TECHNICAL DATA

SpecPoxy HSHV

GreenConscious

High Performance Structural hi-mod, gel anchoring epoxy

DESCRIPTION

SpecPoxy HSHV is a two-component, moisture insensitive, high modulus, structural epoxy bonding gel. SpecPoxy HSHV is 100% solids, solvent-free, low- odor, high-strength, and non-sag adhesive for anchoring in concrete.

- Anchors bolts, dowels, and reinforcing steel
- Suitable for dry and water saturated conditions
- Vertical and overhead structural anchoring bonding and patching
- For use in concrete, block, brick, or stone
- VOC Content = 0 grams per liter

APPLICATION

Mixing Instructions: Air, material and surface temperatures must be a minimum of 40°F (4°C) prior to mixing or installation. To assist with mixing and dispensing, precondition material to 75°F. For cartridges, the resin and hardener are uniformly dispensed and mixed simultaneously through a mixing nozzle.

Surface Preparation: Surfaces to be bonded must be clean and structurally sound. Remove all oil, grease, dirt, laitance, curing compounds, and any other foreign matter by sandblasting, mechanical abrasion or hydroblasting. All drilled holes must be cleaned out with a nylon brush removing all dust and loose material. Use clean, oil free compressed air to blow out any remaining water, dust, or debris prior to application. Bolts, rebar or threaded rod should be free of dirt, grease, oil of other foreign material.

Anchoring: For use in anchoring dowels, bolts, fiberglass rebar, reinforcing steel, etc. the minimum depth of the hole should be approximately 9 times the bolt diameter. The hole diameter should be approximately 1/8" larger than the threaded rod diameter. Ensure the holes are properly prepared, (drilled, brushed and blown out) prior to preparing the epoxy cartridge. Insert the cartridge into the dispensing gun. Remove the plastic caps and dispense a small amount of material until an even flow of black and white material is achieved. Place the mixing nozzle onto the cartridge then slide the nut over the nozzle and thread the nut onto the cartridge. To achieve maximum flow, break off the tip of the mixing nozzle to the largest diameter that will fit into the hole or screen. No nut is necessary on mixers with built-in nuts. Dispense into a disposable container until a uniform grey is achieved with no streaks.

Into Concrete: Dispense the material from the bottom of the hole. Fill approximately 5/8 of the hole depth while slowly withdrawing the nozzle. Insert the bolt, or dowel by turning it slowly during insertion. After insertion, the hole should be completely filled with SpecPoxy HSHV and devoid of all air pockets or voids. Do not disturb or bolt up until cured.

STANDARDS

SpecPoxy HSHV meets ASTM C881 & AASHTO M 235, Type I, II, IV, and V Grade 3, Classes B & C.

Complies with Florida DOT Section 937 Type HSHV requirements.

TYPICAL PROPERTIES

Mix Ratio	1 to 1
Mixed Color:	Gray
Viscosity:	Gel/Paste
Gel time (ASTM D2471)	18 minutes

TYPICAL CURED PROPERTIES @ 70°F

Initial Cure	4 hours
Final Cure	3 days
Compressive Strength (ASTM D695)	14,500 psi
Compressive Modulus (ASTM D695)	505,000 psi
Bond Strength at 2 days (ASTM 882)	2,910 psi
Bond Strength at 14 days (ASTM 882)	3,550 psi
Elongation (ASTM D638)	1.0%
Tensile Strength (ASTM D638)	7,590
Water Absorption (ASTM D570)	< 0.2%
Linear Shrinkage (ASTM C531)	.003%
Heat Deflection (ASTM D648)	155°F

PACKAGING

22 oz. dual cartridge
51 oz dual cartridge
10 gallon units

CLEANING

Tools and Equipment: Uncured material can be removed with SpecChem Orange Peel, Berry Clean or other approved solvent. Dispose of in accordance with local, state, and federal disposal regulations. Mechanical removal (grinder or sander) is necessary for cured material.

