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BUFFING COMPOUND

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The present invention relates to buffing compounds, and particularly solid buffing compounds adapted for use on buffing or abrasive wheels operating at elevated temperatures.

5 A principal object of this invention is the provision of solid buffing compounds which are substantially resistant to decomposition or charring at temperatures of the order of 400° F.—500° F. which are commonly encountered in metal buffing operations.

10 A further object of this invention is the provision of solid buffing compounds which are readily removable from buffed metal surfaces, for example, by water washing. The compounds of this invention are relatively free of hydrocarbon materials such as mineral oil, petrolatum or wax, the presence of substantial quantities of which render the buffing compounds unsuitable for use at elevated temperatures due to marked decrease in viscosity, and likewise render said compounds difficult of removal from the buffed metal surfaces.

15 In the buffing of metal surfaces by means of abrasive wheels or the like, it has been conventional practice to apply a buffing compound, for example, a mixture of stearic acid and finely-divided abrasive material, to the abrasive wheel before and/or during the metal buffing operation. During the buffing of metal surfaces, the abrasive wheels frequently attain temperatures of the order of 400° F.—500° F. due to frictional heat, and it is therefore desirable to employ buffing compounds which are substantially stable at such temperatures. The stearic acid-abrasive mixture above referred to is not satisfactory due to its tendency to char at the elevated temperatures involved, and due to the fact that residues of such mixture remaining upon the buffed metal surfaces upon completion of the buffing operation cannot be readily removed, for example, by water washing.

20 In accordance with the present invention, the above mentioned difficulties are overcome to substantial extent by providing a buffing compound comprising a solid mixture of a water-dispersible soap of a petroleum sulfonic acid and finely-divided abrasive, such compound preferably being in the form of a solid stick or cake. In general, the proportion of abrasive material in my buffing compound is of the order of 50%—90% by weight of said compound, the remainder being substantially petroleum sulfonic soap. The compound, for example, in the form of a stick, is applied to the abrasive wheel by holding the stick against the revolving wheel, whereupon the heat of friction causes softening of the compound to

an extent sufficient to permit a quantity of the compound to gather upon the wheel.

The petroleum sulfonic acid salts or soaps which I employ in accordance with my invention are preferably oil-free, water-dispersible alkali metal soaps softening at temperatures of the order of from about 125° F. to about 175° F., and being substantially resistant to charring at temperatures up to about 400° F.—500° F. Such sulfonic soaps may be derived from oil-soluble petroleum sulfonic acids, particularly those produced in the manufacture of mineral white oils. These sulfonic acids, which are both oil-soluble and water-soluble, are characterized in having an acid value of from about 80 to 140 mg. KOH/gm., molecular weights of the order of from about 400 to about 550, and are derived from sulfuric acid treated oils having Saybolt universal viscosities of from about 80 seconds to 500 seconds at 100° F.

25 Among the finely-divided abrasive materials which may be employed in producing my buffing compound are soft silica, silicates, tripoli, rottenstone, kieselguhr, lime, chalk, magnesia, quartz, hard silica, chromium oxide, iron oxide, artificial or natural aluminum oxide, silicon carbide, slate flower, garnet grain, powdered glass, emery, china clay, bentonite or mixtures of two or more thereof. Depending upon the use to which the buffing compound is to be put, the finely-divided abrasive may vary from about 80 mesh up to about 600 mesh.

30 In the production of my buffing compound, a suitable quantity of sodium sulfonates recovered from caustic neutralized acid treated oil, such as mineral white oil stock, is heated to a temperature sufficient to render the sulfonates fluid and admixed with finely-divided abrasive to obtain a substantially homogeneous mixture. The heating and mixing temperature is generally of the order of 200° F.—250° F., depending upon the softening point of the sulfonates employed. The heated mixture, in a fluid condition, may then be shaped into the desired form, such as sticks or cakes, by casting in a suitable mold. Upon cooling, there is obtained a solid buffing compound substantially free of oil and containing little or no water, which compound is readily applicable to abrasive or buffing wheels, does not char to substantial extent upon use, and is easily removable from buffed metal surfaces by water washing.

35 While my preferred buffing compound comprises essentially a solid mixture of fine-divided abrasive and alkali metal sulfonates of the nature of those hereinbefore described, I may produce modified compounds by adding to my abrasive-

sulfonate mixture a small quantity of alkali metal phosphate, carbonate or borate, in order to assist in the removal of the compound from buffed surfaces by water washing.

- 5 Reference is made herein to the resistance of the sulfonates to charring at elevated temperatures of the order of 400° F.-500° F. By such is meant that the sulfonates contained in the buffing compounds of this invention are substantially resistant to charring or burning under the conditions normally encountered in metal buffing operations involving the development of considerable frictional heat.

What I claim is:

- 15 1. A buffing compound comprising a substantially homogeneous, solid mixture of a water-dispersible petroleum sulfonate soap and finely-divided abrasive, said sulfonate soap softening at temperatures of from about 125° F. to about 175° F. and being substantially resistant to charring at temperatures of the order of about 400° F.-500° F.
- 20 2. A buffing compound comprising a substantially homogeneous, solid mixture of a water-dispersible, substantially oil-free petroleum sulfonate soap and finely divided abrasive, said sulfonate soap softening at temperatures of from about 125° F. to about 175° F. and being substantially resistant to charring at temperatures of the order of about 400° F.-500° F.

3. A buffing compound comprising a substantially homogeneous, solid mixture of a water-dispersible alkali metal petroleum sulfonate and finely-divided abrasive, said sulfonate softening at temperatures of from about 125° F. to about 175° F. and being substantially resistant to charring at temperatures of the order of about 400° F.-500° F. 5

4. A buffing compound comprising a substantially homogeneous, solid mixture of from about 10% to about 50% by weight of a water-dispersible petroleum sulfonate soap and from about 90% to about 50% by weight of finely-divided abrasive, said sulfonate soap softening at temperatures of from about 125° F. to about 175° F. and being substantially resistant to charring at temperatures of the order of about 400° F.-500° F. 15

5. A buffing compound comprising a substantially homogeneous, solid mixture of finely-divided abrasive and a water-dispersible sodium soap of petroleum sulfonic acids having an acid value of from about 80 to about 140 mg. KOH/gm., said soap softening at temperatures of from about 125° F. to about 175° F. and being substantially resistant to charring at temperatures of the order of about 400° F.-500° F. 20 25

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