Aluminothermic welding is a process that takes advantage of the high temperature that develops in the reaction caused by the reduction of copper oxide by aluminum. The reaction takes place within a graphite mold, where the workpieces have been previously introduced; the metal resulting from the aluminothermic reaction melt flows over them, melting and forming a compact and homogeneous mass.

The reaction is very rapid and therefore the workpieces in the area around the welding point acquires a very significant lower temperature that is obtained using standard procedures, an important factor when it comes to protecting the cable insulation or physical characteristics of the materials to be welded.

This type of welding may be used to weld copper to copper or copper to steel. Please consult for other materials.

**components**

**accessories**

- Tongs
- Ignition gun
- Metallic comb and brush
- Scraper
characteristics & benefits

Perfect molecular solder alloy used has a melting temperature substantially equal to that of copper and has a section approximately double that of the conductors to be welded, for this reason:

- Overloads or short-circuit currents do not affect the connection.
- The conductivity of the connection is at least equal to or above the drivers together.
- There is no possibility of galvanic corrosion, since the conductors are integrated in the connection itself.

instructions

Preparation of materials

Welding cables
- For perfect welding, cable must be perfectly clean and dry.
- Cables treated with oil or grease should be cleaned with a degreaser (preferably a solvent that dries quickly without leaving residues). In extreme cases heating cable with a blowtorch until the fat or oil is completely removed.
- Rusty cables must be polished with a wire brush.
- A wet cable or one covered with mud causes a porous welding wire and molten metal projections from the mold. It should be dried with a blowtorch and remove traces of mud.
- Badly cut or shaped cables impede the proper closing of the mold, causing leakage of molten metal.

Welding spikes
The end of the spike on which the welding is carried out must be perfectly clean and free of deformation as indicated for the preparation of the cables.

Welding steel surfaces
- The surface should be free of rust and perfectly dry and flat.
- The layer of rust, paint, grease and dirt should be cleaned by preferably emery wheel.
- Moisture is removed with a blowtorch.
- Galvanized surfaces are cleaned without removing the layer of zinc.

Preparation of graphite molds
Moisture in the mold will cause a porous weld; therefore it must be completely dry when performing any welding.
Before making the first weld, the mold is heated with a blowtorch, or burning a cartridge until it can not be touch, in this case, it should be done with care not to damage the claw.
For successive welds, the heat developed keeps the mold at the correct temperature. If the interval between them provokes the fall of the temperature, the process must be restarted.
If the cable has insulation, remove a 15 cm length. Using a wire brush, brush the metal to be welded to remove all traces of rust or dirt parts.

Before making the first weld, it is essential to preheat the mold with a blowtorch for 5 minutes. Thus, moisture is removed from the mold and porous welds can be avoided.

Open the mold by separating the handles of the pliers. To position the elements to be welded into the mold, follow the instructions for each particular case and / or consult if in doubt.

Close and lock mold pliers in position to prevent leakage of molten metal during welding. Place the metal disc, tapered side down, in the bottom of the hopper, for sealing the tap hole.

Open the cartridge heat lid and empty the solder powder in the hopper of the mold.

Open the black cartridge cover and sprinkle ignition dust on the weld and on the edge of the mold under the cover opening to facilitate its ignition.

Close the mold lid. Apply the gun laterally over ignition powder to ignite it. It is advisable to remove it quickly once it is ignited to prevent spoilage.

Wait a minute before opening the mold grip. Fully open to extract welding.

Remove debris from the hopper, the tap hole and the top of the mold with a scraper. Clean the welding chamber with a brush. If the mold temperature has not been lost it can be used for a new welding without preheating.
most frequent types of connections

wire to wire welds (CC)

spike-cable welds (PC)

rod-cable welds (RC)
cable-plate welds (CCH)
cable-plate welds (CPL)

plate-plate welds (PL)