



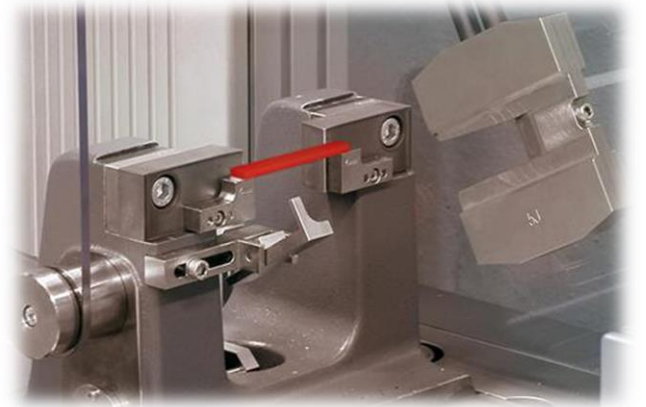
IMPACT PROPERTIES TEST DIFFERENCES

CHARPY IMPACT STRENGTH (ISO 179)

- Usually used with semi rigid materials
- Pendulum with known force swings downwards
- Measured with kJ/m^2
- Sample is placed horizontally
- Has Notch (Specimen 1eA) or no Notch (Specimen 1fU)

Typical values: (Notched samples)

- LDPE $\approx 40 \text{ kJ/m}^2$
- HDPE $\approx 10 \text{ kJ/m}^2$
- PA6 $\approx 7 \text{ kJ/m}^2$
- UHMWPE $\approx 100 \text{ kJ/m}^2$

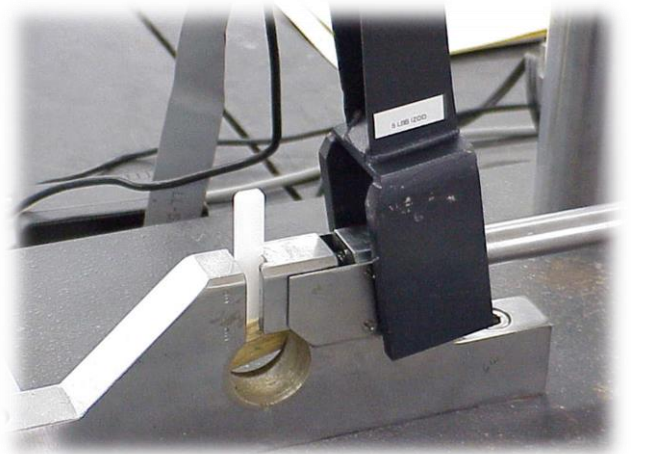


IZOD IMPACT STRENGTH (ISO 180)

- Usually used with semi rigid materials
- Pendulum with known force swings downwards
- Measured with kJ/m
- Sample is placed vertically
- Always has Notch

Typical values:

- LDPE $\approx 1 \text{ kJ/m}$
- HDPE $\approx 0,15 \text{ kJ/m}$
- PA6 $\approx 0,25 \text{ kJ/m}$
- UHMWPE $\approx 1,1 \text{ kJ/m}$





TENSILE IMPACT STRENGTH

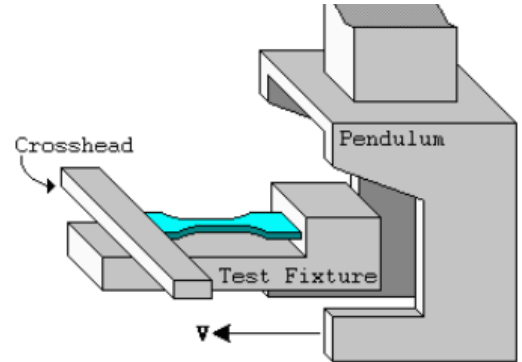
- Usually used for elastic materials
- Pendulum with known force swings downwards
- Measured with kJ/m²
- Sample is placed horizontally
- Different specimen sizes

Tensile Impact Test Specimens

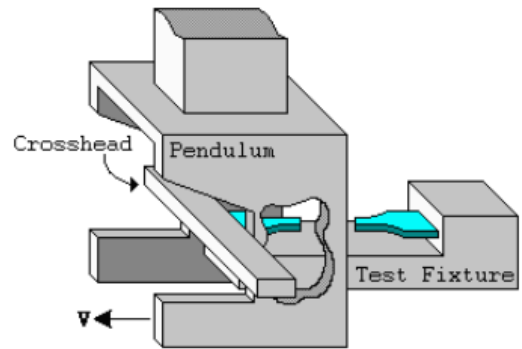
Specimen Type	Diagram
1	
2	
3	
4	
5	

Typical Values:

- LDPE \approx 280 kJ/m²
- HDPE \approx 100 kJ/m²
- PA6 (Usually not measured)
- UHMWPE (Usually not measured)



Before Impact (Method A)



After Impact (Method A)

CONCLUSION:

Producers of flexible polymers (e.g. LDPE, HDPE) oftentimes indicate only tensile impact strength, which is much higher than Charpy impact strength. All three tests are not comparable between each other in any way.