

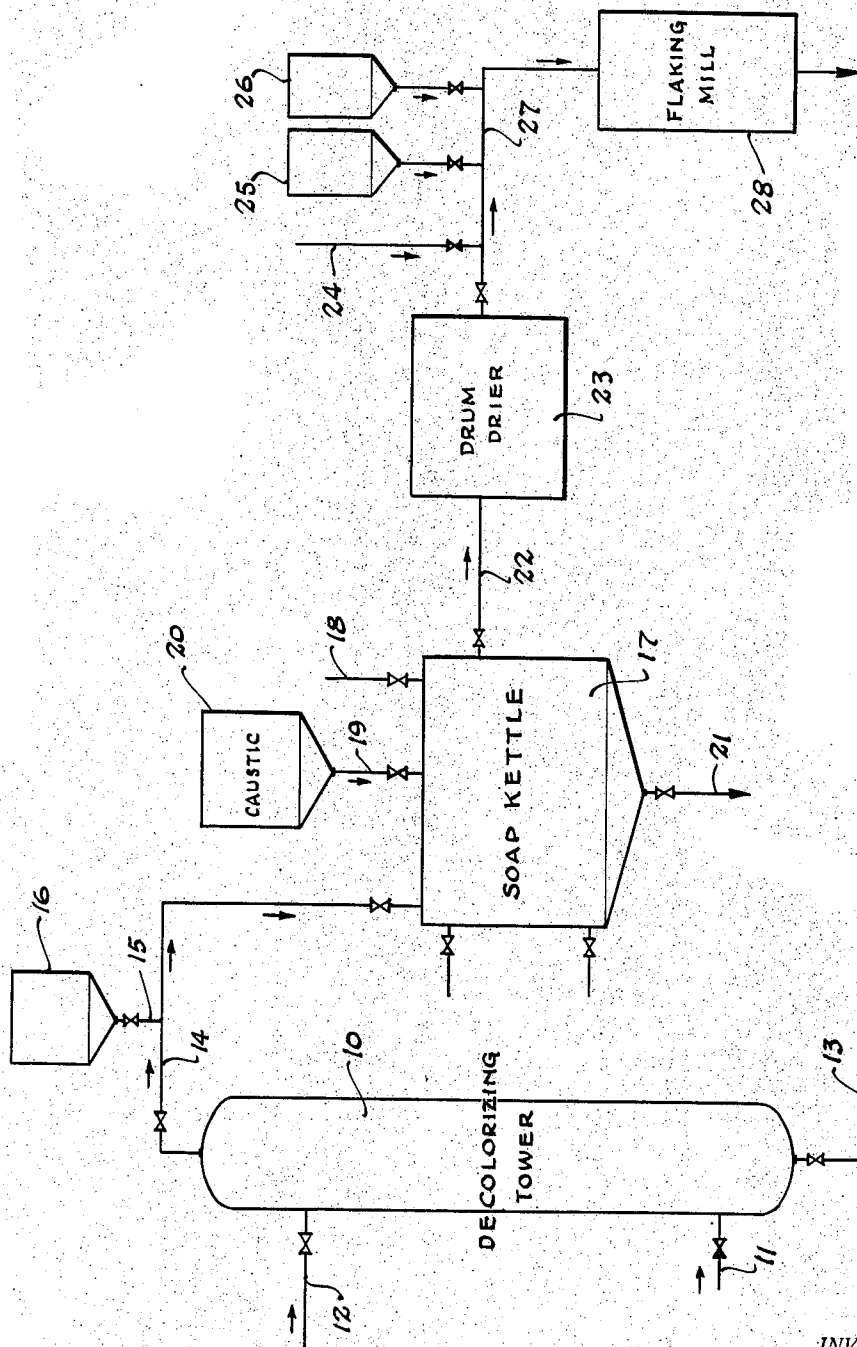
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STABILIZATION OF FATS FOR SOAP

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STABILIZATION OF FATS FOR SOAP

