LAVA-LINER

EP-990HS (HIGH SOLIDS EPOXY)

Ultra-Flex EP-990HS (High Solids Epoxy)

Is a Two-component, High Solids, Novolac/Bis-A Hybrid Epoxy.

LAVA-LINER EP-990HS is self-priming and inhibits corrosion on metal substrates and should be used with Lava-Liner EP-990C medium solids concrete penetrating epoxy primer for concrete and wood.

Epoxy & Component Properties

Component Properties		Value	Test Method
Resin (Part A)			
	Specific Gravity	1.35	ASTM D1475
	Density	1.26	ASTM D2196
Hardener (Part B)			
	Specific Gravity	1.02	ASTM D1475
	Density lbs./gal	8.5	ASTM D2196
Mix Ratio by Weight Mix Ratio by Volume		2:1 A: B	Calculated
Gel Time 25°C -minutes 60 mL (2 fluid oz.)		20-25	ASTM D2471
Tack Free Time @25°C -Hours (PET[1]) 60 mL (2 fluid oz.)		10-12	ASTM D2471

[1] PET – Peak Exothermic Time – time when the peak temperature is obtained, and the temperature begins to drop.

Color	Light Gray	
Shore D hardness	86	ASTM D2240
Adhesion, Elkometer (psi) Wood (substrate failure) Concrete (binder failure) Metal (binder failure)[2]	 >3250 >4000 >3000	ASTM D4541
Tensile	10,400 psi	ASTM D638
VOC gm/l	<1	Calculated
Solids % wt.	>99	Evaporation

[2] Binder Failure- Araldite binder attaching the test dollies to the LAVA-LINER EP-990C coating failed at a pressure greater than that indicated.

Mixing

LAVA-LINER EP-990HS is provided in premeasured containers and as a two (2) part kit. Premix each component separately. Pour the contents of the Part B container into Part A. Mix thoroughly for 3-4 minutes with a low speed (400-600 rpm) drill and paddle mixer. Ensure the paddle is used to scrape the sides of the pail and the bottom to ensure all components are thoroughly blended. The mix is exothermic and to extend the working time, remove material from container and apply with a brush, roller or spray as soon as possible (ASAP).

Coverage

Coverage will vary depending on condition of surface and desired thickness. Recommended thickness is 30 mil applied in multiple coats, two coats of 15 mil each or 3 coats at 10 mil thick. At this rate, coverage will be approximately 53 ft^2 per mixed gallon.

Applying Product

LAVA-LINER EP-990HS is a self-priming coating for metal substrates and is used as a prime as well as a seal coat. For concrete surfaces, prime with Lava-Liner EP-990C and overcoat with LAVA-LINER EP-990HS second seal coat within 12-14 hours after priming. Recoat window for LAVA-LINER EP-990HS is minimum 4 hours and maximum 12 hours for multiple coats.

Surface Preparation

Concrete

The general rule for application of a coating to concrete is that it must be clean and dry. Surface should be blasted to a surface profile of SP 6 / NACE #3 / Sa 2. (A more visual representation of the surface profile that meet the above would be CSP 4 through CSP 6 of the International Concrete Repair Institute which can provide representative profile chips for comparisons.) Exceptions noted below. Concrete should be cured (28 days) before application and green concrete must have a surface area that will allow evaporation to cure the material if LAVA-LINER EP-990C is applied. All concrete surfaces should be clean and all efflorescence, laitance and loose surface material must be removed prior to application. Recommended surface preparation shall comply with the standard SSPC-SP13/NACE 6.

Pre-coated Concrete

If the concrete surface to be coated has a prior coat on it, a test patch should be first applied to determine compatibility. Epoxy coatings can have an adverse effect on oil-based undercoats or primers if they have not completely cured. Most epoxies cure through the use of amine curing (hardener) components which interfere with the action of the metallic driers in some of the alkyd paints (zinc/aluminum, etc.). A similar chemical phenomenon occurs between the amines in epoxy hardeners and the peroxide catalyst used in polyester and vinyl ester resins and primers. The amines inhibit the action of the peroxide catalyst, preventing

cure at the interface. If this happens the paint may surface dry but remain soft and tacky next to the epoxy resin surface or vice versa.

Note: It is best to remove any sealants and coatings on the concrete surface prior to applying an epoxy coating. In particular, alkyd-based coatings.

If there are any questions regarding the preexisting concrete coating, always apply a test coat to determine whether any adverse effects will be experienced.

