

SOYBEAN OIL QUALITY FACT SHEET - GLOSSARY

Glossary

Acyl Group: A group of atoms consisting of a carbonyl group bonded to a carbon group.

Aldehydes: An organic compound and member of the acyl group in which the carbonyl group is attached to a carbon atom at the end of a carbon chain.

Alkali: Any of the soluble hydroxides of the alkali metals, such as lithium, sodium, potassium, rubidium or cesium. Alkalis are strong bases, substances with a pH greater than 7.

Alkali Dosage: Total amount of alkaline solution used to remove free fatty acids during refining.

Alkali Solution or Neutralizing Agent: A soluble base mixed with water.

AOCS: American Oil Chemists' Society, which advances and maintains the standards for the science and technology of oils, fats, surfactants and related materials.

Bleaching: Refined oil is mixed with a dosage of bleaching clay, heated to a bleaching temperature and then filtered.

Bleaching Dosage: Amount of bleaching clay used to achieve zero peroxides.

Caustic: Characteristic of a substance that can burn or corrode by chemical action, like alkalis.

Caustic Refining: Treatment of oil or fat with an aqueous alkali solution, including water washing.

Crude Degummed Soybean Oil (CDSBO): Pure but inedible soybean oil produced from fair to average quality crude soybeans. This represents the largest input cost for refining soybean oil.

Deodorization: A steam stripping process wherein a good-quality steam, generated from de-aerated and properly treated feedwater, is injected into soybean oil under low absolute pressure and sufficiently high temperature to vaporize the free fatty acids and odoriferous compounds, and carry these volatiles away from the feedstock.

Fatty Acids: Molecules that join to create the building blocks of fats in food and organic tissue.

Free Fatty Acids (FFA): Lipids that are released from tissues containing fat cells upon lipolysis.

Glycerol: An alcohol produced by the hydrolysis of triglycerides.

Gums: Hydrated gums are a mucus-like substance created from the combination of hydratable phospholipids with water, or nonhydratable with either alkali or acid. Hydrated metal gums are created from a metal, like iron, and phospholipid complex with acid.

Ketones: An organic compound and member of the acyl group in which the carbonyl group is attached to a carbon atom within the carbon chain.

Lovibond or Lovibond Scale: Measures the color of oils and fats, chemicals, pharmaceuticals and syrups. Sample colors are matched by a suitable combination of the three primary colors together with neutral filters, resulting in a set of Lovibond units that define the color.

Lipolysis: The metabolic process through which triacylglycerols break down via hydrolysis into their constituent molecules: glycerol and free fatty acids.

Neutral Earth: Also called natural clays or earths, originally known as fuller's earth. They are hydrated aluminum silicate and naturally vary in their ability to absorb pigment.

Neutral Oil Loss (NOL): Total amount of oil lost during the process of caustic refining.

Oxidation Products: Oxygen-containing compounds that can decompose through autoxidation or photosensitized oxidation. Decomposition of these compounds produces off flavors in refined, bleached and deodorized soybean oil.

Peroxides: Class of chemical compounds in which a single covalent bond links two oxygen atoms.

Phosphatides: Any member of a large class of fat-like, phosphorus-containing substances.

Phospholipids: A lipid containing a phosphate group in its molecule.

Phytosterols: Plant-derived compounds that are structurally related to cholesterol.

Polar Compounds: Chemical compounds that possess distinct regions of positive and negative charge because of atoms bonding. For example, H₂O consists of H²⁺ and O⁻.

Polymer: Class of natural or synthetic substances composed of very large molecules, called macromolecules, that are multiples of simpler chemical units called monomers.

Poly-unsaturated: Containing several double or triple bonds between carbon atoms.

Saponification Value: Number of milligrams of potassium hydroxide (KOH) or sodium hydroxide (NaOH) required to saponify 1 gram of fat under the conditions specified.

Saponified: Fat or oil turned into soap by reaction with an alkali.

Soaps: Material created by the neutralization of free fatty acids with aqueous alkali, which in turn could adsorb color and precipitate any gums or mucus-like substances present in crude fats and oils.

Squalene: Colorless poly-unsaturated hydrocarbon liquid that is found naturally in many plants.

Tocopherols: Fat-soluble alcohols that constitute vitamin E. Tocopherols are desirable products in refined, bleached and deodorized soybean oil, and their elimination is an inadvertent consequence of the deodorization process.

Triglycerides: Glycerol bound to three fatty acid molecules.

Unsaponifiable Matter: Substances present in oils and fats which are not saponifiable by alkali hydroxides and are determined by extraction with an organic solvent of a solution of the saponified substance under examination.

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