CHEM1000™ ST

HIGH PERFORMANCE POLYASPARTIC COATING

Technical Data Sheet

DCC Master Format™ 09 67 00

COMMERCIAL INDUSTRIAL INSTITUTIONAL RESIDENTIAL

CHEMTEC EPOXY COATINGS

PRODUCT DESCRIPTION

Representing the forefront of technological innovation, the **CHEM1000 ST™** is meticulously engineered as transparent high performance Polyaspartic topcoat with superior toughness.

This advanced formulation achieves an accelerated curing profile, reaching a tack-free state within approximately 180 minutes under recommended ambient conditions, enabling the efficient completion of flooring system installations within a single operational cycle. Its state-of-the-art composition delivers unparalleled mechanical strength and chemical resilience, complemented by minimal maintenance requirements and a visually superior, UV-stable finish.

For enhanced versatility and customization, the CHEM1000 ST™ integrates seamlessly with CHEMTEC decorative elements, including chips, quartz, and aggregates. Additionally, it is compatible with many of CHEMTEC's line of products such as the CHEM100™ SERIES, CHEM-PROOF™ SERIES, CHEM-OIL PRIME, and CHEM1000 SERIES™.
For detailed technical specifications or application-specific guidance, please consult with a CHEMTEC™ representative."

ADVANTAGES:

- ☑ VOC Compliant
- ☑ Advanced Composition Potential for LEED eligibility
- ☑ Low maintenance
- ☑ Multi-Integration options
- ☑ Excellent elongation and abrasion resistance
- ☑ Superior mechanical and chemical properties
- ☑ Self-Priming
- ☑ Chemical Resilience
- ☑ Seamless Coating
- ☑ Aliphatic / UV Stability
- ☑ Multi-Coat application in one single day.
- ☑ Impermeability / Mold resistant
- ☑ VOC and EPA Compliant in all States and Canadian Provinces
- ☑ CIFA, USDA, FDA, Food Safety Compliant

APPLICATIONS

The advanced chemical and mechanical properties of CHEM1000 ST™ make it an ideal solution for a wide range of applications and can adapt to diverse and demanding conditions, including:

- Industrial Flooring
- Garage floors
- Kitchens
- Public Transit Facilities
- Boutiques and Showrooms
- Pharmaceutical
- Commercial Centers
- Schools
- Commercial Spaces
- Healthcare Facilities
- Food and Beverage Industries
- Residential Projects
- Heavy Manufacturing
- Aerospace Facilities
- Electronics Manufacturing
- Warehouses

PACKAGING

The **CHEM1000 ST™** kit consists of Resin Part A and Part B Hardener.

	Part A	Part B
3 Gallon Kit	2Gallons	1 Gallon
15 Gallon Kit	10 Gallons	5 Gallons
Larger bulk units are available upon request.		

TESTING

All surfaces are not the same. Due to variability in surface conditions, it is strongly recommended to create a sample area prior to initiating the project. On-site testing should be conducted using the method provided by your CHEMTEC™ representative to verify optimal adhesion and color consistency. Additionally, a sampling area must be tested on existing coatings to assess for potential contaminants or risks of delamination.

CHECK CONCRETE MOISTURE

Concrete must be dry before application of this floor coating material. Concrete moisture tests are required, either ASTM F1869 (calcium chloride) or ASTM F2170 (in situ RH probe) or any other methods approved by CHEMTEC™ COATINGS INC.

CHECK TEMPERATURE AND HUMIDITY

Floor and material temperature must be at or above the published Technical Data Sheet requirements. Dew point must be 5°F (3°C) or more below the surface temperature. Do not apply if humidity is at or above 80%.

SURFACE PREPARATION

Surface preparation in accordance with: ICRI Guideline No. 310.2R Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair. The pH of the concrete substrate should be at 9 or above. All bond-breaking material must be removed.

