BAILEYS INDUSTRIAL OIL AND FAT PRODUCTS, EDIBLE OIL AND FAT PRODUCTS pdf

1: Bailey's Industrial Oil and Fat Products, Volumes (6th Edition) - Knovel

*Bailey's Industrial Oil and Fat Products, Edible Oil and Fat Products: Chemistry, Properties, and Health Effects (Bailey's Industrial Oil & Fat Products) (Volume 1) [Fereidoon Shahidi] on www.enganchecubano.com *FREE* shipping on qualifying offers.*

Chemistry of Fatty Acids Charlie Scrimgeour. Fat Crystal Networks Geoffrey G. Litwinenko, and Alejandro G. Animal Fats Michael J. Vegetable Oils Frank D. Flavor and Sensory Aspects Linda J. Science, Technology, and Applications P. Dietary Lipids and Health Bruce A. Coconut Oil Elias C. Moro, Economico Pedrosa, Jr. Corn Oil Robert A. Cottonseed Oil Richard D. Clay King, Phillip J. Wakelyn, and Peter J. Olive Oil David Firestone. Palm Oil Yusof Basiron. Peanut Oil Harold E. Rice Bran Oil Frank T. Safflower Oil Joseph Smith. Sesame Oil Lucy Sun Hwang. Soybean Oil Earl G. Sunflower Oil Maria A. Flickinger and Noboru Matsuo. Oils from Microorganisms James P. Wynn and Colin Ratledge. Transgenic Oils Thomas A. Parry, and Kequan Zhou. Julian McClements and Jochen Weiss. Dietary Fat Substitutes S. Namal Senanayake and Fereidoon Shahidi. Wanasundara, and Fereidoon Shahidi. Frying Oils Monoj K. Margarines and Spreads Michael M. Science and Technology Douglas J. Types and Formulations Richard D. Confectionery Lipids Vijai K. Emulsifiers for the Food Industry Clyde E. Frying of Foods and Snack Food Production.

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2: Bailey's Industrial Oil and Fat Products, Volumes (6th Edition) - Knovel

First published in , Bailey's has become the standard reference on the food chemistry and processing technology related to edible oils and the nonedible byproducts derived from oils.

They are consumed in butter, shortening, margarine, salad oils, and cooking oils, as well as in animal feeds, fatty acids, soaps, personal care products, biodiesel, paints made from alkyd resins , lubricants, and greases. The sources of fats and oils include edible vegetable oils, palm oils, industrial oils, animal fats, and marine oils. Food applications account for the major share about three-fourths of the worldwide consumption of fats and oils. However, there has been a continued shift from food to industrial consumption, particularly in biodiesel. In Europe, this has been due mainly to the increased use of rapeseed oil for biodiesel production. In Central and South America, soybean oil has also increased in use for biodiesel as a result of country mandates. Also, industrial applications of other oil crops are being further studied and developed. Industrial uses of fats and oils are expected to continue to increase in Europe. Chinese demand is mainly for soybean oil, followed by canola and palm oils. India is a major consumer of canola oil, as well as palm oil and butter. Both countries expect continued strong growth. Indonesia and Malaysia also contribute to overall consumption, especially in palm oil demand. The following pie chart shows world consumption of fats and oils: Central and South American consumption has also been growing mainly because of increased biodiesel production to meet biofuel mandate requirements. Both Africa and the Middle East are smaller consuming regions that primarily use palm oil. Global production of fats and oils is led by Asia. India also produces large volumes of canola and butter. Southeast Asian countries, particularly Malaysia and Indonesia, continue to increase their acreage of palm trees and to replace older palm trees with higher-yielding tree varieties. Also, in regions such as the United States, consumption has increased through replacement of other oils such as soybean oil in edible uses for health reasons. Soybean oil is the second most widely produced and consumed oil in the world. Its growth in North and South America has been supported by its use as a feedstock in biodiesel production. Animal fats, including tallow and grease, butter, and lard, still account for a significant amount of global fats and oils production and consumption, although volumes have remained fairly steady or only slightly increased in recent years for health reasons e. Tallow and grease are produced in high volumes in the United States and are second in the United States after soybean oil in terms of oil or fat consumed. Tallow production is a by-product and depends on meat consumption such as beef, pork, or lamb. A considerable amount of research and development is being done in the oilseed area, not only in developing new products, but also in improving existing oilseeds through genetic engineering. Examples include the development of high-oil corn; changing the fatty acid profiles of oils such as soybean, canola, and sunflower; and using genetic engineering to improve pest and herbicide resistance in certain crops, as well as to increase crop yields. Overall, the fats and oils industry is growing because of increases in population and increased industrial uses. Oils are occasionally substituted for each other in specific market areas in reaction to long-term trends affecting price or consumer perception of the individual oils. For example, companies do change formulations in order to avoid consumer concern regarding health issues and foreseeable long-term supply shortages that would increase the prices of individual oils.

