Eco-CRE™
Chemical Resistant Epoxy

Eco-HT™ Topcoat
Topcoat for Eco-PT™ 250

Tennant Company, 701 North Lilac Drive, P.O. Box 1452, Minneapolis, MN 55440-1452
800-553-8033 / www.tennantfloorcoatings.com

DESCRIPTION:
A two-component, 100% solids, 100% Novolac chemical resistant epoxy for use on interior concrete floors.

USES:
- Use over other 100% solids epoxies.
- Use as a stand-alone coating.

ADVANTAGES:
- Seals concrete, protecting against dirt and spills
- Offers excellent chemical resistance to 30% Hydrochloric Acid (Muriatic), 10% Nitric Acid, Jet Fuel (JP-4), Skydrol® 500B and Skydrol® LD4 with no adverse effects (based on 7-day spot testing on concrete)
- Cleans easily, saving detergent, labor and water
- Complies with VOC and VOS regulations

STORAGE: Materials should be stored indoors between 65ºF (18ºC) and 90ºF (32ºC).

SHELF LIFE: Minimum 1 year from date of manufacture.

PACKAGING OPTIONS / PART NUMBERS:

Eco-CRE:	**Eco-HT Topcoat:**
2.46 gallons / 370612	2.5 gallons / 370248

OPTIONS:

Colors: Tennant Colorants may be added to Eco-HT Topcoat. Colors available are: Battleship Gray, Tile Red, Smoke Blue, Ivy Green, Medium Gray, Canada Gray, Regal Blue, Sandy Beige and Black.
Use these colorants at the rate of 1 pint per 2.5-gallon unit of Eco-HT Topcoat.
White, Yellow, Rotunda Red and Light Gray are also available; however, these colors will not impart total hide.
Use these colorants at the rate of 2 pint units per 2.5-gallon unit of Eco-HT Topcoat.

Traction: To improve traction in slip hazard areas, use 292 Grit. See 292 Grit Product Bulletin.

LIMITATIONS:
Colors: Do not use colorants in Eco-CRE as it will diminish the chemical resistance properties.

UV/Light Stability: Products are not light stable and will yellow/amber over time.

Contamination (Fisheyes): Products may fisheye if oil, silicones, mold release agents or other contaminants are present.

MATERIAL PROPERTIES (LIQUID):

Property/ Test Method	**Eco-CRE Results**	**Eco-HT Topcoat Results**
Flash Point *°F/C* Seta Closed Cup ASTM D3278	A - >200 / 93 B - >200 / 93	A - >200 / 93 B - >200 / 93
Percent Solids, *by wt* ASTM D2369	A - 100 B - 100	A - 100 B - 99.6
Density *lb/gal / kg/L* ASTM D1475 (A/B)	A - 9.82 / 1.18 B - 8.35 / 1 A+B=9.38 / 1.13	A - 9.86 / 1.18 B - 8.05 / 0.97 A+B=9.26 / 1.11
Viscosity, *cps* Brookfield ASTM D2196	A - 800-1100 B - 450-650 A+B=600-800	A - N/A (Paste) B - 450-650 A+B=4000-6000
Volatile Organic Compound - VOC *lb/gal (g/L)* ASTM D3960	Mixed A+B 0 (0)	Mixed A+B .52 (63)

CURED COATING PROPERTIES (DRY FILM):

Property/ Test Method	**Eco-CRE Results**	**Eco-HT Topcoat Results**
Abrasion Resistance, *mg/loss** Taber Abraser ASTM D4060*	83	100
Coefficient of Friction - COF James Friction Tester ASTM D2047	0.7	
Tensile Strength, psi (kPa) ASTM D2370	8,000 (55,200)	8,000 (55,200)
Percent Elongation ASTM D2370	5	5
Shore D Hardness ASTM D2240	75-80 @ 0 sec 70-75 @ 15 sec	75-80 @ 0 sec 70-75 @ 15 sec

*CS-17 Taber Abrasion Wheel, 1,000 gram load, 1,000 revolutions
Results are based on conditions at 77°F, 50% relative humidity.