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PHYSICAL PROPERTIES

PROPERTIES	VALUES	REFERENCES
Compressive Strength	14,000 psi – 96MPa	**ASTM C 579**
Flexural Strength:	3,700 psi – 25.5MPa	**ASTM D 790**
Tensile Strength:	8,000 psi – 55.2MPa	**ASTM D 638**
Bond Strength (concrete):	350psi – (2.4)	**ASTM D 4541**
	Concrete fails at this point	
Flammability	Combustible	**ASTM D 635**
Hardness (Shore D): Water Absorption:	>73 at full cure. < 0.1% < 0.1%	**ASTM D 2240** **ASTM D 570** **MIL D 3134**
Impact Resistance	No chipping, cracking, or delaminating	**ASTM D 2240**
Flash Point Part A: Flash Point Part B:	>167°F - >75°C >338°F - >170°C	
Abrasion Resistance (CS-17 Wheel, 1,000 g load, 1,000 cycles)	58 mg loss	**ASTM D 4060**

PRODUCT DATA

Volumetric Ratio:	2A:1B
Solids Content:	85%
*Coverage (Wet Mils):	100 - 267 SQ. FT./3.78L.
**Application Temperature:	50-86°F (10-30°C) <80%Rh
Min Substrate Temperature:	33ºF (1ºC)
Thinner:	Not required
Pot Life @ 21ºC:	10-15 minutes
**Drying / Curing Time :	
Working Time:	20-25 minutes (at 22°C/71.6°F <50%Rh)
Pot Life:	1 hour (at 22°C/71.6°F <50%Rh)
Tack Free:	1h50min (at 22°C/71.6°F <50%Rh)
Light Foot Traffic:	5-7 hours (at 22°C/71.6°F <50%Rh)
Traffic:	24 hours (at 22°C/71.6°F <50%Rh)
Recoat Time:	4 hours (at 22°C/71.6°F <50%Rh)
Max Curing Time for resurfacing:	24 hours (at 22°C/71.6°F <50%Rh)
Shelf Life:	12 months (in original sealed container under prescribed conditions)
USDA Food & Beverage & CFIA:	Meets the requirements

**Coverage will differ depending on the quality, porosity, of the substrate, thickness, and application methods.*

CONCRETE SURFACE PREPARATION

Proper preparation of the concrete surface is essential before applying the coating system to ensure maximum durability and adhesion. The following requirements must be met:

- **Dry** – The concrete must have no wet zones, with moisture levels below 4%.
- **Clean** – All contaminants such as dust, grease, delaminated coatings, laitance, or other materials that could hinder adhesion must be completely removed.
- **Profiled** – Mechanically profiled Surface (Surface Preparation ICRI Guideline No. 310.2R Concrete Surface Profile (CSP 2 and above) Depending on System to be Installed and Condition of Concrete, and/or approved by a CHEMTEC™ Representative.
- **Sound** – To ensure the substrate is structurally sound, all cracks and chipped areas must be repaired using a compatible CHEMTEC™-approved product. This step is critical to achieving a durable and effective coating application.
- **Concrete preparation** must be executed using mechanical methods, including shot blasting, grinding, sandblasting, or any other CHEMTEC™-approved technique. This ensures optimal surface profile and adhesion for subsequent coating applications.

PATCHING & REPAIRS

To prevent visible cavities, cracks, and imperfections in the final coating, proper concrete repair is crucial. Fill and level cavities using a compatible CHEMTEC™-approved product, ensuring a smooth substrate. Once the repair materials have fully cured, refine the surface by diamond sanding to address any residual irregularities. If non-CHEMTEC™ repair materials are utilized, consult a CHEMTEC™ technical representative to verify compatibility and ensure optimal results.

MIXING

The CHEM1000 ST™ requires a precise 2:1 mixing ratio by volume—two part A (resin) combined with one part B (hardener). For optimal blending, use a drill equipped with a mixing paddle, ensuring thorough and homogenous mixing for best results.
Note: If using a drill mixer, use a low speed (not to exceed 300 RPM) to avoid air entrapment.

