

UNITED STATES PATENT OFFICE

2,482,667

BUFFING COMPOSITIONS

Daniel Gray, Sherrill, N. Y., assignor to Oneida Ltd., Oneida, N. Y., a corporation of New York

No Drawing. Application August 30, 1946,
Serial No. 694,151

9 Claims. (Cl. 51-304)

1

This invention relates to buffing compositions, and more particularly to liquid buffing compositions in which the liquid is water.

The commercial polishing and buffing of stainless steel, nickel steel, silver and other metals, is ordinarily accomplished by using suitable abrasive powders held together in bar form by means of a binder. The bar is held against a buffing wheel to transfer some of the abrasive to the wheel, and the work is polished or buffed by holding it against the wheel. The binder used is usually a mixture of tallow and stearic acid and may, if desired, contain waxes or petrolatum. The amount of binder by weight ranges from 10% to 35%, and it is solid at ordinary temperatures.

Liquid abrasives or buffing compositions are also known and ordinarily consist of a suitable abrasive suspended in an oily medium.

A difficulty with the bar compound is that a considerable quantity of abrasive is used to accomplish a given amount of polishing or buffing, while the liquid abrasives hitherto used cause difficulty due to settling of the abrasive, and require considerable effort to remove them from the work due to the oily nature of the suspending medium.

It is an object of this invention to prepare a liquid abrasive or buffing composition which has superior abrasive action. A further object is to prepare a liquid abrasive or buffing composition which contains the abrasive permanently and evenly distributed and which is easily removed from the work polished or buffed. Still another object is to prepare an abrasive or buffing composition having a water base, and which has marked advantages in economy over buffing compositions now in common use, and is clean and safe to use from the point of view of the operator.

These and other objects will be described in the following disclosure.

Briefly, this invention relates to a buffing composition containing a substantially water-soluble substantially non-volatile amine salt of a fatty acid, and an abrasive. During preparation of this composition, or before use, sufficient water is added to give the product the proper consistency.

It has been found that by suspending the abrasive in a water medium a better polishing and buffing action is secured. It also extends the wheel life since the temperature reached is apparently less than that when the abrasive is suspended or contained in oil or wax. Since the employment of an abrasive in water appears to be a much more efficient use of the abrasive, a great deal less is required to provide a given amount of polishing. A comparison of use during a 9-hour day of a conventional bar compound and the liquid buffing composition of this invention according to Example I follows:

2

Table I

Bar Compound	Liquid Buffing Composition
5 13.75 lbs. used \$0.0775 per lb. \$1.066 total cost of abrasive Quality of buffed surface: Good.	3 lbs. used \$.03 per lb. \$.09 total cost of abrasive Quality of buffed surface: Excellent

10 The wheel life when using the liquid buffing composition is about twice as long as that when the bar compound is used.

The amine used may be aromatic, cyclic, aralkyl, or alkyl. The preferred acid employed to form the salt is a member of the fatty acid series. It may be a saturated fatty acid such as stearic, or an unsaturated fatty acid such as oleic, though in general the salts of unsaturated fatty acids are more water soluble than those of the corresponding saturated acids. Although the mono-, di- or tri-salt of the amine may be employed, the mono-salt has been found entirely satisfactory.

25 The volatility of the salt is important. For example, soaps such as ammonium stearate are not satisfactory because under buffing conditions sufficient heat is developed to volatilize ammonia leaving stearic acid to precipitate upon the work and the wheel. Salts resulting from the interaction of low molecular weight amines and low molecular weight acids are usually unsatisfactory because of excessive volatility under buffing conditions. On the other hand salts of relatively high molecular weight amines and high molecular weight acids such as that which results from the reaction of octadecyl amine and stearic acid are too water insoluble for the purposes of this invention. The amines useful in this invention include primary amines such as ethylene diamine, secondary amines such as morpholine, and tertiary amines such as triethanolamine. It is preferred, however, to employ the salts of secondary and tertiary amines since their suspending power is greater than that of the primary amine salts. The stearic acid salts of these amines do not appear to be substantially decomposed or volatilized by the heat of the buffing wheel. If desired, the amine may be added in excess though such procedure is not recommended.

In the form in which the liquid abrasive is used, it must contain sufficient water to provide a fluid free-flowing composition, yet it must not be dilute enough to permit the abrasive to precipitate. It has been found that such a composition is produced when for each gram of salt from four to ten grams of water are used and from five to ten grams of abrasive.

