LUBRICANTS FAQs

Q. What is a lubricant?
A lubricant is the material that lies between two surfaces that are moving with respect to each other. The presence of a lubricant affects the friction between the two surfaces. It is usually used to reduce friction, thereby reducing heat and wear, but it is also often used to cool, clean and protect the surfaces from corrosive chemical attack.

A lubricant can be liquid, solid or even a gas. Greases are liquids that have been thickened by the addition of chemical or solid materials. Teflon® and graphite are examples of solid lubricants.

Q. What is viscosity?
Viscosity is a measure of a fluid's resistance to flow. For lubricating oil in general, viscosity is the most important physical property. It is viscosity, as well as the pressure and speed of movement, which determines the thickness of an oil film between two moving surfaces. This in turn determines the ability of the oil film to keep the two surfaces apart, the rate heat is generated by friction and the rate the oil flows between the surfaces and thus conveys the heat away.

The oil should have a viscosity at the operating temperature that is correct for maintaining a fluid film between the bearing surfaces, despite the pressure tending to squeeze it out. While a reasonable factor of safety is usually desirable, excessive viscosity should be avoided because this can create more drag and therefore unnecessary heat generation.

Viscosity is also useful for identification of grades of oil and for following the performance of oils in service. An increase in the oil’s viscosity during use usually indicates that the oil has deteriorated to some extent, a decrease normally indicates dilution with fuel. The permissible extent of viscosity increase before corrective measures are taken is largely a matter of experience and judgement of the operator

Q. What is a Monograde Oil?
Monograde oils are designed to be used within a defined temperature range. The monograde oils are classified by the thickness (or viscosity) of the oil. The intention is to ensure that the oil will cycle as required under specific operating conditions. In cold climates a thinner grade, e.g. SAE 30, is more likely to be required whilst in warmer climates a thicker grade e.g. SAE 100, is more likely to be selected. They can also be characterized by the presence of an additive package ("AD" or ashless dispersant oils) or the absence of such performance additives ("S" or "straight" oils). For example, Mak Gold is a monograde oil.

Q.What is a Multigrade Oil?
Multigrade oils are designed to provide a more consistent viscosity across a wide range of temperatures. They are usually formulated around premium quality base stock (mineral and/or

synthetic blend) enhanced with an additive package. Mak Multigrade, Mak Elite, Mak Auto XL, Mak 4T Nxt are all multigrade oils.

Q.What is Weight?
Weight is the viscosity in SUS (Saybolt Universal Seconds) measured at 210 deg F.

Q.What is SAE?
The Society of Automotive Engineers is an international non-profit educational and scientific organization dedicated to advancing mobility technology. They develop technical information on all forms of self-propelled vehicles including aircraft and disseminate this information through many channels, including oil specifications. In other words it tells you the "thickness" of the oil. The lower the number, the "thinner " the oil; thus SAE 30 is less viscous than SAE 40

Q. We have come across an oil having a 20W-40 rating. What does 'W' stand for ?

This is the common terminology used to indicate a multi-grade oil. 'W' signifies the winter rating of the oil, showing that it will perform well in cold weather. The lower the number prefixing the 'W', the lower the temperature the oil can withstand. Thus 10W- indicates a lower viscosity at low temperature than 20W-. The second figure shows the viscosity at 100 C, which is close to the bulk oil temperature in most water-cooled engines.

Q. What does the specification API stand for ?
API stands for the American Petroleum Institute. This body has specified the performance standards that oils used in road vehicles should meet, notably for cars and trucks made in the USA. For oils destined for use in passenger car engines, the letters API are followed by a set of two letters such as SJ, etc. This indicates the Service Level for passenger car oils. These specified performance levels have evolved through the years, from API SA to SM, in response to the changes in passenger car engine technology that, in turn, has imposed ever more severe operating conditions on the oil to achieve satisfactory lubrication.

The highest API for passenger car motor oils today is API-SM.

Similarly, the API designates the performance of diesel engine oils with a letter sequence such as API CF or API CH-4, and for automotive gear oils they use API GL-4.

The highest API for commercial engine oils (diesel oils) today is API CI-4 Plus.

Many other specifications are used to denote lubricant performance: notably the ACEA (European), JASO (Japan) and the US Military classifications.

