

MetalTec[®] TC

THE ULTIMATE SOLUTION TO
THERMAL INSULATION

INTRODUCTION

The latest generation liquid thermal insulation, having a thickness of 1 to 5mm, the same insulation properties than Rock wool or PU foam but with the advantages of alienating all problems of corrosion under insulation(CUI), condensation, creeping in humidity. At the same time allowing instant inspection and maintenance with complete visibility of the insulated support or equipment.

Metaltec[®]TC is a mono component water based acrylic polymer loaded with different types of ceramic microspheres encapsulating air. Derived from the space industry research, Metaltec[®]TC reconciles performance, lightness, flexibility and compactness.

It is a very stable and durable coating, totally watertight, very thin (from 1 to 5mm), and it also offers the bonus of being a very effective sound dampener, 10 -15dB.

Anti corrosion coating, it offers an excellent protection against rust and eliminates corrosion under insulation (CUI). It does not get affected by ambient humidity and retains its full characteristics in wet conditions. It can be hot applied without downtime on surfaces up to 200°C, with no shutdown necessary. It will insulate from -40°C up to 260°C, (with peaks accepted up to 300°C for short times.)

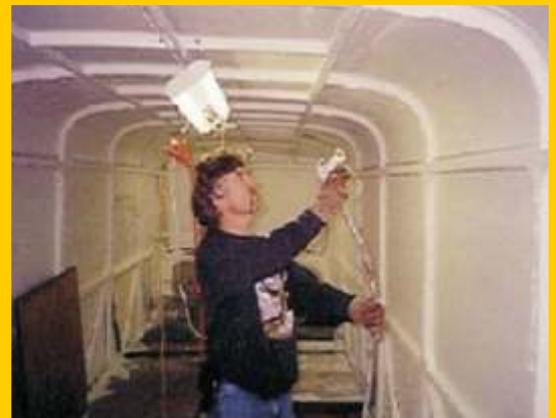
Surface preparation is minimal(wire brushing) and application does not require specially qualified manpower, applicable with airless spray gun, roller or brush in 1mm layers.

Metaltec[®]TC can be applied on walls & roofs, in cellars, attics, warehouses, steam pipes, hot oil pipes, exhaust systems, in all places where insulation and significant energy savings are required. It insulates easily, valves, flanges, elbows, ducts, heat exchangers, equipment of any shape or in remote areas and corners difficult to reach otherwise. It also will protect from freezing temperatures oil & gas pipes, heating ducts and tanks.

It is the perfect product to use to protect personnel from the dangers of skin contact burns in hot processes and heat radiation environments, (skin test certified ASTM C 10555-99), a 3 to 4mm coating temperature will drop from 180 to 50°C. It also acts as a fire retardant Class A, does not propagate flames and does not emit toxic fumes. Metaltec[®]TC is really encapsulating energy!!

Due to its superior properties of emissivity and reflexivity, Metaltec[®]TC excels in insulating structures & equipment against the gain of radiant energy. 99% of this energy is either reflected, or re emitted(radiated back), this means that only 1% is absorbed.

Metaltec[®]TC is environment friendly, non toxic, free of solvents and safe.



Technical Information

Solid volume: 89.5%

Recommended DFT(Dry Film Thickness): 0.4 - 7mm; 0.4 to 0.8mm per coat, multiple coats required to obtain greater thickness. Thickness varies with application

*Consult with your technical representative for assistance.

Dry Time:50% Relative Humidity(R.H)

Temperature	Dry to Touch	Re coat Time	To Normal use
20°C	180min	12 hours	24 hours

Theoretical coverage: Spray application: 1.475m²/litre @ 0.5mm

Net weight per litre: Wet:0.67k/l Dry: 0.38k/l

Storage temperature: Min. 5°C Max: 25°C

*Cool storage is recommended.

Shelf life: 12 months at recommended storage temperatures.

Health & Safety: Materials are safe for handling.

