

LA MATERIA Y SUS PROPIEDADES

MATTER AND ITS PROPERTIES



3ºESO

@miguetecnologia
Departamento de Tecnología



1

MATTER AND ITS PROPERTIES

1. MATTER

1.1 RAW MATERIALS

1.2 MATERIALS

2. PROPERTIES OF MATERIALS

2.1 GENERAL PROPERTIES

2.2 SPECIFIC PROPERTIES

Haz clic sobre los códigos QR para ver los vídeos.



1. MATTER

Haz clic sobre los
códigos QR para
ver los vídeos.

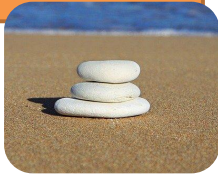


MATTER is anything that
has mass and volume, and
therefore takes up space.

SOUND isn't matter

MATTER can appear in nature in
three different states:

SOLID



LIQUID



GAS



21

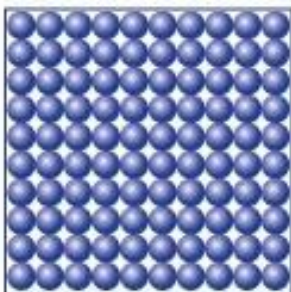
1. MATTER

What is matter made of?

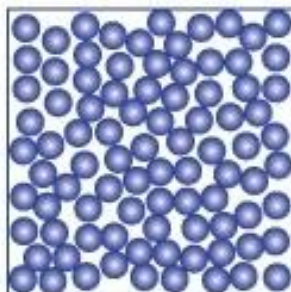


It is made of particles

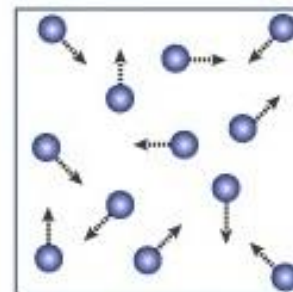
The minimum portion ("tiny brick") that make up matter



Solid



Liquid



Gas



1.1. RAW MATERIALS

Raw materials are those substances that are extracted **directly from nature**, are **not processed** and from which we obtain the materials used in technology.

ANIMAL

They are those that come from animals such as leather, silk, wool ...



VEGETABLE

Raw materials that come from plants and trees such as wood, cotton, cork ...



MINERAL

Those that come from the **earth's crust** such as sand, **clay**, oil or other minerals.



1.2. MATERIALS

MATERIALS are the resources obtained from raw materials from which we can make any technological product.



1.2 MATERIALS

Something made of man-made material (not natural elements) such as **plastic** can be described as a **synthetic material**. E.g. Some soccer stadiums have synthetic grass.



25

The most used technological materials are classified into:

1.2. MATERIALS

Woods		Metals	Plastics
They are obtained from the trunks of trees. E.g. natural and artificial wood, cork, paper....		They are obtained from minerals, which are part of rocks. Iron, steel, copper, ...	They are obtained synthetically from petroleum. They include PET, PVC, Polyester, Silicone ...
Stone, ceramic and glass		Textiles	
They are obtained from sands, rocks and clays. They are used in construction. Natural stones, ceramics, glass ... belong to this group.		They are made by the union of many fibers such as wool, cotton, silk, lycra or nylon	



26

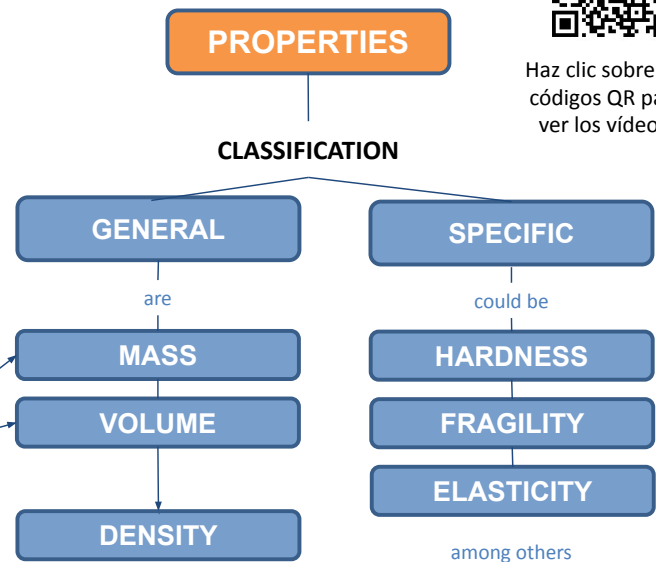
2. PROPERTIES OF MATTER



Haz clic sobre los códigos QR para ver los vídeos.

The properties of materials are the set of characteristics that allow them to be differentiated and predict their behavior under certain circumstances.

Any type of matter has two things in common with the rest: mass and volume.



2.1 GENERAL PROPERTIES

MASS

Amount of matter. Grams [g] or kilograms [kg]



VOLUME

Space occupied by matter. liters [l] or cubic meters [m³]



Haz clic o escanea el código QR para ver el vídeo

[Fuente de la imagen ESERO](#)

2.1 GENERAL PROPERTIES

Density

The relationship between the mass of a substance and its size. Plastics and wood have a low density, whereas metals and stone materials usually have a high density.