Q. How is a Lubricant made?

A lubricant is made in a blending plant. There, the base oils (which may constitute up to 99% of the lubricant, by volume) are mixed together with specially selected additives. Before blending, the base oil is purified by filtration and removal of water; after blending the finished product is subjected to quality control checks in the plant's laboratory before being approved for packing and dispatch.

Q. What is base oil?

Base Oil (sometimes also called base stock) is the name given to the main liquid component (or components) of a lubricant. It is. Base oils are mineral (or petroleum) or synthetic in origin, although vegetable oil-derived stocks may be used for specialized applications. The base stock provides the basic lubricating requirements of a lubricant i.e. the "oiliness"

However, in most modern lubricants a base oil mixture alone is insufficient to deliver the technical performance characteristics required and to keep the product from rapid degradation in use. Therefore the lubricant manufacturer will mix the base oils with a variety of different additives, each chosen to impart additional performance benefits to the finished oil

Q. What are the different kinds of base oils?

Base oils are be classified by both viscosity and their generic chemical composition, itself a function of the original crude oil and/or the refining process. Depending on the proportions of hydrocarbon molecule type: base oils can be paraffinic, naphthenic or aromatic in nature. There are several widely used viscosity classifications, of which the term ‘solvent neutral' is the most common, e.g. SN 150 and SN 500, where the number represents the SUS viscosity (measured in Saybolt Universal Seconds at 40 C). Base oils are also classified by their viscosity index (a calculated figure based on the viscosities measured at both 40 and 100 C). Thus oils are Low Viscosity Index (LVIs) or Medium Viscosity Index (MVIs), High Viscosity Index (HVIs) or extra High Viscosity Index (XHVIs). The higher the viscosity index, the less the oil will ‘thin down' upon heating, and the less it will ‘thicken up' upon cooling.

Base oils are also be defined by the type of refining process used: solvent extraction (for solvent neutral oils) is widely used, but more highly refined oils can be made by a hydro-finishing process or by hydro-cracking.

Q. What is Flash Point of an Oil?

Flash Point of oil is the temperature at which 5% of the oil starts generating enough vapors to ignite the oil in presence of an external source.

Q. How do I choose the right oil for my vehicle ?

You should always consult the car or vehicle manual, issued by the original manufacturer. There you will find the most suitable viscosity grade and performance level. In some cases oils will be mentioned by name.

Then, check the oil pack label to make sure you have the right viscosity grade and that it at least meets the performance level. Note that for many older vehicles the performance level recommended may now have been superseded by newer specifications.

Q. Does using the right motor oil have anything to do with engine life?

The single most important thing you can do to get long life from your engine is to change your engine oil and oil filter as often as recommended by your car manual. This is good maintenance practice. Note that motor oil that properly lubricates the engine system during the first few thousand kilometres can later become thick and even corrosive after long periods of use. It then cannot flow as required and also blocks the oil filter. This may cause engine damage and seizure in extreme cases. Draining off used oil, following the vehicle manufacturer's recommended oil change intervals, also removes abrasive metal particles.

Q. Does Red Colour mean a better oil ?

Colour does not affect the performance of the oil. Different colour dyes are added to differentiate brands. Red colour masks oil colour which otherwise looks dark and blackish due to impurities.

Q. Is it true that when oil turns black it's time to change?

Not necessarily, because oil can turn black due to improper draining of oil while changing, poor maintenance, or quality of previously used oil and fuel, excessive carbon deposits on engine parts etc.. In fact oil will tend to blacken as it cleans the engine & various parts and accumulates dirt particles in itself

Q. Why we need to change the oil?

The oil quality gets reduced while in service due to oxidation of the oil and/or contamination of the oil and / or depletion of the additives as it gets used up during its service. Oxidation of the Oil in presence of air & high temperature produces acidic and gummy substances. If it is allowed to increase beyond certain limits then it will start corroding the equipment or leave unwanted deposits on the moving parts. Similarly contamination of the oil with water, dust, dirt and soot from combustion products leads to corrosion and abrassive wear. The TBN, Antiwear and performance enhancing additive gets used up in service and below certain levels will not be in a position to protect the equipment. Because of these primary reasons that we need to change the oil once it looses its useful life to protect our costly equipment.

