

PREHEATING RECOMMENDATIONS FOR CRUCIBLES

PREHEATING CYCLE FOR BRAND NEW CRUCIBLE or CRUCIBLE USAGE AFTER LONG GAP

1. Moisture Removal

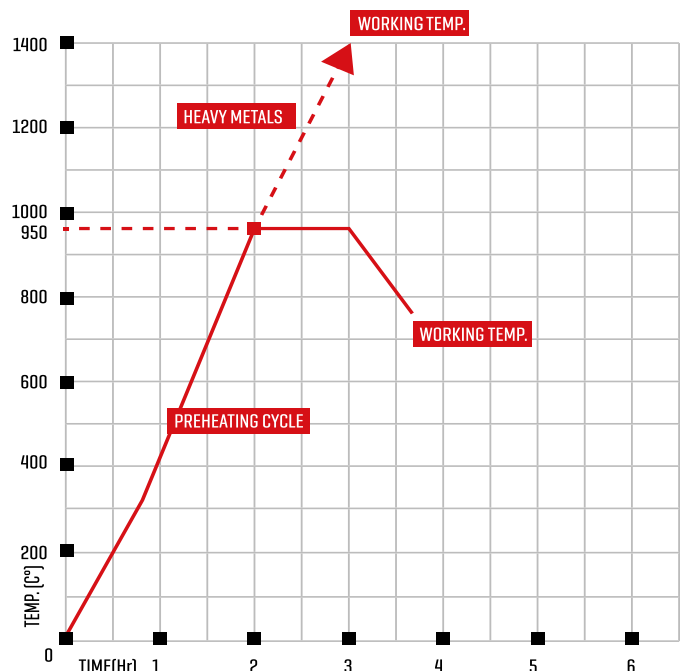
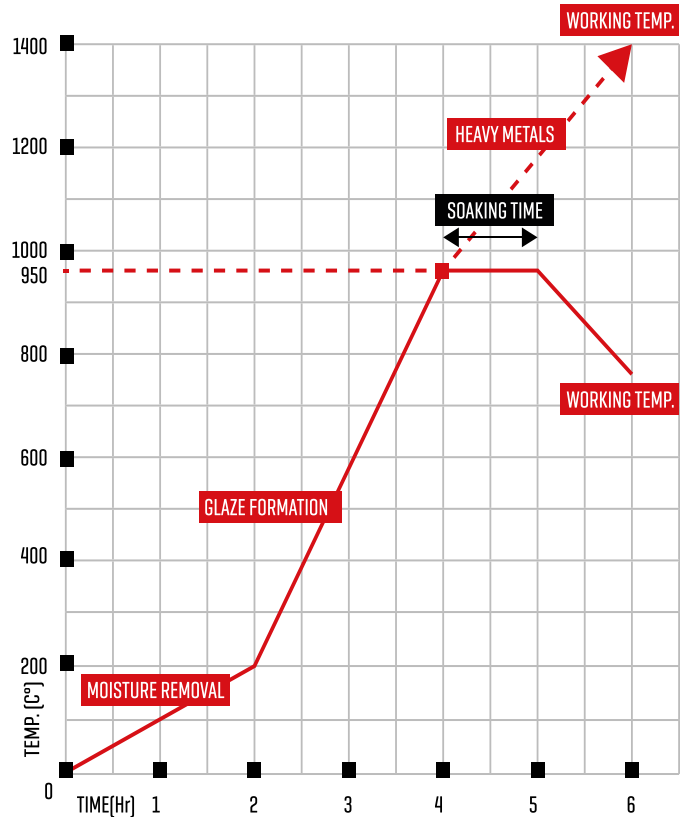
This is the step for removing moisture by heating the crucible up to 200°C. Purpose of moisture removal step is to protect crucibles against possible moisture risk. Brand new or having stoppage for long span crucibles should be heated to 200°C slowly. This process should last at least 2 hours. In order to go to the second step, there should not be any moisture left in the crucible. Important point is to heat to 200°C by stages which mean that first 30 mins to 50°C, next 1 hour to 100°C, then slowly to 200°C. If the crucible is heated to 200°C at once, the crucible has explosion risk. The crucible's protective glaze might crack as a result of moisture pressure coming along with fast heating. Cracks might lead to shorter usage span.

2. Pre-Heating

This is the step for creating glaze formation by heating up to 950°C. After moisture removal step, the crucible should be heated immediately from 200°C to 950°C. Glaze starts to leak and covers cracks if any. To fully activate glaze, the crucible needs to be heated for about 2 hours. When glaze fully forms, the crucible's surface appears like glass. Glaze formation can be checked by looking into the crucible. Later, metals can be placed into the crucible, and the heat may be kept at melting point or lower. Ceramic blankets should not be used at the top of the crucible at least during preheating or else it would lead to improper glaze formation at the top causing oxidation which would slowly develop into cracks. The most important point to keep in mind during preheating that the crucible should be completely empty while undergoing this process.

PREHEATING CYCLE FOR REGULAR USE or SMALL STOPPAGE CRUCIBLES

If the crucible is on regular use or has undergone stoppage for a small span like 1-2 days, it doesn't need to follow the preheating cycle of a new crucible and should be preheated empty directly until 950°C for light metals or to the maximum working temperature for heavy metals as the chances of moisture pick up by the crucible during this span is less if the crucible is being stored in a warm and dry place.



PREHEATING RECOMMENDATIONS FOR CRUCIBLES

1. Inspect: Crucibles need to be properly checked right after purchased and before used to see if protective glaze is damaged or not.

2. Storage: Crucibles need to be stored on pallets loosely, and kept in dry places.

3. Inspection of Furnace

- ♦ Bricks should be placed into the furnace properly
- ♦ Inside of the furnace and outlet of the igniter should be completely cleaned.
- ♦ Drain hole and lids should be checked at intervals.
- ♦ Thermometer's settings should be adjusted at regular intervals.
- ♦ Flame shape and length should be checked by firing before placing the crucible.
- ♦ The igniter should be cleaned with compressed air.
- ♦ Resistance wires should be checked.
- ♦ Dimensions of the furnace should be checked for necessary gaps while placing the crucible.

4. Placement: It is very important to address all essential points for setting crucibles, because every furnace and crucible has different designs and dimensions. The most important is to understand how to use them. Some of these are:

- ♦ **Stand:** It is recommended that stands and crucibles are made of the same material in order to reach desired temperature at the bottom of the crucible. Diameter of the stand must match with the crucible's dimensions. Place the crucible in the middle, and make sure there is no solid material between the stand and the crucible. Non-stick materials such as paper ash or coke powder should be applied to the surface which will provide easier removal.
- ♦ **Placement:** Place the crucible in the center carefully without hitting the surface.
- ♦ **Placement and Expansion Range of Bricks:** Bricks should be placed with a 3mm expansion gap. If the gap is less or no gap, cracks may occur in the crucible.

