



## General Soldering Guidelines for Cored Solders

- Before** Breaking the oxide coating by agitation and fluxing is one key to successful soldering, especially for Aluminum, Stainless Steel and Nickel-plated parts. It is important to follow these steps in a timely uninterrupted 1-2-3... sequence. Otherwise, the strong oxide coating can reform and hinder the solder bond. So, make sure you have all your tools and supplies staged and ready to go before you begin.
- Pre-Tinning** For some difficult to solder and large surface area joints, it may be extremely helpful to pre-tin the joint area on each part with the solder before setting up to join the parts. Simply follow the steps below to coat the joint area of each part with an even coat of solder. Then, after the parts have cooled, follow the steps again to join the parts. The 1-2-3 rule applies here as well. Don't pre-tin one day and solder the next. A fresh oxide-free surface is important to soldering success. Pre-tinning your parts with the right solder can greatly improve joints on difficult to solder metals & large surface area parts.
- Step 1** Pre-clean the parent metal or metals to be joined. Use emery cloth, a wire brush, sandblasting, etc. Prepare Aluminum and Stainless Steel surfaces with a clean stainless steel wire brush. Breaking the oxide coating by agitation and fluxing is one key to successful soldering, especially for Aluminum, Stainless Steel and Nickel plated parts. It is important to follow these steps in a timely uninterrupted 1-2-3... sequence. Otherwise, the strong oxide coating can reform and hinder your solder bond.
- Step 2** When using a rosin-cored or acid-cored solder, the flux flows out of the wire and removes the oxide coating when the parts are heated. **Cut the crimped end off of the solder wire, so the flux has a fresh cut to flow out when heated.** The flux removes the oxide layers and draws the solder into the joint/repair area. Additional flux may be added to the joint area to help the solder flow into tight joints and crevices.
- Step 3** Use a soft flame, heat gun or soldering iron to heat the parts adjacent to the repair area. A direct flame on the repair area is likely to overheat the solder and flux. When using a soldering iron, heat the joint area on both parts, not the rod.
- DO NOT DIRECTLY HEAT THE SOLDERING ROD!**
- Step 4** Hold the torch tip 4 to 6 inches away from the parts. If it is necessary to apply the flame directly to the rod or flux, pull the torch tip back even farther from the work surface and keep it moving.
- Step 5** The flux will flow out and begin to bubble and turn light brown. Besides preparing the parts for the solder, these changes indicate the proper flux working temperature. If the flux turns black, it will contaminate your joint and prevent a strong bond. In that case, let the area cool, clean it & start over.

Step 6 When the flux turns brown, the solder should begin to melt. Drag the rod over the area to be soldered, until it begins to flow.

**ONCE THE ROD FLOWS, STOP APPLYING THE HEAT!**

If additional layers are needed, continue to drag the rod over the area.

Step 7 Sometimes it is necessary to heat the tip of the rod with the flame to help the solder flow more easily onto the repair area. **DO NOT HEAT THE ROD TO THE MELTING POINT!** You are just trying to soften the rod to begin the flow more easily.

Step 8 Observe the solder deposit. The solder should bond smoothly.

**DO NOT OVERHEAT!**

The solder rod will melt if overheated, but will not bond properly.

If you applied the heat to the solder rod instead of the parts, the solder will melt and flow, but it will just sit on your part and can be easily brushed off. The joint follows the heat. Heat your parts and the solder will follow the heat and create a strong joint.

Step 9 If you stopped soldering and want to apply more solder or flow out the deposit more, let it cool a little, clean the area, and reheat. The flux will help the bonding process, whether adding more solder or just flowing out the previous deposit.

Step 10 Remove the excess flux with warm water and a wire brush or clean rag. Flux is corrosive, and residue should be thoroughly removed – even for “no-clean” fluxes.

Step 11 When you are done soldering crimp the end of the solder wire to ensure the flux does not run out of the end of the wire between uses. When you are setting up to solder again, cut this crimped end off of the wire, so you have a fresh cut end to solder with. This ensures the flux is present at the end of the wire and ready to flow when the next joint area is heated.