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BLEACHING OILS IN THE PRESENCE OF STEAM

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The present invention relates to a process of improving the quality of glyceride oils such as soya bean oil, linseed oil, cottonseed oil, peanut oil, corn oil, marine oil such as whale oil, menhaden oil, sardine oil, animal oils, such as lard, or the like and it has particular relation to a process of treating such oils which inherently are fairly low in break constituents for purposes of improving the color and also eliminating the last traces of break.

One object of the invention is to provide a process of treating glyceride oils containing small amounts of break constituents as well as objectionable coloring matter in order to eliminate or reduce the amounts of both constituents in a single simple one-stage operation.

A second object of the invention is to provide a process of treating glyceride oils in order to remove break and color which does not require alkali refining accompanied with the attendant losses of good oil in the foots produced as a by-product.

A third object of the invention is to provide a process of treating glyceride oils with activated absorbing agents which admits of the use of a substantially smaller amount of such agent than is required in conventional procedures and techniques.

A fourth object of the invention is to provide an oil from break containing oil which will not poison conventional types of catalysts employed in the preparation of alkyd resins or in the hydrogenation of oils.

A fifth object of the invention is to provide at minimum expense a glyceride oil of light color and free from break, of a type highly desirable for use in fractionation technique.

A sixth object is to provide a process by application of which very dark oils which do not bleach satisfactorily when subjected to conventional technique can be obtained in a condition satisfactory for most applications.

A seventh object is to provide a process by application of which raffinate oils produced by liquid-liquid fractionation may be bleached and rendered break free.

These and other objects of the invention will be apparent from consideration of the following specification and the appended claims.

Conventional glyceride oils such as linseed oil, soya bean oil, cottonseed oil, corn oil, peanut oil and the like contain certain constituents such as phosphatides and other gummy materials which tend to separate out, especially when the oil is subjected to heat, producing a gelatinous flock

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known as "break." These break constituents also have a tendency to poison the catalysts employed in the preparation of alkyd resins. They further produce incrustations of carbonaceous materials that impair the color of the oils treated. In food oils, break may precipitate at inopportune times during processing to impair color and flavor, or to poison hydrogenation catalysts.

The oils further include coloring matter such as chlorophyll and other constituents which affect customer reaction adversely or which impair the color of paints or varnishes. The presence of chlorophyll in food oils which will be processed to salad oils or hydrogenated products is likewise objectionable, since it impairs the color and quality of the final product.

In order to obviate these defects in the oil it has heretofore been customary to subject the oil to refining operations, for example, treatment with caustic soda in order to remove the break constituents and to form soaps of the fatty acids. Alkali refining also tends to improve the color, which factor may be still further improved by treating the oil with bleaching agents such as adsorbent clays or carbons.

These conventional techniques are objectionable in various respects. Alkali refining, for example, results in excessive loss of oil in the soap stock. Of course, there is also considerable expense involved in the procurement of the requisite quantities of alkali for the operation. Substitute technique such as degumming by water hydration does not completely remove the break. The technique, as heretofore practiced, of subjecting the oil to bleaching after alkali refining, of course, introduces an additional step, additional costly material and requires more apparatus. Furthermore, it is not effective for all types of oil.

According to the present invention it has been found that a glyceride oil containing break and/or coloring matter can be subjected simultaneously to refining to remove break and color by subjecting oil simultaneously to the action of steam and a bleaching agent such as fuller's earth or activated clay or other adsorbent at a temperature above the boiling point of water and thereafter removing moisture from the oil before removal of the adsorbent, as for example by blowing the oil with inert gas. Under hydrating and bleaching conditions of the process, it is found that all the break constituents and gums can be removed from many oils which contain reasonable amounts of such materials. It is also found that the activity of the agent, in many

cases, is substantially improved by the presence of the steam so that smaller amounts are required and it also becomes possible substantially to improve the color of very dark oils which cannot be satisfactorily treated by conventional methods of decolorization.