Q. What is Low smoke oil for Two Stroke Engines?

Faqs What is Low smoke oil for Two Stroke Engines? Why I need to use special 4T oil for my 4 Stroke Motor Cycle Engines? How to select the right viscosity of oil for my equipment? What is Multi-grade Oil & the Benefits of using Multi-grade Oil? Why there are many types of Engine Oils in the market for Petrol & Diesel Engines? What is the purpose of used oil analysis? Why we need to change the oil? When do we change the Oil? Can I use the after market additives in the oil to enhance the performance of the oil? How do I dispose of the Used Oil? Are Biodegradable oils marketed by BPCL? What is Group II base oil? What are the advantages of using Lubricants manufactured with Group II base oil? What is Low smoke oil for Two Stroke Engines? Two Stroke Engines emits the maximum pollutants compared to the four stroke Engines fitted in Cars & two/Three wheeler. The old generation 2T lubricant mixed with petrol and used in two Wheeler contributes more than 70% of the pollutants emitted from the Engines. As the emission norms become stringent, efforts are to reduce the harmful emission from two Wheeler. Only way to reduce the emission from two wheeler is to use the right quality of the 2T oil. By careful selection of the base oil mixed with the right quality and quantity of Synthetic oil and the right blend of performance additives, the emission level can be greatly reduced. Japanese Automobile Standards Organisation is the forerunner in setting standards for two strokes Engine Oil. Their FC specification stipulates a Smoke Index of minimum 80 so that very little pollutants is emitted from the two stroke Engines. Use of an oil meeting the specification requirement of JASO FC will reduce substantially the pollutants emitted by two wheelers. To control the emission from the two Wheeler, The Supreme Court of India allows only JASO FC grade of oil is marketed in India with effect from 1-04-1999. The Two Wheeler user can show their concern to save the Environment by necessarily using oil meeting the JASO - FC standard

in their vehicles. Bharat Petroleum Corporation markets only one grade of Lubricant, MAK 2T, for Two Stroke Engines meeting the JASO FC standards to contribute in a little way to save the environment.

Q. Why I need to use special 4T oil for my 4 Stroke Motor Cycle Engines?

Two Wheeler / 3 Wheeler engines are air-cooled engines unlike the passenger car engines which are cooled by water or by a coolant. The Engines are effectively cooled by the air drag across the engines while the vehicle is in motion. The Engine operating temperatures exponentially shoots up when the vehicle speeds are reduced or the vehicle is stopped since the air drag drastically reduces under these conditions as encountered in a typical city operating conditions. Secondly these vehicles use wet clutch mechanism and the same engine oil lubricates the engine, the wet clutch and the gears. So oil with high Friction Modifier used in Engine Oil will lead to clutch slippage. The Oil used for Four Stroke engines, Two Wheeler / Three Wheeler, need to take care of the higher temperature operating condition as well as it should have controlled friction characteristics to take care of the wet clutch requirement. At the same time it should have reduced friction characteristics as required by the Engines & gears. Mak 4T Nxt Oil is specially developed to meet these special requirements of this class of vehicles.

Q. There are many additive "supplements" on the market that claim to increase power or extend the drain interval. Should I use these products?

In general, these products are a waste of money, and if used incorrectly can result in engine damage. You should use the recommended oil for your vehicle that was manufactured to meet the latest API specifications. This oil was formulated with an additive package to meet the operating requirements of your engine. The oil should be changed at the recommended interval as documented in the owners manual.

Q. How do I tell the difference between detergent and non detergent oils?

All engine oils contain the detergent additive to reduce combustion deposits. Hydraulic oils do not normally contain the detergent additive except in some special formulations identified as "Detergent Hydraulic Oils". The non detergent oil is sometimes identified as "Pump Oil".

Q. Why are some oils called "synthetic" and others "mineral”? ⍰

This refers to the origin of the base fluid. Mineral oils are derived by refining processes, essentially a complex series of purification and separation steps, from crude petroleum oil extracted from the ground. Synthetic base fluids are made by chemical processes, generally by building up larger molecules from smaller ones. Because these chemical reactions and starting materials are well defined, the synthetic fluids are not only relatively pure chemicals but are deliberately made to deliver the performance characteristics required in a lubricant.

Q. Why do oil companies sometimes recommend more than one product for the same

application?

Different drivers and different motoring conditions call for different oils. Thus, a car that is driven under very arduous conditions, with a lot of high-speed motoring, may be better lubricated with synthetic oil which can better resist the high temperatures.