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3: Food Fats and Oils

An Unsurpassed Standard of Excellence. Since publication of the first edition in , Bailey's Industrial Oil and Fat Products has remained the standard reference on the chemistry and processing technology of edible oils and fats as well as industrial and nonedible derivative products.

Chemistry of Fatty Acids Charlie Scrimgeour. Fat Crystal Networks Geoffrey G. Litwinenko, and Alejandro G. Animal Fats Michael J. Vegetable Oils Frank D. Flavor and Sensory Aspects Linda J. Science, Technology, and Applications P. Dietary Lipids and Health Bruce A. Coconut Oil Elias C. Moro, Economico Pedrosa, Jr. Corn Oil Robert A. Cottonseed Oil Richard D. Clay King, Phillip J. Wakelyn, and Peter J. Olive Oil David Firestone. Palm Oil Yusof Basiron. Peanut Oil Harold E. Rice Bran Oil Frank T. Safflower Oil Joseph Smith. Sesame Oil Lucy Sun Hwang. Soybean Oil Earl G. Sunflower Oil Maria A. Flickinger and Noboru Matsuo. Oils from Microorganisms James P. Wynn and Colin Ratledge. Transgenic Oils Thomas A. Parry, and Kequan Zhou. Julian McClements and Jochen Weiss. Dietary Fat Substitutes S. Namal Senanayake and Fereidoon Shahidi. Wanasundara, and Fereidoon Shahidi. Frying Oils Monoj K. Margarines and Spreads Michael M. Science and Technology Douglas J. Types and Formulations Richard D. Confectionery Lipids Vijai K. Emulsifiers for the Food Industry Clyde E. Lusas and Mian N. Oil Extraction Timothy G. List, Tong Wang, and Vijai K. Adsorptive Separation of Oils A. De Greyt and M. Processing Technologies Walter E. Detergents and Detergency Jesse L. Vegetable Oils as Biodiesel M. Narine and Xiaohua Kong. Paints, Varnishes, and Related Products K.

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4: Edible Oils & Fats | Linde Gas

This item: Bailey's Industrial Oil and Fat Products, Volume 3, Edible Oil and Fat Products: Specialty Oils and Oil Products, Part 2, 6th Edition Bailey's Industrial Oil and Fat Products, Volume 5, Edible Oil and Fat Products: Processing Technologies, 6th Edition.

First deodorizer in US running under vacuum never patented Figure 1. Bataille High Vacuum Batch Deodorizer source: In the USA, it was Eckstein who developed the first industrial deodorizer. The most successful American deodorizing process was that of Wesson, which was introduced in by the Southern Cotton Oil Company. The process was not patented and kept secret for a time but it was probably the first vacuum deodorizing process in the US. In current edible oil refining, deodorization is also the process in which free nonesterifed fatty acids in the case of physical refining and volatile contaminants are stripped and unwanted color pigments are degraded heat bleaching. Although the principle of the process has not changed much since its first application, the deodorizing technology itself has changed significantly. It has been steadily improved to meet the need for ever more efficient processing lower operating cost, higher refined oil yield and better valorization of side streams. More recently, increasing attention to the nutritional quality of food oils and fats has had an impact on the deodorizing process conditions. Deodorization principle Deodorization is actually a stripping process in which a given amount of a stripping agent usually steam is passed for a given period of time through hot oil at a low pressure. Hence, it is mainly a physical process in which various volatile components are removed. Vacuum stripping of volatile components Theoretical aspects of vacuum stripping have been described extensively by many authors []. Stripping of a given volatile component from the oil is determined by its intrinsic volatility vapor pressure curve and the deodorizing conditions applied temperature, pressure and amount of sparge steam. For a batch and cross-flow deodorization process, the stripping effect is described by the following mathematical equation: Other, similar equations have been derived for counter- and co-current deodorization [4]. From equation 1 , it can be concluded that the amount of sparge steam required for the stripping of a given volatile component e. It is impossible to eliminate all volatile components during deodorization; Halving the concentration of a given volatile component requires the same amount of stripping steam, irrespective of its absolute concentration Edible oils contain various components, each with its specific volatility Fig. In physical refining, it is mainly free fatty acids FFA that need to be stripped. Apart from FFA, other volatile components, either valuable tocopherols, sterols, etc. The vaporization efficiency E in equation 1 is a deodorizer design-specific factor. It should be seen as a measure of how saturated with volatile components the stripping agent steam becomes during its contact with the oil. Thermal effects Another objective of deodorization is the thermal destruction of flavor precursors and heat-sensitive color pigments. This evolution towards milder process conditions is caused by the increasing awareness of the potentially harmful health effects of thermal degradation products trans fatty acids, polymeric triglycerides and glycidyl esters that can be formed during deodorization. In addition, there is the desire for maximum retention of the natural oil characteristics. Removal of the first group is similar to FFA stripping and can be achieved in a short time. Longer deodorization time is required to convert non-volatile flavor precursors into volatile off-flavors that can be stripped from the oil. In practice, this means that time is an important process parameter in obtaining a refined oil with a bland and stable taste. If the deodorization time is too short, some flavor precursors will stay in the deodorized oil, resulting in the development of off-flavors during storage or usage. Deodorized oil quality Deodorized oil quality is evaluated primarily by traditional quality parameters such as a low residual FFA content, a high oxidative stability, a light color and a bland odor and taste. In addition, high-quality food oils need to contain low trans fatty acid TFA levels, high amounts of natural antioxidants tocopherols , low levels of polymeric and oxidized triglycerides and no contaminants or degradation products. Refining targets for these minor components are given in Table 2.

