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Oil analysis is most commonly used for motor vehicles, which everybody knows need lubricants to operate properly. While there are many different types of lubricants for different engines, the fact remains that some lubricants can be better than others because of the favorable qualities in the substance. There is also the question of new oils and used oils, and how used oils can be safe to use for motor vehicles.

The proper term for oil analysis is tribology, which is the study of friction and the elements present in oil samples. Friction is needed for machinery to operate properly; however, lubricants regulate the friction by preventing gears from wearing off against one another. Lubricants must meet certain qualities to be suitable for machinery, even if the substance happens to have been used before.

Regardless of age, a good lubricant must have a high boiling point to keep the lubricant in viscous liquid form for a long time, and a low freezing point to prevent the lubricant from turning into a gelatinous or frozen form during winter. A good lubricant must have a high viscosity index, meaning it remains in a thick, viscous form for a long timeâ€"thin enough to flow along the engine but thick enough to keep the components from corrosion. It also needs to possess a high resistance to oxidation, or any chemical reaction due to exposure to oxygen.

Major oil refinery industries have improved these qualities in their products by introducing various additives to the lubricants. Organic amines and phenols, as well as metal deactivators are used as antioxidants. Anti-foam agents keep the lubricant in its viscous liquid form instead of becoming foam because of friction or temperature change. However, these additives, often present in synthetic oils, can give the lubricant unpleasant contaminants, which engine oil analysis labs can detect.

Normally, used oils are the ones that may have contaminants because of friction that wears off the machines. Used engine oil analysis can be done first with oil samples taken directly from the machinery. Then, the various qualities and properties of this sample can be studied according to the criteria mentioned earlier.

Used oil analysis also tests a lubricant for its total base number. The total base number is the amount of acid-neutralizing agents still in the lubricant. This is meant to prevent corrosion from taking place in the machinery.

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