

Study shows all extracted oil isn't the same.

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What is the difference in chemical composition between extruded/expelled soybean oil and solvent extracted soybean oil? What is the stability of extruded/expelled soybean oil? These are questions that people ask most often when the quality of the oil is considered.

To determine what effect extrusion pre-treatment has on the composition of expelled soybean oil, a comprehensive chemical characterization was performed at the University of Illinois. The results are of interest because of compositional differences from what is found in crude solvent-extracted soybean oil. When compared to crude solvent-extracted soybean oil, crude extruded/expelled soybean oil contains *higher* amounts of tocopherols, while having *lower* quantities of phosphatides, total chlorophyll, free fatty acids and low initial peroxide value.

In order to better understand the composition study, we need to define tocopherols, phosphatides, chlorophyll and peroxide value.

- ∅ Tocopherols act as antioxidants in lipid systems. The higher the content of antioxidants, the higher the degree of stability. Extruded/expelled oil is high in tocopherols.
- ∅ Phosphatides are the principal constituents of gums in the crude oil. The presence of gums and free fatty acids could interfere with the efficiency of the refining process. The higher gum levels in the oil may also create a viscosity problem in a delivery at low temperature. Extruded/expelled oil is lower in phosphatides.
- ∅ Chlorophyll is the green pigment in soybeans. It acts as a photosensitizer for the production of singlet oxygen and may cause the initial oxidation of oils. Extruded/expelled oil is lower in chlorophyll.
- ∅ Peroxide value is the chemical indication of how much of the oil is in the early stage of oxidation. Extruded/expelled oil is lower in peroxide value.

What does the study mean to the extruder operators? It tells us extruded/expelled soybean oil when compared to solvent-extracted oil will:

- ∅ Have a longer shelf life under proper storage conditions.
- ∅ Will flow more easily through the delivery during cold weather.
- ∅ Will be easier to refine.