



ABSOLUTES: Alcoholic extractions of concretes to remove waxes, terpenes, sesquiterpenes and most odorless materials, and producing an alcoholic-soluble liquid or semi-liquid oil.

BALSAMS: Water insoluble, semi-solid or viscous, resinous exudates of trees and bushes and used as a base in fragrance and medical applications.

CONCRETES: Extractions of fresh natural plant materials, usually with non-polar organic solvents (hexane, benzene, etc.), which yield after removal of the solvent by vacuum distillation, fatty solid or semi-solid waxes.

DISTILLATION: A physical technique for separation and purification of a liquid mixture based on differences in the boiling point of components of the mixture. The process involves vaporization of the more volatile component(s) and then condensation of the vapor back to a liquid.

ESSENCE OILS: Oils collected in the water phase during evaporation during the production and concentration of fruit juices. They are then separated from the water and contain the highly volatile top notes of natural oils. Fruit essences range in strength from 100-200 fold. They are derived through the juice concentration process and can be added back to the concentrate at the point of manufacture. Citrus juice essences normally range in strength from 200-500 fold. Fruit and citrus essences contain the top-notes responsible for freshness and initial flavor impact in the overall flavor profile.

ESSENTIAL OILS: Volatile products obtained by distillation or expression from plant material of a single botanical form and species. This is the oil that is distilled or expressed from a seed, fruit, root, stem or leaf of a plant. Common examples are oil of lemon, cassia, sweet bay, eucalyptus, peppermint, clove, and nutmeg. Hundreds of different essential oils are approved for use in foods and/or beverages. There are several variations of each of these oils, depending upon the growing region, harvest time, and method of extraction. The oils are usually quite strong in character but quite labile in nature, requiring careful processing and storage.

EXPRESSION: A production method used to obtain citrus oils and fruit juices. The expressed or cold pressed essential oils are obtained from the peels of the fruits. Expression yields essential oils, which can contain a certain amount of non-volatile materials. Juices are produced by expression of fruit itself and then often concentrated.



EXTRACTION: A process of treating the natural raw material usually with a non-polar organic solvent. The solvent portion containing the extracted material is filtered and the solvent removed. The extract will contain non-volatile as well as volatile components. Oleoresins, resins, resinoids, balsams, concretes and absolutes are all produced by extraction.

EXUDATES: Non-cellular, natural raw materials that are secreted by plants either spontaneously or after wounding.

FIXATIVES: Materials which slow down the rate of evaporation of the more volatile components in a perfume composition.

FOLDED OILS: Essential Oils which are concentrated by distillation. A single fold oil or extract is produced by the initial extraction of the raw material. If this single fold oil or extract is concentrated to one-half the volume by removing non-flavor materials, the finished product then becomes a two-fold product. Folded oils and extracts range in strength from two-fold to twenty-fold.

GUMS: Water soluble exudates, consisting mainly of polysaccharides and used as food thickeners or carriers for the manufacture of spray-dried flavor compounds (gum arabic, agar).

GUM RESINS: Water soluble exudates consisting mostly of resinous constituents, gums, and small amounts of volatile components (myrrh, galbanum, and oppopanax).

ISOLATES: Simple separation of an aroma chemical from an essential oil via distillation (mechanically) or hydrolysis (chemically). Eugenol ex clove leaf.

OLEORESINS: Extractions, usually of natural food or flavoring raw materials, using selected solvents to remove the vital components. An oleoresin will contain the essential oil plus other important non-volatile components which enhance the flavor, act as fixatives, or contain other desirable properties. Oleoresins have a different flavor profile than essential oils and supply taste properties as well as aromatic qualities. These materials are considered to be truer in flavor character to the original spice than are the essential oils. Oleoresin black pepper has much of the same aromatic properties of black pepper oil plus the pungent character that comes from the alkaloid-piperine. Oleoresins represent a method of obtaining a spice like flavor profile in a concentrated oil soluble liquid form.



RECTIFICATION: A second distillation of an essential oil to remove color, water, resinous matter, and perhaps unwanted top notes.

RESINOIDS: Viscous solid or semi-solid material, prepared from exudates by extraction with a solvent. These products are similar to concretes except that the starting material is not previously live cellular tissue.

RESINS: This group of exudates includes both gums and balsams. They are water insoluble, solid or semi-solid, and are formed in nature by the oxidation of terpenes.

SESQUITERPENELESS OILS: These are essential oils which have had the mono and sesquiterpenic hydrocarbons partially or completely removed to:

- improve solubility in diluted alcohol or food grade solvents;
- improve odor and flavor of the essential oil; and,
- lift the overall fragrance of flavor since sesquiterpenes have a fixative effect.

TERPENES: Fractions of essential oils consisting mainly of hydrocarbons, obtained as byproducts from either concentration or distillation of the oils. In general, these compounds contribute little flavor that is characteristic of the essential oil and are quite insoluble in water. They are easily degraded to produce off notes, which are particularly problematic in citrus oils and citrus-based end products.

TERPENELESS OILS: Essential oils that have had the terpenes removed by distillation or extraction. These oils are normally highly concentrated, have improved water solubility characteristics and have fewer of the stability problems than the single fold essential oils possess. These oils are considerably more expensive to use in flavor compounding and possess slightly less of the true characteristics found in the original single fold essential oil. Complete or partial removal of monoterpenic hydrocarbons in an essential oil will:

- improve solubility in diluted alcohol or food grade solvents; and,
- increase stability of the oil and to prevent the appearance of rancid notes.

TINCTURES: Alcoholic extractions, with the solvent left in as a diluent.

References:

- Citrus & Allied Historical Archives
- FDA website: <https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/cfrsearch.cfm?fr=501.22>
- AIB Technical Bulletin, November 1985
- Ames and Matthews, 1968, and Denny, 1991