

CeramaTherm Extreme Insulation

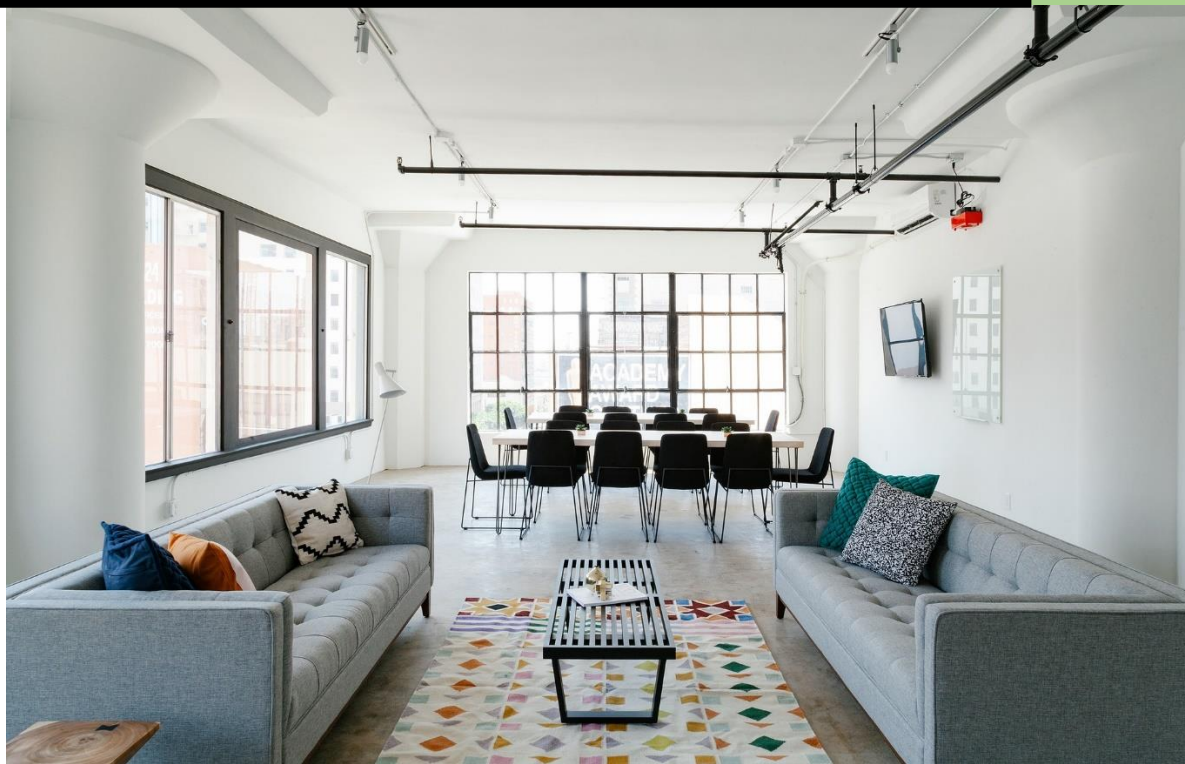


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BG400 CeramaTherm Insulation Coating

CeramaTherm is an extremely unique, ultimate performance, ceramic-based, epoxy sealer coating insulator. It is white, UV-resistant, flexible, durable, waterproof, and breathable. It also provides up to 68% sound reduction and has a Class-A fire rating. It is reliable and versatile, working safely and efficiently in extreme temperatures from Canada to Kuwait, from deep sea to outer space, innovating the future of insulation and enduring in the harshest of environments.

CeramaTherm contains Aerogel and insulates in four ways - via convection, conduction, radiance, and reflection, providing for extreme thin-film insulation functionality. At 0.01", 10 mils, 0.25 mm thickness, the K value is 0.02 W/mK. It can get dirty, lose its reflectivity, be covered in water, and it will still insulate because of the type of components that have been incorporated into the product. It is designed to endure and last for years; it handles high attrition well.

CeramaTherm may be used for interior and exterior applications, and effectively eliminates thermal bridging. For example, it is often used as a stand-alone roofing product, or to encapsulate various roofing materials. It is fully waterproof, and its extreme insulation value stops Thermal Shock, thus extending roof and exterior building wrap life. Applied correctly, it inhibits damage from standing water, and once fully cured, CeramaTherm can remain underwater with no harm to the coating. It is resilient, impact-resistant surface also withstands 2.5-inch hail at 140 mph / 225 kph.