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The present invention relates in general to the stabilization of soap or soap products and, more particularly, to a method for the preparation of stabilized soaps from low-grade fatty materials. Light-colored soap or soap products, designed to be placed on the competitive consumer market, have heretofore been made from top-grade prime fatty materials due to the tendency of soaps made from low-grade fatty materials to become rancid and discolored upon relatively short exposure to light and air. Attempts have been made to overcome this instability of soaps from low-grade fat sources by adding various soap antioxidants thereto. These prior art attempts have failed to produce products which could compete favorably, from a rancidity or color-reversion standpoint,

in the art from the following detailed description of the invention. In accordance with the present invention, it is contemplated that any fatty materials obtained from low-grade fat sources which are suitable for soap making but have heretofore been considered impractical for use in high-grade soap or soap products due to the dark color and the instability of the resulting soaps, may be used. These low-grade fatty materials are preferably of animal origin, such as greases and tallows, including those commonly known in the trade as yellow grease, brown grease, garbage grease, No. 1 tallow, No. 2 tallow, and Diamond S tallow. The commercial specifications of the fats sold under the aforesaid trade names are as follows:

	Yellow Grease	Brown Grease	Garbage Grease	No. 1 Tallow	No. 2 Tallow	Diamond S Tallow
Titer minimum.....	36	38	34	40.5	40	40.5
F. F. A. maximum.....	15	50	60	15	35	20
M. I. U. maximum.....	2	2	3.0	2.0	2.0	2.0
F. A. C. Color maximum	37	-----	-----	33	-----	37

F. F. A. = Free fatty acid.
M. I. U. = Moisture, insoluble and unsaponifiable.
F. A. C. = Fatty Analysis Committee of American Oil Chemists Society.

with soaps made from better-grade fatty materials. Recent improvements in methods of improving the color and quality of fatty materials from low-grade sources, e. g. propane fractionation and the like, have made available great quantities of such materials but, due to their inherent properties and instability, they have not been utilized to any appreciable extent in the soap-making industry for the manufacture of light-colored, high-grade soaps. It is, therefore, an object of the present invention to provide a method for producing a satisfactory, stable soap from low-grade fatty materials. It is a further object of the invention to provide an antioxidant composition which has a synergistic effect in retarding rancidity and color reversion in soaps made from low-grade fatty materials. Additional objects, if not specifically set forth herein, will be readily apparent to one skilled

Decolorization of these materials greatly improves their appearance, making them comparable in this respect to higher-grade fats. However, when they are used in the manufacture of soap, the soap, while initially light-colored, will be found to become rancid and dark upon aging. The addition of soap antioxidants to soaps made from these low-grade decolorized fatty materials or the addition of fat antioxidants to the decolorized material prior to its use in the soap-making process fails to impart stability to the soaps formed. If the low-grade fatty material, decolorized, as for example, by contact with a liquefied, normally gaseous hydrocarbon, is treated with a fat antioxidant immediately after decolorizing, and then after saponification of the fat, is additionally treated with a soap antioxidant, the resultant soap is equivalent to that made from the best grades of fat. It has been found that a synergistic effect is obtained by adding the fat antioxidants to the low-grade fatty material, decolorized as hereinafter disclosed, and after the treated fatty material has been saponified, adding the soap antioxidant to the soap so produced. The resultant product possesses much

greater stability with respect to the development of rancidity and discoloration than does soap prepared from fat which has been treated with a fat antioxidant alone or from a fat which is untreated and a soap antioxidant alone is used. The fat antioxidant is added to the decolorized material as soon after decolorizing as possible, preferably before the decolorized material has been exposed to air. The usual methods of saponification are then carried out and the soap antioxidant is then added to the soap at any time after saponification has taken place.

The fat antioxidants are preferably a phenolic type. As applied to the manufacture of soap by the kettle-boiling process, the so-called "hindered" phenolic compounds are preferred. By this term is meant phenols which have large substituents on the aromatic ring, particularly in one or both of the ortho positions. An important characteristic of these antioxidants is that they are relatively insoluble in dilute (2-3 per cent) sodium hydroxide solutions. In general, the more and the larger the substituents around the phenolic group, the less soluble the compound is in caustic solutions. Examples of such compounds are 2,5, di-tertiary-butyl hydroquinone, para-tertiary-butyl phenol, 2,6, di-tertiary-butyl meta-cresol, 2,6, di-tertiary-butyl

ene-diamine, cyanoguanidine, and the mercapto-benzothiazole salt of phenylbiguanide. The synergistic effect is most pronounced when the biguanide soap antioxidants are used, such as ortho-biphenyl or ortho-tolyl biguanide.

