



TC Ceramic Applications

TC Ceramic can be used anywhere conventional insulation exists, most of the time with better results. The applications where TC Ceramic are used are far too numerous to list in total, however we have listed some of the more common applications on this page. For questions about an application that may be specific to you or your company, please call or email us to discuss how TC Ceramic can help you.

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TC Ceramic has been utilized in a variety of industrial plants across the globe. TC Ceramic applications, although vary from customer to customer, some of the most used applications for food processing plants are including, but not limited to, the following:

Food plants

1. **SAFETY** - is one of the largest reasons for using TC Ceramic as it adheres directly to most any surface which, if hot, cuts the risk of injury from burning for employees. TC Ceramic can lower surface temperatures to easily comply with OSHA requirements.
2. **HOT PIPE OR BOILERS** - Lower the temperature of hot pipe of several hundred degrees to under 150°F or lower with only thousandths (30 to 120 thousandths) of an inch of TC Ceramic thickness depending upon the starting temperature. (Proctor and Gamble has approved TC Ceramic for use in their plants.)
3. **BREWING OR COOKING KETTLES** - Large kettles, which previously could not be insulated or were difficult to insulate, can now be insulated simply without having to change anything. The exterior of the kettle can be insulated with a coating of TC Ceramic which helps to provide more consistent cooking/brewing temperatures and lower energy costs. (Suggested thickness of 60 to 120 thousandths of an inch.)
4. **COST SAVINGS** - TC Ceramic generally will provide material and labor savings to the customer because:
 - a. It is applied directly to the hot surface without having to shut down operations.
 - b. It lasts longer than conventional insulation, thus saving material costs and labor time of not having to re-insulate every several years.
 - c. It can be applied to all fittings, pipe bends, pipe connections and other hard to insulate situations.
 - d. It can be easily reapplied in situations where it has been removed for general maintenance on any surface.
 - e. It is more efficient for energy savings on pipe, boilers, and heat exchangers.



5. **CORROSION RESISTANT** - TC Ceramic, by its nature, is anti-corrosive because it adheres directly to the surface material and no longer allows moisture to attach to the surface, thus cutting out the environment for corrosion. (TC Ceramic is not sold as an anti-corrosive material, but the anti-corrosive benefits are a by product).
6. **ROOF APPLICATIONS** -
 - a. Cut the solar heat through the roof by as much as 20 to 50 degrees, depending upon multiple variables.
 - b. By cutting the heat that penetrates the roof, the contraction and expansion of the roof caused by the heat will be reduced, thus reducing roof leakage and the costs of roof maintenance and damage to the roof.
 - c. By cutting the heat that penetrates the roof, the costs for air conditioning, refrigeration costs and other environmental costs could be reduced, thus providing a more comfortable place for your employees and lower energy costs.
 - d. TC Ceramic will add very little weight to the roof as it is less than one-tenth of a pound per square foot.
7. **INSULATE DELIVERY VEHICLES - VANS AND TRAILERS:**
 - a. Cut the solar heat through the roofs of your equipment by as much as an average of 20 to 50 degrees, depending upon multiple variables.
 - b. In air conditioned/refrigeration/freezer trailers, the reduction of the heat through the roof will reduce the energy/fuel requirements, thus lowering operating costs and lowering refrigeration/freezer unit maintenance costs. (Tests show a 10% to 25% reduction in reefer fuel consumption and reefer run times).
 - c. By cutting the heat that penetrates the roof, the contraction and expansion of the roof will be reduced, thus reducing roof leakage and the costs of roof maintenance and damage to goods.
 - d. By cutting the heat that penetrates the roof, damage or spoilage to heat sensitive products or equipment carried by you or your customers, will be reduced.
 - e. Assists in sealing roofs, thus reducing roof leakage, the costs of roof maintenance and water damage to goods.
 - f. Insulate the interiors of existing or new trailers with 30 to 40 mil of TC Ceramic on the ceiling and walls or doors to protect temperature sensitive products (hot or cold - in summer or winter) without losing any interior space, but where refrigeration is not justified, but constant temperature is desired.



- g. Insulate the underside of the trailers from excessive road heat with 30 to 40 mil of TC Ceramic, thus cutting down on road heat damage to goods.

Steam Plants:

Some of the largest Steam distribution systems in the world are using TC Ceramic in their steam plants and steam systems. TC Ceramic is eliminating almost all of the insulation concerns in this industry where energy conservation is of utmost importance.

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1. STEAM PLANTS

TC Ceramic is being used as insulation against hot pipes and chilled pipes in steam plants.

- a. Hot pipes are coated for:
 - i. Personnel protection against burns.
 - ii. Will withstand up to 500 degrees, using only about 120 to 160 mil (3.0 to 4.0 mm) sprayed directly onto the substrate.
 - iii. Reduce energy loss.
 - iv. Corrosion reduction
- b. Chilled pipes are insulated against
 - i. warm ambient air



- ii. condensation
- iii. corrosion.

TC Ceramic is sprayed directly onto the substrate surface, therefore minimizing or even eliminating any condensation caused by warm ambient temperatures. Pipes, valves, stanchion, elbows and fittings are easily coated as well, as conventional insulation does not fit in these areas, therefore cannot insulate for the best possible result.

2. STEAM TUNNELS

TC Ceramic is being used to coat the pipes in underground tunnels to

- a. Reduce the heat in the tunnels
- b. Reduce energy loss
 - i. Through the pipe surface
 - ii. Through the stanchion holding the pipe
 - iii. Protect against flooding problems such as
 - (1) destruction of conventional insulation
 - (2) loss of energy through the pipe
 - (3) steam turning to water in the pipe due to the flooding cooling effect
 - (4) hot/boiling water in the tunnel
 - (5) Increased maintenance on pumping equipment does to the hot water
 - (6) Additional corrosion on the pipe and stanchion

Because TC Ceramic is impervious to water, a temporary flood of hours to a few days, or ground water exposure will not affect the insulating properties. TC Ceramic is not intended to be submerged in water over a long period of time, however, submersion of a few hours to a few days generally will have no impact on TC Ceramic.

3. MANHOLES

For existing systems, MANHOLES seem to be where TC Ceramic has dramatic benefits to the system for a number of reasons.

- a. First, and foremost, the heat in the manhole itself is causing endless problems
 - i. Excessively hot manhole covers.
 - ii. Pipes, fittings, elbows and valves in the manhole are many times not insulated, thus very hot and causing the manhole to be extremely hot
- b. Coating of the exposed hot surfaces with TC Ceramic provides the following benefits



- i. The temperature s drops dramatically (between 50F to 80F reduction). Now there is no need to ventilate the manhole before employees have to work in them. This is a significant labor savings.
- ii. Personnel protection - reduction of burn injuries
- iii. Reduction of corrosion of the metal surfaces
- iv. Reduction of re-insulation problems and high costs due to periodic flooding.
- v. Reduction of boiling water risks when flooding occurs
 - (1) Water temperature may be reduced to very warm
 - (2) No boiling water under insulation
 - (3) Reduction of cost of pumping equipment due to the lower water temperature.
 - (4) Reduction of risk of injury due to extremely hot water.
- c. Coating manhole covers may not be necessary due to the reduced temperatures in the manhole, if the exposed hot surfaces are already coated with TC Ceramic. If piping is not coated in the manhole, then the manhole cover may be coated with TC Ceramic to reduce the risk of burn injury on the top of the manhole cover due to high temperature. To coat the manhole, it must be coated in the following manner: All exposed surfaces, including the underside, the top, the edges and the collar of the manhole support ring.

4. VAULTS

Vault walls may also be coated to protect the vault from the constant extreme temperatures related to the steam system and the ground water problems of flooding and seepage. Coating the vaults walls with approximately 60 to 120 mil (1.5mm to 3.0mm) provide some of the following benefits:

- a. Keeps the vault from drying out which causes the concrete to crumble.
- b. Flooding and moisture penetration into concrete, which causes further degradation of the vault, can be minimized.



