

# ASME Code Overview

ASME (American Society of Mechanical Engineers) is a group of engineers, scientists and subject matter experts that publish code books that outline the rules for building items such as piping systems, power boilers and pressure vessels. These codes are vital for both safety of the personnel that work around these components and for the proper function of the system after construction or repair.

Understanding what these code books are and how they are applied answers the question of why we do everything that we do with regards to welding. You will find answers to all welding specific questions within these code books.

## **ASME B31.1 – Power Piping**

- Rules and requirements for fabrication and repair of piping systems. This code book includes weld inspection criteria and non-destructive testing requirements, heat treatment requirements and a lot of useful information for engineers.

## **ASME Section I – Power Boilers**

- Rules and requirements for fabrication and repair of boiler components. Similar to B31.1, this code book will outline many of the same requirements with regards to welding along with a lot of useful information for engineers performing the actual design work.

## **ASME Section IX - Qualification**

- Everything you need to know regarding weld testing, range of qualification, what kind of weld test required for a specific job, how long welding certification is good for as well as information on how to qualify welding procedures.

## **ASME Section V – Non-Destructive Examination**

- This code book outlines everything that has anything to do with non-destructive testing including Visual Testing (VT), radiography (X-Ray), Magnetic Particle Testing (MT), Liquid Dye Penetrant Testing (PT). It also includes information about how a non-destructive testing company qualifies their technicians, what kind of equipment they must use etc.

## **How Code Books Tie Together**

Code books often reference each other. For example, on a drawing or print you might see ASME B31.1 listed as the code of construction. If you were wanting to know if the weld you just made will require x-ray, you could look in the B31.1 code book under non-destructive testing. Here you would find a table that would give you material thickness and temperature variables that would tell you if x-ray would be required. You would also see verbiage telling you that all non-destructive testing must be in accordance with ASME Section V, so you'd need to reference Section V to make sure the x-ray technician is properly qualified etc.

The same is true for weld testing. For example, the ASME Section I code book references ASME Section IX for welder qualification and testing.

The intent of this article is to answer many of the “why” questions regarding welding. It's important to be a skilled welder but also important to understand where many of the rules and practices you learn at FWI come from.