The amounts of fat and soap antioxidants may vary, but usually come within the range of about 0.05 to 1 per cent. A preferred amount of either antioxidant is about 0.1 per cent. A convenient method of adding the soap antioxidant is in combination with dry sodium silicate, for example 0.1 per cent antioxidant and 0.6 per cent sodium silicate.

Soap made by the kettle-boiling process in accordance with the present invention was tested under accelerated aging at 100 per cent humidity and at room temperature (Table I) or 50° C. (Table II), and the rancidity increase noted organoleptically by a panel of three soap experts and also by measurement of the accelerated increase in peroxide value, e. g. after uniform exposure to controlled ultraviolet light for one hour. As a general rule, a soap with a lower degree of odor stability than another will show a larger peroxide increase upon aging. The fat samples in the following tables were decolorized by treatment with propane as will be more fully described below.

Table I

Type of Fat Used in Soap	Without Soap Antioxidant						With Soap Antioxidant					
	Odor			Peroxide Increase	Days to (?)	Days to (+)	Odor			Peroxide Increase	Days to (?)	Days to (+)
	(?)	(+)	(Good)				(?)	(+)	(Good)			
(1) Decolorized tallow plus A ₁ ----	15	7	39	21.9	42	48	6	0	55	20.2	>69	>69
(2) Decolorized tallow plus A ₂ ----	11	13	37	25.1	41	44	12	1	48	23.6	55	>69
(3) Decolorized tallow plus A ₃ ----	21	16	24	30.3	20	29	8	1	52	28.1	>69	>69
(4) Decolorized tallow (No phenolic antioxidant)-----	11	39	11	36.6	4	13	23	0	38	33.8	17	>69
(5) Bleached prime tallow (No antioxidant)-----	13	30	18	29.6	3	15	0	0	61	24.3	>69	>69

In the above table:

A₁=2, 5, di-tertiary-butyl hydroquinone (0.1% by weight added).

A₂=2,6 di-tertiary-butyl p-cresol (0.1% by weight added).

A₃=p-tertiary-butyl phenol (0.1% by weight added).

A₄=ortho-biphenyl biguanide.

(+)=This column represents number of times sample considered to be rancid during the 69-day aging period.

(?)=This column represents number of times sample considered to be a borderline case of rancidity during the 69-day aging period.

**=These columns give the approximate number of days before the sample appeared to be definitely rancid (+) or a borderline case (?).

p-phenyl phenol, 2,4,6, tri-tertiary-butyl phenol and the like. The fat antioxidant used in connection with the kettle process should be relatively insoluble in dilute caustic to prevent leaching out by the lye during the soap boiling operation.

In soap-making processes other than kettle boiling the caustic solubility of the phenolic antioxidant becomes less important since all of the phenol added initially remains in the soap formed so as to give the desired synergistic effect with the soap antioxidant. Therefore, when the present invention is applied to the cold-made or continuous soap-making processes, any of the known phenolic fat antioxidants including those relatively soluble in dilute caustic solutions, such as p-tertiary-butyl catechol, propyl gallate, pyrogallol, ortho-butyl para-hydroxy anisole, or the like may be used.

The soap antioxidants which may be used in the present invention may be any amino-type antioxidant effective in retarding loss of color and rancidity of the soap, such as ortho-biphenyl or ortho-tolyl biguanide, diphenyl-para-phenyl-

The tests indicated in Table I were carried out by placing the various soap samples in stender dishes at 100 per cent humidity, room temperature and diffused room light. The samples were tested daily and the observations of the panel recorded as indicated in the above table. The test, being organoleptic, was not quantitatively determinative, but as indicated, the number of times the odors of the samples were questionably rancid was recorded as well as the number of times that the odor was definitely rancid. A comparison of these values over the 69-day testing period gives a comprehensive picture of the stability of the various samples. The bleached prime tallow (5) is typical of the better grades of fats used in soap making, and when soap made from such a high-grade fat was treated with an amino-type soap antioxidant (ortho-biphenyl biguanide) it will be seen from the above table that the odor of such soap was considered neither rancid nor questionably rancid at any time during the 69-day test, and also that the peroxide increase was small (24.3). A soap made from a low-grade, propane-decolorized tallow (4) will

