

## GMAW Additional Topics #3

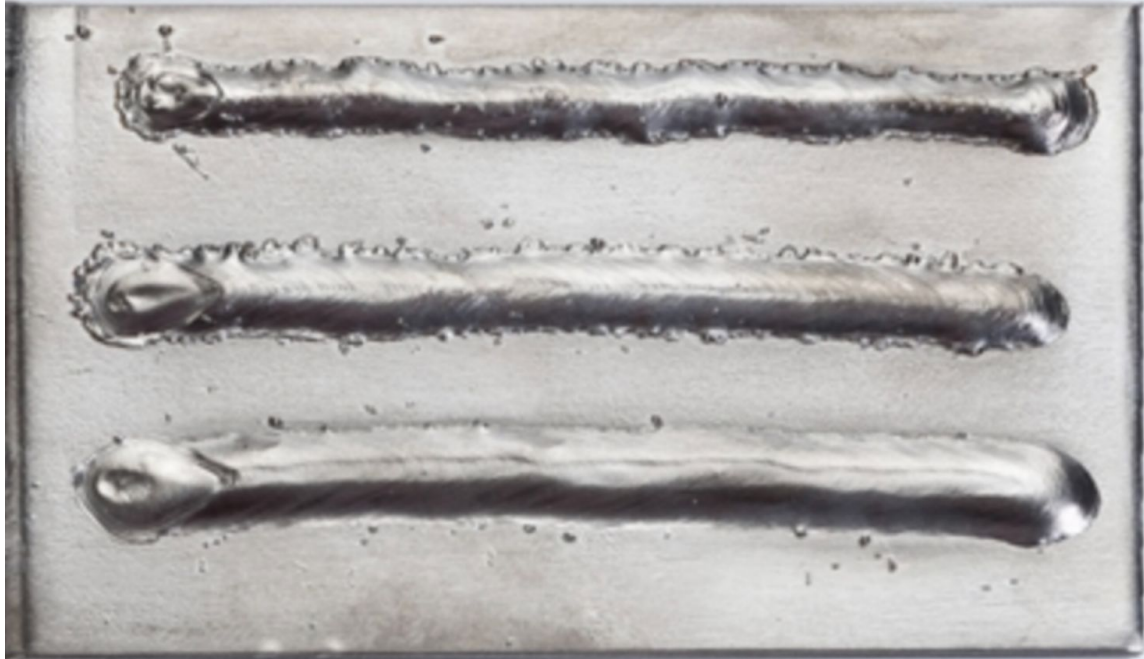
### Current density

- Current Density = the number of amps that an electrode carries at a given **WFS** (wire feed speed)
  - Increasing the WFS can boost the amperage running through the electrode to a degree
  - The amount of current (amps) that an electrode can carry depends on its diameter. The larger the diameter, the more current it can carry

### Voltage

- Voltage is the force (pressure) that pushes current through a circuit
- Amount of voltage required for a particular weld depends on its base metal thickness, joint type, shielding gas, welding position and electrode size
- Welders set voltage prior to GMAW welding and it only varies slightly during welding
- Increasing voltage makes the arc larger and wider (wide, flat beads)
- Decreasing voltage makes the arc shorter and narrower (thin, high beads)
- Excessive voltage can lead to **undercut** and welds prone to cracking
- Too little voltage can result in **overlap** and an erratic arc that does not melt the base metals

Voltage



Low

High