

# MAP Gas Mixture guide

Bulk    Retail

Category	Recommended gas mix	Food items	Typical types of package	Bulk	Retail
<b>Raw Red Meat</b>	<b>Recommended gas mix</b> Retail: 70% O <sub>2</sub> , 30% CO <sub>2</sub> Exceptions: Venison, wild boar - 80% O <sub>2</sub> , 20% CO <sub>2</sub> Bulk: 65% O <sub>2</sub> , 35% CO <sub>2</sub> Exceptions: Pork - 80% CO <sub>2</sub> , 20% N <sub>2</sub> , Venison, wild boar - 80% O <sub>2</sub> , 20% CO <sub>2</sub> Primal: 50% CO <sub>2</sub> , 50% N <sub>2</sub> Exceptions: Pork - 80% CO <sub>2</sub> , 20% N <sub>2</sub>	<b>Food items</b> Beef, goat, hare, horse, lamb, pork, rabbit, veal, venison and wild boar	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages Bulk and primal: Bag-in-box, master pack		
<b>Raw Offal</b>	<b>Recommended gas mix</b> Retail: 80% O <sub>2</sub> , 20% CO <sub>2</sub> Bulk: 80% O <sub>2</sub> , 20% CO <sub>2</sub>	<b>Food items</b> Feet or trotters, foie gras, giblets, heart, kidney, liver, neck, oxtail, sweetbread, tongue and tripe	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages Bulk and primal: Bag-in-box, master pack		
<b>Raw Poultry and Game</b>	<b>Recommended gas mix</b> Retail: 30% CO <sub>2</sub> , 70% N <sub>2</sub> or 20% CO <sub>2</sub> , 80% O <sub>2</sub> Bulk: 100% CO <sub>2</sub>	<b>Food items</b> Capon, chicken, duck, goose, grouse, guinea hen, partridge, pheasant, pigeon, poussin/cornish hen, quail and turkey	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages Bulk: Bag-in-box, master pack		
<b>Poultry, Dark Portions and Cuts</b>	<b>Recommended gas mix</b> Retail: 70% O <sub>2</sub> , 30% CO <sub>2</sub> Bulk: 70% O <sub>2</sub> , 30% CO <sub>2</sub>	<b>Food items</b> Dark poultry mince, other skin-off poultry, skin-off chicken, skin-off turkey, sliced dark poultry, turkey mince	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages Bulk: Bag-in-box, master pack		
<b>Raw Low Fat White Fish and Seafood</b>	<b>Recommended gas mix</b> Retail: 30% O <sub>2</sub> , 40% CO <sub>2</sub> , 30% N <sub>2</sub> Bulk: 70% CO <sub>2</sub> , 30% N <sub>2</sub>	<b>Food items</b> Bream, brill, catfish, cod, coley, croaker, dab, dover and lemon sole, flounder, grouper, haddock, hake, halibut, hoki, huss, jackfish, john dory, mullet, monkfish, pike, plaice, pollack, red snapper, sea bass, shark, skate, turbot, whiting	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages Bulk: Bag-in-box, master pack		
<b>Raw High Fat Oily Fish and Seafood</b>	<b>Recommended gas mix</b> Retail: 40% CO <sub>2</sub> , 60% N <sub>2</sub> Bulk: 70% CO <sub>2</sub> , 30% N <sub>2</sub>	<b>Food items</b> Bluefish, carp, eel, greenland halibut, herring, mackerel, pilchard, rock salmon, salmon, sardines, shad, sprat, swordfish, trout, tuna, whitebait	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages Bulk: Bag-in-box, master pack		
<b>Shellfish, Crustaceans and Molluscs</b>	<b>Recommended gas mix</b> Retail: 30% O <sub>2</sub> , 40% CO <sub>2</sub> , 30% N <sub>2</sub> Bulk: 70% CO <sub>2</sub> , 30% N <sub>2</sub>	<b>Food items</b> Abalone, clams, cockles, conch, crab, crayfish, cuttlefish, lobster, mussels, octopus, oysters, prawns, scallops, sea urchins, shrimp, squid, whelks, winkles	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages Bulk: Bag-in-box, master pack		
<b>Cooked, Cured and Processed Meat Products</b>	<b>Recommended gas mix</b> Retail: 30% CO <sub>2</sub> , 70% N <sub>2</sub> Bulk: 50% CO <sub>2</sub> , 50% N <sub>2</sub>	<b>Food items</b> Bacon, beefburgers, black pudding, charcuterie, chopped pork and ham, cooking sausages, corned beef, frankfurters, haggis, hams, luncheon meats, meat jerky, meat slices, ox tongue, pastрами, pâtés, pepperoni, potted meats, rilletes, roast meats, salami, smoked reindeer, smoked venison, terrines, wurst sausages	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages, flow packages Bulk: Bag-in-box, master pack		