1. Add the contents of the pre-measured CHEM1000 ST™ and mix for 2 minutes.

2. **CHEM1000 ST™** is specifically designed to be applied immediately after mixing. Allowing the mixed product to remain in the container will significantly reduce its working time. Once dispensed onto the substrate, the typical working time is approximately 25 minutes at 25°C (77°F) & 50%Rh. Prompt application is essential to ensure optimal performance.

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APPLICATION INSTRUCTIONS

1. **Temperature Considerations During Application** When applying CHEM1000™ ST, it is crucial to consider temperature changes. Always apply the coating during decreasing temperatures. Concrete is a porous material that traps air; as temperatures rise (typically in the morning), the trapped air expands, which can result in gas escaping through the coating, leading to imperfections. For optimal results, especially in exterior applications, it is safer to apply the coating in the late afternoon when temperatures are on the decline.

2. **Ambient Temperature Recommendations** For optimal performance during application, ensure the ambient temperature is maintained between 10°C and 30°C (50°F and 86°F) <80%Rh. Adhering to this temperature range helps achieve proper curing and overall product efficacy.

   Mixing Instructions (Recap) Prepare the resin by following the previously outlined mixing instructions: Combine Two part A (resin) with One part B (hardener) by volume. Use a drill equipped with a mixing paddle to ensure a thorough and homogenous blend before application.

3. **Application Technique:** Apply the product at a coverage rate of approximately 75–100 ft² per gallon. Pour the mixture onto the surface in a continuous ribbon pattern, ensuring an even distribution. Walk steadily while pouring to maintain a consistent flow, continuing this process until the bucket is completely emptied.

4. **Avoid Dripping:** Ensure that the bucket is never allowed to drip onto the floor during application. Any excess unmixed material that drips may result in improperly cured areas, leading to defects in the final coating. Ensure that the contents are poured completely, and the container is promptly removed. Handle the bucket with precision to maintain a consistent and high-quality finish.

5. **Squeegee Application Technique:** Using a squeegee attached to an extension, spread the CHEM1000™ST evenly over the substrate as thinly as possible to thoroughly wet the surface and ensure even coverage. This technique allows trapped air within the concrete to escape more efficiently, reducing imperfections. When applying a single coat over an existing layer of CHEM1000™ST, maintain a coverage rate of approximately 75–100 ft² per gallon to achieve consistent results.

6. **Roller Application Technique** Use a 10mm microfiber roller to evenly apply the CHEM1000™ ST. Roll systematically forward and backward across the surface, ensuring smooth, consistent coverage. Apply steady pressure throughout the process to achieve optimal results and a uniform finish.

7. **Final Step:** Cross-Rolling for a Smooth Finish Complete the application process by backing up with the squeegee in the opposite direction of the initial pass outlined in step 6. This ensures even distribution and eliminates streaks or inconsistencies for a flawless finish.

8. **Surface Preparation – Cleaning and Smoothing:** Thoroughly clean and sweep the floor to remove any debris or dust. Identify and sand down any high points or imperfections to ensure a smooth, even surface. This step is crucial for achieving optimal adhesion and a flawless finish for the coating.

9. **Topcoat Application:** Apply the topcoat at a coverage rate of approximately 100 sq. ft. per gallon. Follow the same procedure detailed in step 4 by pouring the product onto the surface in a ribbon pattern while walking and pouring simultaneously. This ensures even distribution and consistent application.

10. **Additional Protection Requirements** If enhanced chemical resistance, abrasion durability, or anti-slip protection is needed, consult your CHEMTEC™ representative for tailored recommendations. They can guide you on suitable products or solutions to meet specific project requirements.

PRODUCT LIMITATIONS

Concrete slabs at ground level naturally emit invisible moisture vapor. To ensure coating integrity, the permissible moisture emissions must not exceed 3 lbs./1,000 ft² over 24 hours (<4%), as determined by the calcium chloride test. Alternatively, a relative humidity (RH) test, compliant with ASTM F2170, can be used to assess moisture vapor levels. The RH test results should remain below 80%. If either test reveals moisture levels above these thresholds, blistering and delamination of the coating may occur.