THE OIL TO BE TREATED

For purposes of the present invention substantially any of the glyceride oils such as those above referred to which contain not more than moderate amounts of break constituents and/or objectionable coloring matter may be employed as a raw material. It is preferable that the break be present in comparatively small or moderate proportions, e. g., 0.1% or less, or at most 0.3% as determined by quantitative tests. Some of the natural oils may be of sufficiently low break to be employed without preliminary treatment. In other instances, where considerable amount of break is present in the raw oil, it may be desirable to degum, or partially degum it by conventional hydration technique so as to reduce the break to a satisfactory value. In any event, the present process normally is applied to the treatment of (but is not limited to) an oil which will give a positive Gardner test for break.

In this test a few drops of aqueous hydrochloric acid is added and the oil is heated to 550° F. Even a small amount of break in the oil will then separate as an easily observable precipitate. If a quantitative test is desirable, precipitate may be filtered off, washed free of oil with carbon tetrachloride and weighed. The result is termed "percent Gardner break." The method is A. O. C. S. Official Method Ca 10—40.

One type of oil which is excellently adapted to the practice of the invention is that obtained as a raffinate oil in the solvent fractionation of a break containing oil such as ta partially degummed crude soybean oil using furfural or like polar solvent for the fractionation. The raffinate is quite low in free fatty acids but does in most cases contain a small amount of gums or break constituents which is, of course, objectionable. The color of such raffinate while improved over the original oil is usually not comparable to an alkali refined and bleached soybean oil. In our process the use of steam and bleaching earth in one simple operation will convert such raffinates to a break-free bleached oil which compares favorably to an alkali refined and bleached soybean oil in regard to color, odor, free fatty acid content, and actual conversion to shortenings and other food products. A raffinate oil treated in this manner may be hydrogenated to food products without poisoning the hydrogenation catalyst. Thus by a combination of solvent extraction and bleaching an oil in the presence of steam the oil may be fully refined for further processing into food products.

The fact that the use of fuller's earth or other silica or silicate adsorbents and steam will cause a lowering of the free fatty acid content is especially of value in such products. For example, raffinate oils which have a free fatty acid content as high as 0.1% by weight are often reduced to 0.05% or below upon steam bleaching with a fuller's earth. This behavior is quite unique and is in distinction to ordinary bleaching techniques where at best the free fatty acid content remains the same and in many instances it actually is increased an objectionable degree.

It is to be understood that many dark oils which are difficult to bleach by ordinary methods, requiring large amounts of activated clay, yield much more readily to the combinations of steam and earth as herein disclosed. A glyceride oil that did not bleach satisfactorily with 5% of acid activated clay was bleached satisfactorily with 2 to 3% by weight of earth when steam was blown into the oil containing it. If an oil containing chlorophyll is subjected to solvent fractionation most of the chlorophyll wil tend to go into the furfural phase and if the furfural phase is evaporated directly the oil free of solvent will be dark in color. Such dark oils may be difficult to decolorize under ordinary bleaching conditions but the use of steam and earth under the conditions of our invention will yield oils of satisfactory color. The removal of chlorophyll from any oil has been found to be easier when steam is used in conjunction with the bleaching earth.

The use of the technique is also especially adapted to converting degummed crude soybean oils into light colored oils free of break which find ideal use in the manufacture of alkyd resins, varnishes, and related products. It is not imperative that such oils have an extremely low free fatty acid content, so alkali refining or other refining treatment is not necessary in preparing these oils except to remove the break. The oils should be light in color, therefore a bleaching step is necessary. Our process both bleaches and degums in one simple operation with small losses. Such oils, light in color and free of break, are also well suited as feed oils for solvent fractionation processing to produce a high iodine value extract and a low iodine value raffinate.

