

ON THE SOLDERING OF ALUMINIUM MAGNET WIRES.

One never knows just when someone will ask a question that sends you to the encyclopedia, or the Internet, or a theosophist for help. Just such a one happened recently, when an end user wanted to know how to solder aluminium magnet wires. After painstaking research, prayer, and fasting, we have derived an answer.

The properties of aluminum, which make it difficult to solder are, first, its high thermal conductivity and second, the tenacious, omnipresent film of oxide that forms on the surface. Aluminium soldering is performed at temperatures ranging from 550 to 750⁰F. (288 to 399⁰C) to compensate for thermal conductivity. There are two procedures in general use:

1. Flow soldering using flux. In this case flux dissolves the aluminium oxide and keeps it from re-forming. The flux should be fluid at soldering temperatures so that the solder can replace it in the joint. Information regarding the proper flux is obtainable from any of the myriad solder manufacturers. American Hakko does not recommend any one product line.
2. Abrasion (rubbing the oxide off the aluminium surface). Here the oxide film is removed from the surface using a wire brush, whilst the newly cleaned surface is tinned with solder. The molten solder keeps the oxygen in the air from reacting with the aluminium, but you have to be awfully quick, as aluminium and oxygen have a grand passion for either other.

Solders used for aluminium are generally 50-75% Sn, 25-50% Zn. Again, solder manufacturers can provide assistance in choosing the best mix for the job.