CeramaTherm provides multiple application benefits, including corrosion protection. Use on warehouses, steel buildings, steel structures, aluminum and on old concrete structures, stucco finishes, and the same, and may be applied directly over tight rust. It offers unmatched protection against heat and cold extremes, mildew, alkali, UV, oils, and grease. It can be applied to a dry or damp surface, making rain a non-issue at application time.

CeramaTherm covalently bonds and adheres to practically all surfaces with remarkable flexibility at thermal extremes. As a result, it can be applied directly to metal, PVC, Concrete, EPDM, cap-sheet, wood, stucco, sheetrock, and almost any properly prepared substrate. It can be used to safely encapsulate and seal in asbestos, as long as the base asbestos material still has complete structural integrity, so there is no tear-off or hazardous landfill waste.

CeramaTherm is *not* recommended to be applied directly to Teflon, high-plasticized vinyl, polyethylene, or silicone rubber. However, by utilizing the BlueGold Labs **BX520HT Primer**, it can even be applied to polyethylene and other similar difficult to-bond-to surfaces. We recommend the client tests first when encountering these types of finishes.

Once cured, the product maintains its flexibility to prevent cracking with a working temp from -92°F / -69°C to >300°F / 149°C. It is straightforward to use with long pot life, high insulation, high reflectivity, and high emissivity. It is environmentally responsible by being chemically inert, benign, non-toxic, and non-leaching. It withstands acids and alkalis, salt, animal fats, grease, and oils.

CeramaTherm may be used during construction on the interior hulls of ships to provide insulation, waterproofing, and weight savings. Noise reduction of up to 68% significantly lowers motor and other noises that can impact fish. When the ship hull is made of steel it is naturally porous; it is recommended to first apply **BL170 Rust Tight**. The Rust Tight will seal the steel and turn any rust into a type of ceramic finish. Apply the CeramaTherm over the Rust Tight. This process is necessary to provide the ultimate long-term protection and to ensure the coating integrity with a steel substrate.

CeramaTherm comes in a 25-gallon kit. It contains One 5-gallon pail of Part A & Five 5-gallon pails each holding 4-gallons of part B. Combined 1:4 Part A to Part B, to make 5 full gallons per mixed 5-gallon container. Coverage on a smooth surface is 120 sq. ft per gallon (11.2 sq. meters). A mixed 5-gallon pail covers 600 sq. ft. The whole 25-gallon kit covers 3000 sq. ft. It can be tinted with a water-based tint to any pastel color. For a more robust darker color, you can top-coat CeramaTherm with any coating from the **BZ600 2K color coating series**, which has a fire rating of 1,100°F / 600°C.

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CeramaTherm Features & Benefits Beyond its Very High Insulation Capacity

- ✓ **Antimicrobial Finish** For those that require a consistent temperature and additional pathogen protection it can be ordered with an embedded non-toxic, non-leaching antimicrobial as **BG400AM CeramaTherm AM**, to provide a complete Waterproof Antimicrobial, fungus, mold, virus, and pathogen-resistant finish. CeramaTherm AM should be a consideration for food processing centres, basements, grow rooms and greenhouses where there is potential for moisture challenges and molds. This is particularly good for Boat, Yacht, Camper, and R/V manufacturing where mildew and molds are a problem in the walls.
- ✓ **CeramaTherm Covalently Bonds at a Molecular Level** providing extreme adhesion to the substrate, creating a Fresh New Surface
- ✓ Provides up to 68% in sound attenuation and reduces decibel levels and noise transference. This enables a quieter environment and safer workspace.
- ✓ It is the Thinnest Insulative Layer - Increases the Interior Space and can easily be applied at the manufacturing stage.
- ✓ Environmentally Responsible, it is benign, non-toxic, non-leaching, and inert.
- ✓ Contains No Zinc, Lead, or Chromates