The following examples are given to illustrate 60 compositions included by this invention;

3

EXAMPLE I

The following quantities of ingredients were employed to make a good buffing composition in accordance with this invention:

	Grams
Stearic acid.....	200
Triethanolamine.....	100
Water.....	1,500
300 mesh Carborundum.....	2,000
Chromic oxide.....	50

The triethanol amine was dissolved in water and an equimolar amount of stearic acid was added, with stirring at 160° F., until a uniform liquid was produced. Water was added in small quantities with stirring to form a creamy mixture. To this was added the abrasive powders and more water until a semi-fluid mixture was obtained. The resulting free-flowing mixture had excellent abrasive properties, and there was no significant amount of settling even on long standing.

EXAMPLE II

Following the same general procedure a buffing composition containing the following materials was prepared:

	Grams
Stearic acid.....	200
"Triton B" ¹	11.75
Water.....	1,800
400 mesh Carborundum.....	2,000
Rouge.....	100

¹ Benzyl trimethyl ammonium hydroxide.

The polishing action of the composition was excellent, and the composition showed substantially no settling on long standing.

The procedure given in the first example was followed in preparing the compositions of this and the succeeding examples.

EXAMPLE III

A buffing composition was prepared using:

	Grams
Stearic acid.....	23
Morpholine.....	7
Water.....	250
400 mesh Carborundum.....	200
Rouge.....	10

The composition gave entirely satisfactory buffing action and maintained the abrasive in suspension well.

In place of the stearic acid shown above, oleic acid has been used effectively in preparing similar buffing compositions. The product is thinner but has good suspending power and has good buffing qualities. Other satisfactory non-settling buffing compositions have been prepared by following the procedure of the preceding examples in accordance with the present invention by using, in place of the amines and acids shown above, stearic acid and diethanol amine, and linoleic acid and piperidine.

The amine salts may of course be prepared some time previously, or may be obtained already prepared.

If it is desired, as for purposes of saving shipping weight, water may be added at the point of use rather than at the place of preparation. It is necessary only to thoroughly incorporate the

4

abrasive with the amine salt. The simplest manner is to mix mechanically the two materials without added water. Any intermediate amount of water may, of course, be added. It may, for instance, be desirable to ship a paste which may be more readily diluted than the dry ingredients.

The buffing composition of this invention, properly diluted as shown in the examples, may be applied, as by a spray gun, either directly onto the work or upon the wheel, as desired. Other methods, such as painting the liquid onto the work or wheel, may be used.

Any of the various abrasives useful for buffing may be suspended in the composition described above. Typical abrasives include Tripoli powder, chromic oxide, iron oxide, Carborundum, silica, etc. These abrasives as used herein are of a fineness appropriate to the type of buffing to be performed and the nature and material of the surface to be buffed.

I claim:

1. A stable, substantially non-separating liquid buffing composition consisting of a free-flowing water solution of an amine salt of a higher fatty acid, said salt being substantially non-volatile under buffing conditions, the ratio of water to said salt being not more than about 10:1, and an abrasive present in an amount of 5-10 times the weight of said salt, said abrasive being permanently suspended in said solution.

2. The composition according to claim 1 wherein the fatty acid is stearic acid.

3. The composition according to claim 1 wherein the amine is a secondary amine.

4. The composition according to claim 1 wherein the amine is a tertiary amine.

5. The composition according to claim 4 wherein the fatty acid is stearic acid and the amine is benzyl trimethyl ammonium hydroxide.

6. The composition according to claim 4 wherein the fatty acid is stearic acid and the amine is morpholine.

7. The composition according to claim 4 wherein the fatty acid is stearic acid and the amine is triethanol amine.

8. The composition according to claim 7 wherein the weight ratio of stearic acid to triethanol amine is 2:1.

9. A stable, non-separating liquid buffing composition consisting of triethanol-amine monostearate in solution in from four to ten times its weight of water, and an abrasive in an amount of five to ten times the weight of said triethanol-amine monostearate permanently suspended in said solution.

DANIEL GRAY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,246,996	Pfeifer.....	Nov. 20, 1917
1,327,648	Wesson.....	Jan. 13, 1920
1,669,596	Browne.....	May 15, 1928
2,078,876	Hennessey.....	Apr. 27, 1937

OTHER REFERENCES

"Emulsions," Carbide & Carbon Chemical Corp., July 1934.