

# Pipe Welding

## Course Description

Designed to instruct welders in arc welding safety and the Shielded Metal Arc Welding process (SMAW - Stick) of welding pipe either to meet ASME (vertical up) or API (vertical down) welding code. The course lasts 6 weeks, involving approximately 180 hours of booth instruction, lecture and practice.

## Prerequisites

Students who have not passed the Lincoln Electric Welding School's Basic Plate and Sheet Metal welding course will be required to weld a sample test plate consisting of vertical and overhead welds with E6010 and E7018 electrodes, which will be evaluated by the instructor before being permitted to start the course. Students must also specify either ASME or API before the start of the Pipe Course. Must have thorough knowledge of 6010/7018 welding electrodes to weld in pipe class.

## Course Content

### ASME Week 1

Learn fundamentals of ASME pipe welding, which includes 2G, proper fit-up, joint preparation, tacking, and electrode selection in vertical up welding. Additionally, comparative techniques like whip vs. drag root pass are discussed along with testing procedures and grading.

*30 Clock Hours: Lab - 28, Class - 2*

### ASME Week 2

Review 5G, proper fit-up, joint preparation, tacking and electrode selection in vertical up welding. Review techniques used in the vertical up position. Review test procedures. Prepare final test.

#### **Week 2 Welding Test**

*30 Clock Hours: Lab - 28, Class - 2*

### ASME Week 3

Review 5G, proper fit-up, joint preparation, tacking and electrode selection, in vertical up welding. Working with 6010 and 7018 electrodes in 5G position. Final test at end of week.

*30 Clock Hours: Lab - 28, Class - 2*

### ASME Week 4

Discuss 6G and weld troubleshooting, which includes DC- for less burnthrough and land vs. gap. In addition, AWS, ASME, and API code are explained.

*30 Clock Hours: Lab - 29, Class - 1*

### ASME Week 5 and Week 6

Designed to instruct welders in arc welding safety and the welding of the root and hot passes done with the GTAW (TIG) process. Then fill and cap passes done with low hydrogen (Excalibur®) stick electrodes or as student ability dictates. GTAW all the way (Root, Hot, Fill and Cap) with carbon steel or stainless filler metal on carbon steel pipe.

*30 Clock Hours: Lab - 28, Class - 2*

#### **Final Exam**



## Course Fee:

**\$2,200.00**

## 2010 Course Dates:

**Feb 15 - Mar 26**

**Mar 29 - May 7**

**May 10 - June 18**

**June 21 - July 30**

**Aug 2 - Sept 10**

**Sept 13 - Oct 22**

**Oct 25 - Dec 3**

**Please Note:** Students must pass welding test to receive diploma.

# ***Pipe Welding (Con't.)***

## **API Week 1**

Learn fundamentals of API pipe welding, which includes 2G, proper fit-up, joint preparation, tacking and electrode selection in vertical down welding.

*30 Clock Hours: Lab - 28, Class - 2*

## **API Week 2**

Review 5G, proper fit-up, joint preparation, tacking and electrode selection in vertical down welding. Review test procedures. Prepare final test.

*30 Clock Hours: Lab - 28, Class - 2*

## **API Week 3**

Review 5G, proper fit-up, joint preparation, tacking and electrode selection in vertical down welding using cellulose electrode for root. Vertical up hot, fill and cap with low hydrogen electrodes.

*30 Clock Hours: Lab - 28, Class - 2*

## **API Week 4**

Discuss 6G and troubleshooting, which includes DC- for less burnthrough, and land vs. gap. In addition, AWS, ASME, and API code are explained as well as pipe welding joints positioned at a 45° angle using vertical down techniques.

*30 Clock Hours: Lab - 29, Class - 1*

## **API Week 5 and 6**

Designed to instruct welders in arc welding safety and API vertical down pipe welding. It specifically relates to Butt and Branch "T" joints as well as reinforcement sleeves using cellulosic and low hydrogen electrodes in accordance with API 1104 code. Customer must supply sleeve.

*30 Clock Hours: Lab - 28, Class - 2*

## **Final Exam**