<b>Cooked, Cured and Processed Fish and Seafood Products</b>	<b>Recommended gas mix</b> Retail: 30% CO <sub>2</sub> , 70% N <sub>2</sub> Bulk: 70% CO <sub>2</sub> , 30% N <sub>2</sub>	<b>Food items</b> Bloaters, bombay duck, buckling, cod's roe, cold smoked fish, fish galantine, fish rilletes, fish terrines, hot smoked fish, kippers, potted fish, potted shellfish, salt cod, salted anchovies, salted caviar, salted fish roes, salted jellyfish, seafood pâtés, smoked haddock, smoked halibut, smoked mackerel, smoked salmon, smoked trout, taramasalata	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages, flow packages Bulk: Bag-in-box, master pack		
<b>Cooked, Cured and Processed Poultry and Game Bird Products</b>	<b>Recommended gas mix</b> Retail: 30% CO <sub>2</sub> , 70% N <sub>2</sub> Bulk: 70% CO <sub>2</sub> , 30% N <sub>2</sub>	<b>Food items</b> Capon galantine, chicken ballotine, chicken roll, cured game birds, cured poultry, duck ballotine, duck pâté, duck galantine, pheasant galantine, pigeon galantine, smoked chicken, smoked duck, smoked poussin, smoked turkey, turkey bacon, turkey ballotine, turkey galantine, turkey roll	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages, flow packages Bulk: Bag-in-box, master pack		
<b>Ready Meals</b>	<b>Recommended gas mix</b> Retail: 30% CO <sub>2</sub> , 70% N <sub>2</sub> Bulk: 50% CO <sub>2</sub> , 50% N <sub>2</sub>	<b>Food items</b> Casseroles, ready meals containing fish, ready meals containing game bird, goulash, ready meals containing meat, ready meals containing offal, ready meals containing pasta, ready meals containing poultry, sauces, ready meals containing seafood, soups, ready meals containing vegetables	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages Bulk: Bag-in-box, master pack		
<b>Convenience Food Products</b>	<b>Recommended gas mix</b> Retail: 30% CO <sub>2</sub> , 70% N <sub>2</sub> Bulk: 50% CO <sub>2</sub> , 50% N <sub>2</sub>	<b>Food items</b> Battered: fish, seafood, meats and poultry; Bouchée/enchiladas: fish, seafood, meats and poultry; Burritos, enchiladas, falafels, filled crêpes, pancakes and rolls, kebabs, omelettes, pasties, pâtés en croûtes, pizzas, pasta and pies containing meat, poultry, fish and seafood, quiche, roule au fromage, sandwiches, satays, sausage rolls, soufflés, spring rolls, stuffed pitta bread, tacos, tostadas, vol au vents	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages, flow packages Bulk: Bag-in-box, master pack		
<b>Fresh Pasta Products</b>	<b>Recommended gas mix</b> Retail: 50% CO <sub>2</sub> , 50% N <sub>2</sub> Bulk: 50% CO <sub>2</sub> , 50% N <sub>2</sub>	<b>Food items</b> Capelli, fettucine, funghini, fusilli, linguine, macaroni, pasta shells, spaghetti, tagliarini, tagliatelle, trenette, tubetti, vermicelli, zitoni	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages, flow packages Bulk: Bag-in-box		
<b>Bakery Products</b>	<b>Recommended gas mix</b> Retail: 50% CO <sub>2</sub> , 50% N <sub>2</sub> Bulk: 70% CO <sub>2</sub> , 30% N <sub>2</sub>	<b>Food items</b> Bagels, bread puddings, breads, buns, cheesecakes, crêpes, croissants, crumpets, danish pastries, fruit breads, fruit cakes, fruit pies, fruit strudels, fruit tarts, meringue cakes, muffins, nan bread, nut breads, pancakes, par-baked breads, pitta bread, pizza bases, pretzels, sponge layer cakes, swiss rolls, taco shells, tortillas, vegetable breads, waffles	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages, flow packages Bulk: Bag-in-box		
<b>Hard Cheeses</b>	<b>Recommended gas mix</b> Hard cheese ex. mould-ripened cheeses: Retail: 100% CO <sub>2</sub> Bulk: 100% CO <sub>2</sub> Other dairy products: Retail: 100% N <sub>2</sub> Bulk: 100% N <sub>2</sub> Exceptions: Aerosol Creams: Nitrous oxide (N <sub>2</sub> O)	<b>Food items</b> Aerosol creams, butter, cream cakes, creams, custards, fresh cheeses, hard cheeses, margarine, semi-hard cheeses, sliced cheeses, yoghurts	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages, flow packages Bulk: Bag-in-box tubs and pots are commonly used for yoghurts, soft cheeses, margarine, creams, custards, and butter		