be seen to have been considered questionably rancid 23 times during the 69-day test, even after treatment with ortho-biphenylbiguanide. It was questionably rancid from the 17th day to the completion of the test. It also had a high peroxide increase (33.3). The improved soaps made from decolorized, low-grade fat in accordance with the method of the present invention (1), (2), and (3), will be seen to compare very favorably with the soap made from high-grade fat (5), showing peroxide increases of only 20.2, 23.6, and 28.1, respectively, as compared with the high-grade soap increase of 24.3. A marked improvement is seen in the soaps containing both the soap and the phenolic antioxidant over the same soaps containing only the phenolic antioxidant as well as over the soap containing only the soap antioxidant as discussed above. With the phenolic antioxidant alone, samples (1), (2), and (3) became definitely rancid after 48, 44, and 29 days, respectively. With the combination of the phenolic antioxidant and the soap antioxidant, these samples were not rancid at the end of the 69-day aging period.

These results indicate a considerable improvement in stability over the low-grade fat soap containing only the amino-type soap antioxidant A₄. The stability is of the order of that obtained with soap from bleached prime tallow containing the soap antioxidant A₄. It will also be noted from Table II that those soap samples treated in accordance with the method of the present invention, i. e. samples (1)–(3), showed a considerably smaller increase in peroxide value than did the untreated low-grade soap sample (A), the peroxide value obtained comparing favorably with that recorded for the soap prepared using high-grade bleached prime tallow.

Sodium silicate was added with the soap antioxidant in the experiments from which the data of Tables I and II was obtained. This was done since it is a general practice in the soap-making industry to so employ sodium silicate. However, in order to illustrate that the use of such compound is not essential to the present method, the data of Table III was recorded showing the results of an accelerated aging test on

Table II

Type of Fat Used in Soap	Without Soap Antioxidant						With Soap Antioxidant					
	Odor			Peroxide Increase	** Days to (?)	** Days to (+)	Odor			Peroxide Increase	** Days to (?)	** Days to (+)
	(?)	(+)	(Good)				(?)	(+)	(Good)			
(1) Decolorized tallow plus A ₁	4	47	9	21.9	4	9	6	0	54	20.2	>69	>69
(2) Decolorized tallow plus A ₂	2	49	9	25.1	4	7	14	0	46	23.6	50	>69
(3) Decolorized tallow plus A ₃	7	50	3	30.3	2	8	15	1	44	28.1	>69	>69
(4) Decolorized tallow (No phenolic antioxidant).....	3	57	0	36.6	0	1	25	1	34	33.8	20	>69
(5) Bleached prime tallow (no antioxidant).....	7	48	5	29.6	0	1	1	0	59	24.3	>69	>69

In the above table:

A₁=2,5-di-tertiary-butyl hydroquinone (0.1% by weight added).

A₂=2,6-di-tertiary-butyl p-cresol (0.1% by weight added).

A₃=p-tertiary-butyl phenol (0.1% by weight added).

A₄=ortho-biphenyl biguanide.

(+)= This column represents number of times sample considered to be rancid during 69-day aging period.

(?)= This column represents number of times sample considered to be borderline case of rancidity during the 69-day aging period.

**= These columns give the approximate number of days before the sample appeared to be definitely rancid (+) or questionably rancid (?)

As may be seen from the data in Table II, when no antioxidant at all was used, soap made from both the high-grade fat (5) and the low-grade fat (4) became rancid within one day when aged at 50° C. and 100 per cent humidity. With only the "hindered" phenolic antioxidant present, the soap made from the low-grade fat became questionably rancid in from two to four days and definitely rancid in seven to nine days. The sample of soap prepared from low-grade fat (4) and treated only with the amino-type soap antioxidant A₄ or ortho-biphenyl biguanide, became questionably rancid in only twenty days exposure to the conditions of this test, whereas soap made from high-grade fat plus the soap antioxidant A₄ was not even questionably rancid at the end of the 69-day test. However, when the low-grade fat was first treated with a "hindered" phenolic antioxidant, samples (1)–(3), and thereafter the soap made from such fat treated with ortho-biphenyl biguanide, the resultant product in the case of antioxidants A₁ and A₃ was not even questionably rancid during the test period and that treated with A₂ was questionably rancid only after 50 days' exposure to the accelerated aging conditions of the test.

