



Technical Data Sheet

HES-71

PRODUCT DISCRIPTION:

HES-71 is an advanced high emissivity thin film spray applied ceramic coating specifically formulated to provide external corrosion protection of both carbon and stainless steel process tubing while increasing heat transfer and thermal efficiency.

The high emissivity property of the ceramic coating will improve the thermal efficiency and throughput capability of the ceramic coated process heater, which is accomplished by increasing the absorbed duty capability of the ceramic coated process tubing while eliminating the formation of the insulating surface layers.

The coating is a high solids system which can be applied to a dry film thickness of 4 to 8 mils and has no VOC (Volatile Organic Compound) content.

HES-71 is thermally conductive and bonds well to properly prepared carbon steel or stainless steel substrates. Due to its organic composition HES-71 is very stable and will neither outgas, nor cause skin irritations like many other high temperature coatings.

Working properties of the coating exhibit an extended shelf life prior to exposure to air. Upon curing HES-71 becomes a durable ceramic coating that will provide protection to boiler and furnace tubing and other steel substrate temperatures to 1,500° F (816° C) and will withstand thermal cyclic conditions to 1,650° F (899° C).

PHYSICAL PROPERTIES:

Color	Grey
Finish	Smooth
Maximum service temperature	1650° F (899° C)
Emissivity	0.92 at 550° F (288° C)
Bond Strength	2150 psi
Tensile Strength	2240 psi

Note: Physical properties were determined on specimens prepared under laboratory conditions using applicable ASTM procedures. Actual field conditions may vary and yield different results; therefore data is subject to reasonable deviation.

CHARACTERISTICS

- Resistant to 1650° F (899° C)
- Resistant to severe cyclic conditions
- Corrosion resistant
- Thermally conductive, promotes heat transfer
- Reduces scaling
- Resist gases, oils, solvents and most acids
- Non-toxic and odorless
- Adheres to carbon steel, stainless steel, refractory and organic surfaces
- Good mechanical bonding
- High emissivity

INDUSTRIES

- Power Plants
- Refineries
- Chemical Facilities
- Cement Plants
- Pulp and Paper
- Steel Processing
- Waste to Energy Plants

USES

- Gas and oil fired boiler tubes
- High heat ducts and piping
- Fired heater radiant furnace tubing

SPECIFICATION DATA

Components	Double
Dry time between coats @ 50% R.H., 70° f	1 hour
Volume solids	88%
Theoretical coverage @ 1 mil. D.F.T.	600 sq.ft./gal.
Thinning liquid	None required
Metal temperature during application	50° F – 200° F
Weight per gallon	15.4 lb.
Storage temperature	33° - 100° F (0.5° - 38° C)
Shelf life (before mixing)	6 Months (120 days after mixing)
Cure conversion temperature begins at:	+ 300° F (204° C)

SURFACE PREPARATION

Surfaces to be coated must be dry and free of all chlorides, weld splatter, oil, dirt, grease, liquor and all other contaminants. Round off all rough welds and sharp edges. Abrasive blast to achieve a SSPC-SP5 (white blast) specification. Garnet or other hard sharp materials are recommended for abrasive blasting. A 2 to 3 mil surface profile is recommended.

APPLICATION INSTRUCTIONS

Surface temperature must be a minimum of 5° F (3° C) above the dew point. Do not apply to steel temperatures below 50° F (10° C).

*Do not exceed dry film thickness recommendations.

HES-71 is normally sprayed but if applied by brush mechanically mix container every 5 minutes during application to assure proper particle suspension.

WARNING! Do not thin HES-71 as poor film characteristics may occur.

Application to hot surfaces (+200° F, 93° C) tends to promote dry spray and may cause blistering to occur. HES-71 normally dries by ambient air drying. If the temperature is below 70° F (93° C) and the humidity is high slower drying will occur. Low temperature oven or heat drying may be used to accelerate the drying time. Do not exceed 200° F (93°C) during accelerated drying.

HES-71 should be applied in minimum of two coats of 2-3 mils per coat. Each coat must dry for 1 hour before additional coats are applied. If heat cure is used to accelerate drying assure that the temperature does not exceed 200° F (93° C).

If thicker coating is required allow each coat to completely dry before subsequent coats are applied. Moderate heating can be applied between coats if required.

EQUIPMENT

Conventional or airless spray is recommended. Adjust pressure as needed. Hold gun 10" to 12" from the surface at right angles. Lap each pass 50%.

MIXING

Use mechanical agitation for mixing and during application. Mix materials until smooth and uniform in consistency. Adjust mixing speed to allow for material suspension without cavitations. It is recommended to screen the material before application.

CLEAN-UP

All equipment should be cleaned with soap and water before the coating dries. If removal is required after the coating has dried.

CAUTION

Consult Material Safety Data Sheets and container label caution statements for any hazards in handling this material.