Test Result:

Cross Hatch Adhesion(ASTM 3359)	100% passed. No failure
Flame Spread (ASTM E84-98)	25
Smoke Developed (ASTM E84-98)	45
Accelerated Ageing (ASTM G53) No Primer	No discolouration after 200 hours
Brookfield Viscosity #3 Spindle, 30rpm	3564 centipoise
Specific heat (23°C)	1.1120 W-s/gm-K
Thermal Diffusivity (23°C)	0.00239 cm ² /sec
Thermal Conductivity (23°C)	0.00077 W/cm-K 0.0563 Btu/hr-ft-°F
Solar Reflectance (ASTM E903)	0.83
Emittance (ASTM E408-71)	0.94
Service Temperature	Continuous: -40/+ 200°C Maximum Surge: 232°C

APPLICATION TECHNIQUES

Mixing: Power mix contents of container using a mud paddle at 300 rpm or less for 3 to 5 minutes, making sure to blend in all solids at the top of container.

Surface Temperature: Minimum 15°C, Maximum 175°C. Coating will not dry below 15°C. Prior to applying to substrates at temperatures greater than 66°C, please contact your distributor for assistance.

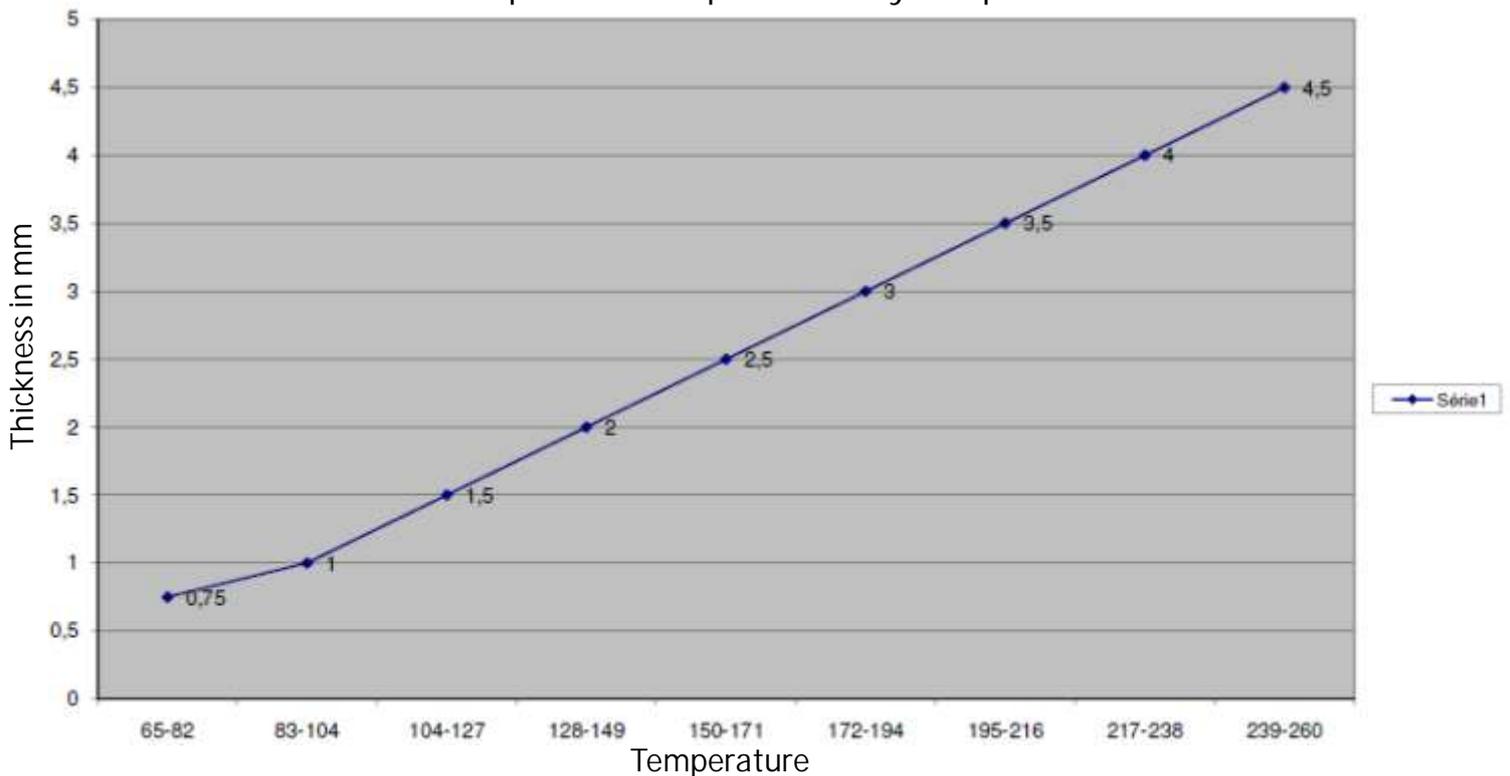
Methods and Equipment: Apply Metaltec©TC on a dry, clean substrate free from oil, grease, wax, dirt, rust or corrosion. Use an airless sprayer with 205 Atm, 4.75L/min, 28:1 ratio with a 0.53mm tip size. A spray gun using shop air may be used for small applications. Allow the product to completely dry between coats. This is a one-coat system with dry time of 12 hours under room temperature conditions. Elevating temperature of substrate will accelerate re-coat time. Brush may be used for touch up, but is not recommended for full application, except for under 50m².