SpecChem
Solution to Service

1511 Baltimore Ave, Suite 600
Kansas City, MO 64108
www.specchem.com 816.968.5600

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SHELF LIFE

Store SPECPOXY HSHV in its original containers and keep tightly closed. Do not allow the accumulation of water, dirt or other contaminants.
The shelf life of properly stored SPECPOXY HSHV is two years from date of manufacture.

LIMITATIONS

Always test a small amount of SPECPOXY HSHV to verify that the product has been thoroughly mixed and will harden properly before proceeding.
Do not thin with any solvent.
For anchoring appplications, concrete must be at least 21 days old
Do not subject uncured material to temps below 35F
Surface and air temperatures must be a minimum of 40°F (4°C) for application.

PRECAUTIONS

Prolonged or repeated skin or eye contact may cause irritation. If contact occurs, wash immediately and seek medical help. Use safety glasses and wear protective rubber gloves. In case of ingestion, call a physician. Contact with skin may cause chemical burns. Wash immediately with soap and water. Avoid eye contact. If eye contact occurs, flush immediately with water. Product is a strong sensitizer. Avoid breathing vapors. Use safety glasses and wear protective rubber gloves.

INDUSTRIAL USE ONLY

Additional precautions, safety and first aid information are contained in the (SDS) Safety Data Sheet.

WARRANTY

NOTICE-READ CAREFULLY
CONDITIONS OF SALE
SpecChem offers this product for sale subject to and limited by the warranty which may only be varied by written agreement of a duly authorized corporate officer of SpecChem. No other representative of or for SpecChem is authorized to grant any warranty or to waive limitation of liability set forth below.
WARRANTY LIMITATION
SpecChem warrants this product to be free of manufacturing defects. If the product when purchased was defective and was within use period indicated on container or carton, when used, SpecChem will replace the defective product with new product without charge to the purchaser. SpecChem makes no other warranty, either expressed or implied, concerning this product. There is no warranty of merchantability. NO CLAIM OF ANY KIND SHALL BE GREATER THAN THE PURCHASE PRICE OF THE PRODUCT IN RESPECT OF WHICH DAMAGES ARE CLAIMED.
INHERENT RISK
Purchaser assumes all risk associated with the use or application of the product.

Pullout Test Result per Florida DOT Section 937 Type HSHV Using Grade B7 5/8" threaded rod

Test Method	Rod Diameter (in)	Hole Diameter (in)	Depth Embed (in)	Average Peak Load (lbs)	Average Bond Strength (psi)	Mode of Failure
Confined Tension	5/8''	3/4"	4"	24,342	3,101	concrete
Confined Damp Hole	5/8"	3/4"	4"	23,251	2,962	concrete
Confined Elevated Temperature	5/8"	3/4"	4"	24,497	3,121	concrete
Confined Horizontal Orientation	5/8''	3/4''	4''	20,744	2,642	concrete
Confined Short Term (24 hrs)	5/8"	3/4"	4"	21,743	2,770	concrete
Unconfined 16x102mm	5/8"	3/4"	4"	18,875	2,404	concrete
Unconfined 16x152mm	5/8"	3/4"	6"	28,788	2,444	concrete
Unconfined 16x152mm	3/4"	7/8"	6"	37,354	2,642	concrete
Unconfined after Creep	5/8"	3/4"	4"	21,722	2,767	concrete

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Package Size	22 fl. Oz. Cartridge	51 fl. Oz. Cartridge	10 Gallon Kit (Resin)	10 Gallon Kit (Hardener)
Part #	SPHSHV-22	SPHSHV-51	SPHSHV-A-10	SPHSHV-B-10
Recommended Mixing Nozzle	CART-MIXER-CLS		CART-MIXER-CLS	
Manual Dispensing Tool	B26T600	N/A		
Pneumatic Dispensing Tool	AT600	AT1500X	Pump	
Battery Tool	E18T600	N/A		
Case Qty	12	5	N/A	
Pallet Qty.	432	252	90 Kits	
SDS Brush Adaptor	SC-BRUSH			
Brush Extension	SC-BRUSH-EXT			
Nozzle Extension Tubing	SC-TUBE-EXT			


