

COMPETENCY PROFILE

SMAW I - SHIELD METAL ARC WELDING

BTC: WLD 110 (4 credits)

Students will learn applications of power sources, electrode identification, & basic steel metallurgy, while practicing techniques in E6010 SMAW process in the 1F, 2F, & 3F positions and E7018 in the 2F & 3F positions.



Shield Metal Arc Welding Set-Up

- Demonstrate proper set-up for Shield Metal Arc Welding and minor troubleshooting with the following:
 - ✓ AC and/or DC power source
 - ✓ Clamps
 - ✓ Electrode holder
 - ✓ Ground lead
 - ✓ Welding booths or portable screens
 - ✓ Welding lead
 - ✓ Welders standard tool kit
 - ✓ Workpieces
- Workpiece is secured.
- Work lead provides continuity from the power source to the workpiece.
- The welding lead provides continuity from the power source to the electrode holder.
- Proper welding polarity is selected.
- The power source is plugged in and turned on.
- Welding booths or portable screens in place.
- Proper 6010 and 7018 electrode handling and storage techniques used.
- Demonstrate proper arc welding equipment and personal safety techniques.

Shield Metal Arc Fillet Welding Techniques

- Demonstrate competency in SMAW techniques with E6010 & E7018 in the Flat, Flat Fillet and Vertical Fillet weld positions on steel plate.
 - Demonstrate understanding of simple layout and fit-up practices on mild steel plate.
 - Make fillet welds using fast fill rod and the following:
 - ✓ Chipping hammer and wire brush
 - ✓ Electrodes
 - ✓ Grinder
 - ✓ SMAW equipment
 - ✓ Fast fill rods
 - ✓ Portable screens
 - ✓ Protective clothing/equipment
 - ✓ Weld gauge
 - ✓ Work pieces
 - Weld is deposited with complete fusion, with a slightly convex uniform bead appearance, and is free from slag, overlapping, cracking and porosity.
 - Weld is at least 25% greater in width than depth, & is approximately 1 1/2 times width of welding electrode.
 - Demonstrate use of proper welding-related terminology.
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College Textbook Reference:

Welding Principles and Applications; Sixth Edition; Larry Jeffus