soaps prepared from decolorized low-grade tallow with and without the dry silicate present:

Table III

Type of Fat Used in Soap	Odor		Peroxide Increase	** Days to (?)	** Days to (+)
	(?)	(+)			
Decolorized tallow (no antioxidant).....	15	14	29.1	6	17
Decolorized tallow plus 0.1% A ₄	5	0	20.6	29	29
Decolorized tallow plus 0.1% A ₄ and 0.6% dry silicate.....	8	0	28.2	29	29

In the above table:

A₄=ortho-biphenyl biguanide.

(+)= This column represents number of times sample considered to be rancid during the 29-day aging period.

(?)= This column represents number of times sample considered to be borderline case of rancidity during the 29-day aging period.

**= These columns give the approximate number of days before the sample appeared to be definitely rancid (+) or questionably rancid (?)

The results of Table III were obtained by aging at 50° C. and 100 per cent humidity, and the organoleptic determination of rancidity was carried out by a panel of three soap experts. As can be seen from the table, there is little effect attributable to the presence of the sodium silicate, and hence the method of the present inven-

tion may be carried out either in the presence or absence of the silicate compound.

Similar tests to those recorded in Tables I and II were also conducted using ortho-tolyl biguanide as the soap antioxidant. For example, a soap prepared in accordance with this invention from propane-decolorized low-grade tallow stabilized with 0.1 per cent by weight p-tertiary-butyl phenol and containing 0.1 per cent by weight of the amino-type soap antioxidant, ortho-tolyl biguanide, proved very stable after 82 days of accelerated aging at both room temperature and at 50° C. Soap prepared from the same fat but without the presence of the synergistic antioxidant composition of the present invention, proved questionably rancid at 20 days and definitely rancid at 38 days accelerated aging at room temperature. When aged at 50° C. this soap was definitely rancid in 8 days.

One method of practicing the present invention will now be described in connection with the accompanying drawing which is adapted for the manufacture of kettle-boiled soap. It is to be understood, however, that the invention is not restricted to the specific apparatus and method described.

Referring to the drawing, a countercurrent decolorizing tower is designated as 10. Countercurrent decolorizing with liquefied, normally gaseous hydrocarbons, such as propane, ethane, or the like, has been described in the art and reference is made to U. S. Patents Nos. 2,118,454, 2,219,652, 2,367,671 and 2,383,535 for a detailed disclosure of variations of this operation. In the present method, any of the above decolorizing solvents may be used. Likewise, other known decolorizing methods may be applied.

For the purpose of illustration, the decolorizing solvent will be referred to as propane in the instant example. The solvent, propane, is fed into the decolorizing tower 10 through line 11. Low-grade fat, e. g. No. 2 tallow, in a liquefied state is fed into the top of the tower through line 12. Within the tower, the fat is passed in countercurrent relationship with the propane. The ratio of propane to fat is approximately 30 volumes to 1. The temperature of the tower is maintained at about 180° F. and the pressure at about 650 p. s. i. The bottoms, i. e. color bodies and other impurities contained in the fatty material consisting of about 5 per cent of the tallow, are drawn off through line 13 and discarded. The overhead product, i. e. decolorized tallow, is drawn from the tower through line 14 and 0.1 per cent of a "hindered" phenolic antioxidant is added continuously to this stream through line 15 from storage tank 16. The antioxidant may be added in any suitable manner, as for example a concentrated solution in some good-grade fat such as white grease. The decolorized tallow containing the "hindered" phenolic antioxidant is then saponified in the usual manner known to the art. For example, 2,000 lbs. batch of the fat, stabilized with 0.1 per cent by weight of the "hindered" phenolic antioxidant, is added to a soap-boiling kettle 17. Approximately 1,000 lbs. of water are then added through line 18 and the mixture heated and agitated by bubbling low pressure steam through it. When the mixture has reached its maximum temperature, about 100° C., 630 lbs. of a 45 per cent solution of sodium hydroxide is added slowly through line 19 from storage 20 to the steam-agitated mixture. This amount of caustic gives a slight excess (about 0.5 per cent) after the