THE ADSORBENT AGENT

In the practice of the invention, various adsorbent agents as fuller's earth such as that from Attapulgus, Ga., acid activated bentonite or other adsorbent silica or silicate compositions, bone char, or activated charcoal or combinations thereof with fuller's earth may be employed. The amount of the agent will vary, dependent upon the amount of break and/or color in the oil, the activity in the agent, the degree of bleaching and other factors which may be desired. However, in most instances a proportion of 0.2 or 0.5 to 5% by weight of the agent may be employed. Some types of earth, e. g., acid activated clay may tend slightly to increase the acid value of the oil treated. Others almost as effective in decolorizing the oil do not appreciably increase acidity and indeed, they may reduce acidity. From the examples to follow, it will be noted that in the case of fuller's earths, the reduction of free fatty acid content is quite substantial.

THE TEMPERATURE AND CONDITIONS OF HYDRATION

The temperatures to which the mixture is subjected during refining is susceptible of some variation. Preferably, it is slightly above the temperature at which water boils at the pressure employed in the operation which is, preferably, atmospheric or near atmospheric pressures.

The pressure upon the system, of course, influences the temperature at which water boils. Generally the process is conducted at or near atmospheric pressure. While slight vacuum (one or two pounds gauge) upon the system is not objectionable, operation at high vacuum tends to dehydrate the oil and therefore should be avoided. The process may be conducted at superatmospheric pressure, for example 10–15 pounds gauge or even higher although no particular advantage appears to accrue therefrom. For most purposes, the temperature of the oil

should be held at a temperature between the temperature at which water boils under the pressure of the system and about 50° F. above this temperature, the preferred range being about from the boiling point to 30° F. above the temperature at which water boils. Hence the temperature of the oil undergoing treatment normally is maintained at 200 to 250° F., the preferred range being about 215 to 230 or perhaps 242° F.

The oil normally is preheated to the temperature of treatment prior to addition of adsorbent. This preheating may be effected by introduction of steam into the oil.

To effect intimate contact of the oil with the steam and adsorbent, steam normally is introduced in the form of small bubbles by introducing the steam through small orifices. Agitation of the mixture during treatment also facilitates this contact.

The process of bleaching and rendering an oil break free is only effectual when operated under hydrating conditions, that is, while moisture is present in the oil. Satisfactory results are not achieved under highly dehydrating conditions, such as exist when superheated steam is passed through the oil under high vacuum, as might be done in deodorizing an oil or in similar processes. A fairly substantial amount of water should be present. For example, if an oil-earth mixture after being steamed by the present technique is subjected to filtration without first drying, the oil will contain enough water to cause it to become cloudy when chilled to room temperature. Hence, even at atmospheric pressure, it has been observed that if the temperature of the bleaching be maintained too high, that break removal is incomplete and unsatisfactory. The conditions are apparently too anhydrous for effective removal of the break. In another instance, it was found that a bleach under a substantial vacuum in the presence of steam also was ineffectual in removing break. Again conditions were apparently too anhydrous.

The rate of steam introduction upon mass basis is about 0.005 pound to .2 pound per minute per 100 pounds of oil to be treated. Obviously the rate is not critical, since the range as above given is 40 fold from minimum to maximum.

It is desirable to maintain the oil under a blanket of inert gas such as nitrogen or carbon dioxide during the treatment with steam.

The steam may simply be bubbled into a body of oil constituting a continuous phase preheated to operating temperature. It also is possible to inject a jet of water into hot oil so that it is converted to steam in situ. The oil containing the bleaching agent is blown fairly vigorously or subjected to agitation in order to bring the combined bleaching and degumming operation to a conclusion within a short period of time. If time is not of the essence, the blowing operation may be slowed down. Usually a period of 10 minutes to 5 to 6 hours and preferably 30 minutes to 2 hours is sufficient for most of the gum or break containing oils. The darker oils require the greater periods of blowing while lighter oils are quickly brought to the desired color. Termination of the time required for steam blowing can be easily determined by Gardner tests of the color and for break. Blowing may be continued so long as the color of samples continues to improve. Further blowing is needless.

