

## Product Information

# Salamander Plumbago Morram 8301A Cement

High thermal conductivity ramming for electric arc furnace applications

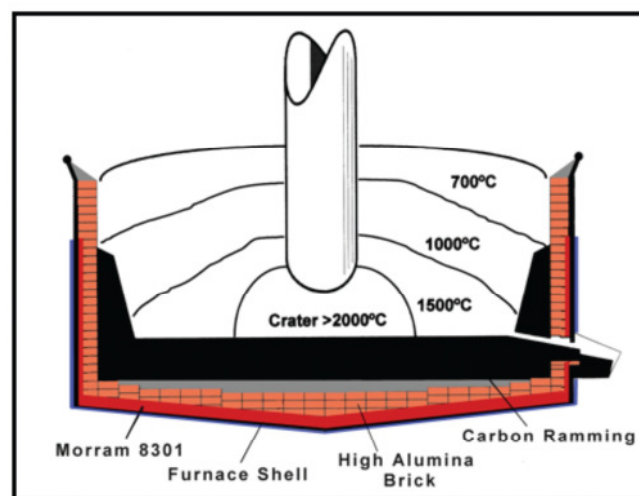
## Introduction

Morram 8301A (MRM8301A) is a high conductivity ramming material manufactured from carefully controlled blends of natural flake graphite (for thermal conductivity), and clays (for ram ability and refractoriness). It has an indefinite shelf life if stored properly in undamaged bags above temp. + 5°C

## Installation

Morram 8301A is supplied ready for use with a moisture content of 12-14%, requires no mixing or heating prior to use and can be installed easily using hand or pneumatic rammers. As a guide, Morram 8301A should be rammed until thumb pressure produces no more than slight indentation. To ensure even compaction throughout, it is recommended that the depth of loose material to be rammed at any one time should not exceed 150mm.

As far as possible, the ramming tool should move in a direction at right angles to the required direction of heat flow thus ensuring maximum cooling effect.



Key: ■ Brickwork ■ Water cooling. ■ Morram 8301.

## Product Information

# Salamander Plumbago Morram 8301A Cement

High thermal conductivity ramming for electric arc furnace applications

## Applications

The wear of refractory linings, in electric arc furnaces, increases as operating temperatures rise. In recognition of this, many furnaces are fitted with a cooling system, the efficiency of which is inhibited by the use of conventional low thermal conductivity refractories. Morram 8301A has been designed to improve the heat exchange between brickwork and the furnace cooling system and thereby extend the lining life and furnace campaign. Morram 8301A is recommended for use in the furnace bottom and the furnace side walls.

## Advantages

- The thermal conductivity of Morram 8301A is at least twice that of conventional high conductivity ramming material.
- The thermal conductivity is maintained even at low rammed densities.
- High thermal conductivity is maintained at working temperatures.
- Easy to install – Morram 8301A is poured straight from the bag and is easily consolidated by hand ramming.
- No heating or other preparation is needed prior to installation.
- Ramming produces marked directional heat flow properties.
- Heat flow may be directed to the cooling system.
- Morram 8301A may be used as a compressible ramming to take up brickwork expansion.
- Indefinite shelf life

## Effect of Temperature

The thermal conductivity of Morram 8301A increases as the rammed density rises but for a given density, it is substantially constant

Method:  
DIN EN ISO 8894-2 (DIN EN 993-15)

Density (g/cc)	Thermal conductivity (W/mK)*		
	44°C	145°C	245°C
1.85	15.59	12.54	11.51
1.75	13.37	12.25	11.45
1.45	7.65	6.53	6.39

\*DIFK Report No. 113-492-00

## Product Information

# Salamander Plumbago Morram 8301A Cement

High thermal conductivity ramming for electric arc furnace applications

## Physical Properties

The thermal conductivity of Morram 8301A is higher than other conventional ramming's, over a wide range of rammed densities.

Chemical analysis % by weight			
Carbon	60 – 70	Al <sub>2</sub> O <sub>3</sub>	9 -13
SiO <sub>2</sub>	15 – 20	Fe <sub>2</sub> O <sub>3</sub>	2 max

**Warning: This material must be completely dry before molten metal is allowed to contact. To do otherwise is dangerous. This material should only be used for the purposes described or recommended.**