APPLICATION CHARACTERISTICS:
Coverage rate will depend upon application coating thickness as well as the texture and porosity of the concrete. A gallon of Eco-CRE or Eco-HT Topcoat will cover:

	Eco-CRE	**Eco-HT Topcoat**
Coverage Rate, *ft^2/gal*	200-535	200-300
Application Thickness, *wet/dry mils*	3-8	5-8 per coat

CHEMICAL RESISTANCE

Clear - ECO-CRE / Eco-HT Topcoat	1 Day	7 Days
Acids, Inorganic		
10% Hydrochloric Acid	E	E
30% Hydrochloric Acid (Muriatic)	E	E
10% Nitric Acid	E	E
50% Phosphoric Acid	G	G
37% Sulfuric Acid (Battery Acid)	G	G
Acids, Organic		
10% Acetic Acid	G	F
10% Citric Acid	E	E
Oleic Acid	E	E
Alkalies		
10% Ammonium Hydroxide	E	E
50% Sodium Hydroxide	E	E
Solvents (Alcohols)		
Ethylene Glycol (Antifreeze)	E	E
Isopropyl Alcohol	E	G
Methanol	P	P
Solvents (Aliphatic)		
d-Limonene	E	E
Jet Fuel - JP-4	E	E
Gasoline	E	E
Mineral Spirits	E	E
Solvents (Aromatic)		
Xylene	E	E
Solvents (Chlorinated)		
Methylene Chloride	P	P
Solvents (Ketones & Esters)		
Methyl Ethyl Ketone (MEK)	P	P
Propylene Glycol Methyl Ether Acetate (PMA)	G	F
Miscellaneous Chemicals		
20% Ammonium Nitrate	E	E
Brake Fluid	G	G
Bleach	E	E
Motor Oil (SAE 30)	E	E
Skydrol® 500B	E	E
Skydrol® LD4	E	E
20% Sodium Chloride	E	E
1% Tide® Laundry Soap	E	E
10% Trisodium Phosphate	E	E

Based on 1-day and 7-day spot testing on concrete.
Coating cured 2 weeks prior to testing.
Legend:
E - Excellent (No Adverse Effect) - Recommended.
G - Good (Limited Adverse Effect) - Use for short-term exposure only.
F - Fair (Moderate Adverse Effect) - Not recommended.
P - Poor (Unsatisfactory) - Little or no resistance to chemical.
Note: Reduced chemical resistance and increased staining is possible in pigmented versions of this system.
Tide® is a registered trademark of Proctor and Gamble.
Skydrol® is a registered trademark of Monsanto.

IMPORTANT:
READ AND FOLLOW ALL PRECAUTIONS AND INSTRUCTIONS BEFORE PROCEEDING.

PRELIMINARY FLOOR INSPECTIONS

CHECK THE CONCRETE: Concrete must be structurally sound and free of curing membrane, paint or other sealer. If you suspect that the concrete has been previously sealed, call Tennant Company, technical support for further instructions.

CHECK FOR MOISTURE: Concrete must be dry before application of this floor coating material. Concrete moisture testing must occur. Calcium chloride testing or in-situ relative humidity testing is recommended. Readings must be below 3 pounds per 1,000 square feet over a 24-hour period on the calcium chloride test or below 70% relative internal concrete humidity. Test methods can be purchased at www.astm.org, see ASTM F1869 or F2170, respectively or follow manufacturer's instructions.

NOTE: Although testing is critical, it is not a guarantee against future problems. This is especially true if there is no vapor barrier or the vapor barrier is not functioning properly and/or you suspect you may have concrete contamination from oils, chemical spills or excessive salts.

CHECK THE TEMPERATURE AND HUMIDITY: Floor temperature and materials should be between 65°F (18°C) and 90°F (32°C). Humidity must be less than 80%. **DO NOT** coat unless floor temperature is more than five degrees over the dew point.

APPLICATION EQUIPMENT

- Protective clothing
- Spiked shoes
- Jiffy® Mixer Blade [Tennant Part No. 08643-1 (1 gal) or 08643-5 (5 gal)]
- Slow speed drill (500 rpm or less)
- 18-24" Flat & Notched rubber squeegees
- Medium (1/2") Nap Roller Assembly [Tennant Part No. 08647-18 (18")]
- Medium (1/2") Nap Roller Refills [Tennant Part No. 08578-18 (18")
- Sandpaper

ASSEMBLE EQUIPMENT: Due to the limited pot life of the material, all application equipment, etc. should be ready for immediate use. (Clean roller with tape to remove any residual lint.)