When the oil has been adequately treated with steam, for example until it is break negative as determined by the foregoing test, it should be dried in order to remove moisture introduced by steaming before filtering it. Such drying can be conveniently effected by blowing the oil with inert gas, e. g., carbon dioxide or nitrogen. The drying operation can be completed in a few, e. g., 10 to 30, minutes. However, the operation can be continued longer, though the costs of operation are increased thereby. This drying may be conducted at atmospheric or subatmospheric pressure. The temperature of drying will vary with pressures of operation, rate of gas flow time permissible and such factors. A temperature of about 248 to 302° F. usually is effective.

When the oil is sufficiently dried, as can be determined by cooling a sample and inspecting for the presence of moisture as evidenced by formation of a cloud in the oil, the oil may be filtered, with or without previously being cooled.

It should also be understood that the drying may be conducted without recourse to inert gas. Thus the water may be vaporized by heating the oil in vacuum until dried to the degree required. Dehydration agents may be added to the oil to facilitate the drying.

Specific examples illustrating the application of the principles of the invention are as follows:

Example 1

A solvent-extracted degummed soybean oil with a free fatty acid content of 0.215% by weight, a positive Gardner break test, a Gardner color of 10, and an iodine value of 135.9 may be treated. Apparatus for the operation comprises a convenient container such as a kettle or column. It may be provided with means to preheat the oil and a coil of tubing or a jacket for circulation of a cooling medium. The container should also be provided with a steam supply head having minute openings and connections to a source of steam at desired temperature. Steam distribution may be enhanced by use of agitators and/or baffles. Naturally, such meters as are required to measure temperatures in the oil, rates of flow of gases and pressures of steam and the like should also be provided. It is convenient though not imperative to provide means to supply blanketing inert gas to the apparatus.

The oil was heated in the apparatus to a temperature in the range of 200 to 250° F., namely to about 230° F. Pre-heating of the oil could be effected by heating coils or pipes or by open flame upon the container or by merely blowing the oil with steam until operating temperature was attained. Two percent by weight of an acid activated bleaching earth was added to the oil in the apparatus and steam was bubbled through the activated mixture for two hours. The mixture was at atmospheric pressure during this time. A stream of inert gas (from butane combustion) was also used to protect the oil from air. After the steam was discontinued, the mixture was heated at 230° F. with the inert gas bubbling through the mixture for an extra 15 minutes to dry it well. The oil was filtered from the earth and the product had a free acid content of 0.431% by weight, a negative Gardner break test, and a Gardner color of 3. A test run under identical conditions except the use of steam was omitted, yielded a well bleached oil but one which still had a positive Gardner break test.

Example 2

An expeller degummed soybean oil with 1.05% free fatty acids, a positive Gardner break test, and a Gardner color of 11 was heated to 230° F. or thereabouts and under inert gas (from butane combustion) in an apparatus as described in Example 1. Two percent by weight of an acid activated earth was added and steam was bubbled through the mixture for one hour at 230° F. The steam was then discontinued but the heat and the inert gas were maintained for fifteen minutes. The dry mixture was filtered and the resultant oil had a free fatty acid content of 1.15% by weight, a negative Gardner break test, and a Gardner color of 4.5.

Example 3

A solvent-extracted degummed soybean oil with a free fatty acid content of 0.24% by weight, a positive Gardner break test, and a Gardner color of 10, and an iodine value of 133.5 was charged into an apparatus such as described in Example 1. It was heated to a temperature within a range of 200 to 250° F., e. g., 230° F. Three percent by weight of a fuller's earth was added and steam was bubbled in for one hour. The mixture was then dried for 15 minutes at about 230° F. with inert gas bubbling through the oil. The oil filtered from the earth had a free fatty acid content of 0.166%, a negative Gardner break test, and a Gardner color of 6. The reduction in free fatty acid content by the use of fuller's earth is noteworthy.

