



PROTECTIVE • LONG-LASTING • ECONOMICAL

WONDER REFRACTORY COATING MATRIX



VERSATILE INDUSTRIAL APPLICATIONS



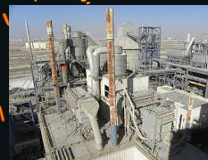
OIL & GAS
INDUSTRY



POWER
PLANTS



FURNACES & CRUCIBLE
MANUFACTURER



CEMENT
INDUSTRY



ROTARY KILN AND
BOILER INDUSTRY



ZIRCOAT is zirconia rich, high temperature, erosion / corrosion resistant ceramic water - based refractory coating compound, which is available in two grades; ZIRCOAT-HT and ZIRCOAT-M

MAX SUITABLE TEMPERATURE	
Zircoat - M : 1500 °C	Zircoat - HT : 1800 °C

Zircoat is the outcome of the untiring efforts put in by our scientists and technicians, backed by a state-of-the-art R&D laboratory.

Zircoat marks the development of a unique Zirconia Ceramic Refractory Coating compound, which will prove greatly beneficial to the industries where erosion/corrosion is a severe and chronic problem for refractories and kilns.

MAIN CHARACTERISTICS & ADVANTAGES OF ZIRCOAT

- Easy to apply by trowelling, brushing or spraying.
- Good adhesion to metals, refractory bricks, monolithics, castables and ceramic fibre modules, molten metal, graphite /carbon crucibles etc.
- Resistant to severe attack and sand blasting effect of burning fuel oil
- Resistant to the influence of steam, acids, alkalies, fumes of sulphur and Vanadium compounds and molten metals.
- Excellent dry strength
- Good chemical resistance
- Reduction in slag adhesion
- Odourless and nonhazardous
- Considerable increase in service life of refractory linings and heating systems

CHEMICAL PROPERTIES

	ZIRCOAT - M	ZIRCOAT - HT
ZrSiO ₄	> 85 %	> 98 %
Others	< 13 %	< 2 %



APPLICATION PROCEDURE OF ZIRCOAT

Zircoat should be applied on clean surfaces only. Old refractory surfaces must be thoroughly cleaned with a scraper or wire brush, removing all loose pieces and particles. Any glossy surface should be thoroughly roughened with an abrasive disc. Cracks and holes should be cleaned and then filled with a thick Zircoat paste. Before applying Zircoat, the surfaces of refractories, castables etc. may be dampened with water.

Mixing : Thoroughly dry mix the Zircoat powder, add clean tap water to it to form a smooth paste of toothpaste like consistency. Add required quantity of water to adjust the consistency of the mix to suit brushing, trowelling or spraying applications.

Excess water will lead to high shrinkage, crack development & loss in mechanical strength.

The pot life of the good mix is for around 8-10 hours at room temperature. Therefore consume the mix during this period.

Application : Coat the surface by brush, spray or troweling to a thickness of 1-3 mm.

If required, further coats can be repeated to increase the coating thickness. Zircoat is also used as a cementing mortar for building and laying of new refractory brick lining.

Drying : Allow each coat to dry thoroughly at ambient temperature. (For 1-3 mm thick coats 24 hour; for thicker coats & mortar masses 24-72 hours).

Initial Firing : Raise temperature slowly at the rate of 20°C - 25°C / hour up to 600°C. Thereafter at usual rate to bonding temperature.

MINIMUM BONDING TEMPERATURE	
Zircoat - M : 750 °C	Zircoat - HT : 1500 °C

PHYSICAL PROPERTIES

	ZIRCOAT - M	ZIRCOAT - HT
Colour	Creamish	Creamish
Coverage (1mm Thick)	2.5 kg/sqm	2.5 kg/sqm
Bulk Factor	1.79	2.11
Bulk Density (Powder)	1.60	1.90
Bulk Density (Coating)	3.0 g/cc (1000 °C)	3.1 g/cc (1600 °C)
Apparent Density	4.1 g/cc (1000 °C)	4.5 g/cc (1600 °C)
Porosity	27 % (1000 °C)	32 % (1600 °C)
Water Absorption	9 % (1000 °C)	10 % (1600 °C)
Shrinkage	< 1 % (1000 °C)	< 2.5 % (1600 °C)
Cold Crushing Strength	297.5 kg/cm ²	350 kg/cm ²
Electrical Properties	Good Insulation	Good Insulation
Thermal Shock Resistance	Excellent	Excellent
Thermal Conductivity(1000 °C)	0.55 W/mK	0.45 W/mK
Temperature Resistance	1500 °C	1800 °C

