
		E.coli	N.D /gm		
		Staph. aureus	20 / gm		
		Listeria monocytogenes	Absent in 25 gm		
		Salmonella	Absent in 25 gm		
		Enterobacteriaceae	10 / gm		
14	Soft Cheese :	Enterobacteriaceae	10 <sup>2</sup> / gm	-	-
		E. coli	N.D / gm		
		Staph. aureus	10 <sup>2</sup> / gm		
		Salmonella	Absent in 25 gm		
		Listeria monocytogenes	Absent in 25 gm		
15	Hard, Semi-Hard Cheese (Un-processed)	Salmonella	Absent in 25 gm	-	-
		Staph. aureus	10 <sup>2</sup> / gm		
		Enterobacteriaceae	10 <sup>2</sup> / gm		
		Listeria monocytogenes	Absent in 25 gm		
		E. coli	N.D / gm		
16	Preserved Food (Heat Treated): (Fo<3 process) intermediate moisture or low pH. Vegetables, and herb in oil, canned or bottled fruits, jams, relishes, pickles sauces.	Staph. aureus	20 / gm	Yeasts & moulds	10 <sup>2</sup> / gm
		Coliforms	10 / gm	Salmonella	Absent in 25 gm
		E. coli	N.D / gm	Listeria monocytogenes	Absent in 25 gm

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17	<b>Seafood Dried:</b>	Aerobic Plate Count	10 <sup>5</sup> / gm	-	-
		Vibrio parahaemolyticus	ND in 25 gm		
		Staph. aureus	10 <sup>2</sup> / gm		
		Salmonella	Absent in 25 gm		
		Clostridium perfringens (vacuum packed)	10 <sup>2</sup> / gm		
		Yeasts & Moulds	100 / gm		
		E. coli	N.D / gm		
18	<b>Canned, Pouched or Bottled Food :</b> Canned meat, fish, vegetables soups, ready meals in pouches, baby food in jars, tomato ketchup, tomato juice, tomato paste, tomato puree, tomato sauce and other tomato products.	Aerobic Plate Count	5 x 10 / gm	Yeasts & moulds	20 / gm
				Shall pass commercial sterility test, Incubation at 25-30°C.	No signs of microbial growth, no smell or seam defect on package are found during incubation
19	<b>Dried Heat Processed Foods:</b> Breakfast, cereals/crisps, snacks; confectionery filled or topped biscuits	Aerobic Plate Count	10 <sup>5</sup> / gm	Bacillus cereus	10 <sup>2</sup> / gm
		E.coli	N.D / gm	Staph. aureus	10 <sup>2</sup> / gm
		Coliforms	10 / gm	Salmonella	Absent in 25 gm
		Yeasts & moulds	10 <sup>2</sup> / gm	Clostridium perfringens (vacuum packed)	10 / gm
20	<b>Dried Heat Processed Foods (Ready to Eat after Rehydration):</b> Soup mixes, dessert mixes, milk powder, pot snacks.	Salmonella	Absent in 25 gm	Clostridium perfringens	10 <sup>2</sup> / gm
		Staph. aureus	20 / gm	-	-
		Bacillus cereus	10 <sup>2</sup> / gm		
		Aerobic Plate Count	10 <sup>5</sup> / gm		
		Coliforms	10 / gm		
		E. coli	N.D / gm		

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21	<b>Dried Raw Foods (Ready to Eat) :</b> Nuts, seeds, dried fruits, nuts.	E. coli	N.D / gm	-	-
		Yeast + moulds	10 <sup>2</sup> / gm		
		Salmonella	Absent in 25 gm		
22	<b>Non-Dairy Fats &amp; Oils:</b> Cooking oil, fat spreads, lard, virgin olive oil, nut oils, and cocoa butter.	Salmonella	Absent in 25 gm	Listeria spp.	Absent in 25 gm
		Moulds	10 <sup>2</sup> / gm	Staph. aureus	20 / gm
		Coliforms	10 / gm	-	-
		E. coli	N.D / gm	-	-
23	<b>Different Types of Chocolates:</b> Chocolate plain, bitter liquor sweets, milk coated sweet, milk coating nuts, butter crunch, toffee.	Salmonella	Absent in 25 gm	Yeasts & Moulds	10 <sup>2</sup> / gm
		Enterobacteriaceae	10 / gm	-	-
		Aerobic Plate Count	1 x 10 <sup>4</sup> / gm		
		E. coli	N.D / gm		
24	<b>Honey :</b>	Moulds	10 <sup>2</sup> / gm	-	-
25	<b>Molasses, Hard Brown Sugar:</b>	Yeasts & Moulds	5 x 10 <sup>2</sup> / gm	-	-
		E. coli	N.D / gm		
		Salmonella	Absent in 25 gm		
26	<b>Dyes (Food Colours):</b>	Aerobic Plate Count	10 <sup>4</sup> / gm	-	-
		Salmonella	Absent in 25 gm		
27	<b>Yeast:</b>	Bacillus cereus	10 <sup>2</sup> / gm	-	-
		E. coli	N.D / gm		
		Salmonella	Absent in 25 gm		