- ✓ **Typical Applications:** Roofs, metal buildings, ducts, pipes, concrete walls, basements, etc.
- ✓ Apply to roofs and outsides of buildings to prevent solar heat buildup. Especially good for livestock barns, hog barns, and poultry barns to protect against radiant roof heat up and provide further insulation in the winter.
- ✓ Apply to floors and under flooring to inhibit heat wicking and cold ingress.
- ✓ It can be applied over damp surfaces and remain underwater once fully cured.
- ✓ Very little prep work for application over tight rusty metal

- ✓ **Cold Rooms:** It helps to prevent thermal bridging on aluminum, steel and concrete, etc.
- ✓ See how CeramaTherm is innovating the future of insulation. Apply to inside and outside of refrigeration trucks, cold storage rooms, food processing centers, freezers, freezer warehouses, supermarket cold rooms, etc.
- ✓ Works and protects even when the refrigeration/reefer unit fails.
- ✓ Helps to maintain the temperature setpoint to provide even temperatures – providing for savings on gas and electrical costs. (This is especially important with the new brutal extremes of summer weather.)

- ✓ **High Resistance to UV**, Adverse Weather, Abrasion & Corrosion Resistant
- ✓ Extremely Durable Wear Surface, No Top-Coat necessary
- ✓ The CeramaTherm insulation coating provides a smooth satin finish. It is the thickness of paint, 0.01” or 0.25mm, equivalent to only 5 sheets of paper
- ✓ It can be reapplied over itself, to build up multiple coats. This has proven very beneficial on pipes carrying temperature sensitive materials over long distances. For a second coat application, wait till the first coat is beyond tacky dry, usually 2+ hours at 80°F / 26.67°C
- ✓ It can be tinted with water-based pigments to lighter pastel shades. It must be very well mixed. *However, it is not recommended to tint any darker as it may lessen the insulation performance.*

BG400 CeramaTherm ASTM Test Data – Properties

ASTM B117	Passed 500-hour Salt Fog Test
ASTM 518	Thermal Conductance 2.61 Btu(h)(ft ²) (°F) = Excellent
ASTM 518	Thermal Conductivity 0.0139 Btu(in)/(h)(ft ²) (°F) Metric 0.02 W/mK = Excellent
ASTM D-2240 Hardness	85 Shore Durometer
ASTM D-638 Tensile Strength	1,393 PSI
ASTM E-96 Water Vapor Transmission	0.7perms
STM E108-91A UBC32-7 E-84 Smoke and Flame Spread Test:	
	Class A Fire Rated
	Flame Spread rating = 5
	Smoke rating = 25
SRI value	110 initial / 99 after 3yrs
Emittance value	0.87 initial / 0.98 after 3yrs
Reflectance value	0.87 initial / 0.79 after 3yrs
ASTM G-53 500 hour accelerated weathering test:	“bent double with no cracking, remaining highly flexible.”
ASTM 1640, D-92, D-1644A, D-2196, D-696, D-570, C-836, D-1652, D-1259:	Flexibility was retained in sub-zero conditions down to -92°F
Solids	75%
VOC Exempt	Per CFR 51.1 Regulation 8
Approximate Pot Life	4 to 6 hours at 80°F / 26.67°C
Drying Time	1 to 2 hours at 80°F / 26.67°C
Curing Time	Initial: 8 hours at 80°F / 26.67°C, Complete: 3 days at 80°F / 26.67°C

Example: Apply at 13.3 mils wet (0.0133 inches, or 0.337 mm), to achieve a final dry mil thickness of 10 mils (0.010 inches, or 0.254 mm).

Coverage approximately 120 square feet (11.2 sq meters) per gallon at DFT 10 mils (0.254 mm) 0.01" thickness. If a second coat is needed, wait until the first coat is beyond tacky dry, usually two hours at 80°F

Application - Plan your Work

CeramaTherm will cover approximately 120 square feet (11.2 sq meters) per gallon at ten mils (0.254 mm) thickness.

CeramaTherm is self-priming, so primer is not required on the majority of surfaces. However, surfaces must be clean and properly prepared before the coating application. An example of the prep work needed is to water blast the surface with a pressure washer (3,000 psi MIN) to thoroughly clean off all the debris. Surfaces should be free of dirt, loose rust, mill scale, paint, grease, oil, loose Portland cement, other film-forming foreign material, and other contaminants. All surfaces should be clean, tight, and cured. The result is to have a properly prepared substrate by whatever means is necessary for the given application.