Q. What are synthetic base oils ?

Synthetic base oils are chemicals that have been made, or synthesised, by combining several smaller molecules together. There are several different types, each with its own suite of physical and chemical properties, and each ideal for a selected set of uses in lubrication. Because these are 'made to design', and are usually quite pure in composition, the lubricants they are used in can have specific properties which cannot easily be achieved through the use of mineral base oils. This advantage, though, comes at a higher price

Q. Are synthetic oils better than conventional motor oils?

In most cases the answer is "yes". Synthetic oils are manmade lubricants which were originally created for jet aircraft engines. They have a wide range of performance and can protect engine at very high and very oil temperature conditions. In other words, they have exceptional thermal stability.

The main disadvantage of synthetic lubricants is that they are inherently more expensive than mineral oils. This restricts their use to speciality oils and greases which command premium prices. Coincidentally, oil marketers therefore ensure that their synthetic oils are also capable of the highest performance possible

Q. Where are these synthetic base oils used?

The main advantages of the synthetic oils are in their high viscosity indexes, higher flash points, lower pour points and very low volatility (tendency to evaporate at higher temperatures) This makes them valuable blending components when compounding for extreme service at both high and low temperatures.

Q. Can synthetic oils be used for longer periods, or will they prolong the engine's life?

It is always best to follow the vehicle manufacturer's (the OEM's) recommendation for oil drain periods. Some OEMs do permit extended drain intervals when high quality, high performance synthetic oils are used. This is often done in combination with extended vehicle and engine service intervals, as it is in the OEM's interest to ensure the engine and the oil will require servicing after longer and longer intervals.

However, because most oil marketers ensure that their expensive, synthetic oils are also the best in terms of performance, when only a normal oil drain interval is observed the oil will give excellent protection to the engine and thus contribute to extended engine life.

Q. Why are additives used in lubricating oil?

Additives are used in lubricating oil to change or alter or enhance its properties. Base oil as such cannot be used in most of the present-day lubricating applications. Their properties - like resistance to heat, oxygen, wear etc - have to be increased. This increment is done with the use of these additives. To increase the resistance to oxidation, we add 'antioxidants', to increase resistance to wear, we add 'anti-wear additives'

Q. What are these additives?

The list below covers most of the additives used. You can see that lubricant formulation is a real science as there are many components and variables, all of which must be balanced out to make a well-rounded product, which is then proven by a series of rigorous tests.

ADDITIVE	WHAT IT DOES	HOW IT WORKS
Oxidation Inhibitor	Prevents varnish and sludge formation on bearings or in circulating systems. Retards aging of the oil. Lengthens service and storage life of oil. Protects oil itself directly (indirect protects metal parts - varnish and acids)	Reacts more readily with oxygen (from air) than does the oil itself, thereby retarding oxidation of the oil. Inhibits the formation of free radicals, an important chemical species in the oxidation process, thus slowing oxidation reactions
Rust Inhibitor	Prevents rusting of ferrous (iron or steel) machine parts	Forms a film on ferrous metallic parts thus protecting them from attack by water and air, or other destructive material.
Corrosion Inhibitor	Prevents corrosive attack on non-ferrous metallic surfaces	Forms a film on non-ferrous metallic parts thus protecting these parts from attack by contaminants in the oil.
Detergent	Prevents oxidation products (sludge) which have formed in oil from sticking to metal components. May also remove deposits already formed on metallic components. Usually combined with dispersant additive They are also used to neutralize acids which form in the oil, or are introduced as by-products of fuel combustion.	By chemical reaction, oxidation products (sludge) remain soluble in the oil and do not stick to the metal surfaces. Chemically neutralize acids.

Dispersant	Keeps oxidation products separated and suspended in the oil. Retards formation of sludge	By chemical reaction, oxidation product particles are kept small enough to allow them to float in the oil.
Foam Inhibitor	Causes foam to dissipate more rapidly	Protects combination of small bubbles into large bubbles which in turn burst more easily.
Viscosity Index (V.I.) Improver	Reduces rate of change of viscosity with temperature	Additive thickens with increasing temperature thereby preventing oil from thinning out too rapidly
Pour Depressant	Lowers the Pour Point	Keeps small wax crystals apart thus preventing the formation of large crystals which would stop the flow of oil.
Anti-wear agent	Minimizes wear caused by metal-to-metal contact during conditions of mild boundary lubrication e.g. starts and stops	Additive reacts chemically and forms a film on metal surfaces under normal operating conditions
Extreme Pressure (E.P.) Agent	Prevents welding and subsequent wear or seizure of contacting metal parts under extreme or shock load conditions.	When metal-to-metal contact occurs (as under extreme or shock load conditions), the heat generated at the point of contact causes the additive to react chemically with the metal. The new compound formed between the metal surfaces reduces friction and prevents welding or seizure.
Tackiness Agent	Increases the adhesive properties of a lubricant - improves retention and prevents dripping and spattering	High molecular weight compounds are added to the oil thereby increasing its viscosity and improving its adhesive properties.
Emulsifier	Promotes rapid mixing of water and oil resulting in the formation of a stable emulsion (e.g. water-soluble cutting oils)	Reduces interfacial tension and permits intimate mixing of oil and water.

Q. The colour of the oil has changed within short duration of putting it in application. Should I throw away the oil as the quality does not seem to be OK?

NO. There are few additives incorporated in few types of oils (more common in case of gear oils)

that change the colour due to change in the surface chemistry immediately (or within short duration) on coming in contact with rotating surfaces (dynamic load condition). This change is colour is within the known behaviour of the oil and does not affect the performance of the oil adversely (or in any other manner).
You may continue to use the oil till its intended life. (You may contact us for any further clarification you require w.r.t. a particular product of MOSIL)

Q. What is the best place to draw sample of oil for further testing and analysis?
The best place to draw a sample of oil is from the downstream of an any application. Ideally one should draw as many samples as possible so as to get the most accurate analysis done. e.g. For large lubricating or gear oil systems, draw the sample from the oil in circulation and from the bottom of the sump / reservoir. In hydraulic systems, draw a sample from the header tank, downstream of filters etc.

Q. What is penetration of grease?
Penetration of grease is the relative thickness of the grease.

Q. How much grease should be put in a bearing?
It is recommended to only fill 33% of the free space of an antifriction bearing. As an exception, for low speed and highly dust prone application, one may fill upto 100% free space in the bearing. Please note that over - filling of the bearing leads to more failure of the bearings as compared to under - filling of the bearings.

Q. The viscosity of the base oil available from your end is reported at 40ºC and 100ºC. How do we know the base oil viscosity of the grease at our application operating temperature?
The viscosity at various temperatures can be calculated using the ASTM Standard Viscosity - Temperature Chart (ASTM D341-03). One may use various utilities available on the Public Domain of World Wide Web to calculate the viscosity at a particular temperature provided you know either the viscosity at a particular temperature and viscosity index or viscosity at a another temperature.

Q. How can I determine the service temperature range of grease?
The upper service temperature is determined by ascertaining the evaporation loss and the thermal stability of the base oil, dropping point of the grease and the maximum serviceable temperature of the additives incorporated. The lower service temperature is ascertained by testing the low temperature torque of the grease and pour point of the base fluid. The temperature range indicated in the product bulletin is only meant to be an indicator for the actual use. The real temperature range should be determined by considering other factors like operating condition, atmosphere and type of application.

Q. The color of the grease has changed within short duration of putting it in application. Should I throw away the grease as the quality does not seem to be OK?

NO. There are few additives incorporated in few types of grease that change the colour due to change in the surface chemistry immediately (or within short duration) on coming in contact with rotating surfaces (dynamic load condition). This change is colour is within the known behaviour of the grease and does not affect the performance of the grease adversely (or in any other manner). You may continue to use the grease till its intended life. (You may contact us for any further clarification you require w.r.t. a particular product of MOSIL)

Q. Is it common to observe oil separation in greases?
"Bleeding" or Oil separation is a naturally occurring phenomenon and should not be construed as a problem. The storage temperature in excess of 45 deg C accelerates oil separation. The excess oil can be safely stirred back into the grease within the container. It has also been observed that the higher penetration greases (Lower Consistency) tend to have more oil bleeding as compared to Thicker greases.

Q. The colour of grease has become darker as compared to when i first opened the container. Should i throw away the grease?
No. It is perfectly alright to use the grease. Few greases (and oils) contain additives that darken by exposure to sunlight, air, temperature. The colour would usually change to slightly darker shade (darker brown in most cases). Sufficient care has been taken to ensure that this change in colour has no effect on the performance of the product.

