

Brief Information of Flux Cord Wires

Flux cored wires namely tubular wires. They can be put in different rates of different elements in the fluxes to adjust the wires for different applications. Flux cored wires are suitable for automatic / semi-automatic welding, gas shielded arc welding, self-shielded welding, or submerged arc welding that matching SAW flux as well as electrogas arc welding. They are widely used in welding mild steels, high tensile strength steels, low alloy and medium alloy steels, stainless steels, hardfacing and for dissimilar steels welding. In general flux cored wire is one of the major welding consumables in modern industry.

1. Features of Flux Cored Wire

- 1) Adaptability of flux cored wires is powerful and just mentioned above they can be used for welding different kinds of steels and the weld joints can meet the requirements of different steels via flux adjusting.
- 2) In welding the weld joints are shield by both gas and slag so the appearances of the weld joints are good. Stabilizer is put in the flux so arc stability in welding is smooth and metal transfer is very uniformity.
- 3) At the same welding current the electric current density of flux cored wire is bigger and melting rate of it is faster and its deposition efficiency is between 85%-90% so the deposition coefficient of flux cored wire is 3-5 times of welding rod (SMAW).
- 4) It can be all position welding at larger welding current and it is easier to control for automatic / semi-automatic welding uninterruptedly.

2. A Comparison of Flux Cored Wire with Other Kinds of Welding Consumables

	Welding Rod (SMAW)	Solid Wire (MAG)	Solid Wire (TIG)	Flux Cored Wire (MAG)
Deposition Efficiency	~55%	~95%	~98%	~85%
Deposition rate	~1.5kg/h	~3.0kg/h	~0.5kg/h	~3.9kg/h
Appearance of Weld	C	D	A	B
Spatter	C	C	A	B
Arc Stability	B	C	B	B
Slag Detachability	C	Oxide	Nothing	B

A: Excellent, B: Good, C: Better, D: So So,

3 Defects in Weld Joint and Preventive Measures

Blowholes

- 1) Choosing welding wire of specification properly and keep it clean and dry.
- 2) The surfaces to be welded must be cleaned away impurities of oil contamination, rust, oxide coating, moisture and so on
- 3) Take a proper flow rate of shield gas and shorten the wire extension properly.
- 4) Facility of wind screen should be taken.
- 5) Slower welding speed to run over the gas inside.

- 6) Sweep the spatters and slag away from current contact nozzle or kort nozzle duly and to expand service life it is better to daub the flux of preventing slag attach on the nozzle.
- 7) Take pure shield gas and the purity must be 99.98% or more and moisture should be lower than 0.005%.

Undercut

- 1) Reduce the arc length.
- 2) When horizontal fillet welding distance between the wire and intersection point of fillet should be 1mm-2mm.
- 3) Take correct operational approach for welding.

Slag Inclusion

- 1) Up the weldment on horizontal as much as possible.
- 2) Every weld bead must be cleaned away impurities.
- 3) Enlarger electric current and reduce welding speed properly.
- 4) Enhance wire feed rate properly.

Crack

- 1) Choosing welding wire of specification properly and keep it clean and dry.
- 2) Pay attention to the coordinate of the groove angle with electric current, if necessary enlarge angle of the groove.
- 3) Pay attention to assembled precision of the weldment.
- 4) Take proper structure design and performing proper welding process.
- 5) Using proper electric current and proper welding speed.
- 6) To anti shrinkage stress the first pass of weld bead should be thicker.
- 7) Do postweld heat treatment for the weldment if necessary.

Storage of flux cored wire and Preventive Measures for Oxidation

- 1) The storeroom should be arefaction and ventilated. The temperature is better 10°C-40°C and relative humidity (RH) $\leq 60\%$. Moisture should be avoided and repulsing any liquid or mordant effumability materials, such as water, acid, alkali and so on, far away from fire also.
- 2) The flux cored wire can not be put on ground directly and it should be put on pallets that made by wooden/metal/ plastic and the distance of the wire against the wall of storeroom at least 300mm.
- 3) Moving wire must be careful and do not damage any package of the wire. Shifting a full spool/reel of uncovered wire with short distance should use fingers of two hands to hook two ends of the inner bore instead to shift it when it flatwise.

- 4) When open a package of the flux cored wire it is better to run out of it in short time and it can not be exposed in atmosphere exceed 40 hours if not it easy be oxidation particularly in the environment with moisture and mordant.
- 5) To shorten the storage time in the storeroom and take the principle of first-in, first-out to use the wire.
- 6) It is important to store the flux cored wires respectively according to the types and specifications and do not misapplication.