

Thermocoat 3100 CL

February, 2008

KCC is pleased to announce **Thermocoat 3100 CL**, a new and superior addition to the 3100 series. This is a higher performance thermoplastic system that raises the performance bar for the 3100 Series with the new design of 3100 CL for use both as a field applied, industrial atmospheric maintenance coating for steel and concrete surfaces as well as over old coatings (testing required to determine integrity of old coatings) and in addition as a full time immersion tank lining system over concrete or steel or aluminum.

As with all KCC – Thermocoat systems, proper bond to target substrate is achieved through the use of any of four KCC thermal primers. KCC’s polymer engineering for each thermal primer takes into account differences in substrate materials and condition of the target substrate as well as intended service conditions for Thermocoat 3100 CL. The thermal primers are heat activated and are specifically designed to function as an advanced adhesive mechanism between the target substrate surface and the protective thermoplastic topcoat.

Thermocoat 3100 CL topcoat is a specially formulated thermoplastic hybrid that is sprayed in a molten state onto the thermal primer. The molten topcoat adheres to the thermal primer forming a cohesively strong coating / lining that is tough, flexible, corrosion resistant and highly abrasion resistant with exceptional molecular permeation resistance along with UV and weathering resistance.

Typical Physical Properties:

Volatile Organic Content (Topcoat):.....	0 lbs. per gallon
Solids Content (Topcoat):.....	100% by weight
Flexibility (Topcoat).....	ASTM D 522.....1/8 inch, no cracks
Adhesion to Steel.....	ASTM D-4541.....2,000 psi
Abrasion Resistance	ASTM D-4060.....28 mg loss/ 1000 cycles, 1000 gms.
Impact Resistance:.....	ASTM D-2794.....> 400 ft-lb/in ²
QUV (4,500 hour).....	ASTM G-154.....No chalking or discoloration
Salt Fog Test (10,000 hours)	ASTM B-117.....No blistering or dulling; slight lifting @ scribe
Elongation of topcoat.....	ASTM D-638.....400%
Tensile Strength Mpa (psi).....	ASTM D-638.....10.3 (1.5)
Hardness (Shore D).....	ASTM D-2240.....55-65
Density, g/cm ³	ASTM D-792.....0.952

Note: Pigment loading and specific functional additives can change properties slightly.
This descriptive data for Thermocoat 3100 CL is not intended as a specification.

Thermocoat 3100 CL is applied with either of two KCC flame spray guns (TC 10 or TCHO 50, which results in a coating / lining that is monolithic (without joints) to an unlimited variety of concrete or steel surfaces and even can be applied over old, existing coatings.

Less affected by varying surface and environmental conditions, the Thermocoat 3100CL is particularly well suited for in-plant and field application. The thermal primers achieve high bond strength to both the target substrate surface with a commercial blast in use as an atmospheric coating and over a near white or white metal blast in immersion conditions.

In addition, there is no cure time for any Thermocoat coating / lining system, since it is sprayed as a molten thermoplastic, if it ready for service within minutes of application as it cools from a molten state to a solid state.

Surface Preparation

In any coating or lining, surface preparation is a critical phase of the installation process. Therefore, in any condition, we encourage Thermocoat applicators to consult with KCC on each application to assure maximum success. Following are general recommendations for surface preparation before application of thermal primers or the Thermocoat 3100 CL system.

As a coating system Thermocoat 3100 CL in atmospheric industrial environments requires a Commercial Abrasive Blast as stated in SSPC-SP-7 (NACE 3). In some cases, Power Tool Cleaning as stated in SSPC-SP3 is also approved, followed by a high-pressure detergent wash and fresh water rinse. For limited areas not serviceable with power tools, Hand Tool Cleaning as stated in SSPC-SP2 hand tool cleaning procedure may be used. Pitted and/or heavily corroded surfaces will require additional measures to ensure an acceptable surface. As approved by the engineer, other methods such as ultra high-pressure water or grit blasting (if site location and/or environmental concerns do not make it an issue) may also be considered.

For full time immersion, KCC recommends either Near White Metal Abrasive Blast as in SSPC-SP-10 (NACE 2) or White Metal Abrasive Blast – SSPC-SP-5, (NACE 1), depending on intended service conditions. Other methods are also satisfactory such as very high pressure hydro blasting. Consult with KCC on service conditions to determine the optimum surface preparation required.

Always plan on proper site control and proper disposal of any and all spent blast media as it is the contractors responsibility for adherence to all plant and regulatory standards.

