

CALORIFIC VALUE

DEFINITION

“Calorific value refers to the amount of heat produced by unit volume of a substance by complete combustion.”

WHAT IS THE CALORIFIC VALUE?

Calorific value is the amount of heat energy present in food or fuel and which is determined by the complete combustion of specified quantity at constant pressure and in normal conditions. It is also called calorific power. The unit of calorific value is kilojoule per kilogram i.e. KJ/Kg.

Water vapour is generated in the combustion process and the heat should be recovered by using certain techniques. If the heat contained in the water vapour could be recovered then it has high calorific value. If heat contained in the water vapor could not be recovered when it has low calorific value.

The efficiency of fuel or food mainly depends on the calorific value. If the value is high, its efficiency will also be high. If the value is low, its efficiency would also decrease. Calorific value is directly proportional to its efficiency.

CALORIFIC VALUE OF FUEL

Here is the detailed list of fuels and their calorific values:

Fuel	Calorific Value Of Fuel(Approximately)
Cow Dung	8000
Wood	22000
Coal	33000
Biogas	40000
Diesel	45000
kerosene	45000
Petrol	45000
Methane	50000
LPG	55000

LPG has more calorific value when compared to diesel, petrol, and kerosene.

Importance of Calorific Value

It is very important to have a knowledge of the calorific value of fuel to carry out our day-to-day activities. This knowledge helps us to determine the amount of energy we transport. The gas shippers and suppliers require this information to bill gas consumers. It also helps to determine transportation charges of gas shippers and suppliers.

The human body requires calories to carry out daily activities. Without calories, the body would stop working and the cells in the body would die. But, if people consumed only a specific amount of calories each day, they would lead a healthy life. Too high or too low calorie consumption eventually leads to health problems.

TYPES OF CALORIFIC VALUE –

There are two types of calorific value –

- Higher calorific value (HCV)
- Lower calorific value (LCV)

Higher calorific value is also known as gross calorific value. (GCV)

Lower calorific value is also known as net calorific value (NCV)

Higher Calorific Value (HCV) or Higher Heating Value (HHV) or Gross Calorific Value: When 1 kg of a fuel is burnt, the heat obtained by the complete combustion after the products of the combustion are cooled down to room temperature (usually 15 degree Celsius) is called higher calorific value of that fuel.

Lower Heating Value (LLV) or Lower Calorific Value (LCV) or Net Calorific Value: When 1 kg of a fuel is completely burned and the products of combustions are not cooled down or the heat carried away the products of combustion is not recovered and the steam produced in this process is not condensed then the heat obtained is known as the Lower Calorific Value.

Relation between Higher and Lower Calorific Value.

Answer: The amount of Lower Calorific Value can be obtained by subtracting the amount heat carried away by the combustion products especially the heat carried away by the steam

$LCV = HCV - \text{Heat carried away by the steam.}$

Fuel Calorific Values

Natural gas	12500 kcal/kg
Propane-butane	11950 kcal/kg
Diesel	10000 kcal/kg
Fuel oil	9520 kcal/kg
Brown coal	3500 kcal/kg
Woods	2500 kcal/kg
Electricity	860 kcal/kWh