Q. What are the conditions that affect storage of Lubricants?
The storage environment greatly affects the shelf life of lubricants and greases. Conditions, which should be monitored, are:

Temperature: both high heat (greater than 45°C) and extreme cold (less than –20°C) can affect lubricant stability. Heat increases the rate of oil oxidation, which may lead to formation of deposits and viscosity increase. Cold can result in wax and possible sediment formation. In addition, alternating exposure to heat and cold may result in air being drawn into drums, which may result in moisture contamination. A temperature range of –20°C to 45°C is acceptable for storage of most lubricating oils and greases. Ideally the storage temperature range should be from 0°C to 25°C.

Light: light may change the color and appearance of lubricants. Lubricants should be kept in their original metal or plastic containers.

Water: water may react with some lubricant additives, sometimes forming insoluble matter. Water can also promote microbial growth at the oil/water interface. Lubricants should be stored in a dry location, preferably inside.

Particulate Contamination: drums and pails should not be stored in areas where there is a high level of airborne particles. This is especially important when a partially used container is stored.

Atmospheric Contamination: oxygen and carbon dioxide can react with lubricants and affect their viscosity and consistency. Keeping lubricant containers sealed until the product is needed is the best protection.

Q. What are the recommended storage conditions and practices for Lubricating Oils and Greases?
Store lubricating oils and greases in a cool dry indoor area where airborne particles are at a minimum. Indoor storage also prevents deterioration of label and container from weathering. The ideal storage temperature range is from 0°C to 25°C.
If drums must be stored outside, use plastic covers or tip oil drums to direct water and contamination away from the bungs. Always store greases upright to prevent oil separation. When necessary, bring grease to satisfactory dispensing temperature just prior to use. Rotate the inventory. Check the container fill date and use the oldest container first.
Keep containers tightly covered or closed to avoid contamination. Wipe off the tops and edges of containers before opening to avoid contamination. Use clean tools and equipment when pumping or handling lubricants and greases.

Q.Is AP3 grease (white/creamish colored) better than darker greases?
It is a myth that white greases are better than darker colored greases. Color of the greases depends upon base oils & others ingredients. Infact, high viscus oils are darker and are generally better than low viscus light colored oils because they provide more lubricity and have higher VI. This fact can be practically established by using **PENSOL APLR 30000** Grease, Which is darker in color (greenish). This grease is getting tremendous response from the end users (Transporters, Car/Two Wheeler owners).
Top

Q. What is the function of typical engine oil?
Engine oil protects the engines in following ways:

- By providing lubricity thereby reducing friction among moving parts of the engine and enhancing their lives.
- By cooling the engine.
- By cleaning the engine parts.
- Acting as an anti oxidant
- It is therefore highly recommended that vehicle owners should use engine oils of right specifications notified by OEMs.

Q. What are the reasons for degradation of engine oils?
Everything in this world has an life and the same applies to engine oils. OEMs generally notifies the period or kilometer (mile) for changing the engine oils. Vehicle owners should change the engine oils in line with OEMs notifications.

In some cases, engine oils degrade faster. The reasons may be many, some are:

- Piston rings having worn out resulting in gaps between the rings & the cylinder. This may

result in oil becoming darker/thicker faster. In common terminology, it is called "Back Compression".

- The vehicles are used in extreme & dusty atmosphere, overload conditions etc.
- Oil filters are not working properly
- Fuel dilution resulting in thinner oil
- Not using engine oil of correct specifications
- Using spurious engine oils. The high priced lubricants of well known brands are prone to this factor

Q. What are the important Tips for Vehicle Owners / Mechanics?

- Drain out engine oil when the engine is hot so that entire used engine oil comes out. (Hot engine oil is less viscous & easy to come out).
- Pour gear oil and engine oil in the system by using separate fillers because they contain different additives. Intermixing of oils may cause harm to the system.
- **Use oils/gear oils of specifications (not necessarily brands) recommended by OEMs.**
- Regular visual inspection of oils should be made for vehicles operating under extreme conditions (like
  dusty, overloading, bad road conditions).
- Used oil should be stored properly and disposed to re-refiners only (to prevent soil contamination, protect environment & prevent use of waste oil by unscrupulous elements.)