Haz clic o escanea el código QR para ver el video



$$\rho = \frac{m}{v}$$

density (pointing to ρ)

mass (pointing to m)

volume (pointing to v)



Foto de Santiago Manuel De la Colina en Pexels



29

2.2 SPECIFIC PROPERTIES

Toughness Vs. Brittleness

Toughness (Impact resistant) is the capacity not to break when hit.
Brittleness (fragility) is the opposite.



30

2.2 SPECIFIC PROPERTIES

HARDNESS Vs. SOFTNESS

Hardness is the resistance of a material to being scratched. The opposite of hardness is **softness**.



GYPSUM

HARDNESS



DYMOND



Haz clic o escanea
el código QR para
ver el vídeo

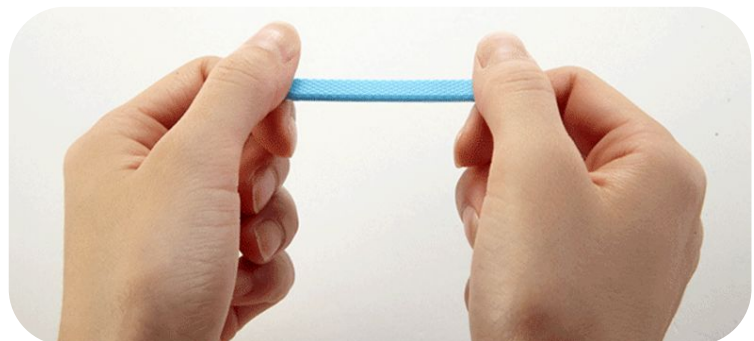


31

2.2 SPECIFIC PROPERTIES

Elasticity

Elasticity is the property of materials to regain their original shape when the force that deformed them stops acting.



32

2.2 SPECIFIC PROPERTIES

Plasticity

In contrast to elasticity, a plastic material remains in its deformed state when the force that deformed it stop acting.



Clay

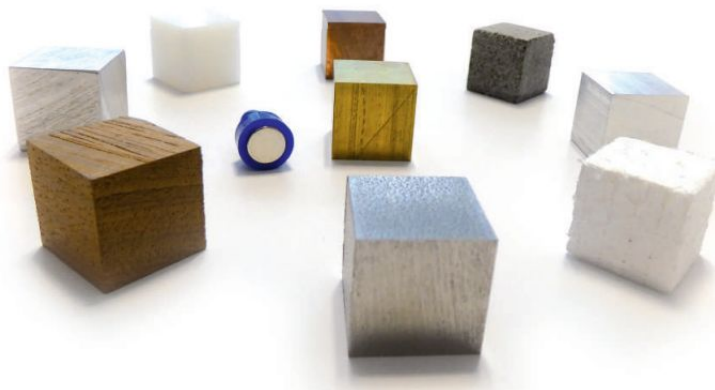


33

2.2 SPECIFIC PROPERTIES

Magnetism

It is the ability of certain materials to attract or be attracted to some metals such as iron.



Haz clic o escanea el código QR para ver el vídeo



34

2.2 SPECIFIC PROPERTIES

Thermal conductivity

It is the ability to transmit heat, for example metals. Otherwise we are talking about **THERMAL INSULATORS**, for example ceramic or plastic.

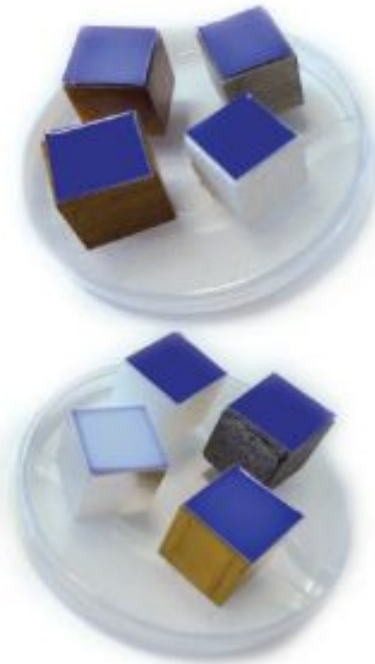


Imagen de [BlenderUnknown](#) en [Pixabay](#)



35

2.2 SPECIFIC PROPERTIES

Electric conductivity

Electrical conductivity is the ability of matter to allow the flow of electrical current through its particles.



Fuente de la imagen [ESERO](#)



36

Fuente imágenes: PIXABAY, freepng y Banco recursos INTEF

Esta presentación se distribuye bajo licencia Reconocimiento –
Nocomercial - Comparteigual Creative Commons 4.0 Internacional



NUEVA TECNOLOGÍA por *@miguetecnologia* se distribuye bajo
una Licencia Creative Commons
Atribución-NoComercial-CompartirIgual 4.0 Internacional.
Basada en una obra en
<http://blogmiguetecnologia.blogspot.com.es/>.

