

Characterization of Materials by Non-Destructive Methods

Mechanical Properties and Structure Analysis by Non Destructive Methods - NDA Techniques

Solid Materials: Metals - Polymers - Composites - Ceramics - Glass

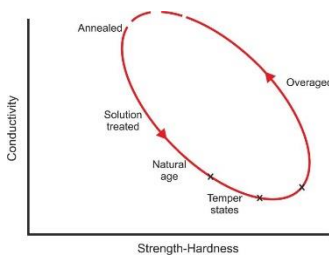
Standard measurements by **ultrasonic methods**:

- ❑ **Modulus of Elasticity E, Shear Modulus G, Poisson's ratio**

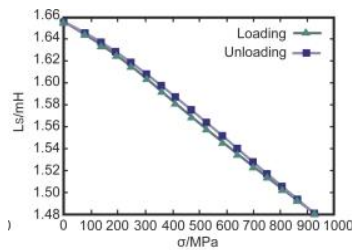
Special measures:

- ❑ **Residual stresses σ , hardness by eddy currents**
- ❑ **Metallurgical analyzes by Ultrasonic / Electromagnetic methods**

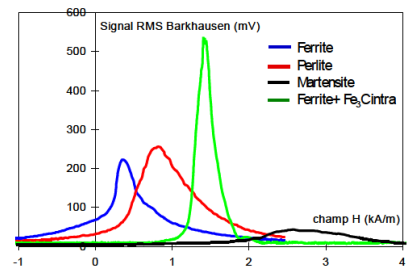
ASNT Non Destructive Testing Handbook reference



Hardness by Eddy Currents



Stress by variation of electrical resistivity



Magnetic noise depending on metallurgical state

Liquid materials of all kinds

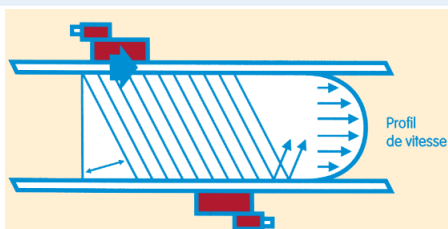
Standard measurements by **ultrasonic methods**:

- ❑ **Rheology: Viscosity, density, particle concentration, flow rate, speed, Re**

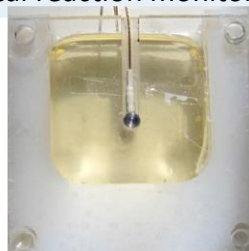
Special measures:

- ❑ **At Low and High temperatures / chemical reaction monitoring, polymerization**

ASNT Non Destructive Testing Handbook reference



Flow profile by ultrasonic measurements



Monitoring polymerization by ultrasonic method