Power Plants

1. **SAFETY**
2. It's one of the largest reasons for using TC Ceramic as it adheres directly to most any surface which, if hot, cuts the risk of injury from burning for employees. TC Ceramic can lower surface temperatures to easily comply with O.S.H.A. requirements.
3. **HOT PIPE OR BOILERS**
4. Under the skin touch requirements of ASTM 1057, TC Ceramic will lower the temperature of hot pipe from several hundred degrees to under 150°f or lower with only thousandths (30 to 120 thousandths) of an inch of TC Ceramic thickness depending upon the starting temperature.
5. **COST SAVINGS**
6. TC Ceramic generally will provide material and labor savings to the customer because:
7. **It is applied directly to the hot surface without having to shut down operations.
8. **It lasts longer than conventional insulation, thus saving material costs and labor time of not having to re-insulate every several years.
9. **It can be applied to all fittings, pipe bends, pipe connections and other hard to insulate situations.
10. **It can be easily reapplied in situations where it has been removed for general maintenance on any surface.
11. **It is more efficient for energy savings on pipe, boilers, heat exchangers, etc.
12. **CORROSION RESISTANT**
13. TC Ceramic, by its nature, is anti-corrosive because it adheres directly to the surface material and no longer allows moisture to attach to the surface, thus cutting out the environment for corrosion. (TC Ceramic is not sold as an anti-corrosive material, but the anti-corrosive benefits are a by product).

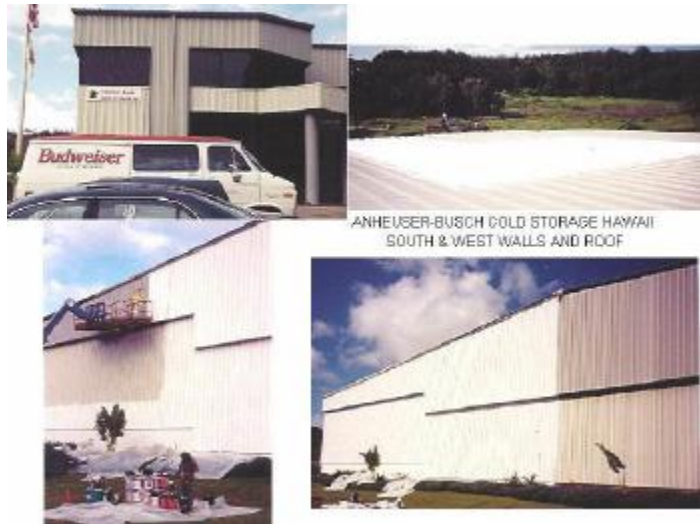




Roof Applications

To *really* consider solving heat roof expansion problems, you should consider the latest in space age technology for heat reduction/insulation which, in turn, cuts down on the roof expansion and contraction. TC Ceramic - a liquid ceramic insulation coating has microscopic ceramic beads in a white latex binder which will accomplish the following:

- 1) Cut the heat through the roof by as much as 20 to 50 degrees, depending upon multiple variables.
- 2) By cutting the heat that penetrates the roof, the contraction and expansion of the roof caused by the heat will be reduced, thus reducing roof leakage and the costs of roof maintenance and damage to the roof.
- 3) By cutting the heat that penetrates the roof, the costs for air conditioning, refrigeration or other environmental costs could be reduced, thus providing a more comfortable place for your employees and lower energy costs.
- 4) TC Ceramic will add very little weight to the roof.
- 5) TC Ceramic has been utilized by a number of other building owners to reduce the heat and other roof problems, mainly expansion and contraction caused by solar heat.



ANHEUSER-BUSCH COLD STORAGE HAWAII
SOUTH & WEST WALLS AND ROOF



Trailers:

To maintain a more constant temperature in your delivery vans or trailers, and to cut costs, you should consider the latest in technology for heat reduction/insulation and cold insulation. TC Ceramic - a Liquid Ceramic Insulation Coating can help you reduce costs in the following ways:

**TC Ceramic cuts the heat through the roofs of your equipment by as much as 20 to 50 degrees, depending upon multiple variables, which can assist in maintaining a more constant temperature for your beverage products.

**In air conditioned/refrigeration/freezer trailers, the reduction of the heat through the roof will reduce the energy/fuel requirements, thus lowering operating costs and lowering refrigeration/freezer unit maintenance costs. (Tests show a 10% to 25% reduction in reefer fuel consumption and reefer run times).



Coated Exterior Roof and Interior Doors

**By cutting the heat that penetrates the roof, the contraction and expansion of the roof will be reduced, thus reducing roof leakage and the costs of roof maintenance and damage to goods.



Coated Exterior Roof

**By cutting the heat that penetrates the roof, damage or spoilage to heat sensitive products or equipment carried by you or your customers, will be reduced.



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**Assists in sealing roofs, reducing roof leakage, costs of roof maintenance and water damage to goods.

