

# PHYSICS

## CLASS NOTES FOR CBSE

### Chapter 08. Sources of Energy

A source of energy is one which can provide adequate amount of energy in a convenient form over a long period of time.

#### 01. Non-Renewable Sources of Energy

Those sources of energy which have accumulated in nature over a very, very long time and cannot be quickly replaced when exhausted are called non-renewable sources of energy. Non-renewable sources of energy are dug out from the earth.

#### 02. Renewable Sources of Energy

Those sources of energy which are being produced continuously in nature and are inexhaustible, are called renewable sources of energy. For example, wood is a renewable source of energy because if trees are cut from the forests for obtaining wood, then more trees will grow.

#### 03. What is a Good Source of Energy

- (i) Which would do a large amount of work per unit mass (or per unit volume).
- (ii) Which is cheap and easily available.
- (iii) Which is easy to store and transport.

#### 04. Characteristics of an Ideal Fuel (or Good Fuel)

- (i) **It should have a high calorific value** : In other words, an ideal fuel (or good fuel) is that which gives us more heat per unit mass.
- (ii) **It should burn without giving out any smoke or harmful gases** : That is, an ideal fuel (or good fuel) is that which does not pollute air on burning by giving out smoke or poisonous gases.



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- (iii) **It should have a proper ignition temperature :** So that it can be burned easily. The ignition temperature of an ideal fuel (or good fuel) should neither be too low nor too high. Because if the ignition temperature of the fuel is very low, then the fuel will catch fire too easily and hence it will be very unsafe to use it. On the other hand, if the ignition temperature is too high, then it will be very difficult to light the fuel.
- (iv) **It should be cheap and easily available :** That is, an ideal fuel (or good fuel) is that which is not expensive and which is available in plenty everywhere.
- (v) **It should be easy to handle, safe to transport, and convenient to store :** That is, an ideal fuel (or good fuel) is that which does not create any safety risks during handling, during its transportation from one place to another or during its storage.
- (vi) **It should not leave much ash behind after burning :** That is, an ideal fuel (or good fuel) should have low percentage of non-volatile materials which do not burn, so that it may burn completely without leaving much ash.
- (vii) **It should burn smoothly :** That is, an ideal fuel (or good fuel) should have a moderate rate of combustion, and burn at a steady rate. In other words, the fuel should not burn either too fast or too slow.

## 05. Conventional Sources of Energy

The traditional sources of energy which are familiar to most people are called conventional sources of energy.

## 06. Fossil Fuels

A natural fuel formed deep under the earth from the pre-historic remains of living organisms (like plants and animals) is called a fossil fuel. Fossil fuels are the major source of energy for generating electricity in power plants.

## 07. Coal

Coal is a complex mixture of compounds of carbon, hydrogen and oxygen, and some free carbon. Small amounts of nitrogen and sulphur compounds are also present in coal. A lot of heat is produced during the burning of coal which makes it a good fuel.

## 08. Petroleum

The crude oil petroleum is a complex mixture of several solid, liquid and gaseous hydrocarbons mixed with water, salt and earth particles.



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