

# 4 Types of Magnet

- Natural
- Temporary
- Permanent
- Electromagnet

# Temporary Magnets

- Temporary magnets are those which act like a permanent magnet when they are within a strong magnetic field, but lose their magnetism when the magnetic field disappears. Examples would be paperclips and nails and other soft iron items.

# Permanent Magnets

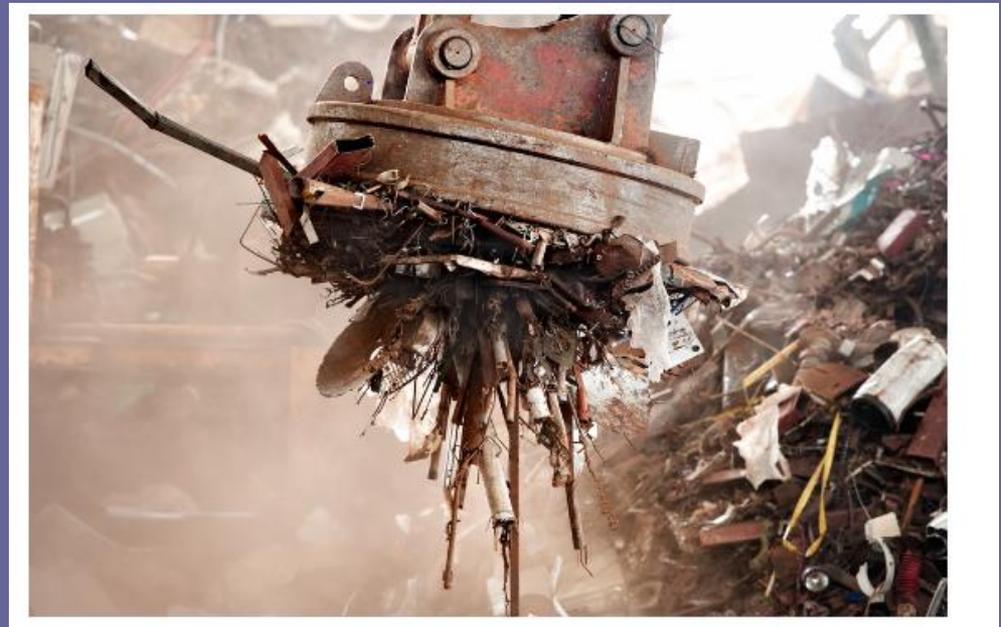
- Permanent magnets are those we are most familiar with, such as the magnets hanging onto our refrigerator doors. They are permanent in the sense that once they are magnetized, they retain a level of magnetism.
- Here is a fridge door covered with permanent magnets.



# Electromagnets

An electromagnet is a tightly wound coil of wire, usually with an iron core, which acts like a permanent magnet when electricity flows through the wire. They can be turned on and off.

Here is a large electromagnet picking up material in a junk yard.



# Materials used for permanent magnets

Here are 2 types of permanent magnets that we have in school:

Alnico

Ceramic

If its **Ceramic**, it'll have a big black magnet on the bottom. If its **Alnico**, the pole pieces will be a gray/silver colour.

# Alnico Magnets

Alnico is made of a compound of **aluminium, nickel and cobalt**. This magnet is least affected by temperature, but is easily demagnetized.

Bar magnets and horseshoe magnets made of alnico will easily become demagnetized by other magnets and by dropping them.



# Ceramic Magnets

Ceramic magnets are the most popular types of magnets available today. The flexible magnets we use are a type of ceramic magnet, with the magnetic powders fixed in a flexible binder.

This is a fairly strong magnet, not as easy to demagnetize as alnico.



You may find a ceramic magnet which looks like a black disc, on the back of a fridge magnet.

# Shapes

- Permanent magnets can be made in most any shape imaginable. They can be made into round bars, rectangular bars, horseshoes, rings or donuts, disks, rectangles, multi-fingered rings, and other custom shapes. Some are cast into a mold and require grinding to achieve final dimensions. Others start as a powder which is pressed into a mould.