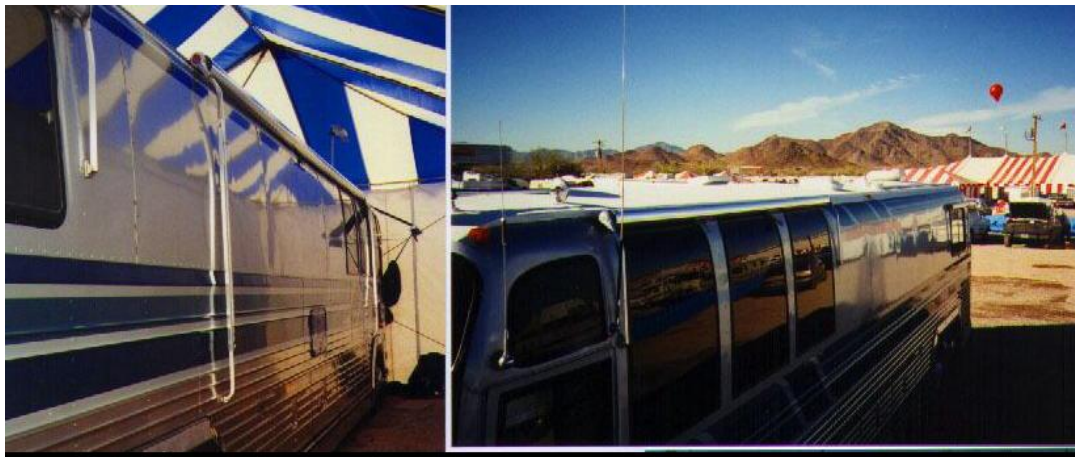
**Insulate the interiors of existing or new trailers with 40 mil of TC Ceramic on the ceiling and walls or doors to protect temperature sensitive products (hot or cold - in summer or winter) without losing any interior space, but where refrigeration is not justified, but constant temperature is desired. TC Ceramic adheres directly to the skin of the trailer, thus will not fall off.

**Insulate the underside of the trailers from excessive road heat with 40 mil of TC Industrial Ceramic, thus cutting down on road heat damage to goods and helping to maintain a constant temperature inside the trailer.

**Insulate kegs which will assist in maintaining temperatures for improved product quality. Note: Utility Trailer now offers coating of trailer roofs with TC Industrial Ceramic through their dealers. NEP, TNN, CBS, NBC, ABC, Sony, Shook Electronic, Boulevard Body, National Mobile and Mobile Systems all coat their TV transmission trailer roofs with TC Industrial Ceramic.

Bus Conversions

TC Ceramic - a liquid ceramic insulation coating product can be utilized throughout your coach/bus in several areas. Areas in which TC Ceramic can be of use are as follows:



1. Exterior roof - TC Ceramic cuts the solar heat (radiant heat) from entering the coach by as much as 20°F to 50°F. (Solar rejection 99%) This cuts down on wear,



- tear and costs of running of the A/C systems and reduces expansion and contraction of the roof which helps to keep the roof seams from leaking. (Recommend 15/1000 inch thickness).
2. Interior shell - (Coating interior walls, floor and ceiling) TC Ceramic would give added insulation, provide acoustical benefits and cut down on corrosion issues. TC Ceramic adheres directly to the skin or other metal surfaces of the coach, thus cutting down on condensation, not allowing the moisture to get to the skin. TC Ceramic also helps to seal the seams of the coach. (Recommend 30/1000 of an inch thickness).
 3. Exterior under floor - TC Ceramic can assist in blocking the road heat that transmits through the floor of the coach by coating the under carriage of the coach. (Recommend 30/1000 of an inch thickness).
 4. Engine compartments - TC Ceramic can assist in stopping the heat from entering the coach through fire walls or heat shields for both front or rear engine compartments and exhaust systems. TC Ceramic can be effective in hot environments/applications up to 500°F (Recommend 60/1000 of an inch thickness).
 5. Acoustical Benefits - TC Ceramic, when sprayed directly onto the interior skin of the bus (30 mil), provides a reduction in the decibels penetrating the passengers' compartment. (Depending upon ranges and frequency.) TC Ceramic is not affected by moisture or compression as to its insulation or acoustical benefits. (Most insulation is affected by moisture and compression. TC Ceramic is also anti-corrosive as it adheres directly to the metal surface thus eliminating the possibility of oxidation of the metal).