

## Vision

**J.J.Enterprise** shall endeavor to become a preferred supplier of Acidic Silica Ramming Mass for Induction Furnaces for domestic & overseas customers.



Acidic Silica Ramming Mass  
for Induction Furnaces

## Contact Us

### **J.J.Enterprise**

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"Your company is the greatest.  
I can't imagine anyone living  
without you."  
- **Very smart Foundry man**

## Introduction

Quartzite ramming Compounds are Generally used for lining Coreless Induction Furnaces for melting and moulding of Steel, Cast Iron and other Non-Ferrous Metals.

We are having Mineral chemical Industry with Qualified and Experienced technicians on this line.

The Raw Material chosen is a high grade Quartzite and it has the following Advantages.

1. Extremely pure 98%-99.5%  $\text{SiO}_2$
2. Uniform Hardness
3. High Degree of refractoriness
4. Good slag resistance

### Physical Grading Analysis:

Coarse – 35%  
Medium – 33%  
Fines – 32%

### Specification:

$\text{SiO}_2$  – 99% Min  
 $\text{Al}_2\text{O}_3$  – Traces  
Iron – Nil  
Sintering Porosity – 1200 Degree C  
Compression Strength –  $350\text{Kg/m}^3$   
Bulk Density – 2.0 to 2.2 M.T/ $\text{m}^3$

## Ramming Process Mixing of The Mass.

- Work out the Quantity of Ramming Mass Required, the exact amount will depend upon the Furnace Design.
- Work out the Quantity of Boric Acid required.
- Pre heat the Mass in tray of sheet to  $120^\circ\text{C}$  in batch of 50Kgs. So as to remove the traces of Moisture.
- Transfer it to another cold tray and cool down to  $50^\circ\text{C}$
- Add exactly weighed Quantity of Boric Acid by sieving through 0.20mm screen.
- Mix it thoroughly by Hand.
- Check the mixed batch for ensuring uniform mixing of Boric Acid.



## Lining Care

Continuous operation of furnace will give the best lining life but if intermittent operations are necessary the following are to be taken care of –

1. Check the cracks, If it is small it will close of during heating by expansion of cracks are of, bigger nature then it should be repaired immediately.
2. Check the water temperature of cooling coils, High temperature in the coils causes faster erosion.
3. Avoid cooling below 1000°C for first several heats or minimum 4 days to develop a crack free skin off sufficient thickness.
4. Maintain high levels (2/3 full) for first several heats to prevent erosion of the delicate sintered layer.
5. Avoid Corrosive Ailloys for the first few heats.
6. Avoid drastsic Fluxing.
7. Practice timely de-slagging.
8. Cover the Furnace to save Energy.
9. Avoid rusty scrap in the first few heats.



**Our Mission** is to bring global resources together to unleash our customers' potential to innovate and create amazing new things with us.

## Salient Points of Ramming Mass:

1. Uniform rounded grains with the required size for uniform distribution to give a compact crucible, after ramming & Sintering.
2. It has good resistance to abrasion, thermal shock at variable temperature and corrosion.
3. Silica Ramming Mass lining can be used in all types of plain carbon & Alloy steels Except in case of 1.2%Mn Steels for which Basic lining is to be used.
4. The basic lining material can stand thermal shock.  
It has good resistance to abrasion, thermal shock at variable temperature and corrosion.
5. Above all, the cost of Acidic silica lining material is just 1/6th of Basic lining material.

## Inductive Sintering:

- The Furnace is filled upto the coil upper edge with starting block carefully centered for mains frequency furnace while Heavy scraps for medium frequency furnace.
- The power supply must be regulated through switching on the lowest transformer tap, keep switching the Power on and off at few minutes intervals so that temperature rise of 100°C/hour is achieved for furnaces upto 6 tones capacity and 50% hour for big furnaces with thick lining.
- This risein temperature is monitored upto about 800°C
- After 800°C the power is raised and with about 150°C/hour the heating is continued upto the melting of sintering charge.
- For measurement of temperature Cr/Al thermocouples is used.
- As the charge slowly melts the solid metal is charged to produce a full furnace bath. The temperature is maintained low during entire melting through constant addition.
- As soon as the furnace filled with liquid metal the power is increased in order to reach the sinter temperature.

- The final metal temperature should be raised to app. 30-50°C above the normal operating temperature and held at this temperature for an hour to stabilize the temperature of refractory lining and also sufficient thickness of refractory gets fritted to withstand the physical shock and shape of crucible.
- The furnace shall not be put out of service or cooled under 1000°C during first 4 days of working as possible.



High Silica Refractory Cloth Filter

## Lining Failures and their causes:

- The life of furnace lined with silica, sintered and ready for use very much depends upon the lining practice and working conditions of furnace. While it is common to set in constant life of lining many occasions one has to face sudden failure of lining, the factors which cause problems with lining to be considered are listed below.
- Granulometric composition of mass
- Non-uniform distribution of binding agent.
- Superheating of molten bath.
- Metal penetration.
- Minimum slag free metal resulting in minimum erosion at slag line
- Loss of refractory powder.
- Toppling/lining interface cracking.

## We also dealing in...

- Magnesite Basic Ramming Mass
- Boric Acid (Technical) Powder
- Ferro Alloys / Metals
- Refractory Coatings
- Exothermic Sleeves
- APC powder
- CPC
- RPC
- Graphite Granules / Powder
- Washed Silica Sand Dry /Wet
- Perlite Ore (Slag-30)
- Foundry Fluxes & Chemicals
- High Alumina/Insulating Bricks
- Castables/Coil coating material
- Refractory cloth filters