Surface Preheat

Though recommended in some applications, preheating the surface to a warm to hot condition (approximate 140°F to 150°F) prior to the application of the thermal primer is not normally required. Preheating accelerates the initial setting of the thermal primer.

Application of Thermal Primer

Apply the recommended thermal primer to the target substrate surface as recommended in the Technical Bulletin for the recommended thermal primer. Do not allow any thermal primer to become contaminated or be subject to temperature extremes of heat or cold (i.e. allowing material in containers to sit or be stored in direct sunlight and heat).

Topcoat Application

Using the topcoat application equipment, preheat the primed surface to obtain a minimum of 150°F prior to topcoat application. For non-immersion service, apply 18 to 20 mils of the Thermocoat 3100 CL Topcoat onto the thermal primer, in a single flame spray application. Apply the topcoat in several film build passes.

Normal application for immersion service, is to apply at the Thermocoat 3100 CL at the rate of 35 to 40 mils DFT thickness onto the thermal primer in a single flame spray application. Consult with KCC Thermocoat Ltd. prior to all immersion applications for more project specific recommendations.) The applied topcoat should appear uniform, consistent, and glossy. The topcoat shall be applied as instructed by KCC. For estimating purposes, the approx. practical coverage at 20 mils is 8.0 sq. ft. per pound of powder and at 40 mils, 4.0 sq.ft. per pound of powder.

Application Equipment

All Thermocoat 3100CL materials shall be applied using only KCC Corrosion Control flame spray equipment. KCC has two proprietary flame spray guns, one standard (TC 10) and the other high output for larger projects (TCHO 50).

Repair and Overlap

Repair areas by cutting back the material to a well-bonded condition. Heat the surrounding areas to ensure a good bond of the repair topcoat. Apply the recommended thermal primer to the exposed target substrate surface. Application of the Thermocoat 3100 CL topcoat results in an immediate bond. Be careful to assure that the areas to receive the repair are clean and free of visual dirt and moisture.

Overlap / cold edge applications are performed by heating the previously coated surface to a near melt condition and applying the system as specified. An overlap of 3" minimum is recommended.

Inspection of Film Integrity

During installation of the system, care should be taken to provide for the correct uniform film thickness by checking at regular, pre-specified intervals. A magnetic dry film thickness gauge is recommended. (Note: Allow the material to sufficiently cool before checking.) Unless otherwise specified, the minimum allowable film thickness for non-immersion service at any given point shall be 18 mils and 35 mils for immersion conditions.

Storage and Shelf Life

All Thermocoat materials shall be stored in a cool dry area out of direct sunlight. The maximum recommended storage temperature shall be 90°F; the minimum shall be 40°F.

Shelf life of the Thermocoat 3100 CL topcoat material is unlimited, when stored at the temperatures stated above. Thermal primers are limited to one year of shelf life when stored at the temperatures stated above.

Safety

All applicable safety procedures or equipment requirements established by City, County, State, Federal, OSHA Agencies and the Company where work is performed, must strictly apply. The contractor is solely responsible for the safety of their personnel and the job he is running. Proper face shields, insulated gloves, non-burning protective clothing (no exposed skin is permitted), respirators, and direct dedicated air feed to each worker in confined space is required (all OSHA rules apply and must be strictly adhered to), proper and safe application equipment, fire extinguishers at the ready.

Prior to application of any material, the contractor must establish and instruct the application crew in all of the proper safety procedures and safe use of equipment carefully following KCC's operating instructions for flame spray equipment, thermal primers and topcoat materials, including those that address the use of exposed propane/gas burning equipment and the handling of molten material. Product MSDS shall be reviewed, understood and posted for further review at a specified and accessible field location.

The Thermocoat 3100 CL topcoat is supplied as a finely ground powder. Though there are no known health hazards associated with this material, normal precautions for handling fine organic powders should be taken. Inhaling of the powder and excessive airborne generation of the powder must be avoided. Consult the Thermocoat 3100 CL Material Safety Data Sheet for further information.

Thermocoat thermal primers may contain flammable materials that must be stored and applied away from flame and/or excessive heat. Always wear protective clothing including solvent resistant gloves. Always wear proper eye protection. Use only in a well ventilated area.

Contractor Qualification

Contractor qualification and certification training is required. Only contractors that have been trained by KCC in the proper use of both the equipment and the application of KCC materials are allowed to bid on and apply KCC Corrosion Control – thermoplastic materials.

Warranty

For product warranty see KCC Corrosion Control Co., Ltd. **STANDARD TERMS AND CONDITIONS (U. S. 1/2008 KCC-Sale), stated terms including limitation of liability constitute the total warranty.**

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