Recommended thickness: Suggested Metaltec©TC Insulation thickness. To reduce surface temperature to approx. 60°C.



Anti Condensation

Thickness required to keep skin safety temp @ 60°C



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THE ULTIMATE SOLUTION TO THERMAL INSULATION

Classical Use

Rooftop Installation: 0.4mm thickness can reduce solar heat flux roof by 99% through refraction and re emission.

Boiler Hot Pipe Installation: Actual installations have shown that a 1.5mm thickness will reduce exterior boiler wall temperatures from over 180°C to less than 90°C. Excellent for insulating hot pipe/surfaces up to 260°C or cold pipe/surfaces in hot environments.

RV/Bus/Truck/Trailer/Container Installation:

- a. 0.4mm thickness on a roof can cut solar heat flux by 99%. Can be sealed by white acrylic or alkyd enamel over the Metaltec ©TC.
- b. 1.2 to 1.5mm thickness in the engine compartment/fire wall can cut the heat inside the RV/Bus.
- c. 0.8mm on the walls, ceiling and floor of the interior shell can increase the insulation of the RV/Bus/Trailer/Container without increasing the wall thickness.

Ships:

- a. Hulls can be coated with approximately 1mm to insulate & seal. Keeps moisture off hulls.
- b. Insulate hot/cold piping (1.6 - 2.7mm) including exhaust system
- c. Insulate hot/cold tanks, refrigeration units or systems with 1.6 - 2.7mm.
- d. Insulate deck housing from solar heat 0.4mm thick.



Personnel Safety
Against Skin Burns

Classical use - Surfaces and Areas

Air Conditioning Duct Work	Cat walk handles & guards	Garages
Aircraft Interior Walls	Chicken Farm Rooftops	Grain Silos
Airplane Hangers	Commercial Refrigeration	Hot water heaters
Metal Buildings	Corrugated iron & metal roofs	Hulls of ships & boats
Slurry Truck Tanks	Crane Beams	Residential home, wall & roof
Barracks	Engines & Engine rooms	Restaurants & Offices
Build up roofs	Flooring	Vehicle Conversion interiors
Boat/ship decks & galleys	Fruit & pack stores & sheds	Wine Cellars





What is Metaltec©TC?

Developed over 12 years ago by MetalTec Products, MT©TC is a liquid thermal insulating coating that goes above and beyond any benefits that conventional insulation methods could ever offer. Made from composite ceramics and applied via spray method, MT©TC tackles three major problems that plague facilities daily around the world;-

- Corrosion Under Insulation (CUI),
- Personnel protection
- Heat retention.

Plants and process facilities constantly battle with these issues, which are all directly related to heat transfer and the materials used to reduce that heat. This is why the use of innovative materials, like MT©TC, has become a must, rather than an option and is an excellent solution to any necessity of heat retention in any plant or industrial environment.

Corrosion Under Insulation (CUI) is one leading costs of maintenance in the industry sector. All plants, facilities and commercial areas that have hot or cold tanks have to deal with Corrosion Under Insulation. Due to the intrinsic corrosive atmosphere and its ability to gestate worse corrosive atmospheres between a substrate and its conventional insulation, CUI has no problem taking hold and spreading like wildfire.

