

## Lesson 2: Welding With Oxyacetylene

**Welding a Butt Joint in Flat Position Using Welding Rod**

**Objective:** Students will weld a butt joint in flat position using the oxyacetylene outfit and welding rod.

**Directions:** Students will use an oxyacetylene outfit to weld a butt joint in flat position.

**Materials and Equipment:**

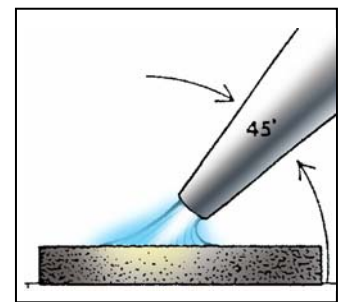
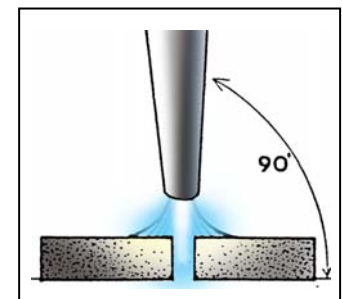
Oxyacetylene outfit and accessories  
Welding goggles with appropriate shaded lens\*  
Safety glasses or goggles  
Leather gloves and any other protective clothing recommended by instructor  
Spark lighter

Pliers  
Wire brush  
Steel plates, selected by instructor  
Welding rods, selected by instructor. Use the pliers to bend the back end of the rod into a hook to distinguish it from the end that could be hot.

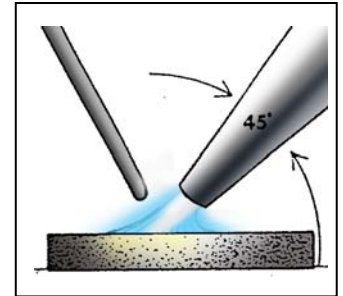
\* Everyone participating in or observing the demonstration should wear appropriate protective eyewear.

**Procedure:**

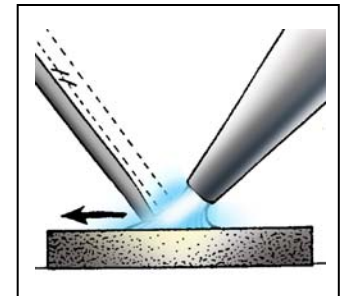
1. Wear appropriate face protection and protective clothing.
2. Inspect equipment, materials, and work area to ensure safe and correct operation.
3. Prepare the metal to be welded.
4. Position the plates on the worktable.
5. Set up the welding outfit following assigned procedure.
6. Light the torch using the spark lighter.
7. Adjust the flame to a neutral flame.
8. Use the torch and welding rod to tack weld the pieces together.
9. Start welding at one end, with the torch at a 45-degree angle and the inner flame cone approximately 1/8 in. from the work. Refer to Figure 1.
10. Hold this position until a weld pool forms. It should form equally over both pieces of metal. Refer to Figure 2.

*Figure 1**Figure 2*

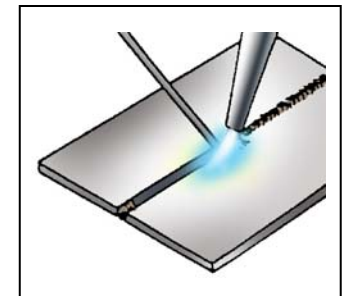
11. At the same time, use the other hand to bring the welding rod close to the flame for preheating. The end of the rod should be approximately  $\frac{3}{8}$  in. from the flame and  $\frac{1}{16}$  to  $\frac{1}{8}$  in. from the pool surface. The rod is held at an angle to the work, usually about 45 degrees. Refer to Figure 3.
12. When the weld pool needs additional material, dip the end of the rod in the front edge of the weld pool. This melts the rod and fills the pool. When enough filler is added to make the desired bead, move forward. Refer to Figure 4.
13. Carry the bead forward by moving the torch and adding filler with a smooth, uniform motion. Refer to Figure 5.
14. Continue moving forward until the weld is complete.
15. Shut off the outfit if the torch must be set down.
16. Shut down the outfit according to the assigned procedure. Materials and equipment should be returned to their proper places.
17. Turn in work to be graded by the instructor.



*Figure 3*



*Figure 4*



*Figure 5*