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ANTIWELDING LUBRICANT PREPARATION

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5 Claims. (Cl. 252—45)

This invention relates to anti-welding lubricants, and more particularly compositions involving mineral oil and selectively provided modifiers. Other objects and advantages will appear as the description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described, and particularly pointed out in the claims, the following description setting forth in detail certain illustrative embodiments of the invention, these being indicative however, of but a few of the various ways in which the principle of the invention may be employed.

It has been known for a long time that mineral oil treated with sulphur has utility as a lubricating and cutting oil. However, such material has certain serious drawbacks, and it is unsuitable for many uses of a more particular character. I have found that where oil is sulphurized there is formed a proportion of sulphur compounds which are of an adsorbable character. And, these furthermore are detrimental. In accordance with the present invention an oil is selectively provided with non-adsorbable sulphur compounds, and an outstanding lubricant function may be had, making possible usages in drastic conditions where metal seizure or welding together is otherwise prone to occur, and notably in high speed machining work where metal is removed by machine tools. The mineral oil may be of desired character, as for instance a lubricating stock of Mid-Continent or other source, and of viscosity suitable for the kind of duty in view, for example 120 to 200 sec. Saybolt Universal at 100° F. The oil is raised in temperature, well above the boiling point of water, and below approach to volatilization or cracking or change of the hydrocarbons. For instance, a temperature around 300° F. is generally satisfactory. Sulphur is introduced, and air is blown through the oil, the treatment continuing until the sulphur is all taken up. The amount of sulphur may be 1 to 4½ per cent, and the time of such treatment may be fifteen to twenty hours. Sulphur goes into combination to the formation of compounds some of which are adsorbable and some non-adsorbable. The oil is cooled and settled to eliminate such solid matters as may have formed, and it is then acidulated rather sharply, as for instance with sulphuric acid, which may be in amount at the rate of about five pounds per barrel, and desirably this should be repeated. After again separating solid matter, the oil is subjected to the action of a finely divided adsorbent, as clay, fuller's earth, etc., and for this its temperature is maintained somewhat in excess of the boiling point of water, as for instance around 250° F., and it is separated from the adsorbent and is passed through a cooler to storage. This product is, unlike sulphurized oils known to the trade, free from adsorbable oil-sulphur compounds, and is clear and transparent. It is applicable in usages including those where particularly severe conditions are imposed, and heavy duty high speed metal working without welding are desired. Unlike known sulphurized oils moreover, it may be applied in delicate operations where the non-transparent lubricants are not feasible. The present product permits an operator to follow the progress of a cutting tool or measure the work without stopping the machine and cleaning off the oil in order to permit view and measurement. Loss in production time is thus very particularly averted, and also excessive cleaning costs to the machinery and to the operator's clothing.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the features stated in any of the following claims, or the equivalent of such, be employed.

I therefore particularly point out and distinctly claim as my invention:

1. A process of making anti-welding lubricants, which comprises selectively providing in a mineral oil non-adsorbable sulphur compounds by subjecting the mineral oil to the action of sulphur and heat and air until several per cent of sulphur are taken up, then acidifying, and eliminating adsorbable compounds by subjecting to the action of a finely divided adsorbent material and temperature somewhat in excess of the boiling point of water.

2. A process of making anti-welding lubricants, which comprises selectively providing in a mineral oil non-adsorbable sulphur compounds by subjecting the mineral oil to the action of sulphur and air at a temperature of around 300° F. until several per cent of sulphur are taken up, and eliminating adsorbable sulphur compounds by subjecting to a finely divided adsorbent.

3. A process of making anti-welding lubricants, which comprises selectively providing in a mineral oil non-adsorbable sulphur compounds by subjecting the mineral oil to the action of sulphur and air at a temperature of around 300° F. for fifteen or twenty hours, then acidifying with sulphuric acid, and eliminating adsorbable sulphur compounds by subjecting to a finely

divided adsorbent at a temperature around 250° F.

4. A process of making sulphurized mineral oil which comprises providing in a mineral oil adsorbable and non-adsorbable sulphur compounds by subjecting the mineral oil to the action of sulphur and air, at elevated temperature, and finally eliminating adsorbable sulphur compounds by subjecting to a finely divided adsorbent.

5. A process of making sulphurized mineral oil which comprises providing in a mineral oil adsorbable and non-adsorbable sulphur compounds by reacting sulphur with the mineral oil at elevated temperature, and finally eliminating adsorbable sulphur compounds by subjecting to a finely divided adsorbent.

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