reaction is complete. The mixture is then boiled slowly for 2 or 3 hours. The product is tested for a slight excess of caustic after the reaction is complete, either by taste or with the use of an acid-base indicator. Sufficient sodium chloride is then added to grain the soap. The steam agitation is shut off and a water layer, containing most of the excess sodium hydroxide, salt and the glycerin, settles to the bottom. This is drained through line 21 and about 1,000 lbs. of water added. The mixture is again brought to a boil and the graining operation is repeated. After the water layer is drained, the steam is turned on and allowed to bubble through the soap. This last boiling slowly dilutes any residual electrolyte until its concentration is such that phase separation will take place upon standing. The steam is then shut off and the soap is allowed to set at about 100° C. overnight. It separates into two phases, a "niger" and a "neat" phase. The "niger" phase is on the bottom and is drawn off through line 21 to be added to future soap kettles. The neat soap is then drawn off through line 22 and dried on a drum drier 23 at about 160-180° C.

To 1,000 lbs. of this dried soap, sufficient water is added from line 24 (approximately 3-10 per cent) so that a continuous sheet will be formed on the flaking mill. Then 1 lb. (0.1 per cent) of a soap antioxidant, e. g. ortho-biphenyl biguanide from tank 25, and 14.6 lbs. of 41 per cent N-brand sodium silicate (0.6 per cent dry basis) from tank 26 are mechanically mixed as in line 27 with the soap. This mixture is then thoroughly blended by several passes through the flaking mill 28. On the last pass, the soap sheet is cut into ribbons, which after air-drying breaks into flakes. These flakes are then tested for rancidity in the manner described above.

In carrying out the present invention, it is contemplated that all fatty materials, including fatty acids obtained from low-grade fat sources, are to be included within the scope of the invention. The invention is also considered to encompass the treatment of such material, after decolorization by treatment with a decolorizing solvent or by bleaching with earth, carbon or the like, with any phenolic fat antioxidant followed by treatment of the soap made from such treated fatty material with any amino-type soap antioxidant, such as diphenyl-para-phenylene-diamine, cyanoguanidine, the mercaptobenzothiazole salt of phenyl-biguanide, and ortho-biphenyl or ortho-tolyl biguanide.

Although the invention has been described in connection with the use of normally gaseous hydrocarbons such as propane for decolorizing the fatty materials, it is contemplated that in addition to the normally gaseous hydrocarbons, polar solvents such as acetone, methylethylketone, and normally liquid hydrocarbons such as butane or isobutane may be used as decolorizing solvents. In addition, fatty materials treated by carbon or earth bleaching methods or by any of the other known decolorizing methods are intended to be covered by the term "decolorized fatty material."

Obviously, many modifications and variations of the invention as hereinbefore set forth may be made without departing from the spirit and scope thereof, and therefore only such limitations should be imposed as are indicated in the appended claims.

We claim:

1. A method for the manufacture of stabilized

soap from low-grade fatty materials which comprises: decolorizing said low-grade fatty materials; immediately adding to said decolorized fatty material a small amount of a fat antioxidant; saponifying said fatty material containing said antioxidant to form a soap; and thereafter adding to the soap thus formed a small amount of a soap antioxidant.

2. A method for the manufacture of stabilized soap from low-grade fatty materials which comprises: decolorizing said low-grade fatty materials; immediately adding to said decolorized fatty material a small amount of a phenolic fat antioxidant; saponifying said fatty material containing said phenolic antioxidant to form a soap; and thereafter adding to the soap thus formed a small amount of an amino-type soap antioxidant.

3. A method for the manufacture of stabilized soap from low-grade fatty materials which comprises: subjecting said low-grade fatty materials to treatment with a decolorizing solvent whereby two phases are formed, one phase containing color bodies and other impurities contained in said fatty material, and the other containing the decolorized fatty material; separating out the phase containing the decolorized fatty material, immediately adding to said decolorized fatty material a small amount of a phenolic fat antioxidant; saponifying said fatty material containing said phenolic antioxidant to form a soap; and thereafter adding to the soap thus formed a small amount of an amino-type soap antioxidant.

4. A method substantially as described in claim 3, wherein the decolorizing solvent is a liquefied, normally gaseous hydrocarbon.