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5: Alton Edward Bailey (Author of Bailey's Industrial Oil and Fat Products)

Bailey's Industrial Oil and Fat Products, Edible Oil and Fat Products: Chemistry, Properties, and Health Effects / Edition 6 First published in , Bailey's has become the standard reference on the food chemistry and processing technology related to edible oils and the nonedible byproducts derived from oils.

Hydrolysis of Fats Like other esters, glycerides can be hydrolyzed readily. Partial hydrolysis of triglycerides will yield mono- and diglycerides and free fatty acids. When hydrolysis is carried to completion with water in the presence of an acid catalyst, the mono-, di-, and triglycerides will hydrolyze to yield glycerol and free fatty acids. With aqueous sodium hydroxide, glycerol and the sodium salts of the component fatty acids soaps are obtained. This process is also called saponification. In the digestive tracts of humans and animals and in bacteria, fats are hydrolyzed by enzymes lipases. Lipolytic enzymes are present in some edible oil sources i. Any residues of these lipolytic enzymes present in some crude fats and oils are deactivated by the elevated temperatures normally used in oil processing. Oxidation of Fats 1. Ordinarily, this is a slow process which occurs only to a limited degree. However, factors such as the presence of light can increase the rate of oxidation. In autoxidation, oxygen reacts with unsaturated fatty acids at the double bond site. Initially, peroxides are formed which may break down into secondary oxidation products hydrocarbons, ketones, aldehydes, and smaller amounts of epoxides and alcohols. Metals, such as copper or iron, present at low levels in fats and oils can also promote autoxidation. Fats and oils are normally treated with chelating agents such as citric acid to complex these trace metals thus inactivating their prooxidant effect. Some fats resist this change to a remarkable extent while others are more susceptible depending on certain factors, such as the degree of unsaturation. When rancidity has progressed significantly, it becomes readily apparent from the flavor and odor of the oil. Expert tasters are able to detect the development of rancidity in its early stages. The peroxide value determination, if used judiciously, is oftentimes helpful in measuring the degree to which oxidative rancidity in the fat has progressed. It is common practice in the industry to protect fats and oils from oxidation to preserve their acceptable flavor and to maximize shelf life. For instance, manufacturers avoid air contact by routinely blanketing oils with nitrogen during processing, storage and transportation; and may use chelating agents or antioxidants to further deter autooxidation. Oxidation at Higher Temperatures. Although the rate of oxidation is greatly accelerated at higher temperatures, oxidative reactions which occur at higher temperatures may not follow precisely the same routes and mechanisms as the reactions at room temperature. Thus, differences in the stability of fats and oils often become more apparent when the fats are used for frying or slow baking. The stability of a fat or oil may be predicted to some degree by determining the oxidative stability index OSI. The more unsaturated the fat or oil, the greater will be its susceptibility to oxidative rancidity. Predominantly unsaturated oils i. Dimethylsilicone is usually added to institutional frying fats and oils to reduce oxidation tendency and foaming at elevated temperatures. Historically, partial hydrogenation has often been employed in the processing of liquid vegetable oil to increase the stability and functionality of the oil. Polymerization of Fats All commonly used fats and particularly those high in polyunsaturated fatty acids tend to form larger molecules known broadly as polymers when heated under extreme conditions of temperature and time. Under normal processing and cooking conditions, polymers are formed. Although the polymerization process is not completely understood, it is believed that polymers in fats and oils arise by formation of either carbon-to-carbon bonds or oxygen bridges between molecules. When an appreciable amount of polymer is present, there is a marked increase in viscosity. Reactions during Heating and Cooking Glycerides are subject to chemical reactions oxidation, hydrolysis, and polymerization which can occur particularly during deep fat frying. The extent of these reactions, which may be reflected by a decrease in iodine value of the fat and an increase in free fatty acids, depends on the frying conditions principally the temperature, aeration, moisture, and duration. The composition of a frying medium also may be affected by the kind of food being fried. For example, when frying foods such as chicken, some fat from the food will be rendered and blended with the frying medium while some of the frying medium will be absorbed by the