<b>Grated and Soft Cheeses</b>	<b>Recommended gas mix</b> Grated and soft cheeses ex. mould-ripened cheeses: Retail: 30% CO <sub>2</sub> , 70% N <sub>2</sub> Bulk: 30% CO <sub>2</sub> , 70% N <sub>2</sub> Other dairy products: Retail: 100% N <sub>2</sub> Bulk: 100% N <sub>2</sub> Exceptions: Aerosol Creams: Nitrous oxide (N <sub>2</sub> O)	<b>Food items</b> Aerosol creams, butter, cream cakes, creams, custards, fresh cheeses, grated cheeses, margarine, sliced cheeses, soft cheeses, yoghurts	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages, flow packages Bulk: Bag-in-box Tub and pots are commonly used for yoghurts, soft cheeses, margarine, creams, custards, and butter		
<b>Dried Food Products (Coffee, Milkpowder, etc.)</b>	<b>Recommended gas mix</b> Retail: 100% N <sub>2</sub> or 30% CO <sub>2</sub> , 70% O <sub>2</sub> Bulk: 100% N <sub>2</sub>	<b>Food items</b> Cocoa powders, coffees, dehydrated milk, dried and salted fish, dried and salted seafood, dried beans, dried cereals, dried colourings, dried flavourings, dried fruits, dried herbs, dried lentils, dried mushrooms, dried pasta, dried snack food, dried spices, dried vegetables, flours, nuts, potato crisps, teas	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages, flow packages, cans Bulk: Bag-in-box		
<b>Cooked and Dressed Vegetable Products</b>	<b>Recommended gas mix</b> Retail: 30% CO <sub>2</sub> , 70% N <sub>2</sub> Bulk: 50% CO <sub>2</sub> , 50% N <sub>2</sub>	<b>Food items</b> Bean chilies, bhajis, broccoli in cheese, bubble and squeak, cauliflower cheese, coleslaw, cooked beans and potatoes, corn fritters, garlic mushrooms, lentil cutlets, other dressed salads, pakoras, pasta and potato salads, pilafs, quorn dishes, rice salads, rissoles, stuffed peppers and tomatoes, vegetable bakes, casseroles containing vegetables, vegetable pastas and crumbles, vegetable curries and dosas, vegetable flans, vegetable pilau, vegetable pie, vegetarian burgers	<b>Typical types of packages</b> Retail: Traysealed and thermoformed packages Bulk: Bag-in-box		
<b>Liquid Food and Beverage Products</b>	<b>Recommended gas mix</b> Retail: 100% N <sub>2</sub> Bulk: 100% N <sub>2</sub>	<b>Food items</b> Cordials, fruit juices, liqueurs, liquid yoghurt, milk, mineral waters, oils, spirits, vegetable juices, wines	<b>Typical types of package</b> Retail: Cartonboard gable-top containers, glass and plastic bottles, aluminium and steel cans Bulk: Kegs, stainless steel tanks, barrels, etc.		
<b>Carbonated Soft Drinks</b>	<b>Recommended gas mix</b> Retail: 100% CO <sub>2</sub> Bulk: 100% CO <sub>2</sub>	<b>Food items</b> Beers, ciders, carbonated soft drinks, lagers	<b>Typical types of package</b> Retail: Cartonboard gable-top containers, glass and plastic bottles, aluminium and steel cans Bulk: Kegs, stainless steel tanks, barrels, etc.		
<b>Fresh Whole and Prepared Fruit and Vegetable Products (EMAP - Laser Perforated Foil)</b>	<b>Recommended gas mix</b> Retail: 5% O <sub>2</sub> , 5% CO <sub>2</sub> , 90% N <sub>2</sub> Bulk: 5% O <sub>2</sub> , 5% CO <sub>2</sub> , 90% N <sub>2</sub>	<b>Food items</b> Apples, apricots, artichoke, asparagus, aubergine, avocado, bananas, bean sprouts, beetroot, beans, broccoli, cabbages, carrots, celery, cherries, cucumber, cumquats, fennel, garlic, citrus fruits, grapes, guava, kiwi fruit, leek, lettuces, lychees, mango, marrow, melons, fruit and vegetable salads, okra, onions, other sprouts, papayas, parsnips, passionfruit, peaches, pears, peas, peppers, pineapple, plums, potatoes, radish, rhubarb, spinach, star apples, strawberries, other berries, sweetcorn, tomatoes	<b>Typical types of package</b> Retail: Traysealed and thermoformed packages, flow packages Bulk: Bag-in-box		

Oxygen (O<sub>2</sub>)

Carbon Dioxide (CO<sub>2</sub>)

Nitrogen (N<sub>2</sub>)

## MAP with confidence



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