Brush Extension


Wire Brush


Mixing Nozzle


Cartridge Gun


Nozzle Extension Tube

Table 5 – Creep at Elevated Temperature Test Results

Specimen ID	1	2	3	Average
Threaded Rod Size *(in.)*	0.625	0.625	0.625	**0.625**
Hole Diameter *(in.)*	0.75	0.75	0.75	**0.75**
Depth *(in.)*	4.00	4.00	4.00	**4.00**
Initial Elastic Displacement *(in.)*	0.0270	0.0420	0.0190	**0.0293**
Creep Displacement at 1000 hrs *(in.)*	0.0060	0.0030	0.0040	**0.0043**
Creep Displacement in last 15 days *(in.)*	0.0000	0.0000	0.0000	**0.0000**
600 day Estimated Displacement Due to Creep *(in.)*	0.0075	0.0042	0.0051	**0.0056**
600 day Estimated Total Displacement *(in.)*	0.0345	0.0462	0.0241	**0.0350**
Unconfined Pull-out Load After 42 days Creep *(lbf.)*	18,532	19,208	20,021	**19,254**
Unconfined Pull-out Bond Stress After 42 days Creep *(psi)*	2,361	2,447	2,550	**2,453**
Displacement at Peak Load *(in.)*	0.0490	0.0330	0.0420	**0.0413**

