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METHOD FOR PREPARATION OF EMULSION TYPE PIGMENTED METAL DRAWING COMPOUNDS

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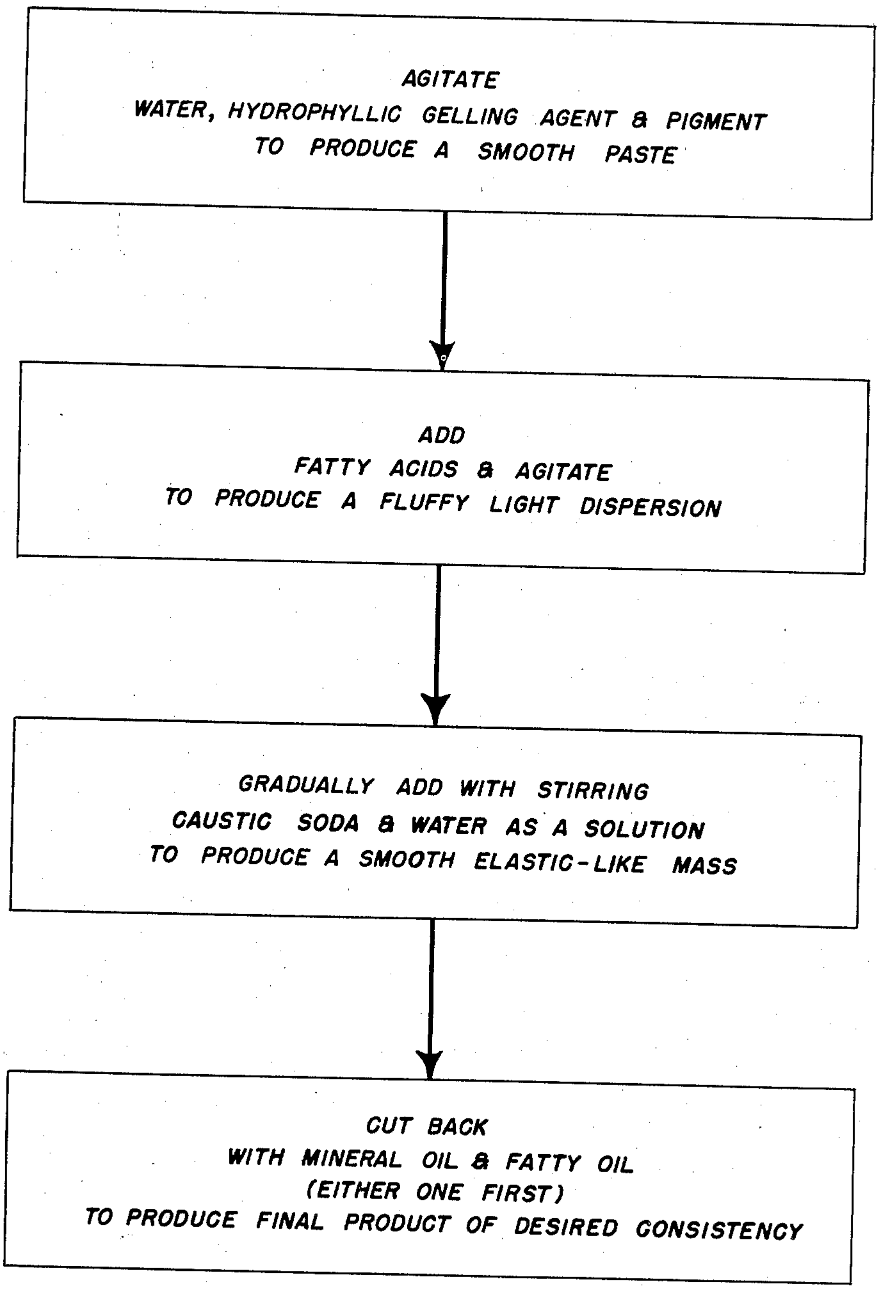

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METHOD FOR PREPARATION OF EMULSION TYPE PIGMENTED METAL DRAWING COMPOUNDS

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This invention relates to a method for the preparation of metal-working lubricants. More particularly, this invention relates to a process for the preparation of non-settling, pigmented drawing and cutting lubricants.

