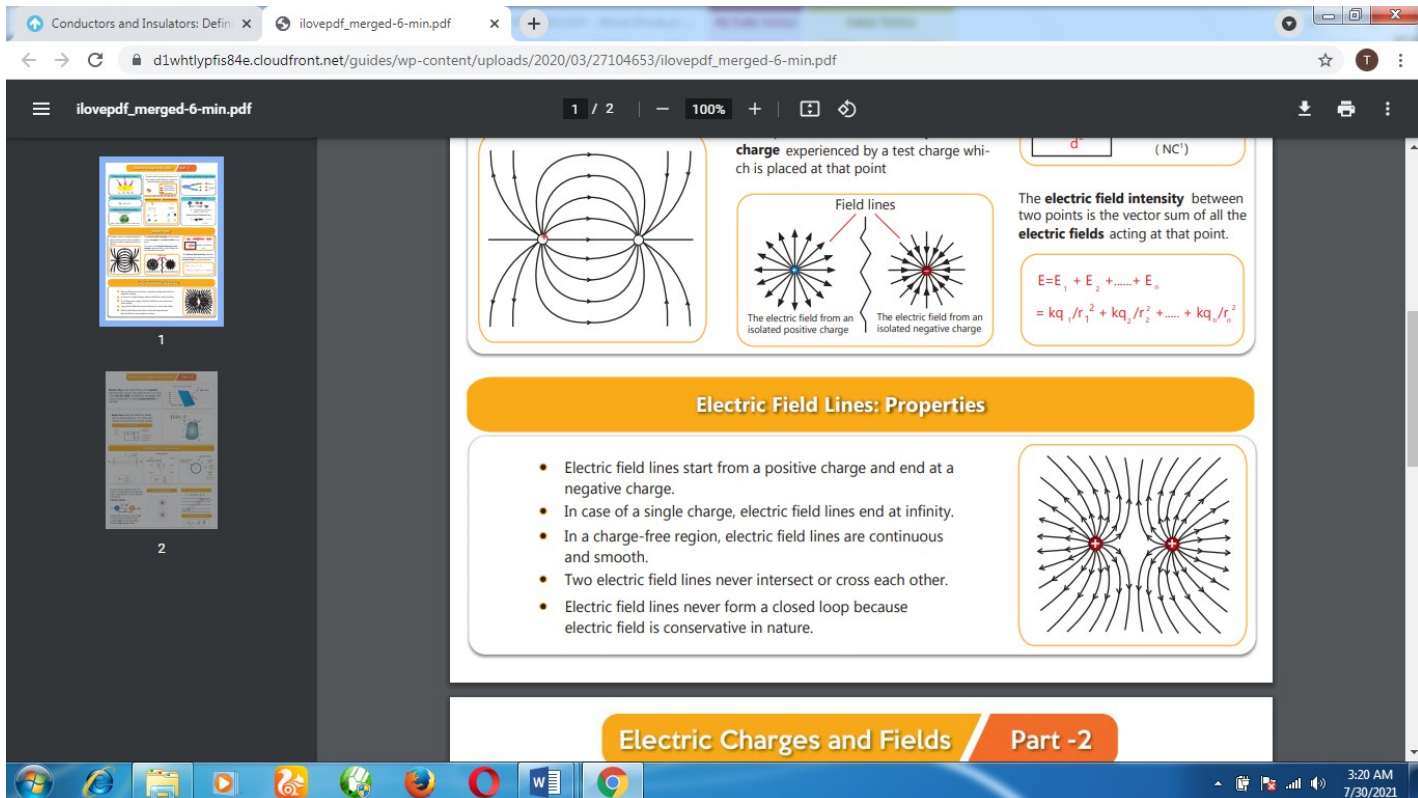


MAGNETISM AND MAGNETS



NARRATION

Magnetism is a force field that acts on some materials but not on other materials. Physical devices which possess this force are called magnets. Lodestone (an iron compound) is a natural magnets which was discovered centuries ago. The magnetic we use today are all manufactured. They are made from various alloys containing elements like copper, nickel, aluminum, iron, and cobalt. These magnets are much, much stronger than the natural lodestone magnet

MAGNETIC FIELDS, FLUX, AND POLES

The force of magnetism is referred to as a magnetic field. This field extends out from the magnet in all directs, as illustrated bellow. The lines extending from the magnet represent the magnetic field. The invisible lines of force that make up the magnetic field are known as magnetic flux. The lines of force in represent the flux. Where the lines of flux are dense, the magnetic field is strong, Where the lines of flux are sparse, the field is weak. The lines of flux are most dense at the ends of the magnet: therefore the magnetic is strongest at the ends of the magnet.

NARRATION

What is Magnetism?.

Magnetism is the force, present in and between all objects, that is **produced by the motion of electrons** – and that results in the attraction and repulsion of different objects. It is a ‘noncontact’ force that affects every single different object in the world, to a greater or less extent, and that is the result of the movement of these subatomic particles, electrons, and their electric charge.

Electrons, Magnetic Moments, and the Three Types of Magnetism.