PREPARATION

Detergent scrub and rinse with clean water to remove surface dirt, grease, oil and contaminants.

Acid Etch (bare concrete): Detergent scrub and rinse with clean water.
Tennant Eco-Prep™ or Diamond Grind: Scrub with Tennant Acid Wash and rinse with clean water (results of diamond grinding may vary depending on technique and the hardness of the concrete. Additional mils may be required).
Light Blast: Use magnetic broom to remove excess shot, sweep to remove large debris and vacuum to remove fine dust.

JOINTS: Depending on the preference of the facility owner, joints may or may not be filled. If the joints are filled, non-moving joints, i.e. contraction or control joints, can be hard filled with thickened, 100% solids epoxy or with a semi-rigid joint filler such as Eco-PJS™ or Eco-EJF™. Construction joints less than one inch wide may also be filled with Eco-PJS. Isolation or expansion joints must be filled with a flexible material designed for this purpose.

ECO-CRE APPLICATION INSTRUCTIONS

APPLICATION - PRIMER COAT

A thin coat of primer will wet out concrete, help seal off concrete pores and minimize outgassing bubbles. Apply a tight coat of primer with a clean, flexible squeegee. Backrolling is not recommended. There should be no mil build over the high spots of the concrete.

COVERAGE RATE will depend upon coating thickness. Much of this will soak into porous concrete. A gallon of Eco-CRE will cover:
535 ft^2 @ 3 mils wet/dry film
400 ft^2 @ 4 mils wet/dry film
321 ft^2 @ 5 mils wet/dry film

PREMIX PART A using a Jiffy® mixer blade and slow speed drill.

ADD ECO-CRE PART B TO PART A while mixing. ***POTLIFE:*** *Mix only enough material which can be applied within the work time (time between the addition of Part B to Part A and the completion of all application actions). Check the following chart for work times at various temperatures. For smaller quantities, use 2 parts PART A to 1 part PART B by volume.*

APPROXIMATE WORK TIME (minutes)

	65ºF	70ºF	75ºF	80°F	90ºF
Eco-CRE	35	15	10	5	NR

MIX FOR 2 MINUTES using a Jiffy® mixer blade and slow speed drill. (Failure to do so could result in lower/diminished coating properties.)

IMMEDIATELY POUR ALL OF THE MIXED MATERIAL onto the floor in a single bead.

PUSH THE FLAT SQUEEGEE at an even speed with down pressure. The squeegee should be pushed to apply maximum pressure and therefore the thinnest coat.

START THE SECOND AND REMAINING PASSES by pushing material parallel to the first stroke. Hold the bead of material near the center of the bar and push at an even speed with slight down pressure. ***NOTE:*** *Epoxy applied thin may "bridge" holes and cracks momentarily before soaking in--make sure the previously squeegeed area is overlapped (halfway).*

TO REDUCE OUTGASSING BUBBLES, it is best to wait until the primer has set up enough to walk on before applying a build coat of epoxy. These approximate times are: 6-9 hours at 75°F (24°C). The primer does not need to be sanded if coated before the sand times listed on the following chart.

APPROXIMATE SAND TIME (hours)

	65ºF	70ºF	75ºF	80°F	90ºF
Eco-CRE	20	16	12	9	6

If primer is hard enough to sand, it must be sanded with 60 grit paper. We recommend thorough sanding with a swing-type buffer so that multiple scratch marks cause an obvious gloss loss on all areas (depressions will remain shiny), and the floor is uniformly dulled. The ability to see individual scratch marks is an indication that sanding is not adequate. Scrub with detergent and rinse with clean water before coating.

APPLICATION - BUILD COAT

COVERAGE RATE will depend upon coating thickness. A gallon of Eco-CRE will cover:
267 ft^2 @ 6 mils wet/dry film
229 ft^2 @ 7 mils wet/dry film
200 ft^2 @ 8 mils wet/dry film
REPEAT STEPS used for mixing and application of the primer coat.

ALLOW COATING TO CURE 24 HOURS at 75°F (24°C) before opening to traffic. Allow more time at lower temperatures.

ECO-HT TOPCOAT APPLICATION INSTRUCTIONS

APPLICATION - TOPCOAT

TOPCOATS: Eco-PT 250 must be sealed with two coats of Eco-HT Topcoat to achieve maximum performance.

