Chapter - 11 Lubricants

* **Introduction:** A lubricant is one which is capable of reducing the friction between two surfaces which are sliding over eachother and ultimately reduces the heat generated when the surface move. By the use of lubricant, the loss of energy due to friction is considerably reduced.

* **Definition of lubricants:**

Lubricants are the substances which are applied between two moving/sliding surfaces to reduce the frictional resistance.

* **Types of lubricants:** Depending upon the physical states, lubricants can be classified into three categories.

1. **Solid lubricants:**

The lubricants that exist in solid form are called solid lubricants. Solid lubricants are preferred where the working temperature is very high and when there is a chance of contamination of the products with the lubricant.

Examples: Layered compounds like graphite, boron nitride, molybdenum disulphide, mika etc. are used as solid lubricants.

Uses of graphite:-

- It is used to lubricate air compressores, railway track joints, food stuff industries, IC engines, open gears etc.
- Graphite mixed with oil called oil dag is used in IC engines.
- Graphite mixed with water called aqua dag is used in food industries.

2. **Liquid lubricants:-** These are also known as lubricating oils.

Examples: Petroleum oils, Animal and vegetable oil, Blended oil etc.

Uses of liquid lubricants:- Liquid lubricants are used when,

- The operating temperature is high.
- Speed of the rollers is high.
- The sealing arrangement is perfect to prevent the loss of oil.

3. **Semisolid lubricants:**

Semi-solid lubricants are gel-like substances which reduce friction between two moving surfaces.

Example: greases, Vaseline, waxes etc.

Uses of Grease :

⇒ Used where oil cannot remain in place due to high load, low speed, sudden jerks like rail axle.

⇒ In bearings and gears which work at high temperature.

⇒ where dropping of oil affects the machine ore products like production of papere, textile etc.

* Purepose of lubrication ore function of lubricants :-

(i) It reduces friction and minimizes weare and teare.

(ii) It reduces loss of energy.

(iii) It reduces noise pollution.

(iv) It increases the effieiency of engines.

(v) It enhances the durability of machinery Parts.

(vi) It reduces expansion of metals.

(vii) It acts as a coolant by removing heat of friction.