



Fuel

Fuel is a combustible substance containing carbon as major constituent, which gives out heat energy on burning. It contains carbon as the major constituent.

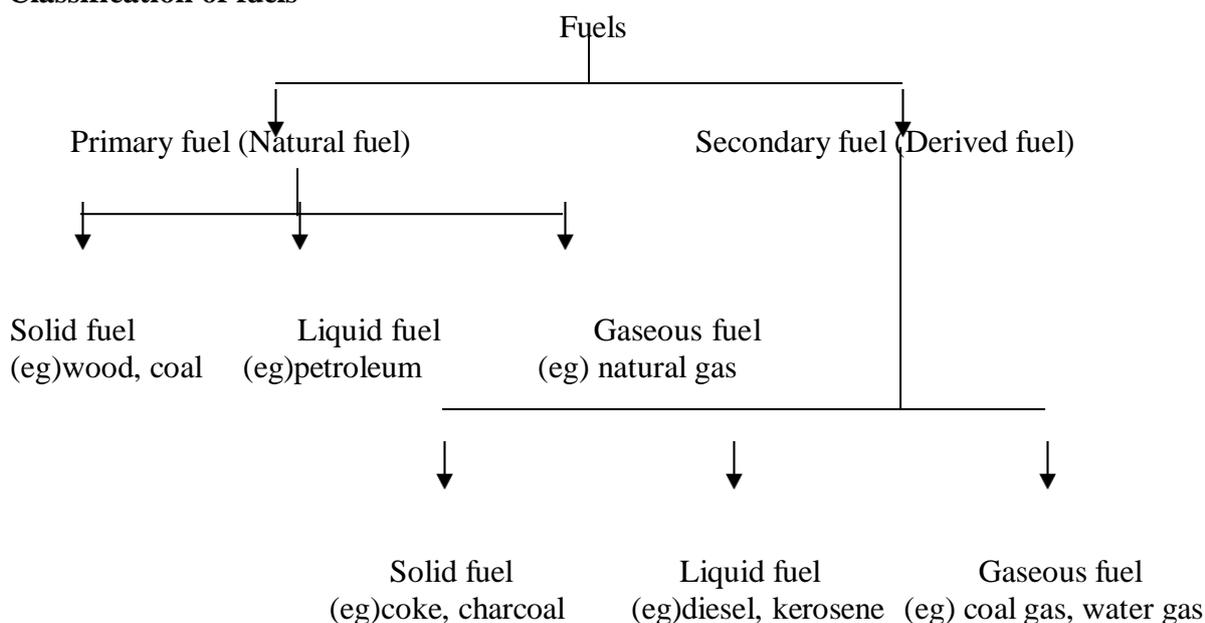


Characteristics of a good fuel:

A good fuel should have,

1. High calorific value.
2. Moderate ignition temperature and velocity of combustion.
3. Low moisture content, non-combustible matter.
4. Low cost.
5. The products of combustion must be harmless.
6. Easy to transport.
7. Combustion must be easily controllable.
8. Must not burn with much smoke.

Classification of fuels





Coal (Solid fuel)

Coal is a highly carbonaceous matter that is formed as a result of alteration of vegetable matter under favorable conditions.

- It consists of C, H, N, O & non-combustible inorganic matter.

Coalification or Metamorphism:

The process of alteration of vegetable matter into coal is called coalification.

Classification of coal (Varieties of coal)

(Moisture, volatile, H, O, N, S contents decreases)

Wood → Peat → Lignite → Bituminous coal → Anthracite



(Hardness, calorific value, carbon content increases)

Metallurgical coke

When bituminous coal is heated strongly in the absence of air the volatile matter escapes out and the mass becomes hard, strong, porous and coherent mass called metallurgical coke. This process of conversion of coal into coke is called **carbonization**.

When coal is heated strongly, the mass becomes soft, plastic and fuses to give a coherent mass, such type of coal is called **caking coal**.

But if the mass so produced is hard, porous and stronger, it is called **coking coal**.

Characteristics of metallurgical coke

Porosity

Coke should be highly porous so that oxygen will have intimate contact with carbon and the combustion will be complete and uniform.

Calorific value

Calorific value should be high.

Combustibility

The coke should burn easily.

Reactivity

Reactivity of coke should be low.

Cost

It should be cheap and readily available