Basically, CUI is the cancer of the industrial world. Because of the lack of substrate inspection ability that is inherent with conventional insulation, once the CUI has been found, it is usually too late to save the substrate. After the insulation is peeled back, there is a crumbled mess of insulation and substrate flaking onto the feet of the inspectors. What was once sturdy, stable steel now resembles spent pipe tobacco. The conventional insulation materials used in the past have played into the rapid process of substrate degradation due to creation of a corrosion-promoting internal atmosphere. This adds to increased industrial maintenance schedules and downtime for repairs.

MetalTec products overcome that problem because of the very nature of the coating itself. Since it is applied to the substrate either directly or on top of a primer, there is no room for CUI to take hold. Best of all, the substrate is now viewable at all times. This means that the inspection team doesn't have to destroy a large area of insulation prior to inspection.

If repairs are necessary, they can be made to that specific area only and the now-exposed substrate is easily touched up and repaired with ease.

Spending money efficiently isn't the only thing that affects a company's health, though. So is protecting the people who are working for that company. In an industrial setting, personnel protection is always at the top of every manager's mind, or at least it should be.

When personnel are working around tanks, piping and other areas involving high temperatures, they shouldn't have to worry about brushing against a substrate and scorching themselves.

MT©TC eliminates this risk by insulating the substrate and reflecting the internal heat back into the substrate instead of transferring it to the hand or hip of a worker walking by.

As the heat travels from the substrate through the coating, it passes through microscopic insulation particle cells that help dissipate and reflect the heat, resulting in reduced heat flux that reaches the environment surrounding the coating. All of the cutting-edge technology that has gone into developing MT©TC results in drastically lower temperatures transferred out of the substrate. If a tank is holding product that is 94°C, only 40 mils of MT©TC will bring the substrate to or below 60°C (depending on ambient conditions), generally accepted as the industry standard for personnel safety. And since it is applied like paint, installation takes a fraction of the time that conventional insulation does.

Any of these issues by themselves must be addressed to increase the efficiency, production and safety of any facility, no matter how large or small. By addressing all of these issues in one single product, a facility can make certain that everything that can be done, is done, to increase these three qualities, at least from an insulation perspective.

MetalTec has since become the leader in controlling thermal and sound transfer and develops a variety of products that can be tailored to meet individual needs. All of MetalTec's thermal insulation coatings are environmentally friendly, meet all of the top quality and industry standards, and pass a stringent internal quality control process during manufacturing.

With offices in the European Union, Africa and Middle East, it assures MetalTec to provide a consistent, quality product in a timely manner anywhere in the world.

IMPRESSIVE RESULTS USING METALTEC©TC

• **GOODYEAR TIRE PLANT**

In a Goodyear tire manufacturing plant, **MT©TC CERAMIC INSULATION** is being used on the very large (10d x 15h) pressure vessels on the bottom half of the vessel. The top half is on the plant manufacturing floor and the bottom half is in a basement/underground vault area.

• **Lyondell-Citgo Refinery Houston Texas**

• DANVILLE DISTRIBUTORS (BUDWEISER BEER) - After the reefer roof was coated, we pulled the temp down to 1.1°C and left it overnight in a hot humid evening with the reefer off and the next morning it was still 4.4°C. We were very pleased. On the trailer, we are now able to keep it down to 4.4°C which we couldn't do before

• DAVIS BROTHERS CONTRACTORS - "This ceramic coating has reduced office temperature by 30% and electric bill dropped 25%. Also, one coating effectively eliminated roof leaks after several attempts with other materials."

• EXXON CORPORATION - "Reduced oil well pipe line temperatures by over 55°C. Previously, the extreme temperature of this well, caused all other coatings to fail. The ceramic coating is continuing to provide insulation."

In South Africa Metaltec©TC is being used at the following plants

- CHEVRON, • ESKOM, • PARMALAT, • SAB, • SEA HARVEST,
- Harmony Gold Mine - See test: <http://www.metaltec.eu/index.php?pageld=57&subpageld=67>
- RICHARDS BAY SMELTER, • MOZAL ALUMINIUM SMELTER

Metaltec SA is in the process of being accredited by ESKOM for substantial energy saving rebates.