Recommendations for Cleaning Al_2O_3 and Pt Crucibles

In most cases, the majority of ceramic and metallic crucibles and their lids can be reused many times. In order to ensure a long lifetime of proper use, the following cleaning recommendations are given for the most common crucibles, made of alumina (Al_2O_3) and platinum (Pt).

Acids must be handled very carefully under a fume hood. Use protective glasses, gloves and apron and read the MSD sheets. Acids should only ever be handled by a person experienced in the handling of chemicals.

All acids (especially HF) are very dangerous and can cause extremely serious injuries or death if they come in contact with the skin or are inhaled.

Work with acids is at the user's own risk. NETZSCH can assume no liability for damage or injury resulting from the use of acids.

Al_2O_3 Crucibles

- **Contamination with organics (polymers, organic pyrolysis products, carbon black, etc.)**
  Heat crucibles in air or oxygen to approx. 900°C to burn off the organics.
  If there are oxide fillers present, be careful with the end temperature, as there might be a reaction with alumina (lower the temperature and work in oxygen). Use a separate furnace, if available.

- **Contamination with metals and alloys**
  Clean with HCl acid (concentration 25% or higher). If there is no reaction with the contaminant, heat the beaker with the acid. If HCl alone does not work, use a mixture of HCl/HNO_3 (1:1) (both concentrated). This may be heated as well.

- **Oxides and other salts**
  Some salts are water soluble. Boil the crucibles in distilled water.
  Use HCl or a mixture of HCl/HNO_3 (1:1) (both concentrated).
  Oxides are often very stable or have already reacted with the alumina. It could easily be the case that it is impossible to remove the deposits. In that case, the crucible must be discarded. HF dissolves oxides, but also the alumina.

Following these cleaning procedures, rinse the crucibles several times with distilled water and let them dry at room temperature. Then heat them in a separate furnace in air to 1500°C.

Pt Crucibles

- **Contamination with organics (polymers, etc.)**
  Heat crucibles in air or oxygen to approx. 900°C to burn off the organics. If oxide fillers are present, attempt to remove them mechanically or use HF (see next procedure).

- **Contamination with metals and alloys**
  There is often no way of removing metals, as Pt will alloy with most metals at higher temperatures. However, make an attempt with HCl acid (concentration 25% or higher). If there is no reaction with the contaminant, try heating the beaker with the acid.
  Do not use a mixture of HCl/HNO_3 (1:1). This would also dissolve the Pt!

- **Oxides and other salts**
  Some salts are water soluble. Boil the crucibles in distilled water.
  Most oxides can be dissolved in HF. In some cases, it is helpful to warm the acid.
  Some salts can be dissolved in HCl.