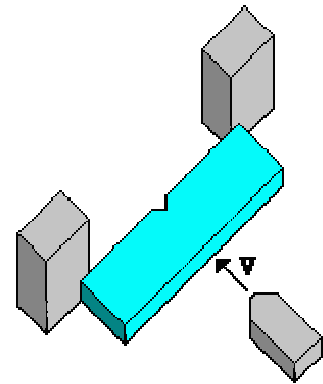


What is Charpy Impact Testing,  
& When might I need it?

**CHARPY IMPACT TESTS**

HISTORY

- French scientist Georges Charpy developed test in 1905
- ASTM standard originally approved in 1933
- Covered by ISO 148-1



PURPOSE

- ⇒ Measures the amount of **Energy Absorbed** during fracture of a specimen in a standardized test;
- ⇒ Usually applied to **STEELS** which exhibit temperature dependent behavior;
- ⇒ Relates **Toughness** of the material at high strain rate;
- ⇒ Toughness is related to the **Direction of Rolling**;
  - Specimen are typically tougher along the direction of rolling, and not as tough across direction of rolling
- ⇒ Often applied to **welded structures**
  - required by some welding codes in Pressure Vessels and related piping, Pipelines, Outdoor Structural codes;
- ⇒ Impact resistance measured for **weld deposit & Heat Affected Zones (HAZ)**;
- ⇒ Thick welds, may require Charpy testing of *top* and *root* of weld.

MATERIAL NEEDED

- ⇒ Pre-forms are cut from base material or weldments, using a bandsawing or similar process of low heat input.
- ⇒ Sizes:
  - Base metal specimens: minimum 55mm (about 2-1/4 inch) length, 12.5mm (about 1/2 inch) width, thickness of material.
  - Welds: length, about 65mm plus width of weld
- ⇒ Weld centerline Charpy's are notched in center of weld.
  - For HAZ test, notch is placed so that maximum amount of HAZ is tested. (applicable to certain codes)

SIZES

- ⇒ STANDARD:
  - 10mm x 10mm x 55mm
- ⇒ SUBSIZES:
  - 7.5mm x 10mm
  - 5mm x 10mm
  - 2.5mm x 10mm
  - Threaded Fasteners & Pipe have special considerations