5. A method for the manufacture of stabilized soap from low-grade, decolorized fatty materials comprising: incorporating in said fatty material immediately after decolorizing a small amount of a fat antioxidant; saponifying said fatty material containing said fat antioxidant; and adding to the soap thus formed a small amount of a soap antioxidant.

6. A method for the manufacture of stabilized soap from low-grade, decolorized fatty materials comprising: incorporating in said fatty material immediately after decolorizing a small amount of a phenolic fat antioxidant; saponifying said fatty material containing said phenolic fat antioxidant; and adding to the soap thus formed a small amount of an amino-type soap antioxidant.

7. A method for the manufacture of stabilized soap from low-grade, decolorized fatty materials comprising: incorporating in said fatty material immediately after decolorization a small amount of a phenolic fat antioxidant, said phenolic antioxidant being relatively insoluble in dilute caustic; saponifying said fatty material containing said phenolic fat antioxidant; and adding to the soap thus formed a small amount of an amino-type soap antioxidant.

8. A method for the manufacture of stabilized soap from low-grade, decolorized fatty materials comprising: incorporating in said fatty material immediately after decolorization a small amount of a "hindered" phenolic fat antioxidant; saponifying said fatty material containing said phenolic fat antioxidant; and thereafter adding to the soap thus formed a small amount of a biguanide soap antioxidant.

9. A method substantially as described in claim 8 wherein the biguanide soap antioxidant is ortho-biphenyl biguanide.

10. A method substantially as described in

claim 8 wherein the biguanide soap antioxidant is ortho-tolyl biguanide.

11. A method for the manufacture of stabilized soap from low-grade, decolorized fatty materials comprising: incorporating in said fatty material immediately after decolorization a small amount of di-tertiary-butyl hydroquinone; saponifying said fatty material containing said 2,5 di-tertiary-butyl hydroquinone; and thereafter adding to the soap thus formed a small amount of an amino-type soap antioxidant.

12. A method for the manufacture of stabilized soap from low-grade, decolorized fatty materials comprising: incorporating in said fatty material immediately after decolorization a small amount of p-tertiary-butyl phenol; saponifying said fatty material containing said p-tertiary-butyl phenol; and after that adding to the soap thus formed a small amount of an amino-type soap antioxidant.

13. A method for the manufacture of stabilized soap from low-grade, decolorized fatty materials comprising: incorporating in said fatty material immediately after decolorization a small amount of 2-6 di-tertiary-butyl p-cresol; saponifying said fatty material containing said 2-6 di-tertiary-butyl p-cresol; and thereafter adding to the soap thus formed a small amount of an amino-type soap antioxidant.

14. A method for the manufacture of stabilized soap from low-grade, decolorized fatty materials comprising: incorporating in said fatty material immediately after decolorization a small amount of 2,6, di-tertiary-butyl meta-cresol; saponifying said fatty material containing said 2,6, di-tertiary-butyl meta-cresol; and thereafter adding to the soap thus formed a small amount of an amino-type soap antioxidant.

15. A method for the manufacture of stabilized soap from low-grade, decolorized fatty materials comprising: incorporating in said fatty material immediately after decolorization a small amount of 2,4,6, tri-tertiary-butyl phenol; saponifying said fatty material containing said 2,4,6, tri-tertiary-butyl phenol; and thereafter adding to the soap thus formed a small amount of an amino-type soap antioxidant.

16. A stabilized soap comprising a mixture of the saponification product of low-grade, decolorized fatty materials containing a small amount of a fat antioxidant added immediately after decolorization and before saponification, and a small amount of a soap antioxidant.

17. A stabilized soap comprising a mixture of the saponification product of low-grade, decolorized fatty materials containing a small amount of phenolic fat antioxidant added immediately after decolorization and before saponification, and a small amount of an amino-type soap antioxidant.

18. A stabilized soap comprising a mixture of the saponification product of low-grade, decolorized fatty materials containing a small amount of a "hindered" phenolic fat antioxidant added immediately after decolorization and before saponification and a small amount of a biguanide soap antioxidant.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,542,438	Divine	June 16, 1925
1,820,744	Kaegebehn	Aug. 25, 1931
2,029,506	Reed	Feb. 4, 1936
2,221,333	Sibley	Nov. 12, 1940
2,416,074	Weber	Feb. 18, 1947