

HydraTech PolySpray ECR-AA

Extreme Corrosion Resistant – Acid Alkaline

Issue 10.14

PRODUCT DESCRIPTION

PolySpray ECR-AA is a spray applied, rapid setting elastomeric polyurea providing outstanding resistance to sustained chemical exposure from concentrated salt, acid and alkali solutions. In many cases the PolySpray ECR-AA provides a flexible alternative to brittle epoxies. PolySpray ECR-AA is ideally suited for the rehabilitation of chemical sewers, sanitary waste pipe, storm drain culverts and secondary containment applications. PolySpray ECR-AA is recommended for structures subject to significant lateral or transverse movement. The unique chemical resistant and elastomeric properties of the PolySpray ECR-AA provide the desired physicals without compromising chemical resistance.

Advantages

- Seamless, High-Build Liner
- Fast Cure (tack free in under 30 seconds)
- High Flexibility & Toughness
- Immediate Return to Service
- Chemical, Abrasion, and Impact Resistant
- Environmentally Friendly (No V.O.C.)
- Elastomeric
- Excellent Mechanical Properties
- Insensitive to Environment
- Thermal Stability
- Moisture Tolerant

PHYSICAL PROPERTIES

RESIN Viscosity	1000 – 1200 cP @ 77 °F
ISO Viscosity	400 – 600 cP @ 77 °F
Gel Time	8 sec.
Tack Free	20 sec.
Back in Service	24 Hours
Shore Hardness	ASTM D2240 D43
Taber Abrasion Resistance	ASTM D4060 <200 (H18, 1000g, mg of loss/1000 cycles)

PERFORMANCE DATA

Tensile Properties (Type IV, min 0.15" thick)

Tensile Strength (psi)	ASTM D638	2,300
Tensile Modulus (psi)	ASTM D638	18,200
Elongation (%)	ASTM D638	200
Tear Strength (pli)	ASTM D624	329

Flexural Properties (3 point, 2.5" span/min 0.15" thick)

Flexural Modulus (psi)	ASTM D790	16,400
Flexural Strength (psi)	ASTM D790	1,200
MVT (perm. 30 mil dry)	ASTM D1653	0.010
CTE (in/in/°C)	ASTM D696	98 x 10 ⁻⁶

Adhesion

	ASTM D4541
Concrete (psi)	400 (concrete failure)
Steel (psi)	>2,000

Limitations

Not recommended for:
Sustained immersion in organic solvents
Structural support applications

Health & Safety

Consult product MSDS supplied separately

Shelf Life & Storage

The product has a shelf life of six months when stored in the original unopened containers and not subject to temperatures below 70°F and above 130°F.



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SURFACE PREPARATION & APPLICATION

Concrete

Unless otherwise recommended by HydraTech Engineered Products LLC, cure new concrete a minimum of 28 days before application of PolySpray.

New concrete generally requires a minimum 28 day cure time under favorable environmental conditions to achieve its design strength. PolySpray should not be sprayed over damp or green concrete, as this may reduce adhesion and increase the potential of water vapor and/or gas caused blisters.

Prior to application of coatings, check for the presence of moisture beneath the surface according to the Plastic Sheet Method described in ASTM D4263. Other appropriate alternate test methods may be submitted for consideration. Conduct the test on representative sections of each pour. If moisture is present, consult HydraTech Engineered Products LLC for required action.

Remove surface hardeners, oil, grease, dirt, efflorescence, laitance, or other foreign contaminants before applying coatings. Remove curing membrane (if any), if it is determined that the membrane would interfere with the adhesion or performance of the applied PolySpray products. The concrete surface also needs to be free of standing water.

If portions of the existing coating are sound and intact, determine the compatibility of PolySpray products with the existing coating in accordance with ASTM D5064. If PolySpray products are incompatible with the existing coating, the existing coating must be removed using the methods described below.

The compressed air supply used for blast cleaning shall be completely free of all oil, water and other contaminants and provide the required volume of air at 100psi or greater. Abrasives used shall be clean, a uniform grade and of an appropriate size to obtain the specified surface finish and profile. Do not use contaminated abrasive. Water used with high-pressure water blasting or wet abrasive blasting shall be clean potable water.

A surface texture similar to that of medium-coarse sandpaper should be attained.

Thoroughly clean all blasted surfaces to remove all dust and debris after dry blasting, or to remove all water, sludge and debris after wet blasting. Vacuum cleaning a roughened concrete surface is the only known effective method of removing dust from deep pits, cracks, crevices, bug holes, etc. and is considered a mandatory procedure.

Use coving products or mastics to eliminate 90° internal angles and corner sections. Repair and remove or fill cracks, voids, honeycombs, fins and other surface irregularities using a recommended patching material. Grind all form ties or other metallic protrusions below the surface and then patch or fill.

All expansion joints and moving cracks must be isolated by with a bridging material to eliminate stresses during cure.

A concrete primer shall be used to ensure adhesion of PolySpray products and to prevent pinholes caused by out gassing. HydraTech offers and recommends PolyPrime for most applications. The primer shall be applied as per the manufacture's instructions.

Steel and other Ferrous Substrates

Prepare in accordance with Steel Structures Painting Council Surface Preparation SSPC-SP6 to SP10 near-white metal blast cleaning to give a 3 - 4 mil profile to create a surface finish for PolySpray to chemically and mechanically adhere to.

All work blasted should be coated the same day.

