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Furnace Protector Coating Technical Data Sheet

Product Description

Furnace Protector Coating is a high-performance, heat-resistant coating designed to protect industrial furnaces, kilns, and other high-temperature equipment from the damaging effects of thermal stress, oxidation, and abrasion. This advanced coating forms a durable barrier that resists extreme temperatures, up to 1000°C (1832°F), making it ideal for use in environments where heat exposure is constant or extreme. The product is specially formulated with a blend of inorganic binders, reinforced with ceramic fillers, to provide superior thermal stability, corrosion resistance, and surface integrity. Furnace Protector Coating not only protects the substrate from heat-induced damage but also improves the efficiency of the furnace by maintaining consistent operating conditions. Its formulation is designed to withstand the rigors of thermal cycling, which ensures long-lasting performance and protection for metal surfaces prone to oxidation or scaling under high heat.

Furnace Protector Coating is easy to apply and dries quickly, allowing for minimal downtime in furnace maintenance or construction. It can be applied on steel, cast iron, refractory materials, and other surfaces commonly exposed to high temperatures. The coating's excellent adhesion and thermal shock resistance make it an essential component for enhancing the operational lifespan of furnaces, kilns, incinerators, and other thermal processing equipment.

This coating also offers a smooth finish that is resistant to abrasion, helping to prevent wear and tear caused by constant material movement in industrial furnaces. Additionally, it can protect components from corrosive gases and residues, extending the maintenance intervals and improving the safety of high-temperature operations.

Recommended Use

1. **Industrial Furnaces and Kilns**: Furnace Protector Coating is primarily used to protect the interiors and exteriors of industrial furnaces and kilns exposed to extreme temperatures. It helps maintain the integrity of the furnace structure while preventing the effects of oxidation, scaling, and heat damage. It is ideal for cement plants, steel mills, and glass manufacturing industries.
2. **Metal Casting**: The coating is perfect for use in foundries and metal casting operations where components are exposed to molten metals and intense heat. It offers protection to molds, casting machinery, and tools against thermal shock and wear.
3. **Incinerators**: Incinerators, which operate under high heat conditions, can benefit from the protection offered by Furnace Protector Coating. It prevents the buildup of scale and corrosion from the combustion process, ensuring a longer life for the equipment.
4. **Heat Exchangers and Boilers**: The coating can also be applied to heat exchangers, boilers, and other high-temperature piping systems. It acts as a thermal barrier, reducing heat loss and protecting the underlying metal from thermal degradation.
5. **Refractory Surfaces**: Furnace Protector Coating is effective in protecting refractory materials inside industrial equipment, such as boilers, furnaces, and reactors. It ensures that the refractory surfaces remain intact and efficient over long periods of high-temperature operation.
6. **Exhaust Systems and Flues**: The coating is useful for protecting exhaust systems, ducts, and flues in industries that generate high-temperature gases. It helps prevent corrosion and oxidation due to exposure to hot, acidic, or corrosive fumes.
7. **Heating Equipment**: This product can be applied to heating equipment like gas heaters, electric furnaces, and radiators to protect the surfaces from heat-induced wear and tear, ensuring prolonged performance.

8. **Other High-Temperature Applications**: Furnace Protector Coating can be used in any other equipment or machinery exposed to constant or intermittent high temperatures, providing protection from thermal degradation, oxidation, and corrosion.

Technical Data Specification

- **Colour**: Grey to off-white
- **Finish**: Smooth, matte
- **Binder**: Ceramic-based inorganic binders
- **Viscosity**: 300–400 KU (Krebs Units)
- **Specific Gravity**: 1.8–2.0 g/cm³
- **Drying Time**: Touch dry in 1–2 hours; fully cured in 24 hours
- **Heat Resistance**: Up to 1000°C (1832°F)
- **Flash Point**: N/A (non-flammable)
- **Abrasion Resistance**: Excellent (ASTM D4060)
- **Chemical Resistance**: Resistant to most acids, alkalis, and thermal oils
- **Volume Solid**: 75-80%
- **Application Method**: Brush, roller, or spray
- **Coverage**: 6–8 m² per liter per coat
- **Storage Temperature**: 5–30°C (41–86°F)
- **VOC Content**: < 50 g/L
- **Adhesion**: Excellent adhesion to metal and refractory surfaces
- **Dry Film Thickness (DFT)**: 50–100 microns per coat

