

### What is RAMMING MASS?

Ramming mass is a pre-blended Dry vibratables refractory made from a selected mix of **SILICA GRAINS**. This blend of grains along with a binder, **BORIC ACID** forms the working lining in an Induction furnace used for melting steel. The application process involves placing a cylindrical steel former within the furnace with equally spaced gaps on all sides. Then the ramming mass is filled into the gaps between the furnace wall and the steel former. This ramming mass is compacted with an electro vibrator. Once the lining is ready, steel scrap is charged, and the power is slowly turned up. Following a suitably designed heating cycle, the lining SINTERS (hardens) and then the steel scrap melts at approximately 1650 °C. Then the lining is ready to use, and scrap is molten and cast into billets or ingots. One lining may last for 5 to 50 cycles of melting, depending on the grade of steel cast, charge mix, melting time and the tapping temperature.

### How is RAMMING MASS manufactured?

Silica rocks are brought in from captive mines to our crushing plant in Jaipur. After initial screening which involves various chemical and physical analysis, the rocks are crushed and sized in various grain fractions.

The various grains fractions are stored in bulk silos. Then the batching plant prepares a batch which consists of a mix of various grain fractions along with the requisite percentage of **BORIC ACID** as per the desired recipe. This batch is then mixed to a uniform consistency and packed in bags. The installed capacity of our crushing, sizing, and mixing plant is 200,000 MT per annum.

### Why is BORIC ACID used in RAMMING MASS?

**BORIC ACID** is introduced in the ramming mass to provide adequate sintering without a marked reduction in the refractoriness of the ramming mass. The production process of ramming mass involves the addition of 0.2 to 5.0% of Boric Acid, which enables the sintering of the crucible lining. Boric acid starts melting at 171 °C and separates to Boric oxide and water. This Boric oxide further reacts with the SiO<sub>2</sub> in the Ramming mass at 440 °C and forming a borosilicate melt. This small percentage of melt formed binds the loose grains in the lining giving it strength. This is the mechanism of formation of a dense contact layer with molten metal and slag, which prevents the penetration of liquid metal into the lining and slows down impregnation of crucible material.