

HiE-Coat™ 840-Series coatings are ideal for improving the radiant heat transfer efficiency in gas-fired furnaces and kilns used in petrochemical refineries and the ceramic, chemical process and power generation industries. These coatings are typically applied to metal process tubes and refractory liners including ceramic fiber, dense brick, castables, and insulating firebrick.

HiE-Coat™ 840-C, 840-CM & 840-CX Refractory Coatings

Uncoated refractory reflects a majority of incident radiant energy back into the furnace flue gas at the same spectral wavelength at which it is emitted from the gas. Energy is then re-absorbed by the gas, limiting the amount of energy transferred to the work-load.

High emissivity coatings on furnace walls absorb more of the incident radiant energy and re-emit this energy across the full black-body wavelength spectrum. This spectral redistribution of emitted energy allows more radiant energy to pass through the flue gas and be transferred to the work-load.

Given that absorbed heat is immediately re-radiated to the cooler work-load, more heat is made available causing the flue gas temperature to decrease because less of the available heat is absorbed and stored in the refractory lining. As such, the refractory lining stays cooler and experiences less thermal shock and stress. Lower refractory temperatures reduce devitrification and shrinkage of ceramic fiber modules and dense refractories resulting in longer refractory life and reduced maintenance costs.

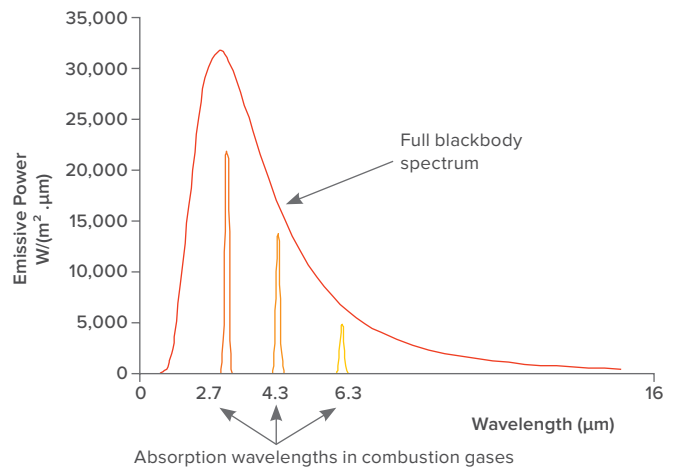
High Emissivity Coating Benefits for Refractory-Lined Furnaces

- Rapid Heat-Up
- Shorter Cycle Times
- Decreased Fuel Consumption
- Increased Heat Transfer
- Improved Temperature Uniformity
- Increased Refractory Life
- Minimizes Refractory Dusting
- Reduced Build Up of Gas By-Products on Refractory



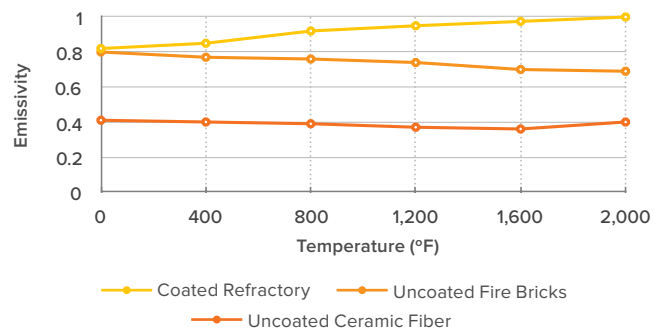
HiE-Coat™ 840-C applied to ceramic fiber module.

Emissive Power vs Wavelength Chart



This chart illustrates the full blackbody spectrum versus the absorption wavelengths in combustion gases.

Increased Emissivity of Coated Refractory vs Uncoated Firebrick vs Uncoated Ceramic Fiber



This chart illustrates emissivity of coated versus uncoated firebrick and ceramic fiber.

HiE-Coat™ 840-M, 840-MS & 840-MX Metal Tube Coatings

This series of high emissivity coatings is available for maximizing the thermal efficiency of radiant heater process tubes. These coatings help to limit scale formation thereby improving the thermal conductivity of the tubes and radiant heat output. Tube scale causes a significant drop in thermal conductivity requiring additional energy input to maintain the same production rate. HiE-Coat™ metal coatings applied in a dry film thickness of 2–3 mils helps to significantly reduce oxidation and corrosion of the metal tube.



HiE-Coat™ 840-M coats industrial heat exchanger.



HiE-Coat™ 840-M coats gas-fired heating tubes.

High Emissivity Coating Benefits for Refractory-Lined Furnaces

- Improved Thermal Conductivity
- Increased Production Rate
- Decreased Fuel Consumption
- More Uniform Tube Wall Temperature
- Longer Tube Life
- Lower Emissions

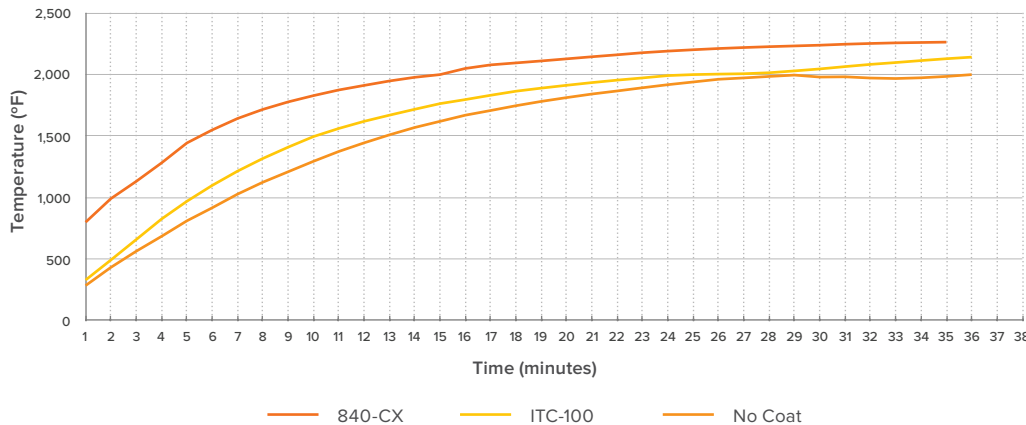
Effect of soot buildup on thermal conductivity of process tubes



Case Study

HiE-Coat™ 840-CX was applied to a specialty propane gas forge that was properly designed and well insulated to limit heat losses. The ramp up temperature was compared to both uncoated refractory and refractory coated using a competitor's product called ITC-100. It was found that the 840-CX helped to achieve a 200 °F higher forging temperature in one-half the time.

Forge Ramp Speed



HiE-Coat™ 840-CX applied to a gas-fired forge.

Refer to Price List for complete order information.

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The user assumes all risk of use or handling whether or not in accordance with directions or suggestions, or used singly or in combination with other products.