Optimum results are obtained if the surface is dry — although entirely satisfactory protection may be obtained if the surface is damp. Surplus water must be removed to prevent excessive bubbling of the coating.

CeramaTherm may be applied by brush, roller, or spray. When appropriately applied, one 13.3 mils wet coat dries to 10 mils DFT making it impervious to water, providing unsurpassed insulative properties and flexibility.

Millage is dependent upon application when covering old, corroded metal in that the tight rust cannot be taller than the coating is thick. The coating must cover all the peaks of the rust. However, no primer is needed on metal surfaces, reducing the total job cost. Ensure the CeramaTherm is at 10 mil DFT thickness above the high points.

Airless spray is the most efficient application method for larger projects. Brushes and rollers may be used for detail work such as edge termination, filling of voids, pinholes, and small cracks.

Mixing – Important, Read Completely Before Mixing – PLEASE PAY ATTENTION TO THESE INSTRUCTIONS Before combining Part A and Part B

- **Do NOT use a paint shaker. Instead, it is crucial to use a mixing blade to Power mix Part A pail and Part B pail for a minimum of 5 minutes separately before blending the ingredients and mixing together again well for at least 20 minutes – Note: Part A may appear clear, but when properly mixed it should become cloudy or milky in appearance.**
- It is imperative to power mix Part A very well to allow for product cure, ensuring the mixing blade *rubs* on the sides and bottom of containers to recombine all contents.
- Combine and thoroughly power mix at a (4 to 1 ratio) 4 Parts of "B" with 1 Part - part "A" Activator, for 5 minutes minimum in the 5-gallon pail and 5 minutes minimum in one-gallon part "A" pail. Use a power mixer for at least 20 minutes until all streaks & lumps disappear and the mixture has uniform color & consistency. Be sure to allow the mixing blade to rub on the sides and bottom of the container to recombine all contents. Wait 45-60 Minutes.
- **Important: After mixing, CeramaTherm must ingest for 45 minutes.**
- Only then may it be applied by brush, roller, or spray. If pumping out of 5-gal pails or larger, keep all contents mixed and in proper suspension.

An example of the suggested Spray Equipment is a Graco 5900 with 0.021 to 0.035 tip size with 3500 PSI capability and typically a reversible self-cleaning tip. Remove all filters from gun and hose, including bung hose, before spraying material.

Cleaning

Any overspray cleaning or equipment cleaning – must be cleaned immediately with acetone, toluene, xylene, or MEK.

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Thinning

- The use of thinner increases the possibility of sag and reduces dry film thickness.
- Thinner also retards cure time.

Allow to stand (or ingest) for 45 minutes to one hour before using or adding any thinner.

- *For best results, use just CeramaTherm as it comes from the pail.*
 - However, if thinning is required (use MEK or new lacquer thinner), it can be added to the product only after the 45-minute ingestion period is completed, with no harm to the coating.
 - Thinning will necessitate applying more coats to achieve the desired mil thickness.
 - If a second coat is needed, wait till the first coat is beyond tacky dry, usually 2+ hours at 80°F.

Safety Concerns

- CeramaTherm is environmentally responsible. It is benign, non-toxic, non-leaching, and inert once cured. However, it covalently bonds to surfaces at a molecular level and cannot be easily removed, so ensure you properly mask off anything you don't want it to stick to. In addition, any overspray cleaning or equipment cleaning – **must** be cleaned immediately with acetone, toluene, xylene, or MEK. Once fully cured, only high abrasion will remove the coating.
- We recommend that PPE, protective clothing, gloves & safety glasses must be worn at all times when handling any chemicals. Use in well-ventilated areas; if that is not possible, use a NIOSH-approved self-contained breathing apparatus or vapor filters on a mask. *Caution:* With the extreme adhesion characteristics of this product, all safety procedures must be followed. Aromatic 100 solvent (as listed on the SDS) is a VOC Exempt Solvent as noted per CFR 51.1 / Regulation 8.

For faster applications, for when quicker cure & production applications are needed

When application and cure time is critical for the continuous production of pipe or other flat surfaces, it is suggested to consider the following:

- The use of a plural component spray system (with pre-heaters) will allow for the product to set up in minutes, or
- If passed through a warming tunnel or other warm air sources, a complete cure can be achieved in a shorter amount of time as well.