Metal-working machinery, particularly machinery utilizing dies, die presses and the like to shape, cut or otherwise finish metal parts, requires satisfactory lubricants during metal-working operations, requirements of the machinery depending upon a number of factors. Lubricants which have been used in the past to protect both the working machinery and the metal being worked have become complex as faster and larger operations on metals more difficult to work have come to the fore. Changing techniques have necessitated better lubricants.

In general, metal-working processes involving the use of dies can be divided into two main categories, cutting of shearing operations and shaping or forming operations. Cutting or shearing processes may consist of any one or more of the following types of operations: piercing, punching, perforating, blanking, shaving, notching, shearing, trimming and sprue-cutting. Shaping operations may include a number of sub-classes such as bending, curbing or wiring and seaming, drawing, and compressing or squeezing; moreover, drawing operations which comprise a large proportion of the total die-utilizing, metal-working operations may be divided into such types as surface finishing or sizing, forging, riveting, swagging, upsetting, bull-dozing, stamping and extruding.

As mentioned above, metal-working lubricants vary according to the conditions of operation but in the main may be divided into five types of cutting and drawing or shaping lubricants. These are the following: water emulsions of soluble oils; soluble pastes with water; straight mineral oils or compounded oils; pigmented lubricants; and, sulfurized and/or chlorinated oils and bases.

In general, a metal-working lubricant (or a lubricant for cutting and shaping, or drawing) is designed to prevent the metal being worked from sticking to the die or seizing the tool. The lubricant is also present to assist the flow of metal so as to prevent scratching or breaking of the piece being worked and to afford maximum life to the die by reducing abrasion and heat generation and by dissipating heat when present.

It has been found that plain mineral oils do not possess the requisite physical characteristics necessary for good lubricants in modern metal-working operations because film strength and adhesive characteristics are notably deficient in most straight mineral oil lubricants used for this purpose. A number of types of fatty materials, such as beef tallow, degras, lard oil and castor oil have been used in the preparation of pastes for metal-working lubricants in attempts to overcome these drawbacks of mineral oil. Castor oil particularly is extensively used because of its high film strength, low coefficient of friction and good wetting powers.

Fats and solids also have been utilized as lubricants for metal-working operations, including modifications resulting from saponification, chlorination, sulfurization,

and emulsification, and combinations thereof with light mineral oils with or without active sulfur. Tests have shown that film strength is a very important characteristic of metal-working lubricants and that said film strength of either a liquid or paste lubricant may be measurably increased by the introduction of certain solid materials in variable amounts, such as 20 to 35 percent. The function of such a solid is to maintain the oily film on the work metal and to prevent seizure of metal to metal.

Recently, solids such as natural calcium carbonate (chalk), lead carbonate, lead oleate, zinc oxide, barium carbonate, lithopone, talc and graphite have been frequently used. Some of these solids are also well-known pigments. Compositions incorporating such solids with one or more lubricating agents such as oils and fats have been frequently utilized in drawing and stamping operations. For light drawing operations in the past, simple compounds such as sodium stearates have been used, but heavy drawing operations have been found to require lubrication by compositions of a more complex nature, for example, sodium stearate in combination with chlorinated mixed acids and sulfurized fatty oils.