food. In this manner the fatty acid composition of the frying medium will change as frying progresses. Since absorption of frying medium into the food may be extensive, it is often necessary to replenish the fryer with fresh frying medium. Obviously, this replacement with fresh medium tends to dilute overall compositional changes of the fat that would have taken place during prolonged frying. Frying conditions do not saturate the unsaturated fatty acids, although the ratio of saturated to unsaturated fatty acids will change due to degradation and polymerization of the unsaturated fatty acids. It is the usual practice to discard the frying medium when 1 prolonged frying causes excessive foaming of the hot oil, 2 the medium tends to smoke excessively, usually from prolonged frying with low turnover, or 3 an undesirable flavor or dark color develops. Any or all of these qualities associated with the frying medium can decrease the quality of the fried food. The smoke, flash, and fire points of a fatty material are standard measures of its thermal stability when heated in contact with air. The temperature at which the fat smokes freely is usually somewhat higher. For typical non-lauric oils with a free fatty acid content of about 0. The typical smoke, flash and fire points of commercially available oils and fats used for food purposes in the U. The degree of unsaturation of an oil has little, if any, effect on its smoke, flash, or fire points. Oils containing fatty acids of low molecular weight such as coconut oil, however, have lower smoke, flash, and fire points than other animal or vegetable fats of comparable free fatty acid content. Oils subjected to extended use will have increased free fatty acid contents resulting in a lowering of the smoke, flash, and fire points. Accordingly, used oil freshened with new oil will show increased smoke, flash, and fire points. This is why most household fat and oil products for cooking carry a warning statement on their labels about potential fire hazards. Accordingly, careful attention must be given to all frying operations. When heating fat, do not leave the pan unattended. The continuous generation of smoke from a frying pan or deep fryer is a good indication that the fat is being overheated and could ignite if high heating continues. If smoke is observed during a frying operation, the heat should be reduced. If, however, the contents of the frying pan ignite, extinguish the fire by covering the pan immediately with a lid or by spraying it only with an appropriate fire extinguisher. Do not attempt to remove a burning pan of oil from the stove. Allow the covered frying container to cool. Under no circumstances should burning fat be dumped into a kitchen sink or sprayed with water. Furthermore, if a consumer wishes to save the fat or oil after cooking, the hot fat or oil should never be poured back into its original container. Most containers for cooking oils are not designed to withstand the high temperatures reached by the oil during cooking. Pouring hot oil into such containers could result in breakage or melting of the container and possible burns to the user. The values are based on a single test for each fat and oil source, thus they do not represent a statistically valid mean or indicate the range of values attributable to each of the source oils. In addition, there can be analyst subjectivity when using this test procedure i. Therefore, to the extent practicable, ISEO recommends that individual companies conduct independent testing that accounts for such variability within source fats and oils unique to their business practices. Further, to the extent any company chooses to rely upon the accompanying data, ISEO strongly urges the employment of a prudent margin of safety below the ISEO test based smoke, flash, and fire points. Commercial samples were tested after deodorization and had a free fatty acid content of 0. Oils and Oilseeds, 5th ed.

6: Major Fats and Oils Industry Overview - Chemical Economics Handbook (CEH) | IHS Markit

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7: Bailey's Industrial Oil and Fat Products : Fereidoon Shahidi :

Bailey's Industrial Oil and Fat Products, Edible Oil and Fat Products: Processing Technology (Bailey's Industrial Oil &

*Fat Products) (Volume 4) [Y. H. Hui] on www.enganchecubano.com *FREE* shipping on qualifying offers.*

8: Bailey's Industrial Oil and Fat Products : Fereidoon Shahidi :

Bailey's Industrial Oil and Fat Products, 6 Volume Set, 6th Edition, By Fereidoon Shahidi First published in , Bailey's has become the standard reference on the food chemistry and processing technology related to edible oils and the nonedible byproducts derived from oils.

9: Deodorization - AOCS Lipid Library

BAILEY'S INDUSTRIAL OIL AND FAT PRODUCTS. Sixth Edition Volume 1 Edible Oil and Fat Products: Chemistry, Properties, and Health Effects Bailey's industrial.

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