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28	Gelatin :	Aerobic Plate Count	5x 10 <sup>5</sup> / gm	-	-
		Staph. Aureus	20 / gm		
		Salmonella	Absent in 25 gm		
		C. perfringens	10 <sup>2</sup> / gm		
29	Margarine:	Yeasts & Moulds	100/ gm	-	-
		Staph. Aureus	100 / gm		
		Salmonella	Absent in 25 gm		
		Aerobic Plate Count	10 <sup>4</sup> / gm		
		Listeria monocytogenes	Absent in 25 gm		
		E. coli	N.D / gm		
30	Tea & Coffee:	Coliforms	10 / gm	E. coli	N.D / gm
		Yeasts & Moulds (Coffee)	10 <sup>2</sup> / gm	-	-
31	Soft Drinks and Alcoholic Beverages: Fruits squashes, fruit drinks, beers, wines, colas, lemonade.	Aerobic Plate Count	10 <sup>5</sup> / ml.	-	-
		Yeasts & Moulds	Absent / ml.		
		Coliforms	5 / ml.		
		E. coli	N.D / ml		
32	Jam, Jelly and Marmalade, Fruit in Syrup:	Aerobic Plate Count	5 x 10 / gm	Salmonella	Absent in 25 gm
		Coliforms	N.D / gm	-	-
		Yeasts & moulds	10 <sup>2</sup> / gm		
		E. coli	N.D / gm		

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33	Starch – i.e. Corn Flour:	Aerobic Plate Count	10 <sup>4</sup> / gm	-	-
		Coliforms	10 / gm		
		E. coli	N.D / gm		
		Bacillus cereus	10 <sup>2</sup> / gm		
34	Vinegar:	Aerobic Plate Count	3 x 10 ml	-	-
35	Bread :	Enterobacteriaceae	10 <sup>2</sup> / gm	Bacillus cereus	10 <sup>2</sup> / gm
		Yeasts & moulds	10 <sup>3</sup> / gm	-	-
		E. coli	N.D / gm		
36	Bottled Water / Ice / Tap Water Drinking water in container (not mineral water) or Tap Water	Pseudomonas aeruginosa	N.D / 250ml	Salmonella spp	Absent / 100 ml
		Coliforms	N.D / 100ml.	-	-
		E. coli	N.D / 100ml.	Heterotrophic Plate Count, Membrane Filter method, 30°C/72 h	500 / 1ml
37	Bottled Water: Natural mineral water. Bottle, plastic cuplet.	-	-	Pseudomonas SPP	N.D / 250 ml.
		Coliforms	N.D / 100ml.	Heterotrophic Plate Count, Membrane Filter method, 30°C/72 h	500 / 1ml
		E. coli	N.D / 100ml.	Salmonella	Absent / 100 ml
38	Unsanitized – Vegetables/Fruits/Salads: Parsley, coriander, lettuce, tomatoes, capsicum, cucumber, pineapple, rock melon etc.	Salmonella	N.D / 25 gm	-	-
		E. coli (Quantitative)	10 <sup>2</sup> / gm		
		Listeria monocytogenes	N.D / 25gm		