When a metal is drawn, it is forced through a hard steel die and takes the shape imposed upon it by the configuration of the die. This deformation involves high pressure between the surface of the metal and the die, and high surface temperatures are generated. If lubrication is poor in the areas where high temperatures and pressures are found during the drawing operation, adhesion of the worked metal to the surface of the die causes bad scratching and tearing of the surface of the drawn article, and necessitates refacing the die because of abrasion. The temperatures generated at the metal-die interface may be so high that a definite welding effect or alloying may occur and the worked metal and the die fuse. Such an occurrence necessitates rejection of the metal being worked and refinishing of the die, so that valuable time and labor are lost and operation costs are greater. Such welding might even require replacement of the die at great expense. Drawing compounds acting as lubricants must be designed to withstand the extreme pressure and temperature conditions encountered in the drawing operations. A suitable drawing lubricant operates not only to reduce friction between the die and metal being worked so as to reduce the amount of seizure, pick-up and welding, but also serves to cool the item being worked to prevent undesirable metal expansion and reduced precision. If properly compounded, a drawing lubricant can significantly reduce operation costs.

Stamping operations are somewhat different from drawing operations but require, in general, similar lubricants. In stamping operations, the metal is not squeezed but merely bent itno the appropriate shapes, designs and configurations. In stamping operations, as with drawing operations, high pressures and temperatures are present at the die-metal interface and seizure, welding and allied phenomena are prevented only by the judicious use of an appropriate lubricant which reduces friction and thereby reduces temperatures generated during the process. Heavy, sulfurized base oils blended with various preparations of light mineral oil have been mainly used, as has been the case in drawing and other metal-working operations.

The die presses used during drawing operations may be of non-hydraulic or hydraulic varieties and generate pressures as high as 1,000 tons or more. Metals of practically all types may be worked in die presses, metals which have a low elastic limit compared with ultimate strength being particularly desirable for deep-drawing operations. Open-hearth steel with a low carbon content, for example about 0.05–0.08 percent, is suitable for deep-drawing, while SAE 1010 steel is largely used for light drawing and stamping. The dies themselves may be made of any number of alloys having recognized hardness and durability.

The speeds at which stamping, drawing, or other metal working operations are conducted depend upon the metals being worked and the characteristics of the metal dies. For instance, brass can be drawn on metal dies at speeds of the press crankpin as great as 2,000 feet per minute; steel, however, may be drawn on steel dies at only about 35 to 60 feet per minute. The rate of production of drawn stainless steel is even lower, as is that of magnesium.

Drawing and stamping lubricants are applied directly to the sheets or strips of metal by the use of a brush, swab, felt pad or by spraying, dipping or passing between lubricated rolls. It has been found that the latter method of applying lubricants to the working material is the most economical and satisfactory in that a uniformly-thin, lubricating film is deposited which either disappears during the drawing operation or may be easily removed after the drawing operation by a suitable washing procedure.

In general, it is seen that a satisfactory lubricant for metal-working operations must have extreme pressure qualities, thermal stability, and high lubricating qualities. As aforementioned, newer, multi-purpose, metal-working lubricants have been compounded primarily of a number of fatty substances and incorporate pigments which, in appropriate amounts, tend to increase the extreme pressure characteristics and prevent seizure of metal to metal. Difficulties, however, have been encountered with these prepared compositions due to the fact that the pigment component of the composition settles out over various periods of time, especially when the composition is "cut back" or reduced in concentration by dilution with water or oil prior to its use. It has been further noted that some of the most successful types of metal-working lubricants of the pigmented variety are water-soluble emulsions, which afford ease of application and some degree of stability. Where the pigment component of such a desired compounded composition proves to be difficult to keep in suspension, the degree of protection against extreme pressure and rust afforded during metal-working operations is indeterminable. Vacillation in the efficiency of the metal-working operations may occur, increasing costs. Heretofore, the lubricating qualities of pigmented lubricants have varied from satisfactory efficiency, when freshly prepared pigment is uniformly suspended, to various degrees of inefficiency depending upon the amount of pigment suspended at the time the lubricant is used. Attempts to render pigmented, metal-working lubricants completely stable without laborious and costly milling procedures after the lubricant has been prepared have been largely unsuccessful.

Accordingly, it is an object of this invention to provide a process for the preparation of a suitable metal-working lubricant.

