

## FABRICATION NEWS

October 1, 2022

### BOARDMAN NEWSLETTER:

We have appreciated the positive feedback to the newsletter we've sent out over the years. We want to continue building strong relationships with our customers and be a resource as the experts in pressure vessel fabrication.

We hope you find this newsletter beneficial as we share tips in the pressure vessel design and construction process.

If there are any topics you would like us to address, please let us know

## Electrode Specifications & Classifications

Did you know that welding consumables are considered a material, just like head materials and shell plate materials? All welding consumables fall under a specific specification. Within that specification, each welding consumable has its own classification. There are thousands of welding consumables and each consumable has a classification.

Some welding consumables are designated for single pass welding or multi-pass welding, require PWHT or can be used in the As-Welded condition, can be used for all positions, and have specific chemical compositions to match the base metal that is being welded.

Here's an example of a specification and classification for a carbon steel flux cored electrode: SFA-5.20 / E71T-12M-JH8. Below is an explanation of these classifications. The SFA-5.20 is the specification for carbon steel flux cored electrodes. The E71T-12M-JH8 is the classification of the electrode.

Here's another example of a specification and classification for carbon steel electrodes and fluxes for submerged arc welding (SAW). SFA-5.17 / F7P8-EM14K. All of these letters and numbers mean something specific.

### Question 1: What do the letters and numbers in the E71T-12M-JH8 classification represent?

#### Answer:

- E: Designates an electrode. E means electrode
- 7: Designates tensile strength. 7 = 70,000psi tensile
- 1: Designates position. 1= All positions
- T: Designates electrode as flux cored. Tubular filled with flux
- 12: Designate usability for polarity & operating characteristics
- M: Shielding gas indicator. M=75%-80% Argon/balance CO<sub>2</sub>
- J: "J" indicates electrode meets CVN at 20ft/lbs & -40°F
- H8: Designator for diffusible hydrogen



## Question 2: What do the letters and numbers in the F7P8-EM14K classification represent?

### Answer:

- F: Indicates a submerged arc welding flux. F = Flux
- 7: Minimum tensile strength. 7 = 70,000 psi
- P: Condition of heat treatment. P = Post Weld Heat Treat
- 8: Temperature in °F at or above impact strength. 8 = -80°F

### EM14K: Classification of the Electrode

This wire/flux combination means that the weld produced was welded with the SAW (Submerged Arc Welding) welding process, has a minimum tensile strength of 70,000psi, is good for PWHT and will impact test at -80°F.

When selecting a SAW wire/flux combination, you should always look at the filler metal manufacturers data sheet to see what properties you will achieve with all of the different combinations.

All of the welding materials to be used for ASME construction can be found in ASME Section II Part C

## BOARDMAN'S ASME Section IX SEMINAR

Boardman is COMMITTED TO EDUCATION for our clients and our employees. We are excited that we will host our first annual ASME Section IX Seminar on October 12-13, 2022. This is a seminar that our clients have been asking for and we are excited to provide this seminar and provide this valuable training. We have partnered with Walter Sperko, an expert and highly respected across the industry. His experience specializes in metal fabrication technology, including material selection, welding, heat treating, inspection, quality assurance and failure analysis. You will earn 16 CE Credits while learning about Requirements & Mechanics of ASME Section IX, Welding, Brazing & Fusing Qualification, Review of welding processes & variables and Welder & Operator requirements. Please let us know if you are interested in attending this seminar in the future or any other educational opportunities provided by Boardman.

**We would love to hear from you and have an opportunity to quote your next project**

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