Figure 1 – Creep at Elevated Temperature – Creep Displacement vs. Time

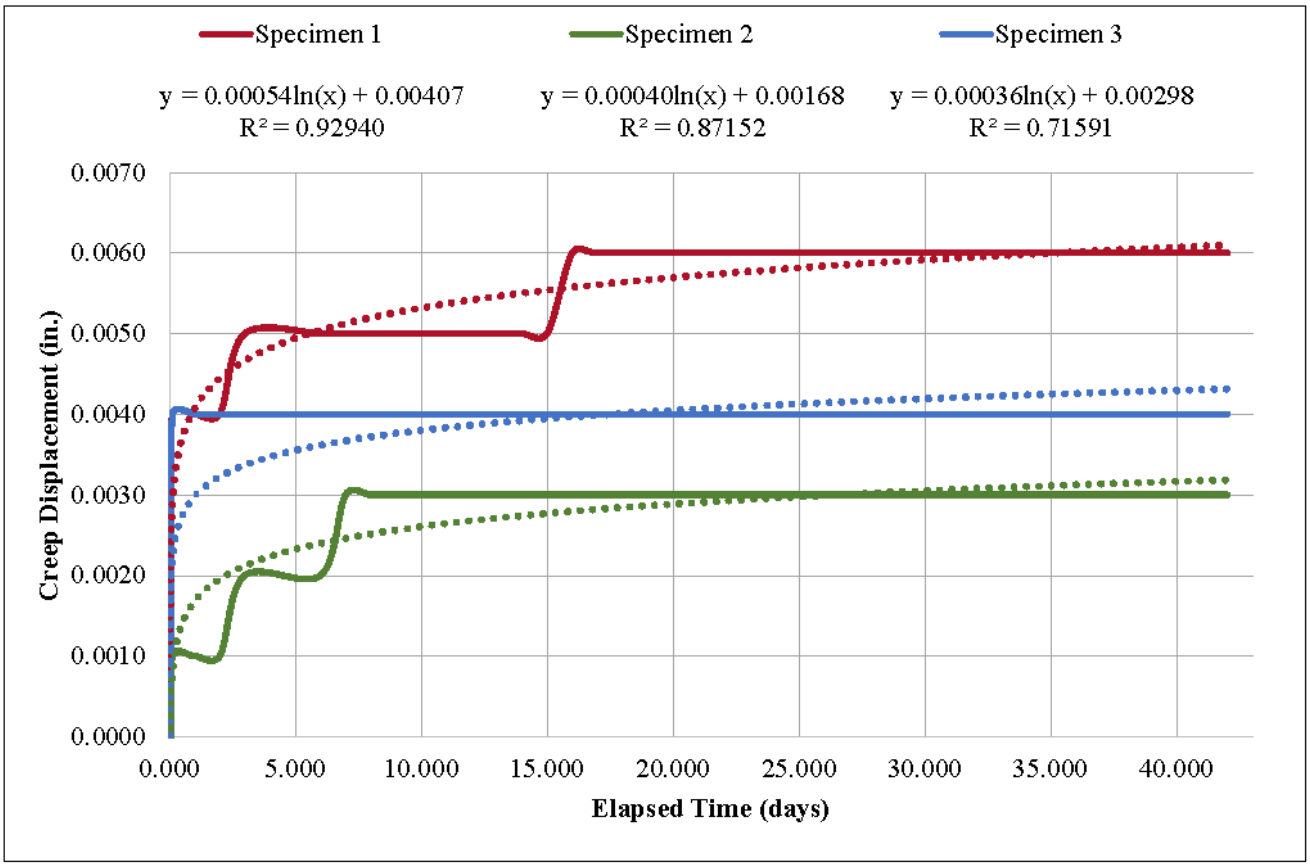

Table 4 – Results of Direct Tension Pull-Out Testing

Sample ID	Rod Diameter *(in)*	Hole Diameter *(in)*	Depth *(in)*	Peak Load *(lbf)*	Bond Area *(in^2)*	Bond Strength *(psi)*	Failure Type	Average Peak Load *(lbs)*	Average Bond Strength *(psi)*
Confined 7 days	5/8 Grade B7	0.750	4.000	24,474	7.85	3,118	Concrete	**24,342**	**3,101**
				25,028	7.85	3,188	Concrete		
				23,683	7.85	3,017	Concrete		
				23,230	7.85	2,959	Concrete		
				25,294	7.85	3,222	Concrete		
Confined Damp Hole 7 days	5/8 Grade B7	0.750	4.000	23,302	7.85	2,968	Concrete	**23,251**	**2,962**
				22,949	7.85	2,923	Concrete		
				22,237	7.85	2,833	Concrete		
				22,280	7.85	2,838	Concrete		
				25,489	7.85	3,247	Concrete		
Confined Elevated Temperature 7 days	5/8 Grade B7	0.750	4.000	24,956	7.85	3,179	Concrete	**24,497**	**3,121**
				24,165	7.85	3,078	Concrete		
				25,841	7.85	3,292	Concrete		
				24,503	7.85	3,121	Concrete		
				23,021	7.85	2,933	Concrete		
Confined Horizontal 7 days	5/8 Grade B7	0.750	4.000	18,086	7.85	2,304	Concrete	**20,744**	**2,642**
				21,992	7.85	2,802	Concrete		
				17,360	7.85	2,211	Concrete		
				21,007	7.85	2,676	Concrete		
				25,273	7.85	3,219	Concrete		
Confined Short Term 24 hours	5/8 Grade B7	0.750	4.000	19,395	7.85	2,471	Concrete	**21,743**	**2,770**
				20,532	7.85	2,616	Concrete		
				25,129	7.85	3,201	Concrete		
				23,525	7.85	2,997	Concrete		
				20,136	7.85	2,565	Concrete		
Unconfined 16x102 mm 7 days	5/8 Grade B7	0.750	4.000	18,065	7.85	2,301	Concrete	**18,875**	**2,404**
				18,841	7.85	2,400	Concrete		
				18,863	7.85	2,403	Concrete		
				19,827	7.85	2,526	Concrete		
				18,777	7.85	2,392	Concrete		
Unconfined 16x152 mm 7 days	5/8 Grade B7	0.750	6.000	28,819	11.78	2,446	Concrete	**28,788**	**2,444**
				29,603	11.78	2,513	Concrete		
				29,826	11.78	2,532	Concrete		
				26,913	11.78	2,285	Concrete		
				28,776	11.78	2,443	Concrete		
Unconfined 19x152 mm 7 days	3/4 Grade B7	0.875	6.000	38,243	14.14	2,705	Concrete	**37,354**	**2,642**
				35,481	14.14	2,509	Concrete		
				37,862	14.14	2,678	Concrete		
				37,279	14.14	2,636	Concrete		
				37,905	14.14	2,681	Concrete		