It is a further object of this invention to provide a method for keeping in suspension the pigment component of a pigmented metal-working lubricant without milling the prepared product.

It is still a further object of this invention to provide a method for the preparation of a pigmented, metal-working lubricant, particularly suitable for drawing and stamping operations, which is homogeneous and stable without costly milling.

It is still another object of this invention to provide a pigmented, metal-working lubricant which is homogeneous and stable when diluted with water or oil.

Other objects and advantages of this invention will hereinafter be disclosed and will be obvious to one skilled in the art.

The accompanying drawing is a diagrammatic illustration of the stepwise process of our invention.

In general, our invention comprises a process for preparing a metal-working lubricant. More particularly, our invention comprises a method for the preparation of a pigmented, metal-working compound which is stable and homogeneous on dilution with either water or oil. A particular point of novelty of our invention is involved in the order of addition of the compounds during the preparation of the pigmented lubricant which obviates the necessity of milling or otherwise homogenizing the product in order to keep the pigment component of the composition in stable suspension.

The lubricant composition is prepared by the following process: A paste of a major amount of water, a water-swellable, gel-forming compound, such as bentonite, and a pigment compound, such as calcium carbonate, is prepared in a kettle. Fatty acids are then added to the paste, and after appropriate stirring, a solution of caustic soda in water is added with agitation. As a final step, mineral oil boiling in the lubricating oil range and lard oil are added. A typical final composition utilizing this procedure is the following:

TABLE I

Components	Weight Percent
Water initially added	29.34
Bentonite, 325 mesh	1.50
Precipitated Calcium Carbonate	21.99
Animal Fatty Acids	10.79
Caustic Soda (98 percent Assay)	1.49
Water subsequently added	5.00
200 Viscosity Neutral Oil	11.19
Bright Stock Extract	4.81
Lard Oil	13.89
	100.00

The product is homogeneous and the pigment suspension is stable even upon dilution with equal parts of water or oil. This product is in direct contrast with the usual pigmented drawing compound of paste form which shows settling of the pigment on brief or long standing of said lubricant so that a hard pigment cake is formed at the bottom of the container when the compound is cut back with water.

The steps of the process of our invention will now be described in more detail. The initial step involves the preparation of a suitable paste. This paste may be made with variable amounts of water, bentonite or other hydrophilic, gel-forming inorganic and organic compounds, such as montmorillonites, bentones, carboxy methyl cellulose, gelatins, etc., and a suitable pigment. Bentonite is the preferred hydrophilic gelling agent. It has been found that the hydrophilic gelling agent and the lubricating pigment should usually have a mesh number of at least 325 in order to provide rapid dispersion and preferably should be of a finer particle size, such as 0.1 micron. Granular and larger than 325 mesh bentonite can be used but requires a longer time for proper dispersion. The physical and chemical state of the pigment should be that normally provided by the precipitation of the technically pure compound. For instance, 325 mesh limestone would not suffice, since cementitious material therein prevents proper dispersion; 325 mesh precipitated calcium carbonate would be suitable. In general, the finer the bentonite and pigment particles the more rapid the pigment disperses, and the more stable and homogeneous the lubricating composition. Instead of calcium carbonate, other suitable compounds may be used as pigments, e.g., lead carbonate, zinc oxide, barium carbonate, lithopone, talc and graphite. In the case of pigments which are unprecipitatable, particles at least as small as mesh size 325 would be satisfactory for the purpose of the instant drawing composition. Any pigment which is used in the paint art as a pigmenting agent is suitable, provided it is of the required particle size as defined above. Any such suitable paint pigment is described in the appended claims by the term "particulate pigment." The amount of water utilized in the preparation of the paste may vary from that which is enough to convert the mixture from a cake to a paste to that which produces a paste of low viscosity. A medium-thick workable paste is preferred.

