



Titanium Brazing Flux



Guidelines for Working with the Titanium Brazing Flux

The titanium flux is composed of various alkali fluorides enclosed in a petroleum-based binder. Upon heating, the solvents come off first, followed by the petroleum binder which burns. The inorganic fluorides sinter and then melt at about 540 – 595°C. When molten, the flux protects the titanium substrate from oxidation. However, the flux no longer protects the titanium against oxidation if the substrate is heated much above 815°C (cherry red).

Following are directions for achieving the best results:

- Place generous amounts of flux on the area to be joined.
- It is important to use a reducing, non-oxidizing, soft flame. This will keep the flame temperature down, and help reduce titanium oxidation.
- Heat slowly until the flux has melted and is protecting the titanium parts.
- Introduce the silver alloy to the joint area when the temperature of the titanium parts exceeds the liquidus temperature of the alloy, in this case above 720°C, but not much higher.
- The filler alloy recommended is A38T (BAg34): 38Ag/32Cu/28Zn/2Sn. It has a solidus of 650°C and a liquidus of 720°C.

Titanium oxidizes rapidly at elevated temperatures, and it is critical to work in the temperature zone where the flux is still active and protective. Otherwise, the silver alloy will ball up and not wet the titanium. The flux will work, but it just takes very careful working of the torch, so as to stay within the safe temperature range.

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