

CHARCOAT

CharCoat CTI-600

PRODUCT DESCRIPTION

CharCoat CTI-600 is a next-generation water based, single pack, high temperature resistant insulating paint. It is designed to efficiently insulate the substrate to which it is applied, at up to 600°C constant substrate temperature. It is a high-solids, thin-film insulating coating that can be used internally or externally and is non-flammable.

The CTI-600 version uses a unique water based silicone binder. It is applied to a substrate between 7-40°C. 2mm is the recommended minimum to reduce the surface temp to a level at which additional CTI variants can then be applied as required for additional insulation levels or surface temperature reduction.

PROPERTIES

- Excellent thermal insulation
- Eliminates CUI, and enables easy corrosion inspection
- Non-hazardous
- No toxic vapours
- Minimal odour
- Can be applied to surfaces up to 60°C with normal application
- Withstands constant substrate temperatures up to 500°C
- Seamless
- Flexible at low temperatures, can withstand constant temp of -40°C
- Excellent UV resistance
- Easy to apply in difficult areas with brush or roller
- Can provide energy savings of 50% or more at as little as 1.0mm thickness

APPLICATION AREAS

- Defence
- Power Plants
- Refineries
- Fire trucks
- Pipe insulation
- Industrial and Manufacture Facilities
- Hot surface touch protection
- Worker comfort in sheds

COLOURS

Standard white. If colour is required, tinting the CTI-600 is the best choice due to high temperatures. Ensure that the thickness is such that the surface temp is reduced below the maximum temp of the top coat. For larger orders we may be able to arrange tinting prior to delivery, but pastel colours are recommended. Adding colour to the product may reduce thermal efficiencies, particularly dark pigments.



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AUTHOR	ROMNICK YUMOL
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TYPICAL WET PROPERTIES

Material Properties	Value
Density, cured (kg/L)	0.42-0.47
Density, wet (kg/L)	0.57-0.63
Mix ratio (by volume)	Single Pack
Solids (mixed) by volume	~70%
Theoretical Coverage	0.5mm thick = 0.65L over 1m ²
Max thickness per coat	1.0mm DFT (1.3mm WFT)

TECHNICAL DATA

Heat conductivity at 20°C	0.001-0.02 (W/mK)
Min Surface Temp for appl	7°C
Skin Time (substrate and ambient temp dependent)	~45min @ 25°C & 50% RH
Recommended minimum recoat window (substrate & ambient temp dependent)	24 hours
Maximum Recoat Window	NA
Elongation, ASTM412-C	>30%
Pull-off adhesion (Most substrates)	1-1.5 N/mm ²
Constant Service Temp	-40 to 500°C
Peak Service Temperature (Short Duration – Max 2 hrs)	650°C
Water vapour permeability	0.006 mg/mhPa
Reflectance	>84% (solar reflective index 100%)
Application temp range	7-40°C (special procedure for >60°C)
Shore A Hardness	>30

PLEASE CONTACT US FOR OTHER PROPERTIES

PACKAGING

Standard 20L Pails. Other sizes may be available on request.

SYSTEM SPECIFICATION

Remove all grease, oil, dust and other contamination.

- Steel – Clean to Sa2 to ISO8501-1 minimum
- Concrete & Ceramic – Remove dust, oils, grease and other contaminants. Dampen the substrate before application.
- Wood – Remove dust, resins and other contaminants from the surface.
- Plastic & Plasterboard – Sand surface, dust and degrease as required.

PRIMER

Generally, a primer is only required for substrates above 60°C. The primer should be a watered down version of CTI-600. The amount of clean water to add depends on the temperature of the substrate. Generally, start with 50-90% CTI-600 in water. Too lumpy means not enough water, bruising means too much water. Do trial patches to determine the correct mix.

For ambient substrate temps, just do a mist coat and allow to dry for 30min or more before applying the first full coat.

RECOMMENDED THICKNESS

Contact your distributor for the recommended thickness based on the insulation value required. Generally 1-2mm for pipes and processing plant. The thicker the product the better the insulation properties. Use 1mm DFT = RSI-1 Insulation value.

NUMBER OF COATS

Apply the product in no more than 0.65mm WFT coats (0.5mm DFT).

TOP COAT

Most common house paints, aliphatic urethanes, etc. can be painted over the CTI-600 to give the required colour/impact resistance. If the product is to be used in an exposed environment, particularly where water ponding may occur, a waterproof topcoat is recommended, or one of our other clear top-coats (contact us for more information).

TYPICAL SERVICE LIFE

Life expectancy for the CTI-600 is >15years for most applications.

MAINTENANCE

Being a brushable coating, any minor touch-ups or maintenance is simple. Just clean the surface of dust, grease and oil and other contaminants and re-coat the affected area.

STORAGE AND HANDLING PRECAUTIONS

The product should be kept properly closed and stored indoors in a well-ventilated area under normal factory conditions. Storage at room temperature (20-35°C) also provides a convenient viscosity for handling.

Storage at low temperatures (below 5°C) is not recommended. This material must be protected from frost.

APPLICATION GUIDELINES

The coating is single pack and can be applied using any airless sprayer capable of maintaining a pressure of at least 100bar (1500psi) with 35:1 ratio or greater (i.e. Graco Ultramax II 795 or better). A 523 tip is recommended for most applications, although it will spray through 17-27 thou tips of various fan widths.

Remove any skinned product on the surface of the drum before mixing. Thoroughly mix the product using a jiffy mixer at no more than 300rpm.

Add up to 3% by volume water to improve consistency if the product has started to lose moisture and consistency. More may be added in hot, dry conditions to assist with sprayability and maintaining consistency in the hopper/pail.

If the product has been subjected to low temperatures it may freeze and hence for small cured pockets within the drum. If this is occurring and the tip is blocking regularly, we recommend straining it through a 30-60 mesh strainer prior to spraying. Generally, machine and gun filters should be removed. If the tip is still clogging, a 30 mesh machine filter should prevent further clogging.

Spray pressure should be maintained between 500-1200psi, any higher and cracking of the finished film may occur due to damage of the microspheres.

If the coating is applied too thick, alligator cracking can occur.

CURE TIME AND RECOAT TIME

Development of a full cure only occurs after baking at >200°C for >5hrs. To minimise overall cost, we recommend using 1-2mm thickness of CTI-600 to reduce the surface temperature to a level that can be withstood by other variants, which can be applied over the baked CTI-600 coating.

At substrate temperature if +300°C - Curing time is 2/3 hours

At substrate temperature if +400°C - Curing time is 2/3 hours

In order to avoid the appearance of bubbles in the CTI-600, we recommend applying the coating at gradual temperatures from +200°C and raising the temperature of the substrate operating values.

During the curing process, physical and mechanical impact is not permitted.



Suite 301 – 220 Brew Street, Port Moody, BC V3H 0H6 Canada
☎ +1 604 941 1001 ✉ mail@CharCoat.com 🌐 www.CharCoat.com

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