The paste comprising a major amount of water, bentonite (or suitable substitute), and pigment may be prepared in any suitable manner, such as by mixing in an open, grease-type kettle with the use of suitable stirring means, such as a rotary- or paddle-type stirrer, etc., or a "Lightnin Mixer." Preferably, the bentonite or other hydrophilic gelling agent is added to the water to form a slurry or gel which is agitated for a time sufficient to thoroughly disperse the bentonite in water, after which the pigment is slowly added. The slurry is agitated or worked until a paste having a smooth consistency is formed. Alternatively, but less preferably, the water, gelling agent, and the pigment may be mixed simultaneously and agitated until the paste formed is of a smooth consistency.

Animal fatty acids are then added to the paste in the kettle and the resulting mixture is agitated until homogeneous. The animal fatty acids are those which are derived from beef tallow or other animal sources and comprise, in general, unsaturated and saturated fatty acids, preferably a mixture of acids of 12 carbon atoms or more. Suitable fatty acids are, for example, oleic acid, stearic acid, and the like. A typical mixture of such fatty acids has the following characteristics:

TABLE II

Percent free fatty acid (as oleic acid)__percent__	97–100
Acid number	192–204
Saponification number	196–207
Color	3 NPA
Titer (° C.)	39–43
Iodine value	50–60
Moisture, insolubles, and unsaponifiables__percent max__	3

Fatty acids other than animal-derived fatty acids may be used, such as those prepared synthetically and those obtained from vegetable matter, such as soya beans, castor beans, rape seed, etc. Further examples of suitable fatty acids, saturated and unsaturated are the following: hypogeic acid, elaidic, erucic, brassidic, behenic acid, linoleic, palmitolic, stearolic, behenolic, lauric, tridecoic, myristic, pentadecanoic, palmitic, margaric, nondecylic, and arachidic acids. The amount of fatty acids added may vary. It is an object to produce sufficient soap in situ in the composition by reaction of the fatty acids with alkali metal hydroxide to emulsify the other ingredients. Accordingly, enough fatty acids may be added for a final soap concentration of about 5 weight percent to about 25 weight percent. Moreover, the final composition may contain free unreacted fatty acids up to about 10 weight percent or more, but about 1.5 weight percent is preferred; such free fatty acids act as a lubricity agent in the composition.

It should be noted that after the addition of the fatty acids to the mixture in the kettle, the batch is transformed from a smooh, thick paste to a distinctive, light-density and fluffy, curdy-looking mass; the fluffy mass has a volume approximately 50 percent greater than the sum of the individual volumes of the ingredients.

As the next step in the process, a concentrated solution of caustic soda in water is prepared and is gradually added to the contents of the kettle with stirring. The contents of the reaction vessel are of uniform consistency before the aforesaid addition, but upon addition of the caustic solution, the light and fluffy dispersion gradually begins to become sticky and rubber-like in consistency. The caustic solution is followed by a variable amount of water which has been used to wash the container in which the caustic soda and water have been mixed. As agitation of the mass continues, the curds disappear and the mass becomes a uniformly smooth, somewhat elastic, sticky paste. Certain other alkali metal hydroxides may be used in lieu of caustic soda, for example, potassium hydroxide. In fact, any basic or alkaline substance which will react with the fatty acids present in the mixture to form water-soluble organic salts or water-soluble soaps may be utilized. The amount of alkaline reagent added is that which is necessary to react with the fatty acids aforementioned to produce in situ the emulsifier or soap in an amount of about 5 weight percent to about 25 weight percent. The alkaline reagent may be present in amount sufficient to react with all or some of the fatty acids or may be present in a small excess without deleteriously affecting the composition. That is, the final composition may be acidic, neutral or slightly basic.

