

A Guide to MAP Gas Mixtures

	Bulk	Retail
Raw Red Meat		
Recommended gas mix Retail: 70% O ₂ , 30% CO ₂ <i>Exceptions:</i> Venison, wild boar - 80% O ₂ , 20% CO ₂ Bulk: 65% O ₂ , 35% CO ₂ <i>Exceptions:</i> Pork - 80% CO ₂ , 20% N ₂ , Venison, wild boar - 80% O ₂ , 20% CO ₂ Primal: 50% CO ₂ , 50% N ₂ <i>Exceptions:</i> Pork - 80% CO ₂ , 20% N ₂	Food items Beef, goat, hare, horse, lamb, pork, rabbit, veal, venison and wild boar	Typical types of package Retail: Traysealed and thermoformed packages Bulk and primal: Bag-in-box, master pack
Raw Offal		
Recommended gas mix Retail: 80% O ₂ , 20% CO ₂ Bulk: 80% O ₂ , 20% CO ₂	Food items Feet or trotters, foie gras, giblets, heart, kidney, liver, neck, oxtail, sweetbread, tongue and tripe	Typical types of package Retail: Traysealed and thermoformed packages Bulk and primal: Bag-in-box, master pack
Raw Poultry and Game		
Recommended gas mix Retail: 30% CO ₂ , 70% N ₂ or 20% CO ₂ , 80% O ₂ Bulk: 100% CO ₂	Food items Capon, chicken, duck, goose, grouse, guinea hen, partridge, pheasant, pigeon, poussin/cornish hen, quail and turkey	Typical types of package Retail: Traysealed and thermoformed packages Bulk: Bag-in-box, master pack
Poultry, Dark Portions and Cuts		
Recommended gas mix Retail: 70% O ₂ , 30% CO ₂ Bulk: 70% O ₂ , 30% CO ₂	Food items Dark poultry mince, other skin-off poultry, skin-off chicken, skin-off turkey, sliced dark poultry, turkey mince	Typical types of package Retail: Traysealed and thermoformed packages Bulk: Bag-in-box, master pack
Raw Low Fat White Fish and Seafood		
Recommended gas mix Retail: 30% O ₂ , 40% CO ₂ , 30% N ₂ Bulk: 70% CO ₂ , 30% N ₂	Food items 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	Typical types of package Retail: Traysealed and thermoformed packages Bulk: Bag-in-box, master pack
Raw High Fat Oily Fish and Seafood		
Recommended gas mix Retail: 40% CO ₂ , 60% N ₂ Bulk: 70% CO ₂ , 30% N ₂	Food items Bluefish, carp, eel, greenland halibut, herring, mackerel, pilchard, rock salmon, salmon, sardines, shad, sprat, swordfish, trout, tuna, whitebait	Typical types of package Retail: Traysealed and thermoformed packages Bulk: Bag-in-box, master pack
Shellfish, Crustaceans and Molluscs		
Recommended gas mix Retail: 30% O ₂ , 40% CO ₂ , 30% N ₂ Bulk: 70% CO ₂ , 30% N ₂	Food items Abalone, clams, cockles, conch, crab, crayfish, cuttlefish, lobster, mussels, octopus, oysters, prawns, scallops, sea urchins, shrimp, squid, whelks, winkles	Typical types of package Retail: Traysealed and thermoformed packages Bulk: Bag-in-box, master pack
Cooked, Cured and Processed Meat Products		
Recommended gas mix Retail: 30% CO ₂ , 70% N ₂ Bulk: 50% CO ₂ , 50% N ₂	Food items Bacon, beefburgers, black pudding, charcuterie, chopped pork and ham, cooking sausages, corned beef, frankfurters, haggis, hams, luncheon meats, meat jerky, meat slices, ox tongue, pastrami, pâtés, pepperoni, potted meats, rillettes, roast meats, salami, smoked reindeer, smoked venison, terrines, wurst sausages	Typical types of package Retail: Traysealed and thermoformed packages, flow packages Bulk: Bag-in-box, master pack
Cooked, Cured and Processed Fish and Seafood Products		
Recommended gas mix Retail: 30% CO ₂ , 70% N ₂ Bulk: 70% CO ₂ , 30% N ₂	Food items Bloaters, bombay duck, buckling, cod's roe, cold smoked fish, fish galantine, fish rillettes, 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	Typical types of package Retail: Traysealed and thermoformed packages, flow packages Bulk: Bag-in-box, master pack
Cooked, Cured and Processed Poultry and Game Bird Products		
Recommended gas mix Retail: 30% CO ₂ , 70% N ₂ Bulk: 70% CO ₂ , 30% N ₂	Food items 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	Typical types of package Retail: Traysealed and thermoformed packages, flow packages Bulk: Bag-in-box, master pack
Ready Meals		