Ambient Cure Times

CeramaTherm is 75% solids.

Approximate Pot Life: 4 to 6 hours at 80°F / 26.67°C

Drying time: 1 to 2 hours at 80°F / 26.67°C

Curing time: Initial 8 hours at 80°F / 26.67°C, Complete 3 days at 80°F

If a second coat is needed, wait till the first coat is beyond tacky dry, usually 2+ hours at 80°F

Example: Apply 13.3 mils (.0133 inches or 0.337 mm) wet to achieve a final dry mil thickness of 10 mils (0.010 inches or 0.254 mm).

Storage Stability & Shelf Life

The shelf life of CeramaTherm is one year when stored in an original, unopened container. Do not freeze — store containers in a well-ventilated and covered area away from extreme heat and moisture. Contact your BGL representative if you have any questions about the product or its uses. Health, safety, and environmental information are provided for this product in the Materials Safety Data Sheet (SDS). This SDS sheet provides details of potential hazards, precautions, First Aid measures, environmental effects, and disposal of used products.

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Questions?

Q: What kind of tape do you recommend to bridge gaps on roofs?

As long as the structure is solid, use UniTape Seam Tape or equal type fabric tape – being sure to use a width that allows at least a 7.5 cm/3" overlap, or more on each side of the joint if there is much movement expected, then coat over with CeramaTherm.

Q: My team works with Telecom towers equipped with solar panels for charging the system batteries. The battery cabinets have A/C units attached for cooling. To prepare the surface for coating they can use a wire brush, then wipe clean. But because they are so high up the tower, the surface could still be slightly dusty as the wind is constantly blowing. During the CeramaTherm application the surface may not be completely free from dust or moisture. Could this cause a problem?

This dust should not pose any problems; remove as much of the dust as possible and wipe clean, allowing the coating to bond to as clean and tight a substrate as much as possible. CeramaTherm will stick to damp surfaces, so moisture will not pose a problem. Further to the CeramaTherm insulation coating, we also recommend applying the BlueGold Labs **BL170 PV Solar Enhance** for the face of the solar panels, and **BL185 Heat Dissipating Clear Coating** on the rear of the solar panels to pull away heat, so they perform better and lasts longer in the hot sun.

Q: We work in a tropical environment and have high humidity. Sometimes rain showers happen even when the sky is clear and blue, so it's not predictable. It says in the literature that the coating can be applied to damp surfaces. Are there any particular thoughts, comments, or advice you would have in the application of CeramaTherm in this type of environment?

It should not be a problem at all; damp surfaces are ok. If it has just rained, brush off or squeegee off standing water, wipe down the surface and allow it to dry to damp as best as possible. Rain showers will not harm the product once the product is sprayed onto the surface; it will continue to cure.

Q: CeramaTherm is safe, non-leaching, and non-toxic. We build swimming pools and use prefab panels to make the pool shape; plastercrete is then applied. As CeramaTherm is insulative and waterproofing, can we apply it over the cured plastercrete to seal it? And once it is dry, can we apply ceramic tile on top of the CeramaTherm. Would there be any issues with sticking?

This is a good idea as it will save you on pool heating costs. First, ensure the CeramaTherm is at (applied 13.3 mils wet) 10 mil DFT thickness above the high points of plastercrete. Once the CeramaTherm is fully cured (3 days at 80°F), then apply the ceramic tiles using a ceramic tile adhesive that's recommended for high moisture areas.

Q: We have an R/V Camper and 30' Yacht that we are renovating, can we use 'CeramaTherm AM' for inside the walls?

This is an excellent use of the material. You can use it for insulation inside any vehicle, apply on walls, floors, ceiling, inside doors and on the firewall. It will save on weight, provide more usable space, and protect the substrate from corrosion, mold and mildew. It will also allow your vehicle to be warmer in the winter and cooler in the summer. It will also reduce road noise considerably, reducing driver fatigue. You can apply this under the floor and wheel wells as well to further reduce road noise and protect from exhaust and road heat. Please look at our other advanced **Tecmari Nano Ceramic Products** to keep your R/V and Yacht looking and performing their best.

CeramaTherm has multiple applications, however, if you are unsure of your particular project and before using the product for uses other than directed, please get in touch with BlueGold Labs Inc for any questions:
info@bluegoldlabs.com

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