The fourth step involving the addition of mineral oil and fatty oil to the aforementioned smooth elastic mass to produce a desired viscosity in the final product may proceed rapidly; it is of no importance whether the fatty oil is added before or after the mineral oil or together therewith. Any fatty oil, such as sperm oil, tall oil and the like, may be added in appropriate amounts to produce a satisfactory product when present in the mixture with mineral oils, but lard oil is the fatty oil preferred because of its satisfactory lubricity and low cost. The mineral oil added to the composition in the fourth step of the process of our invention may be any mineral oil boiling within the lubricating oil range. This includes any single component or combination of lubricating oils and extracts thereof. An example of a suitable compounded oil is 200 viscosity neutral oil blended with phenol extract from the manufacture of bright stock to an appropriate viscosity. Fractions obtained by extracting mineral lubricating oil with phenol, sulfur dioxide or other solvent commonly used for such purposes may be utilized alone or in combination; such extracts are obtained from the manufacture of bright stock and neutral lubricating oils. The lubricating oil fractions abovementioned may be of high, medium or low viscosity and be bright stock or neutral oil. Instead of having both fatty oil and mineral oil added in the final step, one of these oils may be eliminated and the other oil used exclusively; that is, the proportions of mineral oil and fatty oil in the mineral oil-fatty oil combination may each vary from 0 to 100 percent. After the addition of the fatty oil and mineral lubricating oil, agitation is continued until a homogeneous, smooth paste is obtained which is then withdrawn to suitable containers. This lubricant composition is economical, easy to prepare, efficient in operation, and, when cut back with an equal amount of water or oil, gives satisfactory results without pigment settling or oil separation.

The light and fluffy mixture obtained by the addition of fatty acids to the slurry of water, calcium carbonate, and bentonite is unusual and unexpected, as is the rubbery, sticky mixture resulting from the addition of caustic solution. Upon cutting back the finished compound with an equal amount of 200 viscosity neutral oil, a smooth non-bleeding, homogeneous paste with similar consistency to the original lubricating compound is obtained. Likewise, dilution with an equal quantity of water results in a homogeneous liquid which shows no sign of pigment separation within a 72-hour test period.

When a similar composition is prepared, but not in the particular and critical order of addition specified in the process of this invention, similar dilution with oil results in slight oil separation, while similar dilution with water produces an upper liquid phase and a lower suspension phase. This pigment-suspension phase occupies about one half of the volume of the reduced compound and decreases the utility and effectiveness of the lubricant.

Example 1

A non-limiting example of the process of our invention is as follows. Fifteen pounds of 325-mesh bentonite are dispersed by a "Lightnin Mixer" in 35.23 gallons of water to form a slurry which then is transferred to an open-type grease kettle and agitated for an additional 1-1.5 hours to assure satisfactory dispersion and suspension of the bentonite in the water. At the end of this time, 219.9 pounds of Calcene NC, a commercial, precipitated calcium carbonate of approximately 0.1 micron particle size, is charged to the kettle and the slurry is agitated with a paddle-type stirrer until a smooth white paste is formed. Then 107.9 pounds of animal fatty acids derived from beef tallow are added and the resulting mixture is worked until it presents a smooth homogeneous appearance. The fatty acids are principally saturated and unsaturated acids of more than 12 carbon atoms, and have the following characteristics:

TABLE III

Percent free fatty acid (calculated as oleic acid) ____ percent__	97–100
Acid number ____	202
Saponification number ____	198
Color ____	3NPA
Titer (° C.) ____	41
Iodine value ____	55
Moisture, insoluble and unsaponifiable matter percent__	2

A gradual transformation from the smooth, thick, white mass to a very light, fluffy, curdy-looking paste occurs concomitant with a volume increase of approximately 50 percent. A caustic solution of 14.9 pounds of caustic soda and 5.0 gallons of water is then prepared and gradually added to the kettle, with stirring, followed by one gallon of wash water. The contents in the kettle gradually become rubbery and sticky, but as agitation continues, the mixture becomes smooth and somewhat elastic in character. This smooth product is then mixed with a blend of 15.26 gallons of 200 viscosity neutral mineral oil and 5.91 gallons of bright stock extract. After the mineral oil blend has been added, 138.9 pounds of a commercial lard oil (Larex No. 5) is added in small portions to produce approximately 1,000 pounds of finished product.