Metal

Carbon Steel / Ferrous

All carbon steel and ferrous metal surfaces must be clean, dry and free from oil, grease, rust and corrosion. Flash surface rust should be wiped from the surface with acetone or MEK prior to application of a primer. Surface preparation should be to a profile equal to or greater than the SSPC-SP5/NACE 1 standard requiring the complete removal of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products and other foreign matter by compressed air nozzle blasting, centrifugal wheels or other specified method.

Galvanized (Galvanealed) Metal

Galvanized steel should be cleaned with a solution of trisodium phosphate or citric acid and thoroughly dried before applying LAVA-LINER EP-990HS directly to the metal.

Non-ferrous Metal:

Metal surfaces such as aluminum, tin or galvanized steel require a different priming agent or approach and, in some instances, need not be primed. The mantra again here is "clean and dry." And surface preparation to provide a profile that allow more aggressive adhesion than to a smooth surface. Most nonferrous metals are shipped with an anti-oxidizing protective coat of wax, oil or other compound that must be removed prior to coating. Chemical etching of these surfaces is recommended but care must be taken when coating galvanealed surfaces. TSP or other cleaners may create hazardous vapors that can pose a threat to personnel in enclosed or confined spaces.

Dry Time

You may re-coat LAVA-LINER EP-990HS as soon as the surface is tacky and dry to touch (4) hours, but no later than 12 hours. Dry times are based on an average temperature of 77°F (25°C) and 50% humidity.

Clean Up

Uncured material should be mechanically scraped, and the residue removed with an environmentally safe solvent. Acetone is recommended. Cured material should be removed mechanically.

Limitations

- This product is designed for professional application and for industrial use only.
- Be sure to measure and mix properly. Be aware of the pot life of mixed epoxy and temperature of the environment as well as the temperature of the mix can.
- Do not apply in temperatures below 35°F or above 95°F or where the substrate to be coated is at a temperature greater than 95°F. Hot or cold weather will affect dry times.
- Epoxy must be cured for a minimum of 7 days before being placed in service or coming in contact with water.
- Solvents may be required in cooler weather to lower viscosity and increase coverage of 100% solids. The preferred solvent is n-butanol (butyl alcohol) solvents must only be used where the time for complete solvent evaporation is obtained before the application is placed into use.
- Please check with local laws governing the use of solvents.
- Do not allow LAVA-LINER EP-990HS components to freeze.

Methods of Application

When using a 2K spray application, the ratio is 2 Parts A to 1 Part B by volume.

If application is by brush or roller, two gallons of Part A should be mixed with one can of Part B in a clean, unused container capable of holding the contents. Mixing should be accomplished using a drill bit mixer that will incorporate the components in a homogenous blend. When mixing, precautions to avoid the entrainment of air should be taken.

The mixing will cause an exothermic reaction and the temperature of the blend will increase thus shortening the pot life. Pot life (gel time) will be approximately 20-25 minutes during which the mixed product can be easily applied. Thereafter, it may become unwieldly

and too thick to apply properly. The pot life can be extended by pouring the mixed components into roller trays or distributed into smaller cans and thereby limiting the buildup of heat within the larger quantity of LAVA-LINER EP-990HS.

Air Assisted Airless Spraying can be accomplished only if the component parts are thinned prior to blending. The appropriate solvent to use to thin is n-butanol and should be used only by experienced and trained professional applicators. By adding up to 2-3% by weight of each component and premixing each before combining the two parts, the materials when blended together will be thin enough to be applied using commercially available spray equipment. Do not dilute too much or it will take many coats to achieve the proper thickness and will reduce the mechanical properties of the final coating.

EP-990HS CHEMICAL RESISTANCE

REAGENT	RATING
Acetic Acid	R
Acetone	R
Ammonia Hydroxide - 38%	R
Beer R	R
Bleach L*	L
Brake Fluid R	R
Citric Acid - 30% R	R
Citric Acid - 40% L	L
Crude Oil R	R
Diesel Fuel R	R
Ethylene Glycol R	R
Fatty Acids R	R
Gasoline R	R
Hydrochloric Acid - 37% R	R
Isopropyl Alcohol R	R
Lactic Acid - 50% R	R
Methyl Ethyl Ketone L	L
Nitric Acid - 10% R	R
Orange Juice R	R
Peroxide - 35%	L
Phosphoric Acid - 85%	R
Skydrol	R
Sodium Hydroxide - 50%	R
Sulfuric Acid - 98%	R
Toluene	R
Urea	R
Vinegar	R
Xylene	R

R - Recommended for continuous splash/spill service
L - Limited recommendation (occasional spills, may cause slight stain or discoloration) *Bleach allowed to evaporate/concentrate repeatedly will cause stains