



## **VEGETABLE OIL PRODUCTION**

Vegetable Oils, despite their wide variety, all share a remarkably simple chemical composition. With few exceptions, they are composed of one alcohol (glycerol), combined with organic acids belonging to the aliphatic straight-chain type. Although they almost always have an even number of carbon atoms per molecule, usually between 8 and 24, there is enough complexity to allow for a multitude of formulation options.

### ***Refining Nature***

Our Vegetable Oils are obtained through a physical process such as pressing which removes any defects and to extend stability thus making them suitable for uses in cosmetics, soaps, toiletries, aromatherapy, massage, etc. Some of these natural oils are obtained by the expeller or cold pressing of seeds and some by the expeller or cold pressing of the pulp of the fruit. (See below for further processing information.)

### ***Perfect by Design***

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### ***Perfect by Process***

Producing Vegetable Oils that meet the demanding global standards of the cosmetic and specialty food industries is a multi-step process. Oils by Nature is involved in the entire production process – procurement of raw material, extraction, refining and packaging.

- **Procurement of Raw Material** – It begins with the harvesting of the highest quality raw materials available. Oils by Nature works with a global network of farmers and co-ops to ensure that our standards for time of harvest and storage conditions of our oil stocks are strictly maintained.

- **Extraction** – This is the next phase of vegetable oil production and is performed by cold pressing or mechanical extraction (expeller pressed).
  - **Cold Pressing** – In cold pressing, a chemical-free mechanical pressing process, usually hydraulic, is used in which heat-producing friction is minimized so that temperatures remain below 120°F.
  - **Expeller Pressing** – Expeller pressed oils are produced through a solvent free, continuous mechanical screw process, but unlike cold pressing, the resulting friction from continuous production can generate temperatures of up to 185°F.

That heat differential is significant in oil production because each 10° increase in temperature dramatically raises the rate at which the fatty acids react with oxygen, potentially destroying nutrients.

Oils by Nature oils are extracted by combining the best of both processes – temperature controlled, low resistance expeller pressing. By utilizing refrigerated in-line cooling devices on our expeller presses, and by controlling the speed of the screws, we are able to control temperature based on particular extraction requirements. The resulting oil is consistent with the natural properties maintained.

After extraction, the oil is either packaged as unrefined oil or sent on for refining.

- **Refining** – This step involves the removal of reacted compounds and decay compounds in the form of peroxidized fats and free fatty acids. The most common refining techniques employed are Decolorization and Deodorization.
  - In **Decolorization**, the oil is treated with activated carbon, diatomaceous earth, or clay that removes color bodies and some odors from the oil. The process involves mechanical straining through filter medium, which removes suspended compounds and delivers more uniform, lighter-colored oil.
  - **Deodorization**, through the utilization of high vacuum, controlled temperature, and live steam removes strong odors from the oil. Lower temperatures with longer exposure time are applied in the steam column to effectively remove impurities which maintaining the oil's integrity.
- **Packaging** – To ensure that our Fixed Vegetable Oil is protected from the damaging effects of oxygen, a “modified atmosphere packing system” is used. This packing process replaces the damaging oxygen, or “dead air” in the package, with stabilizing nitrogen. This “nitrogen blanket” locks in and protects the natural properties of the product. It will arrive as fresh as when it was produced, with increased shelf life and decreased risk of rancidity during transit.