

A Guide to MAP Gas Mixtures

			Bulk	Retail
Raw Red Meat				
Recommended gas mix: Retail: 70% O ₂ , 30% CO ₂ Exceptions: Venison, wild boar - 80% O ₂ , 20% CO ₂ Bulk: 65% O ₂ , 35% CO ₂ Exceptions: Pork - 80% CO ₂ , 20% N ₂ , Venison, wild boar - 80% O ₂ , 20% CO ₂ Primal: 50% CO ₂ , 50% N ₂ Exceptions: 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 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% CO 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 , 60% 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, rilletes, 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 rilletes, fish terrines, hot smoked fish, kipers, 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, fettucine, funghini, fusilli, linguine, macaroni, pasta shells, spaghetti, tagliarini, tagliatelle, trenette, tubetti, vermicelli, zitoni	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, pancakes, 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: Hard Cheese ex. mould-ripened cheeses Retail: 100% CO ₂ , Bulk: 100% CO ₂ Other dairy products: Retail: 100% N ₂ , Bulk: 100% N ₂ Exceptions: Aerosol Creams: Nitrous oxide (N ₂ O)	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: Grated and soft cheeses ex. mould-ripened cheeses Retail: 30% CO ₂ , 70% N ₂ , Bulk: 30% CO ₂ , 70% N ₂ Other dairy products: Retail: 100% N ₂ , Bulk: 100% N ₂ Exceptions: Aerosol Creams: Nitrous oxide (N ₂ O)	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 Tubs 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 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				
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)

Quality Control

Handheld gas analyser For O₂ or O₂/CO₂

CheckPoint

The CheckPoint meets the basic requirements for checking of oxygen and carbon dioxide levels in any type of modified atmosphere packages.

- Battery powered
- Battery capacity for a minimum of 2,500 measurements
- Stores the last ten measurements in its memory
- Easy to calibrate
- Available in two variants - as O₂ or as O₂/CO₂



Portable gas analyser For O₂ or O₂/CO₂

CheckPoint II

The CheckPoint II gives operators and QC managers easy access to important information about the gas composition in modified atmosphere packages.

- Data logging capabilities
- Possibility to transfer data to a PC
- Optional built-in bar code scanner
- Ideal for small to medium volume production facilities



Off-line gas analyser For O₂ or O₂/CO₂

CheckMate II

With its intuitive and easy to use operator interface, the CheckMate II is an important everyday tool in any quality control process for modified atmosphere products.

- Easy to use bar code recognition feature to prevent operator errors
- Data logging, such as operator name, product line, etc.
- Automated workflow saving time
- For medium to high volume production



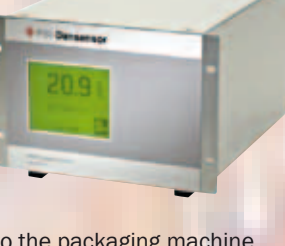
Quality Assurance

On-line analyser For flow packaging machines

MAP Check Combi II

The MAP Check Combi II can be fitted onto most vertical and horizontal flow packaging machines.

- Can be fully integrated into the packaging machine
- Ensuring that the packaging process is stopped if the required gas content is not present in the packages
- Automated flow control allows large gas savings



On-line analyser For thermoforming and tray sealing machines

CMV-2

Analyser designed for use with thermoforming and tray sealing machines equipped for modified atmosphere packaging.

- Works by measuring the gas content non-destructively before sealing the packages
- Can be fully integrated with the MAP Mix 8000 EL electronic gas mixer
- Ensures a uniform packaging quality



On-line analyser & gas mixer For flow packaging machines

TGC-2

Gas analyser, spot test analyser, electronic gas mixer and flow control system integrated with the packaging machine.

- Automates the gas flushing process on both horizontal and vertical flow packaging machines
- Maintains the correct gas level in the package independently of the packaging speed
- Automated flow control allows large gas savings