Every atom in a substance is made up of particles, including the neutrons, electrons, and protons. In magnetism, it is the electrons that are doing the work. These tend to orbit the neutrons, and they each have their own charge – either positive or negative. What generally happens is that **the electrons ‘pair’ with those of an opposite charge** – meaning that an electron with a negative charge would pair with one that is positive – and so the material would be relatively stable, as each of the charges would cancel the other out. When substances have paired electrons, we refer to it as diamagnetism.

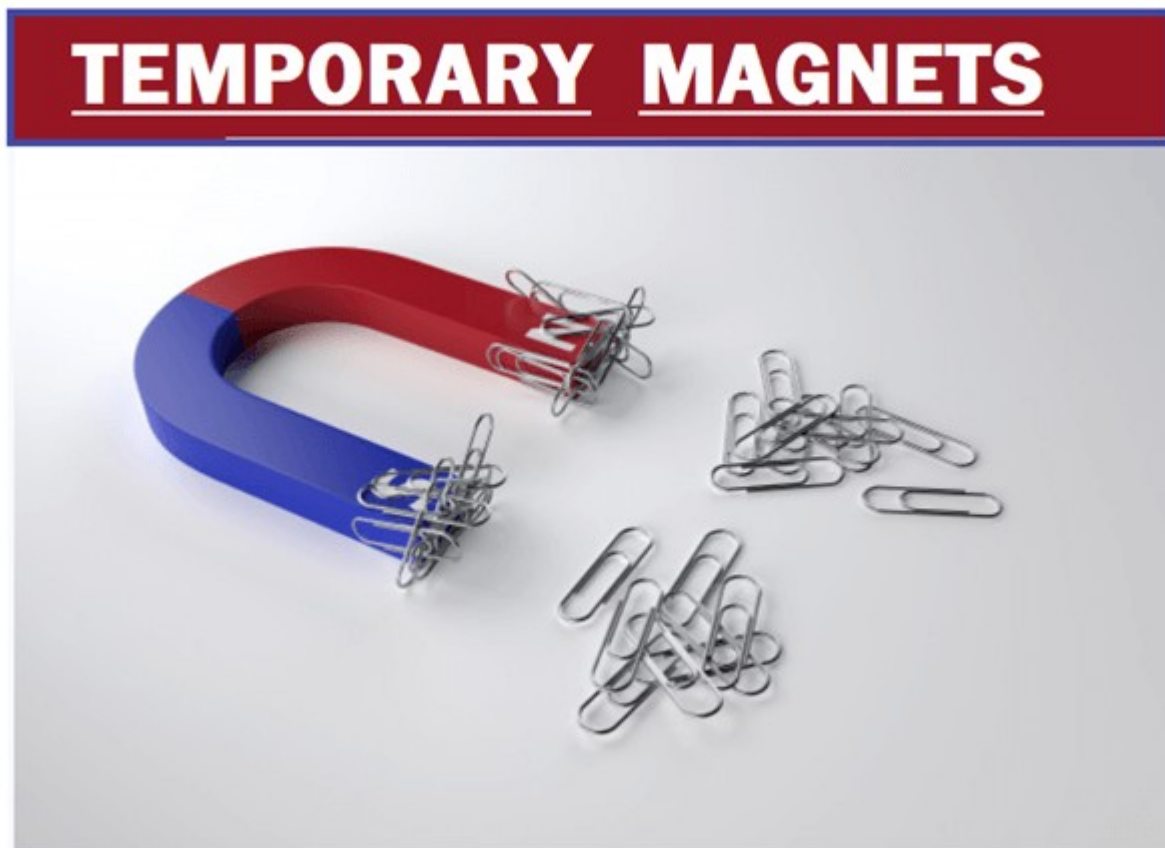
Magnetic Materials

Materials that are attracted by magnetic fields (and materials from which magnets can be made) are called magnetic materials. The most common magnetic materials are iron, iron compounds and alloys containing iron or steel. These magnetic materials are also called ferromagnetic materials. (Ferro is a prefix that means ‘iron.’) A few materials, such as nickel and cobalt are slightly magnetic. They are attracted by strong magnets. Compared with iron.

Materials that are not attracted by magnets are called nonmagnetic materials. Most materials, both metallic and nonmetallic are in this category. A magnet does not attract metals like copper, brass, aluminium, silver, zinc, and tin. Neither does a magnet attract non metals like wood, paper, leather, plastic, and rubber. A nonmagnetic material does not stop magnetic flux.

TEMPORARY AND PERMANENT MAGNETS

Temporary Magnets



We have seen a variety of magnets around us in our lives, unlike a bar magnet or a horseshoe magnet. Almost all the magnets that you come across are artificial and possess a magnetic field around them. Though our scientists are constantly trying to knock the augmentation of the magnetic force and why it exists. There are various shapes, types, and forms of a magnet, and each possesses its unique characteristics.

