MOREY'S® HEAVY DUTY OIL STABILIZER

Morey's® Heavy Duty Oil Stabilizer is a 100% petroleum based product. It does not contain potentially damaging compounds or materials such as PTFE resin, molybdenum disulphide (Moly), graphite or chlorinated compounds. It is formulated using advanced additive technology to stabilize all engine, gear and hydraulic oils, including synthetic and semi-synthetic types. Morey's® stabilizes even those oils recently developed to meet engine manufacturer's latest specification for their most demanding engines. Morey's® simply makes oil perform better in all types of equipment in all types of service, regardless of the brand you use. Morey's® boosts the oil's performance and the vehicle's performance as well, be they new, newly rebuilt or worn. It requires no special knowledge or tooling procedure, other than common sense. It is not carcinogenic nor does it have any adverse effect on any known working substances.

All lubricating oils have always been rated by viscosity. Techniques are now needed to examine lubricating substances for two other characteristics shear strength and coating ability.

When observing or comparing Morey's® remember it does more than effect viscosity. It has many innovative and remarkable qualities. There is an anti-wash or coating action, which is visually observable in operation. This coating is unique. With pumping action it ensures a stable working pressure is maintained. On rotating objects it does not fly away, but travels the path of rotation from end to end and remains attached to surfaces when pumping or rotation action ceases. It is protective by nature by developing a coating that prevents oxidation and it will not allow the reformation of chemically created damaging deposits.

When any known chemical contaminates enter it, like water formed from condensation, it will hold the water in suspension and not emulsify. It will also hold abrasive contaminates in suspension allowing these particles to be carried away from bearing surfaces.

The specific gravity of Morey's® is 0.89, which is characterised by its coating ability. The density rating of 1.00 is reflected in its ability to hold contaminates in suspension. Its high flash point of over 200^{O} C coupled with its negligible evaporation rate make it safe and economical to work with.

With the advent of smaller and lighter vehicles operating at higher temperatures, faster speeds of rotation and more load carrying capacity, industry needs to change its lubricating substances from the standard gear or motor oils with the usual 10W to 30 or 40 SAE ratings.

The lubricants now used have no forgiveness or ability to prevent the base hydrocarbons from fouling and creating harmful deposits caused by heat or stress.

There is not a common SAE rated gear or motor oil on the market today that is not hygroscopic and that will not emulsify when chemical contamination such as water enters it.

The basic properties of an engine lubricating oil are that it protects the sliding surfaces of machine components against wear and reduces friction and hence power consumption. There are other properties which are important in particular situations, some examples being, deposit formation in engine piston ring grooves and cylinder walls, the ability to be pumped around circulating systems, and protection against oxidation. Conditions in between sliding surfaces can be classified according to the degree of interaction between the surfaces. It is usually desirable to separate surfaces completely by a film of lubricant since wear is eliminated and the friction comes solely from shearing the fluid. In practice Morey's® does just that. The ability of a lubricant to achieve full separation depends on its viscosity stability the greater the stability the better the separation effect. Complete

separation also depends on the loads and speeds involved and the type of component. The bearings in an engine crankshaft for instance require a different set of circumstances than do piston rings against cylinder walls. Crankshaft bearings rely on sliding motion whereas piston rings require additional lubricant adhesion to achieve the separation affect. By imparting to piston rings and cylinder walls Morey's® a strong adhesive lubricant film blow down, or blow by, is greatly reduced decreasing oil contamination in the sump.

At relatively high loads between surfaces complete separation is difficult to achieve and there is some degree of contact. All machined surfaces are to some extent rough, hills and valleys occur on a microscopic scale. The function of the lubricant now changes to protecting the surfaces against seizure and tearing which would occur with dry metals by form of cold welding at contacting asperities. This process of protection depends on active molecules in the lubricant, which attach themselves to the surfaces, it is known as boundary lubrication. Morey's® characteristically displays its superior boundary lubrication protection by a subsequent decrease in noise level, and temperature.

All oils exhibit a change in viscosity with temperature, this viscosity change is known as the viscosity index. Before additives the viscosity index of most oils varied from 50 to 90, but with the discovery of additives it is now possible to change a 70-viscosity index oil to 150. In other words the additives make it possible to create 5W-50 SAE oil. To understand the difference between a high index over 100 and a low index one of near 60 we must realise that low index oil thins out when hot and over thickens when cold. The high index oil resists this thickening or thinning. The smaller the viscosity change from hot to cold, the higher the index. The addition of Morey's® to multi viscosity oils results in a significant increase in the viscosity index, which is maintained at high temperatures. At the same time a 20 percent addition of Morey's® lowers the pour point by between 2^{O}C and 7^{O}C, the foaming tendency is also reduced by between 50% and 100%.

At a fixed temperature simple fluids, such as water or straight mineral oil, have a single effective value of viscosity no matter how fast they are sheared. These fluids are known as Newtonian fluids. Non Newtonian fluids exhibit changes in viscosity according to the rate of working. An example is non-drip paint; it is very viscous in the can but reduces in viscosity when being applied. Some lubricating oils have non- Newtonian properties, which can affect their behaviour in machines. For instance straight SAE 30 oil has a constant viscosity and the viscosity also remains constant, at a higher value, when Morey's® is added.

Multi grade engine and gear oils display non-Newtonian properties, with the addition of Morey's® the shear-thinning, reduced viscosity, tendencies of multi grade oils are lessened and their viscosity is also maintained at a higher level. With Morey's® accelerated shear rate and its high shear stability index, the efficient and smooth operation of machines is achieved, as well there is an improved safety margin for emergency power situations, plus measurably lower oil consumption.

To reduce smog, re-circulating crank case ventilation systems have become an integrated part of the spark ignition engine. However, this solution is quite incomplete and has undesirable side effects. Reducing the amount of partially burnt hydrocarbons discharged to the atmosphere provides a partial answer to the smog problem. It is apparent that crank case oil vapour does not have sufficiently high volatility to burn completely under conditions existing in the engine cylinders, as a consequence a certain amount of partially burnt hydrocarbons will be emitted to the atmosphere through the exhaust system. Incomplete combustion of oil in the vapour results in an accumulation of unburned hydrocarbons in the engine itself. This causes a dirty engine with resultant fouling of spark plugs, rings, valves, and exhaust systems, as well as cylinder wall varnishing, increasing temperatures and reducing efficiency with heavy sluggish operation of the engine. The use of Morey's® Heavy Duty Oil Stabilizer in the crankcase cleans the lower area of the engine providing better results with smog control systems.

GEAR BOXES

As loads and speeds increase, boundary lubrication film breaks down and intensive metallic contact occurs, temperatures increase and wear becomes excessive. Morey's® will not allow metal to metal contact by providing thick film lubrication. Morey's® resists slipping on gears and mating faces allowing the centre of the oil film to do the sliding, consequently reducing temperatures, friction, noise and maintenance costs. Morey's® unique anti-wash or coating action ensures an adequate lubricating film remains attached to all surfaces after shut down preventing oxidation. Its tough adhesive and cohesive film also ensures the elimination of dry-start wear. Designed for severe duty conditions it provides the highest degree of protection available.

HYDRAULICS

Hydraulic fluids have been very staid over the last 25 years a change in the standard types of hydraulic fluids is long overdue. Morey's® will do things no other hydraulic fluid has ever done such as preventing washing of the lubricants from rotating elements and decreasing the weeping or leakage of fluids from seals. Hydraulic fluid has a tendency to foam and cause hydraulic hammering because it lacks a proper viscosity. Many hydraulic pumps, slave cylinders, valves and hydraulic rotating elements fail because the fluids used do not meet the requirements needed. The versatility of Morey's® is highly recommended in hydraulic systems and hydrostatic transmissions.

Today, higher pressures and loads on hydraulic components have become so great that lubricant requirements for these close tolerance fluid power systems must provide a combination of physical and temperature stability, severe temperature operation ability, and adequate lubrication under all operating conditions.

The high viscosity index of Morey's® along with its combined properties controls temperature behaviour improving operation reliability. Oxidation and corrosive acids associated with high operating temperatures are all significantly reduced. Improved lubricity protects all metal surfaces from corrosion and Morey's® unique ability to resist emulsifying enables air trapped on circulation to be rapidly released to prevent foaming. Implementing this one grade product substantially decreases all temperatures and friction together with high operating cost maintenance. Morey's® increases the reliability of these fluids by ensuring a constant supply working pressure is developed with its assurance of viscosity stability.

AIR TOOLS

Modern pneumatic tools and machines operated by air require specialised lubrication to resist the formation of acids, sludge, gums and varnish that build up and rob the operating equipment of power and performance. The addition of between 5% to 10% of Morey's to the lubricating oil used in this type of equipment where accelerated oxidation due to high and low temperatures and humidity are effectively controlled by this harmoniously well balanced lubricant. Morey's® ability to eliminate formation deposits as well as its excellent water separation properties enable these systems to operate for long, trouble free periods resulting in improved efficiency, power and performance, with reduced downtime and maintenance costs.

One other attribute of Morey's® should not be overlooked. Its microscopic penetration, along with its tenacious qualities makes an ideal lubricant for chains, bushings and bearings. Its high affinity to metal surfaces along with its superior cleaning qualities, high temperature tolerance, thermal stability and aversion to water means longer trouble free operating life of all equipment.