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39	Sanitized Vegetables : Parsley, coriander, lettuce, tomatoes, cucumber, stir fried vegetables, blanched vegetables, fresh herbs, coleslaw salad.	Aerobic Plate Count	$1 \times 10^6$ / gm	Escherichia coli O157	N.D / 25 gm
		Salmonella	N.D / 25 gm	Staphylococcus aureus	100/gm
		Listeria monocytogenes	N.D / 25gm	Enterobacteriaceae	$1 \times 10^4$ / gm
		E. coli	<10/gm	Shigella sp	Absent in 25 gm
40	Sanitized Fruit and Fruit Juices : Whole sliced or chopped fruits, freshly squeezed juices, fruit cocktail.	Aerobic Plate Count	$1 \times 10^6$ / gm	Escherichia coli O157	N.D / 25 gm
		Salmonella	N.D / 25 gm	Staphylococcus aureus	100/gm
		E. coli	<10/gm	Enterobacteriaceae	$1 \times 10^4$ / gm
		Yeasts & Moulds	$1 \times 10^5$ / gm	Shigella sp	Absent in 25 gm
		Listeria monocytogenes	N.D / 25gm	-	-
41	Pasteurized Fruit Juices :	Aerobic Plate Count	$5 \times 10^5$ / gm or ml	Staph. aureus	100 / gm.
		Coliforms	10 / gm or ml	Escherichia coli O157	N.D / 25 gm
		E. coli	N.D / gm	Enterobacteriaceae	100/gm/ml
		Yeasts & Moulds	$10^5$ / gm or ml	Shigella sp	Absent in 25 gm
42	Part Cooked Foods: Prepared meals, pizzas, coated fish, meat products, fresh filled pastas.	Aerobic Plate Count	$3 \times 10^4$ / gm	Bacillus cereus	$10^5$ / gm
		Coliforms	$10^2$ / gm	-	-
		E. coli	N.D / gm		
		Staph. aureus	<20 / gm		

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43	Mayonnaise, Mustard Sauces:  Salad dressings and other sauces.	Aerobic Plate Count	10 <sup>3</sup> / gm	Bacillus cereus	10 <sup>2</sup> / ml.
		Enterobacteriaceae	10 <sup>2</sup> / gm		
		E. coli	N.D / gm		
		Staph. aureus	100 / ml.	-	-
		Salmonella	Absent in 25 gm		
		Yeasts & Moulds	100 / gm		
44	Cooked Sea Food:  Fish and shell fish including smoked fish and other sea foods products.	Aerobic Plate Count	1 x 10 <sup>6</sup> / gm	Salmonella spp.	Absent in 25 gm
		Coliforms	2 x 10 <sup>5</sup> / gm	Listeria monocytogenes.	Absent in 25 gm
		E. coli	N.D / gm		
		Vibrio parahaemolyticus	ND in 25 gm	-	-
		Staph. aureus	10 <sup>5</sup> / gm		
45	Caviar :	Aerobic Plate Count	1 x 10 <sup>6</sup> / gm	Salmonella spp.	Absent in 25 gm
		E. coli	N.D / gm		
		Staph. aureus	10 <sup>2</sup> / gm	-	-
		Vibrio parahaemolyticus	ND in 25 gm		
46	Cooked Poultry and Poultry Products:  Including smoked, egg and egg products.	Aerobic Plate Count	1 x 10 <sup>6</sup> / gm	Escherichia coli O157	Absent in 25 gm
		Coliforms	10 <sup>2</sup> / gm	Clostridium perfringens (Vaccumed)	100/gm
		Listeria monocytogenes.	Absent in 25 gm	Bacillus cereus	100/gm
		E. coli	N.D / gm	Campylobacter jejuni	Absent in 25 gm
		Salmonella	Absent in 25 gm		
		Staph. aureus	10 <sup>2</sup> / gm	-	-