It is essential to perform a calcium chloride or RH test to evaluate the concrete's moisture levels before application. Should the RH exceed 80% or the calcium chloride test result surpass 3 lbs., a concrete moisture vapor control system must be installed prior to applying the coating system.

Humidity Control System Recommendation: For cases where humidity levels exceed acceptable limits, it is recommended to use CHEM-PROOF™, CHEM-PROOF™ RAPID, or CHEM-PROOF™ SC Vapor Barriers. These MVB systems meet the F3010 specification as verified by E96 test results. For further information or guidance, please contact a CHEMTEC™ representative.

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Joint and Crack Treatment: To minimize the risk of cracking in the coating system caused by concrete movement or separation, proper treatment of joints and cracks is essential prior to application.

- **Control Joints & Random Cracks:** These should be either sawn or chiseled before being filled with CHEMFILLER™, CHEMFILLER FC™, or CHEM3000™ to ensure stability and smoothness.

- **Construction/Cold Joints:** These joints, where two slabs meet and may experience movement, must be addressed before coating. After the coating has been applied and fully cured, saw off the coating over the construction joints and fill them with an elastomeric joint filler for flexibility and durability.

⚠ These procedures are critical for maintaining the integrity and longevity of the coating systems.

For further information or guidance, please contact a CHEMTEC™ representative.

DISPOSAL

⚠ Excess material (components A and B) should be mixed and allowed to cure. Once cured, the product can be disposed of without any restrictions.

⚠ Uncured materials should be stored in a suitable and sealed container and may be disposed in accordance with provincial, State, municipal, and /or Federal regulations.

SAFETY WARNING

Safety Precautions Polyaspartic resins can cause allergic reactions in some individuals, so avoid direct skin contact. It is strongly recommended to use a cartage mask, protective gloves, eyewear, and protective clothing to minimize exposure. Additionally, ensure adequate ventilation in the working area to prevent inhalation of fumes and to maintain a safe environment.

Additional Information and Guidance: For comprehensive details on the safe handling, storage, and disposal of chemical products, users should consult the latest CHEM1000™ST Material Safety Data Sheet (MSDS). This document provides vital information, including physical, ecological, toxicological, and other safety-related data.

– KEEP OUT OF REACH OF CHILDREN –

- FOR INDUSTRIAL USE ONLY -

– KEEP FROM FREEZING –

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WARRANTY

CHEMTEC™ COATINGS products are backed by a one-year guarantee from the date of application. For comprehensive details, please consult the CHEMTEC™ Hardware Limited Warranty.

Disclaimer and Product Information
The recommendations and information regarding the application and end-use of CHEMTEC™ COATINGS INC. products are provided in good faith, reflecting CHEMTEC™ COATINGS INC.'s extensive knowledge and expertise. This guidance is based on the assumption that the products are stored, handled, and applied according to standard prescribed conditions and within their specified shelf life.

However, due to the wide range of variables, such as differing materials, substrate conditions, and environmental factors at actual project sites, the performance of these products may vary. As such, CHEMTEC™ COATINGS INC. makes no warranty, either expressed or implied, regarding the merchantability, fitness for a particular purpose, or any other aspect of product performance under diverse conditions.

Users bear the responsibility of determining whether the products are suitable for their specific application needs and must conduct adequate testing to confirm compatibility and performance. Additionally, users are advised to observe all proprietary rights of third parties and adhere to applicable legal requirements during use.

Sales Conditions
All orders are accepted under CHEMTEC™ COATINGS INC.'s current terms of sale and delivery, which can be provided upon request.

Accessing Product Details and Support
For the most accurate and up-to-date product information, users should refer to the latest version of the Technical Data Sheet for the specific product. These documents are readily available upon request, accessible online at www.epoxychemtec.com, or by consulting CHEMTEC™ COATINGS INC.'s technical representatives.

For further inquiries or assistance, users may also contact CHEMTEC™ COATINGS INC. via email at info@epoxychemtec.com.

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