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MODULE S
Special methods of fusion welding

Cold pressure welding

Cold pressure welding

- Cold pressure welding is among the oldest metal joining technology.
- The principle welding the approximation of surfaces of materials welded to grid distance of the order parameter, when there is an interaction between the metal atoms to form a strong bond.
- To achieve the desired approach requires considerable plastic deformation, which must be at least 60% and for different materials is different.
- Large influence on the ability to form a weld ratio of the hardness to the hardness of the metal oxide.
- Oxides metals with high hardness are more easily damaged and are pushed into the fin.
- Oxides a metal whose hardness approaching the hardness of metal, having high plasticity and their displacement from the weld surface is difficult.

KUBÍČEK, J. DANĚK, L. KANDUS, B. *Technologie svařování a zařízení. Učební texty pro kurzy svařovacích inženýrů a technologů*. Plzeň: ŠKODA WELDING, s. r. o., 2011. s. 164.

Joint preparation for welding, cold pressure

- Weld surfaces should be flat, mechanically and chemically cleaned.
- Welding of welded joints, cold pressure
  - Toupee welds (mostly for joining circular profiles)
  - Lap welds (usually spot or seam welds, and are up to 6 mm)
- The welding pressure is selected according to the type of material, the size and type of welded parts of the welded joint.
- Mostly the welding pressure of between 500 MPa to 4 GPa.
- Weld on hydraulic presses, used special fixtures.

The application and use of welding, cold pressure

- Welding aluminium and copper conductors
- Welding copper one-to-one trolley up to the cross-section 150 mm^2
- In the manufacture bonding chokes cu and Al
- In packaging technology - food packaging, pharmaceuticals, radioactive, chemical
- Production of aluminium cookware
- Connecting wires in tavern

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Advantages of cold pressure welding

- Melt arises and no heat-affected zone of the material
- Possibility of welding dissimilar metals
- Joint is considerably hardening
- The joint is characterized by fine grain structure
- No radiation
- The device can only be operated by trained worker

Safety in welding, cold pressure

- When welding cold pressure threatens fumes generated during welding of cleansing detergents.
- Further is hazardous dust generated from the mechanical cleaning of welds (brushing), and the worker must pay attention to the moving parts of the welding device.