Recommended gas mix Retail: 30% CO ₂ , 70% N ₂ Bulk: 50% CO ₂ , 50% N ₂	Food items 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	Typical types of package Retail: Traysealed and thermoformed packages Bulk: Bag-in-box, master pack
Convenience Food Products		
Recommended gas mix Retail: 30% CO ₂ , 70% N ₂ Bulk: 50% CO ₂ , 50% N ₂	Food items Battered: fish, seafood, meats and poultry; Bouchée/breaded: 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	Typical types of package Retail: Traysealed and thermoformed packages, flow packages Bulk: Bag-in-box, master pack
Fresh Pasta Products		
Recommended gas mix Retail: 50% CO ₂ , 50% N ₂ Bulk: 50% CO ₂ , 50% N ₂	Food items Capelli, fettuccine, funghini, fusilli, linguine, macaroni, pasta shells, spaghetti, tagliarini, tagliatelle, trenette, tubetti, vermicelli, zitfioni	Typical types of package Retail: Traysealed and thermoformed packages, flow packages Bulk: Bag-in-box
Bakery Products		
Recommended gas mix Retail: 50% CO ₂ , 50% N ₂ Bulk: 70% CO ₂ , 30% N ₂	Food items 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, pretzels, par-baked breads, pitta bread, pizza bases, pretzels, sponge layer cakes, swiss rolls, taco shells, tortillas, vegetable breads, waffles	Typical types of package Retail: Traysealed and thermoformed packages, flow packages Bulk: Bag-in-box
Hard Cheeses		
Recommended gas mix <i>Hard cheese ex. mould-ripened cheeses:</i> Retail: 100% CO ₂ Bulk: 100% CO ₂ <i>Other dairy products:</i> Retail: 100% N ₂ Bulk: 100% N ₂ <i>Exceptions: Aerosol Creams: Nitrous oxide (N₂O)</i>	Food items Aerosol creams, butter, cream cakes, creams, custards, fresh cheeses, hard cheeses, margarine, semi-hard cheeses, sliced cheeses, yoghurts	Typical types of package 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
Grated and Soft Cheeses		
Recommended gas mix <i>Grated and soft cheeses ex. mould-ripened cheeses:</i> Retail: 30% CO ₂ , 70% N ₂ Bulk: 30% CO ₂ , 70% N ₂ <i>Other dairy products:</i> Retail: 100% N ₂ Bulk: 100% N ₂ <i>Exceptions: Aerosol Creams: Nitrous oxide (N₂O)</i>	Food items Aerosol creams, butter, cream cakes, creams, custards, fresh cheeses, grated cheeses, margarine, sliced cheeses, soft cheeses, yoghurts	Typical types of package 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
Dried Food Products (Coffee, Milkpowder, etc.)		
Recommended gas mix Retail: 100% N ₂ or 30% CO ₂ , 70% O ₂ Bulk: 100% N ₂	Food items 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	Typical types of package Retail: Traysealed and thermoformed packages, flow packages, cans Bulk: Bag-in-box
Cooked and Dressed Vegetable Products		
Recommended gas mix Retail: 30% CO ₂ , 70% N ₂ Bulk: 50% CO ₂ , 50% N ₂	Food items Bean chillies, 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	Typical types of packages Retail: Traysealed and thermoformed packages Bulk: Bag-in-box
Liquid Food and Beverage Products		
Recommended gas mix Retail: 100% N ₂ Bulk: 100% N ₂	Food items Cordials, fruit juices, liqueurs, liquid yoghurt, milk, mineral waters, oils, spirits, vegetable juices, wines	Typical types of package Retail: Cartonboard gable-top containers, glass and plastic bottles, aluminium and steel cans Bulk: Kegs, stainless steel tanks, barrels, etc.
Carbonated Soft Drinks		
Recommended gas mix Retail: 100% CO ₂ Bulk: 100% CO ₂	Food items Beers, ciders, carbonated soft drinks, lagers	Typical types of package Retail: Cartonboard gable-top containers, glass and plastic bottles, aluminium and steel cans Bulk: Kegs, stainless steel tanks, barrels, etc.
Fresh Whole and Prepared Fruit and Vegetable Products (EMAP - Laser Perforated Foil)		
Recommended gas mix Retail: 5% O ₂ , 5% CO ₂ , 90% N ₂ Bulk: 5% O ₂ , 5% CO ₂ , 90% N ₂	Food items 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	Typical types of package Retail: Traysealed and thermoformed packages, flow packages Bulk: Bag-in-box

Oxygen (O₂)



Carbon Dioxide (CO₂)



Nitrogen (N₂)

