WELDING PROCESSES: BRAZING AND SOLDERING

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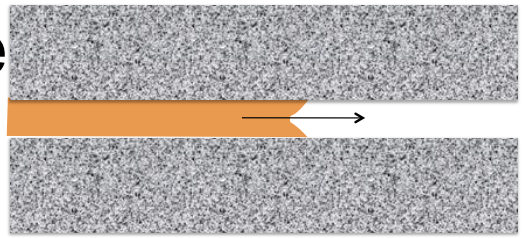
Brazing and Soldering

- Advantages
  - Minimal disruption of the base materials
  - Joining of fundamentally different materials (e.g., metals to ceramics and metals to glasses) can be done
  - The joint forms itself by the nature of the flow, wetting, and subsequent crystallization process, even when the heat and the braze or solder are not directed precisely to the places to be joined.
  - Joint spreads loading over large surfaces
    - performs better in shear rather than in tension
  - Considerable freedom is allowed in the dimensioning of joints
  - The brazed or soldered connections can be disconnected if necessary
  - Equipment for both manual and machine brazing/soldering is relatively simple
  - Processes can be easily automated

Brazing and Soldering

- Functioning principle:
  - Capillarity drives the molten braze
    - must use fluxes to remove oxides
  - Metal-metal bonds are created
    - sometimes there are reaction layers



- Brazing
  - filler melts above 450 C
- Soldering
  - filler melts below 450 C