Product Information

GRAFIT Crucibles

DESCRIPTION

Noltina's Grafit crucibles are physically formed CLAY-GRAPHITE crucibles characterised by high refractoriness and good thermal conductivity as well as very good thermal shock resistance and chemical resistance against fluxes. In order to meet the specific requirements of induction furnaces, NOLTINA has developed a specialised range of CLAY-GRAPHITE crucibles with a specific modified electrical resistivity. This optimises the coupling power of the crucibles especially in middle frequency induction furnaces (Frequence 1 kHz - 3 kHz) and avoids the risk of overheating.

APPLICATIONS

Noltina's Grafit crucibles are suitable for all furnace systems for non-ferrous metal alloys and precious metals with melting temperatures between 400°C and 1400°C.

TYPICAL METAL CASTING TEMPERATURE

400 - 1400°C (752 - 2552°F)

PERFORMANCE CHARACTERISTICS

- High mechanical strength.
- Good thermal conductivity.
- Good resistance to chemical corrosion.
- High refractoriness.
- Good oxidation resisistance.

IDENTIFICATION

Noltina's Grafit crucibles are coloured black and utilize the suffix G to denote the type.

PATTERN RANGE

Noltina's Grafit crucibles are available in a wide range of sizes and shapes. Consult the product selector or contact MorganMMS for a specific recommendation based on your requirements.

QUALITY

Noltina's Grafit crucibles are manufactured from premium grade raw materials under an ISO 9001:2008 quality management system.

INSTALLATION

Grafit crucibles are used free standing in lift out furnaces. In fuel fired and electric furnaces the stand should be made from similar material to the crucible to ensure uniform heating of the crucible base and provide sufficient mechanical support. The diameter of the stand should be at least the same as the base of the crucible and the height should be such that the base of the crucible is level with the centre line of the burner. The stand and crucible should be installed centrally in the furnace. In induction furnaces the crucible stands on a refractory pedestal and must be installed centrally within the coil. A thin layer of coke dust or other carbonaceous material should be sprinkled on to the stand or pedestal to prevent the crucible sticking to it.

PREHEATING / FIRST USE

Fuel-Fired and Electric Resistance Furnaces: A new crucible should be pre-heated empty in order to minimise the temperature gradient across the crucible wall. If the furnace refractories have been repaired or if there is a risk of the crucible having absorbed some moisture, then the furnace should initially be heated slowly up to circa 200°C and held at this temperature until all moisture has been driven off.
A new crucible should initially be heated slowly and evenly to 600°C on low power (avoiding local impingement of flame for gas/oil fired furnaces). Subsequently the full heat input rate should be utilised to achieve a uniform bright red condition over the whole crucible (circa 900°C / 1650°F) at which point the crucible should be charged immediately taking care to avoid packing metal tightly or bridging ingots across the crucible. The furnace controls can then be set to achieve the desired metal operating temperature and heating should continue at the full rate until the metal has reached the desired temperature.

In the case of crucibles to be fed with molten metal, it is important that the crucible body temperature is equivalent to or slightly above that of the molten metal in order to minimise thermal stress.

Induction Furnaces: Grafit crucibles are sometimes used in medium to high frequency induction furnaces. The heat-up procedure is dependent on furnace frequency, coil dimensions, and the resistivity of the metal being melted. It is recommended where possible to preheat the crucible empty. The furnace should initially be run at 20% of maximum power until the crucible shows signs of red heat. After 30 minutes the power can be increased to 50% of the maximum. Loosely charge the crucible with metal and maintain the power level at 50% until approximately half the crucible contains molten metal. The power should then be increased to maximum.

MorganMMS highly recommends that every new crucible be heated slowly to 200° C over a period of 2 hours to eliminate any moisture that may be present.

CHARGING

Follow the specified preheat procedure. Charge light scrap and returns first in order to form a cushion for heavier material. Use tongs to charge ingots and place large pieces and ingots vertically allowing space for expansion. Only add flux once the metal is molten.

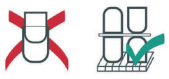
CLEANING OUT

Crucibles should be cleaned out carefully between melts or at least once per day in holding applications while hot in order to remove build-up of oxide dross. In tilting furnaces crucibles should be cleaned in the horizontal position where possible.

SAFETY

Proper safety clothing must be worn at all times, refer to AFS. Standards. Ensure that no moisture is introduced into the melt.

Store crucibles in a dry, warm area.



Do not stack insisde another.

Do not roll crucibles.

Check for cracks or transport damage before use.

Base block must be flat larger than crucible bottom and centred.

Use ceramic fiber blanket to seal. Allow space between top and sides of furnace

Use locating bricks in tilting furnaces, to allow for expansion.

Tangential fire around crucible.

Do not drop charge, slowly lower in with tongs.

First charge with returns, then ingots on top.

Only add flux after metal is molten.

Avoid premature crucible failure by ensuring drain hole is sealed.

For lift-out, tongs must be placed on lower third of crucible. Fit tongs evenly on both sides.

Empty crucible before removing from furnance. Do not let metal solidify in crucible.

Clean carefully every day while still hot