Example 4

An oil resulting from the furfural fractionation of a degummed soybean oil, with a free fatty acid content of 0.083%, a positive Gardner break test, a Gardner color of 8.5, and an iodine value of 131.8 was charged into the apparatus as described in Example 1. It was heated to 230° F. and was mixed with 2.5% by weight of a fuller's earth. It was then subjected to a vigorous current of steam at about 230° F. for 20 minutes. The steaming was discontinued and the mixture agitated for 5 minutes under a stream of inert gas (from butane combustion). The dry earth-oil mixture was then filtered to yield an absolutely break-free oil with a Gardner color of 4 and a free fatty acid content of 0.022%.

In a similar test in which the same oil was treated under identical conditions except that steaming was omitted, the resulting oil contained a large amount of break and 0.050% of free fatty acids.

Example 5

A raffinate oil resulting from the furfural fractionation of a degummed soybean oil with a free fatty acid content of 0.041% by weight, a positive Gardner break test, a Gardner color of 7, and an iodine value of 129.9 was treated with 1.5% by weight of an acid activated clay and a vigorous current of steam at about 230° F. for 20 minutes. The steaming was discontinued and the mixture was agitated for 5 minutes under a stream of inert gas. The dry earth-oil mixture was then filtered to yield an absolutely break-negative oil with a Gardner color of 2 and a free fatty acid content of 0.046% by weight.

Example 6

A raffinate oil resulting from the furfural fractionation of a degummed soybean oil with a free fatty acid content of 0.034% by weight, a positive Gardner break test, a Gardner color of 6, and an iodine value of 125.7 was treated in an apparatus such as described in Example 1 with 2.0% by weight of an acid activated clay at about 230° F. and at atmospheric pressure with a vigorous well distributed flow of steam for 20 minutes. The steaming was discontinued and the mixture was agitated for 5 minutes under a stream of inert gas in order to dry it. The dry earth-oil mixture was then filtered to yield an absolutely break-free oil with a Gardner color of 2 and a free fatty acid content of 0.043% by weight.

Example 7

A raffinate oil resulting from the furfural fractionation of a degummed soybean oil with a free fatty acid content of 0.061% by weight, a positive Gardner break test, a Gardner color of 7, and an iodine value of 123 was heated to about 230° F. and 1% by weight of a fuller's earth was added. Steam at 230° F. was vigorously bubbled through the oil at atmospheric pressure for 20 minutes. The steaming was discontinued and the mixture was agitated for 5 minutes under a stream of inert gas. The dry earth-oil mixture was then filtered to yield an absolutely break-free oil with a Gardner color of 2.5 and a free fatty acid content of 0.046% by weight.

Example 8

A dark extract oil resulting from the furfural fractionation of degummed soybean oil had a free fatty acid content of 0.12% by weight, a Gardner color of 13+, an iodine value of 154.0 and no apparent break. The oil was heated to about 230° F. under inert gas, two percent by weight of an acid activated earth was added, and steam was introduced for three hours while the oil was at or near atmospheric pressure. The steam was discontinued and the mixture was dried for several minutes and filtered. The resultant oil had a Gardner color of 8 and a free fatty acid content of 0.31. The same experiment done without application of steam and with four percent by weight earth yielded an oil with an unacceptable color, that is, a Gardner value of 12, and a blackish tinge.

Example 9

A sample of extract oil resulting from the furfural fractionation of a degummed soybean oil having an original free fatty acid content of 0.18% by weight, a Gardner color of about 18, and a blackish tinge, and an iodine value of 151.4 was introduced into the apparatus. It was bleached at about 230° F. and in the presence of distributed steam and inert gas and an acid activated earth for 4½ hours. The pressure in the apparatus during these operations was atmospheric. The mixture was then dried and filtered to yield an oil with a Gardner color of 8.5 and a free fatty acid content of 0.48% by weight.

Example 10

A sample of crude peanut oil at about 230° F. was bleached with 2% by weight of an acid activated earth while steam was bubbled therethrough for one hour. Agitation was continued for 15 minutes after discontinuing the steam in order to dry the oil. Upon filtration the oil was found to have a Gardner color of 3 and was break free.