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47	Processed Foods :- (Ready to Eat):  Ready meals, cooked meats, sandwiches, salads, fermented meats (sausages), cured meats, rice and rice products.	Aerobic Plate Count	$1 \times 10^6$ / gm	Listeria spp. (for Cold meals)	Absent in 25 gm
		Coliforms	5000 / gm	C. perfringens (only for joint of meat, beef)	$10^2$ / gm
		E. coli	N.D / gm	Vibrio parahaemolyticus (for seafood products)	N.D in 25 gm
		E. coli (Ready to Eat Cold meals with uncooked components)	<10/gm	Escherichia coli O157 (Salads, Sandwich with salads/ Coleslaw)	N.D in 25 gm
		Staph. Aureus	$10^2$ / gm		
		Salmonella	Absent in 25 gm	Enterobacteriaceae	$1 \times 10^4$ / gm
				Shigella sp	Absent in 25 gm
Bacillus cereus (For rice products and highly spiced products.)	$10^2$ / gm	-	-		
48	Desserts :  Mousse, custard, pudding or any dessert to be served without heat - treatment.	Aerobic Plate Count	$10^4$ / gm	Bacillus cereus (vanilla sauce)	20 / gm
		Coliforms	$10^2$ / gm	Enterobacteriaceae	$1 \times 10^4$ / gm
		E. coli	N.D / gm	Shigella sp	Absent in 25 gm
		Salmonella	Absent in 25 gm	-	-
		Bacillus cereus	20 / gm		
		Staph. Aureus	100 / gm		
49	Sauce - (In House):  Gravies, Stock, Stews.	Aerobic Plate Count	$5 \times 10^3$ / gm	-	-
		E. coli	N.D / gm		
		Bacillus cereus	$10^2$ / gm		
		C. perfringens	$10^2$ / gm		

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50	Salad Dressings – (In House)	Aerobic Plate Count	$5 \times 10^5$ / gm	Bacillus cereus	$10^2$ / ml
		Coliforms	$10^2$ / gm	Staph. aureus	20 / ml
		E.coli	N.D / gm	Salmonella	Absent in 25 gm
		Yeasts & Moulds	$5 \times 10^5$ / gm	-	-
51	Cooked Sausages and Cold Cuts  Salami, Pastrami, Dry cured ham, Bresola, Mortedella, Pepperoni sausages.	Aerobic Plate Count	$10^4$ / gm	Salmonella	N.D / 25 gm
		Coliforms	$10^2$ / gm	Listeria monocytogenes	N.D / 25 gm
		E.coli	N.D / gm	-	-
		Staph. aureus	$10^2$ / gm		
		Clostridium perfringens (vacuum packed)	$10^2$ / gm		
52	Coconut freshly grated/dessicated	Moulds	10 / gm	-	-
		Enterobacteriaceae	$10^2$ / gm		
		Salmonella	Absent in 25 gm		
53	Glucose syrup, cane syrup, maple syrup, corn syrup	Aerobic Plate Count	$10^4$ / gm	-	-
		Yeast & Moulds	$5 \times 10^2$ / gm		
		E.coli	N.D / gm		
		Salmonella	Absent in 25 gm		
54	Rose water, Kewra water and other aromatic flavour water	Aerobic Plate Count	$10^2$ / gm	-	-
		E.coli	N.D / gm		

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55	Tamarind pulp, Date paste, Dry fruit pastes	Salmonella	Absent in 25 gm	-	-
		Yeast & Moulds	$10^2$ / gm		
		E.coli	N.D / gm		
56	Sesame seed products including Tahini	E.coli	N.D / gm	-	-
		Salmonella	Absent in 25 gm		
		Staph. aureus	10 / gm		
57	Dried herbs and spices, RTE herbs and spices	Aerobic Plate Count	$10^5$ / gm	-	-
		mould	$10^4$ / gm		
		Faecal Coliforms	10/gm		
		Salmonella	Absent in 25 gm		
		Staph. aureus	$10^2$ / gm		
		C. perfringens	$10^2$ / gm		
		Bacillus cereus	$10^3$ / gm		

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58	Cakes and Bakery products (Ready to eat) cakes, pies, pastries,flans, muffins, quiches, crumpets, tarts etc.	Aerobic Plate Count	10 <sup>5</sup> / gm	Listeria monocytogenes	N.D / 25 gm
		Enterobacteriaceae	10 <sup>2</sup> / gm	-	-
		E.coli	N.D /gm		
		Salmonella	Absent in 25 gm		
		Staph. aureus	10 / gm		
		Bacillus cereus	10 / gm		

Reference:

- British Airways Microbiological Standards.
- IFST Microbiological criteria for foods – U.K.
- Central Laboratory of Food – Dubai Municipality Microbiological criteria for Food Stuff
- Emirates Authority for Standards & Metrology (ESMA) UAE.S 1016:2017 Microbiological Criteria for food stuffs
- GSO 1016/2015 (E) Microbiological Criteria for Foodstuffs