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Flavouring and Colouring Agents

7.1 FLAVOURINGS

Four types of flavourings are available to the manufacturers of sugar confections and chocolates: (1) essential oils; (2) essences; (3) fruit juices and pulps; (4) powdered flavours.

Liquid flavourings of all types should be held in sealed, full containers under cool, dark conditions. They are best held away from other ingredients to avoid the spoilage which can arise from flavour pick up. Essences and essential oils are often inflammable and should therefore be stored in metal-lined cabinets to reduce fire risk.

The headspace in containers, particularly those in a part-used state, can be a source of deterioration through oxidation of the flavouring. Opened containers of flavours should be used up as quickly as possible and never stored in hot processing areas unless required for that day’s production. Unopened containers of flavourings should not be held on store for more than one year.

The containers used for storing flavouring materials can be in glass or metal. Glass bottles should be coloured, preferably deep amber, to reduce the catalytic effect of light which accelerates deterioration. It is possible to store some flavouring materials in plastics, but essences and essential oils tend to soften these materials and pick up off-flavours. Aluminium bottles are an acceptable packaging medium but are costly. PVC or polythene lined drums are satisfactory for some flavours. Lacquered tins are unaffected by powdered flavours and are the normally accepted packaging for these materials.

Glass or plastic measures are suitable for flavour dispensing. Plastic measures are slowly affected by essences and oils, though contact time is so short as not to rule out their use. Optic volumetric measures can be usefully adapted for delivering fixed amounts of flavourings. Flavour dispensing from a central point is preferable to individual operatives retaining their own flavour stock.

R. Lees et al., Sugar Confectionery and Chocolate Manufacture
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The level of flavouring needed for sugar confectionery varies considerably according to the product and the type of flavouring chosen. It is important to indicate to the flavour manufacturer the intended use for his product. Choice of solvent, binding agent, etc. can be varied to minimise flavour-loss and destruction for particular processing methods. Flavours must be chosen with care as some materials may adversely affect other confectionery ingredients, particularly gums. Experimentations carried out with a new flavouring should be at an initial level of 0.1%. The use of small amounts of salt enhances other flavourings. Ammoniated glycerhizin can also be used as a flavour intensifier in chocolate, chewing gum and butter confections.

Liquid flavours should be mixed with a small amount of dextrose to assist dispersion on adding to the batch. Flavouring oils and essences can also be diluted with ethanol, isopropanol, propylene glycol or carbitol.

7.2 Essential Oils

Essential oils are produced in three ways: (1) distillation; (2) solvent extraction; (3) cold expression.

Distilled oils are improved by a short maturation period before use, while cold expressed oils are immediately available for use. In distillation, the chopped flowers, leaves, peel or pulped whole fruit are macerated with water. This mix is either boiled, or steam is bubbled through the mix. The steam and essential oil vapour is passed into a condenser and the condensed liquor collected. Filtration, separation and drying then takes place prior to packaging.

Essential oils are complex mixtures of alcohols, esters, aldehydes and lactones. The flavouring components of common fruits have been reviewed by H. E. Nursten and A. A. Williams [1967, Chem. and Ind., (12), 486-497]. Some of the hydrocarbon components, particularly the terpenes, may produce cloudiness in confectionery jellies. Terpenes can be removed by dual solvent treatment or by vacuum distillation. The quality of oil is thus improved, but at a considerable increase in cost. Some essential oils contain small traces of antioxidants to reduce deterioration from oxidation; any such additive must be acceptable for the regulations in force in the country of sale.

Vanillin differs from most other natural flavourings in being available in crystalline form. It can be purchased either extracted from the plant or prepared synthetically. It should be added to caramels and fudge at 0.02% level to enhance butter flavour or at 0.05% to chocolate or coffee confections as a flavour intensifier. Vanillin should not be added to confectionery boils at temperatures greater than 90° C (194° F) if flavour loss is to be avoided.