AEPCO
Auto Electric Products Co.
Coating Division

PRODUCT DATA SHEET

THERMOPLAST-1800

(Temperature Resistant, Electrically Insulating, Anti-oxidation Coating/Paste)

Service Temperature: 2750^{0} C + 10%

Description

THERMOPLAST-1800 is prepared by mixing two dissimilar minerals in predetermined proportions with a unique binder. It is effective, chemically strong and forms a strong bond with the principle surface. Thermoplast-1800 provides high temperature resistance, electrical insulation and anti-corrosion properties. Chemical bonding of Thermoplast-1800 (with the surface) effectively starts after 57^{0} C and finishes completely by 130^{0}C, when the mix settles down to form Thermoplast-1800; an effective, stable bonded coating/paste.
Thermoplast-1800 paste is highly hygroscopic at room temperature but becomes non-wetting after complete curing (heat treatment) and does not absorb any moisture. It can withstand temperatures up to 2750^{0} C + 10% with its electrical and other properties being stable.

Salient Features

- Acts as anti-oxidation and anti-erosion material at elevated temperatures.
- Thermal shock bearing capacity is very high, therefore doesn't disintegrate with thermal shocks.
- Non-wetting or non-sticky; therefore molten metal doesn't stick to the coated surface which reduces oxidation and increases life of the black refractory and ladle lining.
- High temperature resistant and electrical insulation properties developed are stable at elevated temperatures.
- Thermal inertia and emissivity is very high.
- Improves thermal resistance property of the old refractory brick lining to the level of new brick lining.
- When coated on high temperature element, Thermoplast-1800 reduces oxidation, therefore enhances life of the heating element.
- High electrical insulation and mechanical strength:
  - High degree of electrical insulation helps reducing in energy/fuel consumption.
  - Above 110^{0} C, coating's mechanical strength is excellent and increases further (without peeling) as the temperature rises up to 2000^{0} C and reduces thereafter.
  - The paste is gray in color up to 600^{0} C, white from 600^{0} C to 1250^{0} C and silver thereafter.
  - High temperature holding time can be achieved by coating Thermoplast-1800 on lining of the furnace.
  - Suitable for coating floors of LWG and Acheson furnace (used in graphitization of graphite electrode) because of the high electric insulation and mechanical strength of Thermoplast-1800.
  - Solution to the problem of temperature leakage, thermal insulation failure and excess fuel consumption in high temperature process industries.
- Anti-corrosive; no effect of So_2, So_3 and acid fumes on coating.
- Reduces downtime due to thermal breakdowns; Thermoplast-1800 offers immediate recovery from thermal break down which helps to achieve unimpeded operations.

Scope of Application

- High temperature baking furnaces, induction/electric arc/vacuum furnaces, LRFs, SAFs, kilns and boiler tubes /burners/hot air exhausts, graphitization furnace.

- Burner equipment, casings, ports, baffles, black refractories (Sub-entry nozzles, shroud tubes, stoppers etc).
- Graphite crucibles, HCl synthesis burners, stirrers, stoppers and other specialties.
- Heavy-duty castings, repair of moulds.
- Reconditioning of refractory brick linings and joints, con-cast, tundish.
- Temperature sensors (Thermocouples).
- Gas pipelines.

Technical Specification

1	Viscosity	Thick paste
2	Colour	White
3	Coverage factor	2-3 ft^2 per Kg (with 1mm thickness). Depends on the condition of the eroded refractory surface and thickness of the coating.
4	Adhesion to surface	Refractory surface: excellent; bonding increases with rise in temperature. Metallic surface: good at elevated temperatures around 1500^0 C.
5	Absorption	Non-wetting / Non-sticky against molten metal
6	Thermal Conductivity	Semi thermal conducting (standard coating is 40% thermal conducting but it can be varied)
7	Chemical reactivity	Neutral against acidic and alkaline solutions/liquid.
8	Electrical conductivity	Non-conducting; highly electrically insulating at elevated temperatures around 1800^0 C + 10% and doesn't absorb moisture at elevated temperatures.
9	Storage	Container must be stored at room temperature (10^0 C – 49^0 C). Once pack is open, material must be used immediately.
10	Shelf life	6-7 months from date of manufacturing in an unopened container.
11	Thickness	Varies with different application and service temperature.
12	Packaging	20 Kilograms
13	Safety	Thermoplast-1800 should be applied in open ventilated space.

Designed and developed by:
A.P Patki
Innovator of New Generation High Temperature Coatings