Numerous experimental processing procedures other than that of Example I were tried in making drawing compounds of the two similar compositions shown in Table IV following.

TABLE IV

Constituents	Composition A, Wt. Percent	Composition B, Wt. Percent
Animal fatty acids	10.2	9.2
Caustic soda (98% assay)	1.45	1.5
500 viscosity mineral lubricating oil	16.0	16.0
Lard Oil (Larex #5)	13.0	13.9
Water	34.35	34.4
Calcene NC [1]	22.0	22.0
Bentonite (325 mesh)	1.5	1.5
Soda soap, resulting from reaction of above animal fatty acids and caustic soda	11.0	11.0
Free fatty acids, remaining after animal fatty acid—caustic soda reaction	2.5 (average)	1.5 (average)

[1] Commercial precipitated calcium carbonate.

Composition A was prepared by the following procedures:

TABLE V

(A1) A paste was formed of all ingredients except the bentonite, the lard oil and some of the water. The lard oil was added to the paste alternately with the bentonite and water slurry.

(A2) The same procedure was used as in (A1) above, except that a similar quantity of commercially available soya acids was substituted for the animal fatty acids.

(A3) All ingredients were mixed together, except the aqueous caustic soda solution; the mixture was then reacted with the aqueous caustic soda solution and worked to a smooth paste.

Samples of the above preparations of Composition A were cut back in a series of tests with equal amounts of mineral oil and in a parallel series of tests with equal amounts of water; results appear below.

TABLE VI

Sample	Characteristics on oil cut-back	Characterisces on water cut-back
A1	mealy appearance	pigment settled.
A2	do	Do.
A3	mealy appearance, but better than A1 and A2.	Do.

Settling was determined for a 72-hour period

Composition B was prepared by the following procedures:

TABLE VII

(B1) A paste was made by mixing together all ingredients except the carbonate. Dry carbonate was then worked in to form a smooth paste.

(B2) A slurry of water, bentonite, caustic and carbonate was made, to which was added, in order, the fatty acids, lard oil and mineral oils with stirring.

(B3) A slurry was made of bentonite, some of the water and 50 per cent of the calcium carbonate. A paste was then made incorporating the remaining ingredients with the exception of the lard oil. The lard oil and the slurry were then added alternately to the paste with stirring.

(B4) The procedure of (B3) was used, except that bentonite of particle size finer than 325 mesh was utilized.

(B5) The fatty acids, caustic soda, lard oil and 50 percent of the carbonate were mixed to form a paste, to which was then added alternately the mineral oil and the slurry of bentonite, water and 50 percent of the carbonate.

(B6) The same procedure as in (B5) was followed except granular bentonite of particle size larger than 325 mesh was used in place of the 325 mesh bentonite.

(B7) The procedure of (B4) was followed, except that granular bentonite was used instead of 325 mesh bentonite.

(B8) The procedure duplicated that of (B5).

(B9) A slurry of water, bentonite and calcium carbonate was made in the kettle to which was added progressively and in order the animal fatty acids, the caustic solution, the mineral oils and the lard oil with appropriate stirring.

(B10) The procedure duplicated that of (B4).

(B11) The procedure duplicated that of (B9).

Samples of the above preparations of B Composition were cut back in a series of tests with equal amounts of water and in a parallel series of tests with equal amounts of mineral oil. The results appear below:

TABLE VIII

Sample	Characteristics on oil cut-back	Characteristics on water cut-back
B1	mealy appearance	pigment settled.
B2	do	Do.
B3	smooth appearance	Do.
B4	very smooth appearance	very slight separation.
B5	smooth appearance	pigment settled.
B6	do	Do.
B7	do	Do.
B8	do	Do.
B9	very smooth appearance, no oil separation.	no pigment separation.
B10	very smooth	pigment settled.
B11	very smooth appearance, no oil separation.	no pigment separation.

