









HARDNESS: It's the resistance of a material to be scratched or penetrated. If the material has a high hardness, we say it is hard; if it has a low hardness, we say it is soft.

DENSITY: It's the relationship between the mass of a material and the volume it occupies. Therefore, the density of a material is related to the weight of the object. That is, when a material has a high density, the object usually is heavy; and when a material has a low density, the object usually is light.

TENACIDAD (TENACITY or TOUGHNESS) / FRAGILIDAD (FRAGILITY or BRITTLINESS):
It's the capacity of a material to resist impacts or hits without breaking. The opposite property is called fragility or brittleness. Therefore, when the material has got a high tenacity we say it is tenacious or tough, and when the material has got a low tenacity we say it is fragile or brittle.

RESISTENCIA MECÁNICA (MECHANICAL RESISTANCE or STRENGTH):
It's the capacity of a material to resist forces without deforming excessively or breaking. Depending on the force that acts on the material, we can distinguish between tensile or traction strength, compression strength, bending strength, torsion strength and shear strength.

ELASTICIDAD (ELASTICITY) Y FLEXIBILIDAD (FLEXIBILITY)
It's the capacity of a material to change its form when a force acts on it and return to its original form when the force stops. The more deformation presents a material, the more elastic it is. But when the material scarcely deforms, we say it is rigid or stiff.
Flexibility is the elasticity of a material when the force that acts on it tends to bend it.

PLASTICITY (PLASTICIDAD):
It's the ability of a material to change its form when a force acts on it and stay with that deformation. Normally, materials with plasticity also have ductility and malleability.

DUCTILITY (DUCTILIDAD):
It's the ability of a material to change its form into filaments or wires when the material is stretched. When a material presents ductility we say it is ductile. If not, we say it is a non-ductile material.

MALLEABILITY (MALEABILIDAD):
It's the ability of a material to change its form into sheets or films when the material is compressed. When a material presents malleability we say it is malleable. If not, we say it is a non-malleable material.

THERMAL /ELECTRICAL/ ACOUSTIC CONDUCTIVITY (CONDUCTIVIDAD TÉRMICA/ELÉCTRICA/ACÚSTICA):
It's the capacity of a material to transmit heat, electricity or sound. Those materials that transmit heat, electrical current or sound are conductors, and those that don't transmit heat, current or sound are insulators.

OPTICAL PROPERTIES: TRANSPARENCY, TRANSLUCENCE AND OPACITY (PROPIEDADES ÓPTICAS: TRANSPARENCIA, TRANSLUCENCIA Y OPACIDAD):
Transparency is the property of those materials that allow light to pass through them, so it is possible to see clearly through them. They are transparent materials.

Translucency is the property of those materials that allow some light to pass through them, but it is not possible to see clearly through them. They are translucent materials.
Opacity is the property of those materials that don't allow light to pass through them, so it is not possible to see through them. They are opaque materials.

PERMEABILITY AND POROSITY (PERMEABILIDAD Y POROSIDAD)

It's the capacity of a material to filter water or other liquids through it. When a material has permeability, we say it is permeable; if not, we say it is impermeable.
Porosity is the ability of a material to absorb liquids or gases. When a material has porosity, we say it is porous. Normally, permeability and porosity are related properties, so a permeable material usually is also porous.

MAGNETISM (MAGNETISMO):

It's the capacity of some materials, such as iron, to attract or repel metals.

FUSIBILITY AND MELTING POINT:

Melting point is the temperature at which a solid material changes to the liquid state.
Fusibility is the property of a material to melt (change from solid to liquid state) at the melting point.
Materials that don't melt, but burn, are combustibles.

MOLDABILITY:

It's the ability of some materials to adopt the form of a mould.

OXIDATION OR CORROSION RESISTANCE

It's the property of a material to change its composition under the presence of water or oxygen. Some materials are easy to oxidize, and others are stainless.

CHEMICAL RESISTANCE

It's the capacity of a material to resist the action of chemical substances.

WELDABILITY:

It's the ability of some materials to join others through the melting of them or of a third material. Some materials are weldable and others are non-weldable.

MACHINABILITY:

It's the ability of a material to be shaped by using a cutting tool or machine. Some materials are more machinable than others.

SENSORY PROPERTIES: COLOUR, SHINE AND TEXTURE.

Sometimes, these properties can be important for the use of the material in an object.

ECOLOGICAL PROPERTIES: TOXICITY, RECYCLABILITY AND REUSABILITY.

Before using a material for making an object, we have to make sure it is not toxic.
Some materials are easier and cheaper to recycle than others.
Some materials are able to reuse many times, while others are not able to reuse.