White Paper: Advancing Industrial Insulation with NanoTech Materials' Cool Touch Coating





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Introduction

Thermal insulation in industrial environments is not just an energy management concern-it's a safety, maintenance, and cost control imperative. Surfaces such as steam lines, heated tanks, boilers, and other high-temperature assets pose risks of energy loss, personnel burns, and condensation-related corrosion. Historically, solutions like aluminum jacketing and multilayer insulation systems have addressed these challenges but at the expense of labor, cost, and long-term maintainability.

NanoTech Materials, Inc. has introduced a new generation of thermal protection with its Insulative Coat: Cool Touch, an advanced spray-on coating formulated with the company's patented Insulative Ceramic Particle™ (ICP) technology. Cool Touch stands out for its powerful thermal barrier, application efficiency, and long-term durability. This paper explores how Cool Touch compares to market alternatives-including Mascoat coatings and metal jacketing systems-and why it is increasingly becoming the preferred solution for high-heat industrial environments.

Core Technology Overview

At the heart of Cool Touch is NanoTech's proprietary ICP[™] additive, a non-toxic, highemissivity ceramic powder engineered to deliver extremely low thermal conductivity. Unlike traditional insulation materials that rely on mass or air pockets to slow down heat transfer, ICP uses energy band theory to reduce phonon transport-actively impeding heat conduction at the molecular level. This results in high-performance thermal insulation that does not compromise the mechanical integrity of the coating.

Cool Touch delivers thermal conductivity values near 0.05 W/m·K, combined with emissivity ratings above 0.88, and is capable of maintaining surface temperatures well below personnel burn thresholds even when exposed to substrate temperatures exceeding 350°F (177°C).



Flaking

None

Performance Validation

Cool Touch has been independently tested to NACE TM21423 standards, confirming its ability to prevent skin-contact burns at multiple operating temperatures with a single-coat application. For example, at a substrate temperature of 115°C (239°F), the surface temperature of a 41-mil coating remained at just 48°C (118°F)—well below the 58°C safety threshold for human contact.

The coating also passed ISO 12944 natural salt spray and condensation resistance tests, making it suitable for corrosive industrial environments such as refineries, chemical processing plants, and offshore platforms.

Electrolytic Solution		Duration		Temperature		Duration		Temperature	
50 g/NaCl		720 hours (30 Days)		(35+/-2) C		480 hours (20 Days)		(35+/-1.3) C	
DFT Thicknesses	Blistering	Rusting	Cracking	Flaking	Corrosion at Scribe	DFT Thicknesses	Blistering	Rusting	Cracking
91.2-183.2 mils	None	0	None	None	0.0mm	103.2-179.4 mils	None	0	None
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Comparison with Industry Leader Mascoat

Mascoat is a recognized leader in thermal coating systems, particularly in the industrial insulation sector. However, sideby-side comparisons demonstrate several **critical advantages** of NanoTech's Cool Touch system:

Feature	NanoTech Cool Touch	Mascoat Industrial-DTI
Application Passes	1–2 passes (max 80 mils)	3-4 passes (often 120+ mils)
Cure Time	Fast cure, spray-on	Multi-day cure cycles
Personnel Burn Protection	Achieved at 41–80 mils	Requires thicker layers
Labor and Material Costs	~40% lower total application	Higher due to thickness and passes
VOC Content	Water-based, low-VOC	Water-based, moderate VOC
CUI Prevention	Passes ISO standards	May require additional prep

With fewer passes, faster application, and comparable or better performance metrics, **Cool Touch reduces labor and material costs by approximately 40%**, providing a significant operational advantage in large-scale industrial settings.

Advantages Over Aluminum and Steel Jacketing

Traditional **metal jacketing systems**—common in industrial and refinery environments—serve as physical insulation covers layered over mineral wool or calcium silicate. While effective in heat retention, these systems come with several inherent drawbacks:

- High labor intensity for installation, inspection, and maintenance.
- Vulnerability to corrosion under insulation (CUI) from trapped moisture.
- Inflexibility for irregular geometries and tight-space applications.
- Slow ROI due to high upfront and ongoing maintenance costs.

In contrast, **Cool Touch applies directly to primed steel surfaces**, forms a seamless barrier, eliminates condensation, and **does not promote CUI**. It conforms to complex geometries and is ideal for retrofits and areas where traditional insulation is impractical.

Use Cases and Immediate Applications

Cool Touch is ideal for:

- Heated tanks and vessels
- Steam and condensate lines
- OEM and skid systems
- Refineries, food production, and chemical plants
- Military infrastructure and rugged environments

The product has been adopted in projects involving **DOT infrastructure**, **Fortune 500 facilities**, **and high-heat processing plants**, where quick ROI, safety compliance, and long-term durability are essential.

Conclusion

NanoTech Materials' Cool Touch coating represents a leap forward in thermal insulation materials science. Its integration of ICP[™] technology into a user-friendly, water-based coating delivers superior performance with fewer application passes and significantly lower labor costs than traditional systems like Mascoat or metal jacketing. For facility managers, safety officers, and energy efficiency leaders, Cool Touch offers a practical, scalable, and proven alternative for managing industrial heat challenges.