Example 11

A sample of oil obtained by the furfural fractionation of peanut oil had the following properties: Iodine value, 89.5; percent free fatty acid, .24 by weight; Gardner break test, positive; Gardner color, 6. Five hundred grams of oil were heated to about 230° F., 10 grams of fuller's earth were added, and live steam was introduced. An inert gas (from butane combustion) was used in the apparatus as a protective blanket. Agitation and steaming were continued for one hour. The steam was then stopped and the mixture dried at 230° F. with inert gas bubbling through the mixture. The final product, after filtration of the earth, had a negative Gardner break test, 0.16 percent by weight of free fatty acids, a Gardner color of 2, and upon hydrogenation gave a snow white shortening.

Example 12

A sample of oil obtained by the furfural fractionation of cottonseed oil had the following properties; iodine value, 108.8; percent free fatty acid, 0.12 by weight; Gardner break test, positive; Gardner color, 9–10. One thousand grams of the oil were heated to about 230° F., twenty grams of fuller's earth were added and live steam was bubbled through. An inert gas (from butane combustion) was used as a protective blanket. Agitation and steaming were continued for 1 hour. The steam was then stopped and the mixture dried by maintaining at 230° F. with inert gas bubbling through the mixture. The final product, after filtration of the earth, had a negative Gardner break test, 0.10 percent by weight of free fatty acids, and a Gardner color of 3–4.

As previously intimated, the oil, when it has been properly blown with steam, will contain small amounts of water which will separate as a visible cloud in the oil when the latter is cooled. It has been found to be desirable to subject the oil to a drying operation after it has been subjected to steaming and before it is filtered. Drying results in an improved color and promotes ready filtration. Drying may be effected in several different ways:

A. It can be blown with inert dry gas such as CO_2 or nitrogen or a mixture thereof.

B. The heated oil can be agitated until the moisture is evaporated, at least to such degree that a cloud will not form therein when a sample is cooled.

C. The oil, preferably hot, can be placed under a vacuum to remove moisture.

These several methods are illustrated in the following example:

Example 13

A 2000 gram sample of degummed soya oil was placed in a four liter stainless steel beaker having a rotary agitator and steam connection near the bottom. It was heated to a temperature within a range of 230 to 239° F. 25.0 grams of acid activated earth known as "Sierra Absorbol A–420" and 25.0 grams of Attapulgus fuller's earth were added. The oil, at atmospheric pressure, was blown with steam introduced below the agitator for 20 minutes and the agitator was operated to effect thorough distribution and contact of the oil, adsorbent and steam. During bleaching, 4% by weight, based upon the oil, of steam was used. Steam was stopped and the sample was then divided into four parts for filtration. One part was filtered while wet. The second was blown at 230 to 239° F. with inert gas for 10 minutes to dry it. The third portion was vigorously agitated for 10 minutes at 230 to 239° F. (no gas being employed) in order to dry it. The fourth portion was dried under a vacuum of 20 millimeters (absolute) at a temperature of 194 to 212° F. over a period of 1 hour.

The samples were all filtered and color determinations were made thereupon by the use of a Coleman Spectrophotometer as recommended in the June 1949 issue of the Journal of the American Oil Chemists Society. Under this system a light colored oil has a low reading and a dark oil a high reading. The results are tabulated as follows:

	Undried Oil	Dried With Gas	Dried by Agitation	Dried Under Vacuum
Coleman Color...	112	75	79	77

The different methods of drying obviously varied in efficiency, however the application of any of the three methods results in an improved product as compared with the oil which was filtered without drying.

In the treatment of the oils as described in the examples, a certain amount of oil may tend to cling to the bleaching agent; this, however, may in large measure be recovered by extraction with naphtha or other oil solvent. The coloring matter and break constituents are not appreciably taken up in naphtha. The loss of oil in the refining operations is only .1 to .2% if the clay is so treated. In any event the losses will not be higher than in ordinary decolorization, even if the spent agent is not extracted. Alkali refining losses are usually in order of 3 to 7%.

