

MECHANICAL PROPERTIES

Mechanical Property	Definition
Hardness	Resists being scratched or deformed
Elasticity	Returns to its original after the stress
Resilience	Resists shocks without breaking
Ductility	Can be stretched without breaking
Malleability	Can be flattened or bent without breaking
Stiffness	Keeps their shape when subjected to various constraints

MATERIALS

➤ Wood

Wood is a material obtained by harvesting and processing trees.

Modified Wood: Pieces of wood (shavings etc) mixed with glue or other substances.

➤ Metals

Metals are naturally occurring; they are usually shiny and good conductors of electricity and heat.

Alloy: The result of mixing a metal with one or more metallic or non-metallic substances.

Certain metals are valued for their ductility and malleability.

➤ Plastics

Plastic is a manufactured material made of polymers. Most plastics come from petroleum or gas.

Plastics can be easily moulded and can be shaped into anything. Once they are moulded, plastics keep their new shape.

Different types of woods, metals and plastics have different mechanical properties.

For example:

	Steel (an alloy)	Oak (wood)	Copper (metal)
Hardness	√	√	
Elasticity		√	
Resilience	√	√ (with adequate moisture)	
Ductility			√
Malleability	√	√ (when heated)	√
Stiffness			
Tensile strength	√	√	

BASIC MECHANICAL FUNCTIONS

Technical objects are made up of many different parts. These parts often work together and each has a specific function.

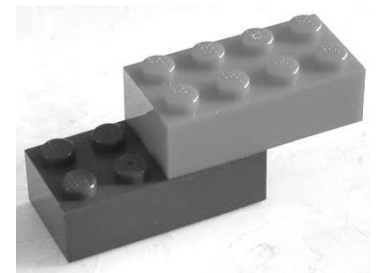
GUIDES

Guiding is the mechanical function performed by any component that controls the motion of one or more moving parts.



LINKS


A link connects, fastens, or puts together two or more components of a technical object.



GUIDING

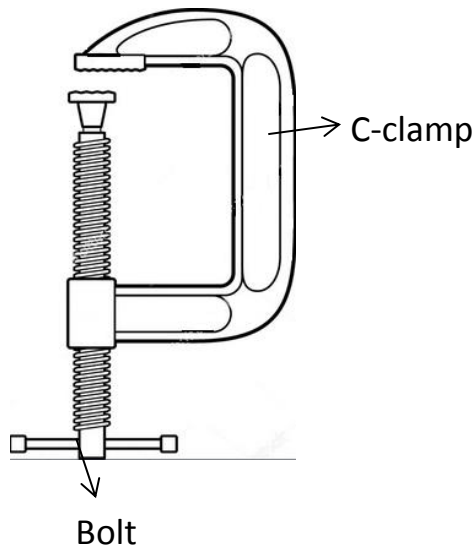
There are two types of guides:

a) **Translational Guide:** allows parts to slide up and down

(or left to right) 

b) **Rotational Guide:** allows part to move (turn) around an

axis 



Example:

The bolt is guided by the _____

What type of guide is this?

LINKS

Types of Links		
1	Direct Link	Two parts hold together without a linking component
	Indirect Link	The parts require a linking component to hold them together.
2	Rigid Link	The linking component or surface is rigid (doesn't move).
	Flexible Link	The linking component or surface can be deformed.
3	Removable Link	The linked parts can be removed without damaging their surface or the linking component.
	Non-removable	It damages the linked parts when separating them.
4	Complete Link	Prevents the linked parts from moving on their own (they can't move independently from each other).
	Partial Link	At least one part can move independently of the other parts.