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Study of lubricants – physical properties, additives and their application



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Classification of Lubricants

1. Animal
2. Vegetable
3. Mineral
4. Synthetic



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Animal Lubricants

Lubricants with animal origin:

Tallow oil

Lard oil

Neat's foot oil

Sperm oil

Porpoise oil

These are highly stable at normal temperatures

Animal lubricants may not be used for internal combustion because they produce fatty acids



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Vegetable Lubricants

Examples of vegetable lubricants are:

Castor oil

Olive oil

Cottonseed oil

Animal and vegetable oils have a lower coefficient of friction than most mineral oils but they rapidly wear away steel



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Mineral Lubricants

These lubricants are used to a large extent in the lubrication of aircraft internal combustion engines

There are three classifications of mineral lubricants:

Solid

Semisolid

Fluid



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Synthetic Lubricants

Because of the high operating temperatures of gas-turbine engines, it became necessary to develop lubricants which would retain their characteristics at temperatures that cause petroleum lubricants to evaporate and break down

Synthetic lubricants do not break down easily and do not produce coke or other deposits



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Lubricating Oil Properties

Gravity

Flash Point

Viscosity

Cloud Point

Pour Point

Carbon-Residue Test

Ash Test



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Characteristics of Lubricating Oil

It should have the proper
body (viscosity)

High antifriction
characteristics

Maximum fluidity at low
temperatures

Minimum changes in viscosity
with changes in
temperature

High antiwear properties

Maximum cooling abilities

Maximum resistance to
oxidation

Noncorrosive