In most of the examples, blowing of the oil with inert gas in order to dry it after it has been steam blown, has been described. A few minutes are usually sufficient to dry the oil. It is needless further to blow the oil with gas after it has once been dried. However, there is no particular limit upon the time or blowing, if it is desired further to blow it. Drying should be continued until the oil is bright and does not cloud when it is cooled to room temperature.

It will be apparent to those skilled in the art that numerous modifications may be made herein without departure from the spirit of the invention or the scope of the appended claims.

This application is a continuation-in-part of our copending application Serial No. 41,168, filed July 28, 1948, which is now abandoned.

We claim:

1. A process of treating glyceride oil containing break constituents but in an amount not in excess of .3% which process comprises preheating the oil to a temperature of 215 to 242° F., then blowing it with live steam and in the presence of about .2 to 5% by weight of an adsorbent earth, drying the oil by blowing it with inert gas, and removing the adsorbent earth.

2. A process as defined in claim 1 in which the adsorbent earth is fuller's earth.

3. A process as defined in claim 1 in which the adsorbent earth is acid activated clay.

4. A process as defined in claim 1 in which the oil treated is soybean oil and the adsorbent earth is fuller's earth.

5. A process of treating a glyceride oil containing break constituents but in an amount not in excess of 0.3% and coloring matter to obtain

oil which is break negative and of improved color, which process comprises the steps of preheating the oil to a temperature of 200 to 250° F., then blowing it with steam and in the presence of about 0.2 to 5% by weight of an adsorbent bleaching earth, drying the oil by blowing it with inert gas, and then removing the adsorbent earth.

6. A method of treating a glyceride oil containing coloring matter inherent in a glyceride oil, to improve the color thereof, the break content of said oil not exceeding .3% which method comprises the steps of preheating the oil to a temperature of 200 to 250° F., then blowing it with live steam in the presence of .2 to 5% by weight of an adsorbent bleaching earth, drying the oil by blowing it with inert gas, and removing the adsorbent earth to obtain said oil of improved color.

7. A process of treating a glyceride oil containing break constituents but in an amount not in excess of .3% and coloring matter inherent in a glyceride oil, which process comprises preheating the oil to a temperature of 200 to 250° F., then blowing it with live steam in the presence of about .2 to 5% by weight of adsorbent bleaching material for a period of 10 minutes to 6 hours, drying the oil by blowing it with inert drying gas to remove water absorbed therein, then removing the adsorbent material whereby to obtain oil which is break negative and of improved color.

8. A process as defined in claim 7, in which the oil treated is soybean oil, and the adsorbent material is fuller's earth.

9. A process of treating a glyceride oil containing break constituents but not in excess of .3% and coloring matter inherent in a glyceride oil, which process comprises preheating the oil to a temperature of 200 to 250° F. then blowing it with live steam in the presence of about .2 to 5% by weight of adsorbent bleaching material for a period of 10 minutes to 6 hours, then removing the moisture absorbed in the oil and subsequently filtering the adsorbent material whereby to obtain oil which is break negative and of improved color.

10. A process of treating a glyceride oil containing break constituents, but not in excess of .3% by weight, and coloring matter inherent in a glyceride oil, which process comprises preheating the oil to a temperature of about 215 to 230° F., then blowing the oil with steam under hydrating conditions in the presence of about .2 to 5% of adsorbent bleaching material for a period of 10 minutes to 6 hours, then removing the moisture absorbed in the oil and subsequently filtering off the adsorbent material, whereby to obtain oil which is break negative and of improved color.

11. The process as defined in claim 9 in which further good oil of low color is obtained by extracting the spent adsorbent after the filtering operation, with a solvent of oil.

12. A process of treating a glyceride oil containing break constituents but in an amount not in excess of 0.3%, which process comprises preheating the oil to a temperature of 200 to 250° F., then blowing it with live steam and in the presence of 0.2 to 5% by weight of an adsorbent bleaching material, drying the oil of absorbed water and removing the adsorbent.

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