The results indicate that only by the process of B9 (duplicated by B11) could a very smooth paste lubricant be prepared which remained smooth with no oil separation on being cut back with an equal amount of mineral oil, and which showed no separation or settling of pigment over the 72-hour test period when cut back with an equal amount of water. In B9 the steps of the process of our invention were followed in order to produce the desired product. It is important that the lubricant exhibits stability on being cut back with either oil or water because many metal-working operations are more efficiently carried out with the lubricant thinned with water, and other metal working operations demand greater lubricity of the lubricating agent which is facilitated by the use of a lubricant paste cut back with an oil rather than water. Complete flexibility of use may be achieved by preparing a pigmented lubricant according to the steps of our process, the final composition being satisfactory as a multi-purpose metal-working lubricant, smooth, homogeneous and stable towards pigment-settling without being milled. The usual type of pigmented drawing lubricant has to be finely milled after compounding in order to hold the pigment in somewhat stable suspension.

The equipment utilized in the process of our invention may be replaced by other appropriate equipment which would facilitate the process of our invention and which would be obvious to one skilled in the art.

We do not wish to be limited to a process for the preparation of a drawing compound, but clearly disclose that the lubricant prepared by our process may be effectively utilized as a lubricant in all types of metal-working operations, including cutting and drawing, stamping, punching, shearing, trimming and similar operations.

We claim and particularly point out as our invention:

1. A process for the preparation of a lubricant which comprises the sequential steps of admixing water with sufficient hydrophilic gel-forming particulate substance selected from the group consisting of montmorillonites, bentonites, carboxymethylcellulose, and gelatins to form a gelatinous slurry, mixing therewith sufficient particulate pigment, no larger than 325 mesh, to form a smooth paste, agitating the mixture until a smooth paste is formed, adding to the paste an amount of fatty acids having 12 to 24 carbon atoms per molecule, which when saponified, will completely emulsify the final composition, mixing until a homogeneous mass is obtained, saponifying the fatty acids by addition of concentrated aqueous alkali metal hydroxide solution, mixing the saponified product with at least one oil selected from the group consisting of mineral oil boiling within the lubricating oil range and fatty oils, in an amount sufficient to obtain a smooth, homogeneous paste, and agitating the product until such paste is obtained.

2. The process in accordance with claim 1 in which the particulate pigment is selected from the group consisting of lead carbonate, zinc oxide, barium carbonate, lithopone, talc, graphite, and calcium carbonate.

3. A process in accordance with claim 1 in which said hydrophilic gel-forming particulate substance is a bentonite of approximately 325 mesh.

4. A process in accordance with claim 1 in which said hydrophilic gel-forming particulate substance is carboxymethylcellulose.

5. A process in accordance with claim 3 in which said particulate pigment is calcium carbonate.

6. A process in accordance with claim 4 in which said particulate pigment is calcium carbonate.

7. A process in accordance with claim 3 in which said particulate pigment is zinc oxide.

8. A process in accordance with claim 4 in which said particulate pigment is zinc oxide.

9. A process in accordance with claim 5 in which said fatty oil is lard oil and in which said alkaline hydroxide is sodium hydroxide.

10. The process of preparing a lubricant paste that forms stable emulsions with oil and water comprising mixing approximately 29.34 parts by weight of water with 1.5 parts by weight of 325 mesh bentonite and 21.99 parts of precipitated calcium carbonate until a smooth paste is obtained, adding 10.79 parts by weight of animal fatty acids, having 12 to 24 carbon atoms per molecule, to the paste, and agitating until a homogeneous mass is obtained, saponifying the mixture with concentrated aqueous caustic soda solution containing 1.49 parts by weight of caustic soda, and after saponification adding sufficient mineral lubricating oil fraction and lard oil to give a smooth paste and agitating until a smooth paste is obtained.

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