COLORS: Premix Tennant Colorant before adding to Eco-HT Topcoat to ensure uniform color. Add colorant to Eco-HT Topcoat Part A and mix using a Jiffy® mixer blade and slow speed drill.

ADD ECO-HT TOPCOAT Part B TO PART A and mix well using a Jiffy® mixer blade and slow speed drill.

MIX FOR 2-3 MINUTES using a Jiffy® mixer blade. ***POTLIFE:*** *Mix only enough material which can be applied within 20 minutes.*

POUR THE MIXTURE IN A BEAD over the cured Eco-PT 250 mortar. **SPREAD THE ECO-HT TOPCOAT WITH A SQUEEGEE** at 6-8 mils (200-267 sq. ft. per gallon) and **BACKROLL WITH A 1/2" NAP ROLLER** for a uniform finish. The use of spiked shoes will allow freedom of movement on the wet floor. Allow 8-12 hours between coats of Eco-HT Topcoat.

NOTE: Because of the high viscosity, roller lines may be apparent if you put down more than 12 mils Eco-HT Topcoat per coat. Unpigmented Eco-HT Topcoat will dry "milky" if put down at more than 6 mils.

ALLOW COATING TO CURE 24 hours at 75°F (24°C) before opening to traffic. Allow more time at low temperatures.

ULTIMATE HEAT AND CHEMICAL RESISTANCE is achieved after a cure of 2 weeks.

TECHNICAL SUPPORT

For any application questions, please call Tennant technical support at 800-553-8033 ext. 6070.

DISPOSAL

Dispose in accordance with federal, state and local regulations.

PLEASE SEE MATERIAL SAFETY DATA SHEET (MSDS) FOR SAFETY AND PRECAUTIONS.

USE PRODUCT AS DIRECTED.

KEEP OUT OF THE REACH OF CHILDREN.

MAINTENANCE GUIDELINES

Allow floor coating to cure at least one week before cleaning by mechanical means (e.g., sweeper, scrubber, disc machine).

Care: Proper maintenance will increase the life and help maintain the appearance of your new Tennant floor coating. Sweep and scrub your new coating regularly, as dirt and dust are abrasive and can quickly dull the finish, decreasing the life of your coating. Remove spills quickly as certain chemicals may stain and could possibly permanently damage the finish.

Use soft nylon brushes or white pads on your new floor coating. Polypropylene or abrasive bristle (Tynex®) brushes can cause premature loss of gloss.

Detergent: Tennant has a full range of detergents--general purpose to heavy duty--for your cleaning needs. For assistance in determining which detergent is right for your facility or for additional technical information call: 800-553-8033.

Caution: Avoid scratching or gouging the surface. All floor coatings will scratch if heavy objects are dragged across the surface.

Do not drop heavy or pointed items on the floor as this may causing chipping or concrete popouts in the case of a weak cap.

Rubber tires can permanently stain the floor coating from plasticizer migration. Plexiglass® between the tire and the floor coating can prevent discoloration.

Rubber burns from quick stops and starts can heat the coating to its softening temperature, causing permanent marking.

Repair: Repair gouges or scratches or chip outs as soon as possible to prevent moisture or chemical contamination.

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

This warranty applies to all Specialty Surface Coatings, with the following exceptions: Eco-Hard-N-Seal™, Eco-EDP™ (Electrostatic Dissipative Primer), Eco-EDE™ (Electrostatic Dissipative Epoxy), and SDS™ (Static Dissipative System). These products have a separate warranty policy.

Tennant Company warrants its Specialty Surface Coatings to be free from defective manufacture, improper formulation, and defective ingredients. Warranty covers replacement of materials only.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

In no event shall Tennant or Seller be liable for any incidental, consequential, or special damages arising out of the use of Tennant Specialty Surface Coatings. **THE ONLY REMEDY OF THE USER OR BUYER, AND THE ONLY LIABILITY OF TENNANT AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES, OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE) SHALL BE REPLACEMENT OF THE PRODUCT OR, AT THE ELECTION OF TENNANT OR SELLER, RETURN OF THE PURCHASE PRICE.**

No representative of Tennant has authority to give any other warranty or assume other liability.

The presence of a Tennant employee during the application of Tennant's Specialty Surface Coatings does not extend or alter the warranty or limitations in any manner whatsoever.