Dosage, Addition, and Method of Application

1. **Dosage**:
   - The recommended coverage rate for Furnace Protector Coating is 6–8 m² per liter per coat, depending on the surface texture and porosity. For highly porous surfaces, multiple coats may be required to achieve a consistent, protective layer.
2. **Addition**:
   - **Pigments**: The coating is available in a standard grey or off-white finish. For specific needs, custom colors can be achieved by adding compatible pigments. Ensure proper mixing for even color distribution.
   - **Thinning**: If thinning is required, use an appropriate solvent based on the type of application (for spray applications, a small amount of water or solvent may be required). Follow the manufacturer's instructions on the recommended dilution ratio.
   - **Additives**: No special additives are needed for most applications. However, if anti-slip or additional heat resistance is required, suitable additives can be mixed in.
3. **Method of Application**:
   - **Surface Preparation**: Ensure the surface to be coated is clean, dry, and free from any contaminants such as oil, grease, or dirt. For metal surfaces, remove rust, scale, or oxidation by abrasive blasting, wire brushing, or chemical rust removal. For concrete or refractory surfaces, use a cleaner to remove any loose debris. Light sanding may be required for smooth, non-porous surfaces to improve adhesion.
   - **Mixing**: Stir the Furnace Protector Coating thoroughly to ensure uniform consistency before application. If additives or pigments are added, mix thoroughly to ensure an even dispersion of materials.

- **Application by Brush or Roller**: For small to medium-sized areas, apply the coating using a brush or roller. Use a medium-pile roller for large, flat surfaces and a brush for edges or intricate details. Apply the coating evenly, working in long, continuous strokes to prevent drips and ensure uniform coverage.
- **Spray Application**: For larger surfaces, use an airless spray gun. Adjust the nozzle for a fine spray pattern, ensuring a smooth, consistent layer of coating. Maintain the correct spraying distance to avoid excessive buildup or overspray. Always spray in thin, overlapping coats.
- **Drying and Curing**: Allow the first coat to dry for 1–2 hours at room temperature before applying additional coats. For full curing, allow the final coat to dry for 24 hours. Drying time may vary depending on environmental conditions such as temperature and humidity.
- **Clean-Up**: Clean all tools and equipment immediately after use with an appropriate solvent or water (depending on whether the product is water-based or solvent-based). Proper cleaning prevents the coating from hardening on tools, ensuring their longevity.

Safety Instructions

1. **Handling**:
   - Always wear appropriate personal protective equipment (PPE) including gloves, goggles, and a respirator with organic vapor cartridges. This will protect against skin irritation and inhalation of fumes or dust during application.
2. **Ventilation**:
   - Apply the product in a well-ventilated area, especially when working indoors. Use local exhaust ventilation or ensure adequate airflow to minimize inhalation of vapors and fumes.
3. **First Aid**:
   - **Skin Contact**: Wash with soap and water immediately. If irritation persists, seek medical attention.
   - **Eye Contact**: Rinse eyes with plenty of water for at least 15 minutes. If irritation continues, seek medical attention.
   - **Inhalation**: Move the person to fresh air immediately. If symptoms persist, seek medical assistance.
   - **Ingestion**: If swallowed, do not induce vomiting. Rinse mouth with water and seek medical attention.
4. **Storage**:
   - Store the coating in a cool, dry place away from direct sunlight, heat, or open flames. Ensure containers are tightly closed when not in use to prevent contamination and evaporation.
5. **Disposal**:
   - Dispose of any unused product and empty containers in accordance with local environmental regulations. Avoid disposing of in drains or water systems.
6. **Fire Hazards**:
   - Furnace Protector Coating is non-flammable, but always take precautions to avoid open flames or sparks when handling any industrial coating.

Furnace Protector Coating is a reliable solution for protecting high-temperature equipment from damage, improving operational efficiency, and extending the service life of furnaces, kilns, and other heat-exposed machinery.