THE USE OF ZIRCOAT IN SOME MAJOR INDUSTRIES



IRON & STEEL INDUSTRY

Apply around 3 to 5mm thick Zircoat between ganister and steel shell of the heating chambers of the cupola and accordingly suitable thickness coating for patching

receivers, ladles, funnels, spouts etc., and over refractory bricks in reheat furnaces, soaking pits, open hearth floors, furnace doors, sloping floors etc. Zircoat is used as a lubricant in the preparation of steel ingots for better quality and better finish of steel plates, castings etc. Zircoat acts as a barrier and as an armour coat on the linings of electric arc furnace, producing special grade steels.



KILN FURNITURE AND CRUCIBLES

Life of silicon carbide, mullite, alumina, cordierite refractory kiln furniture as well as graphite crucibles can be increased

considerably by brushing or spraying with 1 to 2mm thick Zircoat.



INDUCTION MELTING FURNACES

Zircoat-HT is used to reinforce refractory bricks lining between electric bobbins and silica ramming by trowelling with 3 to 4mm thick

coating on outside and 5 to 6mm thick coating on inside refractory brick walls. Coating has to be properly dried to expel entrapped moisture.

After proper setting of Zircoat, silica sand has to be rammed in between the steel sleeve and 5mm thick asbestos or mica sheet to form an average silica wall thickness of 200mm. Melting of steel starts and the steel sleeve is allowed to melt away and get dissolved in the molten steel. After removing the molten metal from the trough, coating of pure silica is formed on top of the Zircoat coating.

Zircoat-HT is excellent to protect the heating system from following problems:

- Rammed silica lining and fireclay bricks cracks due to thermal shocks.
- Slagging of molten metal passage obstructs free flow of metals.
- Eroding of silica lining and contamination of molten metals
- Faster leaching out of refractory bricks in contact with molten metal.



TOWN AND NATURAL GAS INDUSTRY

The coatings can perform satisfactorily and offer prolonged protection. The life of heat transfer units of domestic and industrial

boilers can be improved further by applying 3 to 4mm thick Zircoat over the refractory lining.



CHEMICAL + PULP AND PAPER INDUSTRY

Zircoat coating increases the life of heating systems considerably due to its resistance to acids and waste gases. The service life of kilns,

furnaces and heating chambers can be extended multi folds if coated with Zircoat.

USE OF ZIRCOAT-HT IN ROTARY KILNS

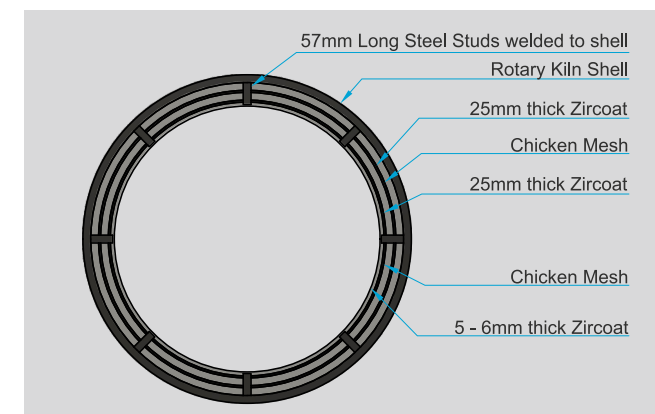
Zircoat is also an ideal and excellent refractory coating for rotary kilns, ducts etc. 25mm thick Zircoat coating is sufficient for obtaining superior results.

Procedure :

Weld 6mm dia x 57mm L steel studs to the inside tubular kiln chamber wall at (12") 305mm centres.

Apply around 25mm thick Zircoat coating (in convenient small thickness layers) on the bottom half of the cylinder and fasten a mild steel wire mesh to the bolts over the coated area and press it tightly. The Zircoat coated shell must be heated to completely dry out the moisture.

After thoroughly drying out the coating, again apply 25mm thick Zircoat on the surface of wire mesh and repeat a further layer of wire mesh tightly secured over the coated area. Once again thoroughly dry up the coated area. This makes total thickness of Zircoat-HT coating around 55mm above the steel shell. Apply a final coat of around 5 to 6mm to ensure that the steel studs are totally immersed in Zircoat. The System should be heated up for around 48 hours until 150°C to ensure that all the moisture is completely removed. After that the temperature can be increased at the usual rate.





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