

WHITE MINERAL OIL

FOR THE MEAT PACKER

By DR. ERICH MEYER

Department of Industrial Research
L. Sonneborn Sons, Inc.

The Bureau of Animal Industry of the U. S. Department of Agriculture has enacted a number of rules and regulations for the benefit of the meat packing industry as well as for the protection of the consuming public.

Maintenance of Metal Equipment

Many of these rules and regulations apply to cleanliness of the packing plant, which includes the daily cleaning of all metal surfaces, such as containers, table tops, conveyors and trucks, as well as hooks, racks, grinders, saws and other equipment.

Oil—A Rust Preventive

The actual washing is usually done with hot lye solution and then, in order to prevent the metal surfaces from rusting, they must be oiled. The oil forms a protective coating against rust and thus prolongs the life of the equipment.

Highly Refined Oil Essential

The Bureau of Animal Industry strongly recommends the use of oil since the absence of rust is conducive to sanitation. However, the Bureau of Animal Industry insists that the oil used be tasteless and odorless so as to guard against contamination of the meat by foreign taste or odor.

Therefore, it is the practice of the government meat inspectors to forward a sample of the oil to a Government Testing Laboratory for approval before it is used. Quite frequently, the Government laboratory rejects oils on account of insufficient purity, which not only is costly but also often embarrassing to the meat packer.

Paraffin Oil Versus White Mineral Oil

The main reason for rejections of this kind is an unfortunate misunderstanding of the nomenclature of these oils. The meat packing industry usually calls them "Paraffin Oils," whereas in the oil industry a "Paraffin Oil" is usually understood to be a light colored lubricating oil having a distinct odor and petroleum taste. Yet a number of oil companies can furnish an oil that is guaranteed to pass the inspection of the Bureau of Animal Industry. But such an oil is referred to as "White Mineral Oil" and should be free from color, odor and taste.

Additional Requirements

Two other important requirements for oils to be used in meat packing plants are that they must not gum or turn rancid. Only a pure White Mineral Oil will fully meet these requirements.

The U. S. P. Acid Test

In order to detect unsuitable oils, a special test, the so-called acid test, has been found very helpful. This test, established by the U. S. Pharmacopoeia, is able to show the true degree of refining of an oil. Five cubic centimeters of the oil are heated with 5 cubic centimeters of 95% sulfuric acid in a water bath for ten minutes and the mixture well shaken at intervals of thirty seconds. In the case of a partially refined oil, the acid will turn a dark yellow, brown or even black, but in a true White Mineral Oil the color will change only slightly, if at all. The fact that an oil possesses a U. S. P. Acid Test will assure the user that it is absolutely pure and will not gum or turn rancid.

Improper Oils Are Dangerous

Many modern meat packing plants have recognized the great importance of using an oil of U. S. P. Acid Test though they fully realize that White Mineral Oils of U. S. P. Acid Test are somewhat more expensive than semi-refined White Mineral Oils. By using an oil of non-U. S. P. Acid Test, the meat packer is taking too great a chance, because such oils—even if they are originally practically odorless—are found to develop a kerosene-like odor during the warm weather or upon exposure to light. This is indeed a very undesirable feature and one which is exceedingly dangerous, particularly since the same kerosene odor is used by the U. S. Government to designate condemned meat.

Correct Oil Specifications Necessary

White Mineral Oils are refined in many different viscosities and therefore it may be well to investigate which viscosity is best suited for use in meat packing plants. It has been found that an oil of low viscosity—in other words, a thin oil—is preferable to an oil of high viscosity. An oil of thin body possesses better spreading and penetrating properties, can be applied in a thinner film and therefore is less greasy, and last but not least, is more economical. However, we have to remember that the lower the viscosity of an oil, the greater is its tendency to evaporate. Since resistance to evaporation is of great importance, a white mineral oil which combines low viscosity with high resistance to evaporation should be selected. This feature is characteristic of white mineral oils refined from paraffin base crudes.

It is hoped that this necessarily brief discussion of an extremely important problem of the meat packing industry will be of interest and assistance.