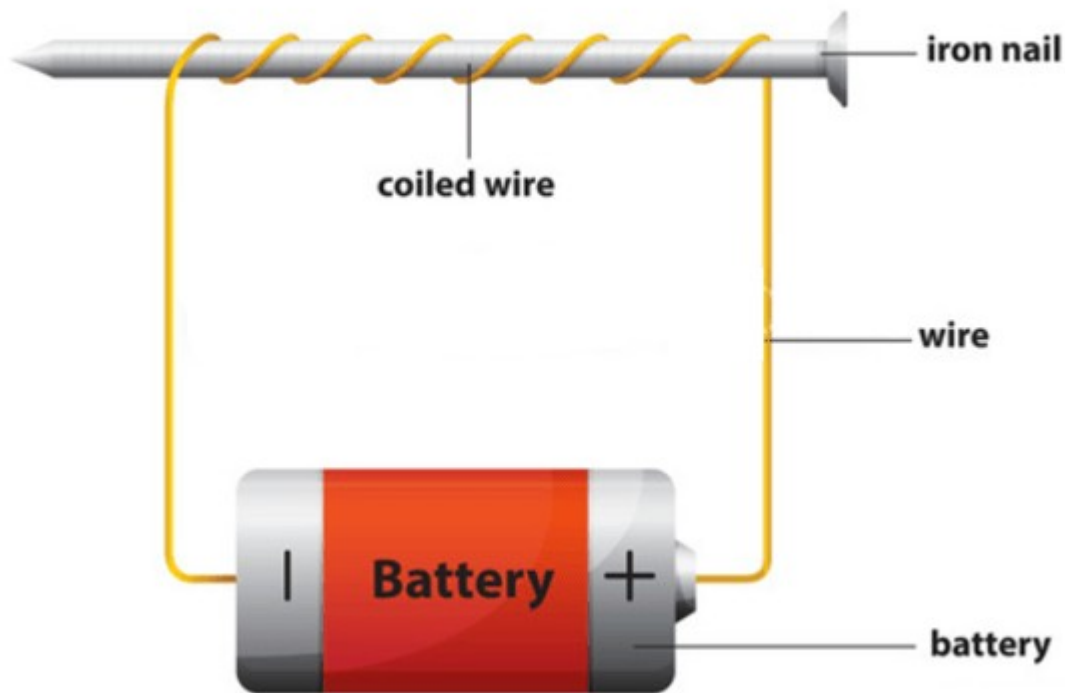
In this course, we will cover the definition of a temporary magnet, with detailed information of its existence, its types, the process of creating it, and demagnetize it to provide you a better insight into the topic.

What is a temporary magnet?

Temporary magnets are a type of magnet that occurs artificially (human-made) in nature. These magnets are created from soft metals. Magnetism can be induced in a magnetic material in the presence of a permanent magnetic field or electronic current, or any other external magnetic field. Those materials are known as Permanent magnets.

Types of Temporary Magnets

Simple Electromagnet



there typical example of a temporary magnet is an electromagnet that preserves the magnetic properties whenever electrical current is passed through it. However, the strength and polarity of Electromagnets may vary depending on the coil wire (made up of iron core) used and various other factors. You have electromagnets all across you, and you even used them in the form of everyday objects such as doorbells, motors, etc.

Difference between Permanent Magnets & Temporary Magnets

Temporary Magnets	Permanent Magnets
1. Temporary Magnets do not possess the ability to preserve their magnetic force on their own.	1.) Permanent Magnets always preserve their magnetic field or electric force.
2. They usually need an external source of a magnetic field to fetch their power.	2.) They do not need any external source of a magnetic field to fetch their power.
3. The magnetic materials of temporary magnets are considered to be hard	3.) The magnetic materials of a permanent magnet are also considered to be hard.
4. Temporary Magnets can function in the presence of magnetic force or electric current, and they stop their functioning in their absence.	4.) Permanent Magnets are constructed with the help of another strong magnetic force and retain their functioning permanently.

These magnets lose their magnetic property once you remove the magnetic field. For Example, Paperclips, iron nails, and similar materials act as temporary magnets in the presence of an external magnetic field.

When a magnetic material is put in the magnetic field of a magnet, it becomes magnetized. All the domains are aligned in an orderly fashion. The magnetic field of one domain supports the field of the next domain. The magnetic materials became a magnet when it was magnetized. Whether it is temporary or permanent magnet depend on how it reacts when removed from original magnetic field. If most of the domains remain aligned, the magnetic material becomes a permanent magnet. Many alloys of iron, especially those that contain more than 0.8 percent carbon, become permanent magnets. Most tools, such as screwdrivers, pliers, and hacksaw blades contain more than 0.8 percent carbon. They can become permanent magnets. Capable of attracting other magnetic materials. Most permanent magnets are made of alloys (such as alnico) which can be highly magnetized. Ceramic materials also make strong permanent magnets. Permanent magnets are used to make door catches and magnetic poles for loudspeakers, electric meters and motors.

MAGNETIZING MAGNETIC MATERIALS

Magnetic materials can be magnetized by the magnetic fields of either a permanent magnet or an electromagnet, when the switch is closed , the field from the coil magnetizes the tool steel in the screwdriver, such tool steel makes a permanent magnet. the screwdriver remains magnetized after the switch is opened. Now the screwdriver can be used to attract other magnetic materials such as steel screws.