SMAW Electrode Classification

Classification	Welding Current	Arc	Penetration	Coating/Slag	Iron Powder
EXX10	DC+	Digging	Deep	Cellulose-Sodium	0-10%
EXXX1	AC, DC+	Digging	Deep	Cellulose-Potassium	0%
EXXX2	AC, DC-	Medium	Medium	Titania-Sodium	0-10%
EXXX3	AC, DC-, DC+	Soft	Light	Titania-Potassium	0-10%
EXXX4	AC, DC-, DC+	Soft	Light	Titania-Iron Powder	25-40%
EXXX5	DC+	Medium	Medium	Low Hydrogen-Sodium	0%
EXXX6	AC,DC+	Medium	Medium	Low Hydrogen-Potassium	0%
EXXX8	AC, DC+	Medium	Medium	Low Hydrogen-Iron Powder	25-40%
EXX24	AC, DC-, DC+	Light	Light	Titania-Iron Powder	50%
EXX28	AC, DC+	Medium	Medium	Low Hydrogen-Iron Powder	50%

Steel Alloy Suffixes for SMAW Electrodes

Suffix	*Major Alloy Element(s)*
1) A1	*0.5% Molybdenium*
2) B1	*0.5% Molybdenium + 0.5% Chromium*
3) B2	*0.5% Molybdenium + 1.25% Chromium*
4) B3	*1.0% Molybdenium + 2.25% Chromium*
5) B4	*0.5% Molybdenium + 2.0% Chromium*
6) C1	*2.5% Nickel*
7) C2	*3.5% Nickel*
8) C3	*1.0% Nickel*
9) D1	*0.3% Molybdenium + 1.5% Manganese*
10) D2	*0.3% Molybdenium + 1.75% Manganese*
11) G	*0.2% Molybdenium + 0.3% Chromium + 0.5% Nickel + 1.0% Manganese + 0.1% Vanadium*
12) W	*Weathering Steel*

Selecting a SMAW Electrode

- If your welding project is to be performed under a welding code, the particular electrode to be used may be chosen for you, leaving you no choice but to use a specific electrode

- If one is not specified and you have to select one that is appropriate, follow these steps:
    - Identify the base metals - most carbon steels use E6OXX or E70XX electrodes. If welding an alloy, identify the alloy to select the proper electrode
    - **Classify the type of joint** - An out of position (vertical or overhead) weld or a weld with a large root opening may require a **fast freeze** electrode. Welds requiring a large amount of weld metal and are in the flat or horizontal position often require fast fill electrodes. Those welds out of position and requiring high deposition rates generally use **fill freeze** electrodes
    - **Consider the power source** - make sure it can accomodate your electrode
    - **Select the proper diameter** - Correct diameter produces the desired weld bead in the fastest time. Larger electrodes diameters are used on thicker base metals and give deeper penetrations. Small diameter electrodes create a smaller weld puddle in out of position welds to prevent spilling and to allow the puddle to freeze faster