# Table 2.0 A General Overview of Food-deterioration Causes

| Food deteriorations | | | Organisms / mechanisms | Bakery | Beverage | Culinary | Confectionery | Dairy | Oils & fats | Fruits & Vegetables | Meat, Poultry, and Fish |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Microbiological deterioration | Gas formation | Bubbles | Yeasts, Lactic acid bacteria | | | | | Cottage cheese | | Coleslaw | |
| | | Holes | Coliforms | | | | | Cheese | | | |
| | Surface growth | Cloudiness | Yeasts | | Beverages | Brines | | | | | |
| | | Moldy | Molds / fungi | Bread, Cakes | | | | Dairy | Spread | Soft fruit, Vegetable | |
| | | Sprouting | Toxin production | | | | | | | Potato | |
| | Discoloration | Blackening or black spots | *Pseudomonas nigrifaciens, Cladosporium herbarum* | | | | | Milk | | | Frozen poultry products |
| | | Browning | *Lactobacillus brevis* | | | | | | | Brined vegetable | Bacon |
| | | Greening | *Lactobacillus viridescens* | | | | | | | | Meats |
| | | Pigments | *Pseudomonas spp.* | | | Eggs | | | | | Meats |
| | | Pink | *Rhodotorula spp., Clostridia, Rhodotorula glutinis* | | | | | | | Sauerkraut, Frozen peas | Cooked-in-bag breast products |
| | | Red spots | *Lactobacillus plantarum* | | | | | Cheese | | | |
| | | White spots | *Sporotrichum herbarum* | | | | | | | | Frozen poultry products |
| | Off-texture | Bittiness | *Bacillus cereus* | | | | | Milk | | | |
| | | Curdling | Lactic acid bacteria | | | | | Milk | | | |
| | | Holes | *Coliforms* | | | | | Hard cheese | | | Meat |
| | | Ropiness | *Alcaligenes spp.* | Bread | | | | | | | |
| | | Slime | *Bacillus subtilis, Pseudomonas fragi, Leuconostoc mesentroides* | | | | | Milk | | | Meat |
| | | Softening / rotting | *Erwinia, Clostridia*, Yeasts, Molds | | | | Confectionery | | | Fruit and vegetables | |
| | Off-flavor | Alcoholic | Yeasts | | Fruit juices | Mayonnaise-dressed salads | | | | | |
| | | Fruity | *Pseudomonas fragi* | | | | | | | | Meat |
| | | Mustiness | Mold | Bread, Cakes | | | | | | | |
| | | Nitrogenous | *Clostridia, Pseudomonas, Acinetobacters, Moxarellas* | | | Eggs | | | | | Meat |
| | | Pigsty | *Erwinia spp., Clostridia* | | | | | | | Vegetables | |
| | | Potato-like | *Pseudomonas* | | | Eggs | | Milk | | | Meat |
| | | Souring | Lactic acid bacteria, *Brochothrix thermosphacta, Bacillus spp.*, Butyric acid bacteria, *Acetobacter spp.* | | Beer, Wine | | | Dairy | | Vacuum packed meats | |
| Chemical deterioration | Off-flavor and off-odour | Rancidity | Oxidation | Cereals, Snack | Carbonated beverages, Coffee, Wine | | Confectionery, Chocolate | Dairy | Butter, Low-fat spread | Coleslaw | Frozen fresh meat products |
| | | Rancidity | Hydrolytic | | Carbonated beverages, Fluid milk | | | Fluid Milk | | Coleslaw | Fresh Fish |
| | Surface growth | Cloudiness | Enzymatic action | | Fruit juices | | | | | | |
| | Discoloration | Browning | Enzymatic action | | | | | | | Fruit, vegetable | |
| | | Melanosis | Polyphenols oxidases | | | | | | | | |
| | | Grayish or green color | Oxidation (light and oxygen) | | | | | | | | Cured meat |
| | | Fading or darkening | Oxidation | | | | | | | | Fresh red meat |
| | | | Chemical reaction | | | | | | | Spices | |
| | Nutrient loss | Sweetness loss | Hydrolysis / Oxidation | | Low-calorie soft drinks | | | | | | |
| | | Vitamin loss | Oxidation | | Fruit juices | | | | | Fruit preserves | |
| | Off-texture | Texture softening, bruising | Enzymatic breakdown/action | | | | | | | Soft/hard fruits, potato, cucumber | |
| Physical deterioration | Off-texture | Staling | Starch retrogradation, Protein changes | Bread, Cakes, Dried pasta, Breakfast cereals | | | | | | | |
| | | | Oxidation | | | | Chocolate | | | | |
| | | Dryness | Moisture loss | Bread, cakes | | | | | | Fruits | |
| | | Loss of viscosity | | | | | | | | Coleslaw | |
| | | Loss of crispness | | Snack foods | | Prepacked salad | | | | Lettuces | |
| | | Hardness | Moisture migration | | | | | | | Fruits | |
| | | Softening | | Bread, Breakfast cereals | | | | | | | |
| | | Ice crystal formation | | | | | | Ice-cream | | | |
| | | Caking | Moisture uptake | | | | Confectionery | Powdered dairy | | | |
| | | Bloom | Fat migration | | | | Chocolate | | | | |
| | | Gritty texture | Lactose crystallization | | | | | Cheese, Sweetened condensed milk | | | |
| | | Serum separation | Syneresis | | | | | (Fruit) yoghurt | | | |
| | | Freezer burn | Ice sublimation | | | | | | | | Frozen meat |
| | Off-flavor | Flavor changes | Volatile loss | | Beverages | | | | | Fruit preserves, Spices | |