

ACID BATHS FOR DEOXIDIZING / DESCALING

- HYDROCHLORIC (MURIATIC) ACID
 - Common, effective, treatment for rust removal
 - Take care to avoid etching, attack on grain boundaries
- NITRIC ACID WITH HYDROFLUORIC ACID
 - 25-30% HNO₃ + 2% HF
 - May have to re-clean to remove smut and to eliminate drag-in to EP tank.
- NITRIC ACID WITH AMMONIUM BIFLUORIDE
 - 25-30% HNO₃ + 6 oz/gal NaHF₂
 - May have to re-clean to remove smut and to eliminate drag-in to EP tank.

DRAG-IN PROBLEMS WITH ALL OF THE ABOVE

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Muriatic acid is probably the most common bath used for rust removal in metal finishing operations. Its use is limited to short immersion times and low temperatures in most stainless steel electropolishing lines, to avoid attack on the grain boundaries with resultant etching of the basis metal.

Weld descaling normally uses a mixture of nitric and hydrofluoric acid. Bath conditions vary from a long, overnight soak at room temperature to 30 minutes at 130° F. The hazard associated with hydrofluoric acid can often be circumvented by substituting ammonium bifluoride, a dry, crystalline material which is easier to store and to handle.

All of the halogen acids, including hydrochloric and hydrofluoric, raise the possibility of contamination of the electropolishing bath due to drag-in from the acid tank. Chloride or fluoride compounds dragged into the electrolyte can cause serious etching during electropolishing.