Steel surfaces must also be free from rust, salts, dirt and any other contaminants. Any welds shall be free of voids and spurs. Sharp protrusions should be ground smooth. Check for soluble salts in all appropriate locations and take remedial action if any are found.

Be sure to test the surface conditions prior to application of the PolySpray system. Do not apply PolySpray products when the ambient temperature is less than 5°F above the dew point.

Beware of the potential for cold wall effect and undertake appropriate preventative measures when required.

Equipment Recommendations

Gun	Gusmer GX7-400 (mechanical purge) 453 Module (drilled to 0.025" on both ports) 212 Tip	
Pump	Graco H20/35 Pro	
	Component temperature	155°F
	Hose temperature	155°F
	Pressure	2000psi

Notes:

Clean equipment with PolyFlush followed by PolyLube. Do not use MEK to clean equipment. Ensure material is mixed and >70°F prior to spraying. PolySpray ECR-AA has a very short recoat window. Use PolyPrep when recoating is required. Avoid contact with moisture by utilizing desiccant cartridges on both the A and B sides and by spraying in dry conditions onto dry substrates. PolySpray ECR-AA has a very rapid gel time and tack free time similar to other polyureas but requires extended time to fully cure. Physical properties are not achieved until completely cured. Ensure even application thickness and smooth transitions.



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**PRIMARY & SECONDARY CONTAINMENT RECOMMENDATIONS* BASED UPON CHEMICAL RESISTANCE
(ASTM D543, 7d immersion @ 77°F, unless otherwise stated)**

Chemical	<u>ΔWt%</u>	<u>ΔVol%</u>	<u>1°</u>	<u>2°</u>
Acetic Acid, 10%	2.50	2.55	Yes	Yes
Acetone	62.30	64.44	No	No
Ammonium hydroxide, 20%	2.93	0.54	Yes	Yes
Ammonium nitrate, 20%	0.74	0.68	Yes	Yes
Ammonium phosphate, 20%	-0.25	-0.75	Yes	Yes
Antifreeze	-0.30	0.50	Yes	Yes
Benzene	111.30	114.75	No	No
Brake fluid	22.03	18.91	No	Yes
Brine, 13%	-0.26	1.55	Yes	Yes
Citric acid, 20%	0.05	0.60	Yes	Yes
Diesel fuel	11.68	16.50	No	Yes
N,N dimethyl formamide	185.01	164.79	No	No
Gasoline	93.99	100.23	No	No
Hexane	18.67	22.06	No	Yes
Hydrochloric acid, 5%	-0.08	0.83	Yes	Yes
Hydrochloric acid, 10%	-0.12	0.98	Yes	Yes
Hydrochloric acid, 25%	-0.22	0.49	Yes	Yes
Hydraulic oil	1.32	2.87	Yes	Yes
Isopropanol	18.74	25.63	No	Yes
Kerosene	13.93	14.10	No	Yes
Lactic acid, 85%	15.26	10.77	No	Yes
Methyl ethyl ketone	119.40	127.60	No	No
Methanol	36.99	37.90	No	No
Mineral spirits	14.38	16.59	No	Yes
Motor oil (10W30)	1.25	1.54	Yes	Yes
Nitric acid, 10%	2.59	1.45	Yes	Yes
Nitric acid, 30%	13.49	7.99	No	Yes
Nitric acid, 50%	53.65	68.69	No	No
Phosphoric acid, 10%	-0.06	0.11	Yes	Yes
Phosphoric acid, 25%	-0.15	-1.28	Yes	Yes
Phosphoric acid, 50%	-0.01	0.75	Yes	Yes
Phosphoric acid, 85%	33.99	11.31	No	Yes
Potassium hydroxide, 10%	-0.17	0.29	Yes	Yes
Potassium hydroxide, 20%	-0.54	0.37	Yes	Yes
Potassium hydroxide, 50%	-1.16	-0.49	Yes	Yes

Chemical	<u>ΔWt%</u>	<u>ΔVol%</u>	<u>1°</u>	<u>2°</u>
Propylene carbonate	3.83	6.85	No	Yes
Sodium hydroxide, 5%	-0.09	-1.22	Yes	Yes
Sodium hydroxide, 10%	-0.29	1.07	Yes	Yes
Sodium hydroxide, 25%	-0.81	-1.18	Yes	Yes
Sodium hydroxide, 50%	-1.46	-0.56	Yes	Yes
Sodium hypochlorite	0.61	0.56	Yes	Yes
Sulfuric acid, 5%	-0.11	0.25	Yes	Yes
Sulfuric acid, 10%	-0.21	1.76	Yes	Yes
Sulfuric acid, 20%	-0.25	0.12	Yes	Yes
Sulfuric acid, 25%	-0.38	0.32	Yes	Yes
Sulfuric acid, 50%	26.36	10.58	No	Yes
Sulfuric acid, 70%	67.31	34.23	No	Yes
1,1,1 trichloroethylene	146.20	107.03	No	No
Toluene	98.63	88.16	No	No
Vinegar	1.62	2.00	Yes	Yes
Water (tap)	-0.14	-0.52	Yes	Yes
Xylene	19.49	84.29	No	No

Recommendations are based upon samples cured for 48 hours before unsupported complete immersion in the stated test chemicals at room temperature. It is highly recommended that in the case of complex mixtures and/or elevated temperatures, the performance of any product should be confirmed by field immersion prior to the coating operation.

