

## **Modified Atmosphere Packaging (MAP) Information**

There are numerous gas compositions used to pack different food products. For example, red meat needs high levels of oxygen to maintain the red colour whereas bread requires low levels of oxygen to avoid mould. Vegetables often need a mixture of three gases: Oxygen, Carbon Dioxide and Nitrogen.

Parry (1993)<sup>i</sup> outlines some common food types and their recommended MAP gas mixtures:

Product	% Oxygen	% Carbon Dioxide	% Nitrogen
Red Meat	60-85	15-40	-
Cooked/cured meats	-	20-35	65-80
Poultry	-	25	75
Fish (white)	30	40	30
Fish (oily)	-	60	40
Salmon	20	60	20
Hard Cheese	-	100	-
Soft Cheese	-	30	70
Bread	-	60-70	30-40
Non-dairy cakes	-	60	40
Dairy cakes	-	-	100
Pasta (fresh)	-	-	100
Fruits and vegetables	3-5	3-5	85-95
Dried/roasted foods	-	-	100

The **Hazard Analysis and Critical Control Points (HACCP)** approach to preventative food safety incorporates MAP processes. The Irish Food Safety Authority of Ireland (FSAI) states that, "A full description of the product should be drawn up, including relevant safety information such as: Packaging (e.g. hermetic, vacuum, **modified atmosphere**)". The data to be included in HACCP mentioned is a "sequence of all process steps (including the incorporation of raw materials, ingredients or **additives** and delays during or between steps)".<sup>ii</sup> The **additives** as defined by the European Directive Directive No 95/2/EC are classified as "food additives other than colours and sweeteners" for which MAP gases are listed.<sup>iii</sup> Therefore, the process should be monitored thoroughly to comply with global standards and to ensure that the extensive benefits of MAP are achieved.

<sup>i</sup> [http://www.unido.org/fileadmin/import/32124\\_23MODIFIEDATMOSPACKAGING.5.pdf](http://www.unido.org/fileadmin/import/32124_23MODIFIEDATMOSPACKAGING.5.pdf)

<sup>ii</sup> [http://www.fsai.ie/uploadedFiles/EU\\_Guidance\\_HACCP.pdf](http://www.fsai.ie/uploadedFiles/EU_Guidance_HACCP.pdf)

<sup>iii</sup> [http://ec.europa.eu/food/fs/sfp/addit\\_flavor/flav11\\_en.pdf](http://ec.europa.eu/food/fs/sfp/addit_flavor/flav11_en.pdf)