Graphite crucible manual – GIRtech FUSION SC

Composition: alumina graphite materials
Usage: for melting precious and non-ferrous metals (gold, silver, platinum, copper, etc.);

1. Technological conditions of crucibles operation

1.1. The range of metals for melting: non-ferrous metals, their alloys – aluminum, copper, zinc and precious metals.
1.2. Operating temperature – 1560-2910 °F.
1.3. Types of heating units when using crucibles – electric, induction and gas.
1.4. Before installing the crucibles in the furnace, they must be inspected for cracks.
1.5. **The crucible must be installed in the furnace without misalignment**, the flame must go about the crucible. The gap between the crucible and the furnace cover must be insulated with thermal insulation material.
1.6. Crucibles must be heated empty before use. To remove moisture, the crucible must be heated up to 390 °F for two hours.
1.7. To reduce the sensitivity of the crucibles to internal stresses, they must be heated to a temperature of 1110 °F at a low furnace power and then to a temperature of 1650 °F or the required operating temperature of the crucible.
1.8. The time to reach the required calcination (heating) temperature is 3-4 hours.
1.9. **Without heating operations, the service life of the crucibles is significantly reduced – up to failure during the first melting.**
1.10. **The above recommendations require special attention.**
1.11. Ingots (charge) must be loaded accurately and strictly vertically.
1.12. In order to exclude the formation of cracks, the rate of metal melting should be maximum.
1.13. The melt level must be maintained at a maximum.
1.14. **It is not allowed to leave heated to the operating temperature empty crucible in the furnace, the period between heats should be minimal.**
1.15. **It is not allowed to overheat the molten metal above the maximum temperature.**
1.16. It is allowed to cover crucibles with refractory covers during operation.
1.17. When using various kinds of chemical additives (reagents) for alloys modification, it should be borne in mind that their presence adversely affects the resistance of crucibles. Additives must be added at the maximum permissible melt temperature.
1.18. **It is strictly forbidden to heat the crucible with the solidified in it metal.**

1.19. When switching off the furnace, the liquid melt must be removed from the crucibles. Crucibles must be thoroughly cleaned of slags and adhered crust of solidified metal. Slag must be cleaned from the inner surface of the crucibles using a special tool: a metal scraper or blade that does not have sharp corners.

1.20. **In order to avoid mechanical damage to crucibles, pliers (grips) wrapped in rubber or other soft material should be used to install them in the furnace.**

1.21. The prerequisite for the correct operation of the crucibles is the presence of a support corresponding to the design of the furnace and the type of crucible used. The support must be made of the same material as the crucible and have a diameter equal to that of the crucible bottom. **The use of supports made of other materials (chamotte) is not allowed. It is strictly forbidden to install the crucible on asbestos.**

1.22. The crucibles are cooled together with the furnace.

1.23. Physicochemical characteristics of crucibles provide high resistance to slags, chemicals, temperature extremes and oxidation.

2. Labeling, packaging, transportation, storage and use of crucibles

2.1. Efficient use of crucibles is ensured by the conditions of transportation and storage. When handling crucibles, due to their fragility and hygroscopicity, the following requirements must be observed:

- use of reliable packaging that protects the product from mechanical damage and does not allow shocks and impacts;
- protection from atmospheric precipitation.

2.2. Refractories are transported in covered vehicles by rail, road, sea transport in accordance with the rules for the carriage of goods in force for this type of transport.

2.3. **It is not allowed to transport crucibles in open vehicles.**

2.4. Crucibles should be stored in dry heated premises on wooden racks, stands, pallets. Storage is possible in two or more layers, separated by cardboard of sufficient rigidity. **It is not allowed to insert crucibles one into another.**

2.5. Packing, transportation and storage of crucibles may be carried out by agreement of the parties, provided that the preservation of the operational properties of the product is guaranteed.

2.6. Product marking is applied to the packaging in the form of labels indicating the purpose, geometrical dimensions, handling signs and other parameters.

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