A good lubricating oil generally possess the following characteristics:

1. **Suitable Viscosity:** The viscosity of oil should not change with rise in temperature.
2. **Oilness:** It ensures the adherence to the bearings and spread over the surface. This property makes oil smooth and very important in boundary lubrication.
3. **Strength:** The lubricant must have high strength to avoid metal contact and seizure under heavy loads.
4. **Chemical Stability:** The lubricant should not react with surfaces and any deposit in the cylinder.
5. **Pour Point:** It should be low to allow the flow of lubricant at low temperature to the oil pump.

6. **Flash Point and Fire Point:** The lubricating oil should not burn inside the cylinder, otherwise it will leave heavy deposit and poisonous exhaust. Therefore, the flash point and fire point of the lubricating oil must be high.

7. **Neutralization:** The oil should not have a tendency to form deposits by reacting with air, water, fuel or the products of combustion.

8. **Cleaning:** The oil should act as cleaning agent inside the engine and should carry any deposits with it. It should also have non-foaming characteristics, low cost and be non-toxic.

Lubricants couldn't perform the tasks they do without additives. Additives are combined with base oils to create finished products. Additives are very complex and different packages can be used to get different effects from a lubricant. However, these additives can be broken down into three main categories:

Oil Modifiers – Improve the performance of the base oil

-Viscosity Index Improvers (VII)

-Pour Point Depressants (PPD)

-Seal-swell controllers

Oil Protectors – Reduce the rate at which undesirable changes take place

-Anti-Oxidants

-Metal deactivators

-Anti-foam agents

Surface Protectors – Impart entirely new performance characteristics to a lubricant

-Antiwear and extreme pressure additives

-Corrosion inhibitors

-Detergents

-Dispersants

-Friction Modifiers

2.4.7 Solvent Dewaxing

Solvent dewaxing processes are designed to remove wax from lubricating oils to give the product good fluidity characteristics at low temperatures (e.g., low pour points), rather than being used to treat the whole crude oil (Speight, 2007). The mechanism of solvent dewaxing involves either the separation of wax as a solid that crystallizes from the oil at low temperatures, or the separation of wax as a liquid that is extracted at temperatures above its melting point. Through preferential selectivity of the solvent the former mechanism is usually used for commercial dewaxing processes.

Dewaxing of lubricating oil base stocks is necessary to ensure that the oil will have the proper viscosity at lower than ambient temperatures. Two types of process are used; selective hydrocracking and solvent dewaxing. In the formar, one or two zeolite catalysts are used to selectively crack the wax paraffins. The latter is more prevalent. Here, the oil feed is diluted with solvent to lower the solution viscosity, chilled until the wax crystallizes, and then filtered to remove it. Solvents used for this process include propane, and mixtures of methyl ethyl ketone (MEK) with methyl isobutyl ketone (MIBK), or MEK with toluene.