

Just Considered, everything other than the vessel in which the reaction is taking place is called the Surrounding.

There are three types of systems that is open system, closed system and isolated system

1 Open System: \rightarrow A system which can exchange matter and energy with the surroundings is called an open system. For example: \rightarrow An open test tube in which a reaction is taking place is an open system. It can exchange heat with the surroundings and gaseous products can escape into the surroundings.

2 Closed System: \rightarrow A closed system can exchange energy with the surroundings but not mass. If a reaction occurs in a sealed bulb

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Some of the best Malleable metals

2 Metals are ductile \rightarrow The metals such as copper, aluminium, magnesium and iron are available in the form of wires. The property which allows the metals to be drawn into thin wires is called ductility. It is another important characteristic property of metals. Most of the metals are ductile. But all the metals are not equally ductile.

Some metals are more ductile than the other. Gold is the most ductile metal.

For example, just 1 gram of gold can be drawn into a thin wire about 2 kilometres long. Silver is also among the best ductile metal.

Magnesium wires are used in science experiments in the laboratory.

From the above discussion, we conclude

Conducted from one end of the metal to its other end. Thus heat conductivity (or thermal conductivity) is a characteristic property of metals.

4 Metals are good conductors of electricity
By saying that metal are good conductors of electricity, we mean that metals allow electricity (or electric current) to pass through them easily. Metals are good conductors of electricity because they contain free electrons.

These free electrons can move easily through the metal and conduct electric current.

Thus, electrical conductivity is another characteristic property of metals. From the above discussion we conclude that metals are good conductors of heat and electricity.

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Thermodynamics

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Have we define a some basic terms used in any discussion of energetics or chemical thermodynamics. It is essential for start a systematic study, that is

a System: → Have the system means that part of the universe which we are interested in investigating for example if we are studying a particular reaction in a vessel, then the vessel, the reactants and the products constitute the system.

b Surroundings: → Everything other than the system or the part of the universe other than the system is called the surroundings. In the example we have

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Physical Properties of Metals class XII

5 Metals are lustrous: → By saying that metals are lustrous we mean that they have a shining surface for example, gold, silver and copper are shiny metals and they can be polished. The property of a metal of having a shining surface is called metallic lustre. The shiny appearance of metals makes them useful in making jewellery and decoration pieces. For example, gold and silver are used for making jewellery because they are bright and shiny.

6 Metals are generally hard: → Most of the metals are hard. But all the metals are not equally hard. The hardness varies from metal to metal.

7 Metals are strong: → By saying that metals are strong we mean that

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they can hold large weights without snapping (without breaking)

§ Metals are solids at room temperature. Most of the metals like iron, copper, aluminium, silver and gold etc, are solid at the room temperature, only one metal, mercury, is in liquid state at the room temperature.

§ Metals have high melting points and boiling points. → for example iron metal has a high melting point of 1535°C .

This means that solid iron melts and turns into liquid iron on heating to a high temperature of 1535°C , copper metal has also a high melting point of 1083°C .

exception only sodium and

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which can exchange heat with the surroundings but not matter, the bulb constitutes a closed system.

3 Isolated System → An isolated system can neither exchange matter nor energy with the surroundings. A thermos flask filled with hot tea is an isolated system.

that Metals are malleable and ductile. It is due to the properties of malleability and ductility. that metals can be given different shapes to make various articles needed by us.

3 Metals are good conductors of heat. → Metal allow heat to pass through them easily. when a metal is heated, its atoms gain energy and vibrate more vigorously. This energy is transferred to the electrons present in the atoms. These electrons can move through the metal. when the energetic electrons move through the metal they transfer energy to other electrons and atoms of the metals some distance away from the end that is being heated. In this way heat is

Thermodynamics is the important chapter of physical chemistry. In this chapter we can study about deals with energy changes that take place during a chemical reaction. In any chemical reaction, the atoms of the reactants are rearranged to form the products. This involves the breaking and forming of bonds. You know that energy is required to break bonds and that it is released when bonds are formed. It should be happens when energy changes. So we can understand that a chemical reaction involving the dissociation and formation of bonds must be accompanied by energy changes.

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⑩ potassium metals which have low melting and boiling point.

⑩ Metals have high densities. \Rightarrow By example that metals are heavy substances. For example that metals are heavy substances. For example 7.8 g/cm^3 is the density of iron which is quite high.

⑪ Metals are Sonorous. \Rightarrow Sonorous means Capable of producing a deep or ringing sound.

If we suspend a big piece of a metal and strike it with an object, we will find that it makes a ringing sound. and we say that the metal is Sonorous. It is due to the property of Sonorousness that metals are used for making bells, and strings (wires) of musical instruments like Sitar and violin.

~~Kinetic Equation of Gases~~

Such as the energy change accompanying a reaction may appear in different forms we know that when fuels are burnt, for instance, energy appears as heat and light. we know that when the chemical reaction in a battery occurs then the battery produces electrical energy. And when a ~~gran~~ grenade explodes, the chemical reaction produces heat, light sound and kinetic energy. for example we consider the following reactions:

