



AF35LVE CHEMICAL INJECTION SYSTEM

LOW VISCOSITY STRUCTURAL EPOXY

AF35LVE is a two-component, low viscosity epoxy designed for deep embedment of anchor rods in large diameter holes due to its zero shrinkage and longer working times. Due to its ultra-low viscosity, AF35LVE flows freely when under pressure. The installation temperature range is between 40 °F and 110 °F (4 °C and 43 °C).



APPLICATIONS & USES

- Non-shrink and moisture insensitive allows for installation in most applications
- 2:1 Mixed Ratio Epoxy
- Quick cure time
- Pull test in as low as 72 hours
- Blue color once cured
- Extended working time
- Diamond cored holes (roughened)
- Mixing nozzle included
- 2 year shelf life

KEY FEATURES

- Low viscosity
- Ability to inject epoxy after anchor is installed
- Tested specifically for tower modifications
- Saves installation time
- Field friendly

MATERIAL SPECIFICATIONS

Approvals

ASTM C881/C881M-14

TYPE I, II*, IV, & V* GRADE 1 CLASS C

AASHTO M235

**With exceptions*

AVAILABILITY

AllFasteners carries all epoxy, accessories and dispensing tools and are in stock.

COLOR & RATIO

Part A (Resin): Clear, Part B (Hardener): Blue, Mixed: Blue; Mix ratio: 2:1 by volume.



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STORAGE & SHELF LIFE

24 months in unopened containers stored in dry conditions between 55 °F (13 °C) and 80 °F (27 °C).

INSTALLATION & COVERAGE

Manufacturer's Printed Installation Instructions (MPII) are available within this Technical Data Sheet (TDS). Due to occasional updates and revisions, always verify that you are using the most current version of the MPII. In order to achieve maximum results, proper installation is imperative.

CLEAN UP

Always wear appropriate protective equipment such as safety glasses and gloves during cleanup. Clean uncured materials from tools and equipment with mild solvent. Cured material can only be removed mechanically.

WORKING TIMES & CURE TIMES

BASE MATERIAL	MINIMUM WORKING TIME	FULL CURE TIME
°F (°C)		
40 (4)◇	50 mins	7 days
75 (24)	30 mins	72 Hours
110 (43)	20 mins	

* Working times are approximate, may be linearly interpolated between listed temperatures and are based on cartridge & nozzle system performance.

◇ If ambient temperature is expected to drop below 40 °F at any point during the 7 day cure window then full cure time should be doubled to 14 days. Performance of this material in base material temperatures below 40 °F has not been evaluated.

LIMITATIONS & WARNINGS

- Do not thin with solvents, as this will prevent cure
- Product not designed to stop seeping or flowing water, however it may be applied in moist or damp environments as long as standing water is removed
- New concrete should be a minimum of 28 days old prior to application

SAFETY

Please refer to the Safety Data Sheet (SDS) for AF35LVE published on our website or call for more information at 888.859.6060.



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SPECIFICATIONS

The epoxy repair material shall be a two component, 2:1 ratio, epoxy adhesive system. When cured 7 days and at a temperature of 60 °F (16 °C), the epoxy adhesive shall have a minimum compressive strength of 9,000 psi (62.1 MPa) per ASTM D695 and a minimum tensile strength of 5,000 psi (34.5 MPa) per ASTM D638. The epoxy adhesive shall be AF35LVE from AllFasteners, USA.

ORDERING INFORMATION

PART #	DESCRIPTION	
12AF35LVE	33 oz. (340mL Cartridge)	10/Case

TABLE1: AF35LVE, DISPENSING TOOLS, MIXING NOZZLES & ACCESSORIES¹

PACKAGING SIZE	33 oz. (340mL Cartridge)
PART #	12AF35LVE
CASE QTY	10
PALLET QTY	360
MANUAL DISPENSING TOOL	13MDTAF35LVE-33
PNEUMATIC DISPENSING TOOL	13PDTAF35LVE-33
BATTERY DISPENSING TOOL	13BDTAF35LVE-33
AF HOLE ROUGHENER	9HR-14, 9HR-20, 9HR-30
RECOMMENDED MIXING NOZZLE	INLCUED

1. Call for bulk packaging availability and lead time.



13MDTAF35LVE-33



13PDTAF35LVE-33



13BDTAF35LVE-33



9HR-14, 9HR-20, 9HR-30



INCLUDED



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MATERIAL SPECIFICATIONS

TABLE 2: AF35LVE PERFORMANCE TO ASTM C881-14^{1,2,3}

PROPERTY	CURE TIME	ASTM STANDARD	UNITS	SAMPLE CONDITIONING TEMPERATURE 60°F(16°C)
				CLASS C
GEL TIME - 60 GRAM MASS ⁴	--	C881	MINS	27
VISCOSITY	--		cP	500
POT LIFE ^{5,6}	--		MINS	19
COMPRESSIVE YIELD STRENGTH	7 DAY	D695	psi (MPa)	10,150 (70.0)
COMPRESSIVE MODULUS			psi (MPa)	300,000 (2,068)
TENSILE STRENGTH		D638	psi (MPa)	7,230 (49.8)
TENSILE ELONGATION			%	4.4
BOND STRENGTH HARDENED TO HARDENED CONCRETE	2 DAY	C882	psi (MPa)	1,580 (10.9)
	14 DAY		psi (MPa)	2,950 (20.3)
BOND STRENGTH FRESH TO HARDENED CONCRETE	14 DAY		psi (MPa)	1,720 (11.9)
HEAT DEFLECTION TEMPERATURE	7 DAY	D648	°F (°C)	120 (48.9)
WATER ABSORPTION	14 DAY	D570	%	0.3
LINEAR COEFFICIENT OF SHRINKAGE	48 HRS	D2566	%	0.0003

1. Results based on testing conducted on a representative lot(s) of product. Average results will vary according to the tolerances of the given property.
2. Full cure time is listed to obtain the give properties for each product characteristic.
3. Results may vary due to environmental factors such as temperature, moisture and type of substrate.
4. Gel time may be lower than the minimum required for ASTM C881.
5. Property not referenced in ASTM C881.
6. Pot life is measured as the workable and applicable time of 1.0 gallon (3.8 L) when mixed.





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SURFACE PREPARATION

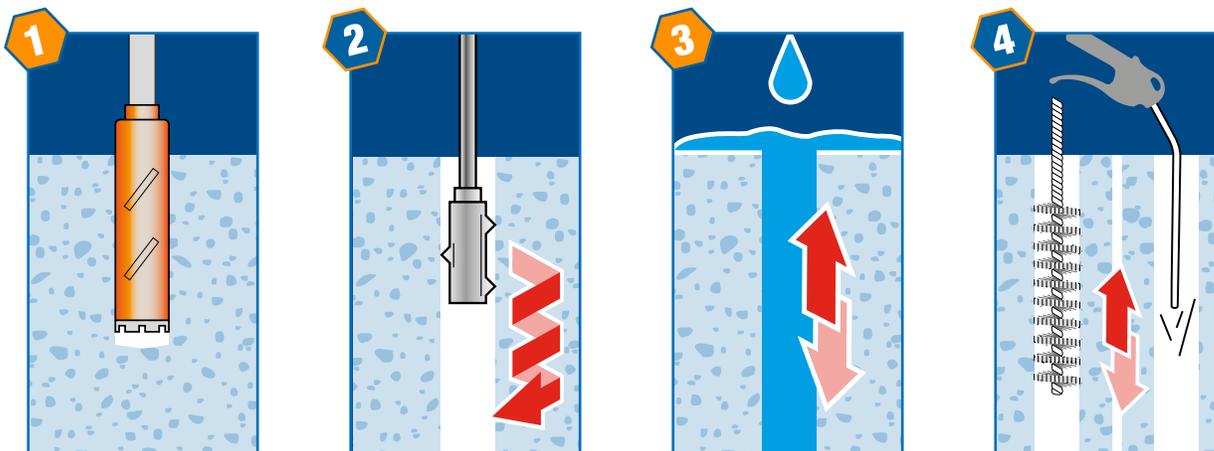


Surface preparation will be dependent upon the application of the product. Old concrete must be clean and profiled or textured. New concrete should be a minimum of 28 days old. All dirt, oil, debris, wax, grease or dust must be removed. Prepare the surface mechanically using an AllFasteners Hole Roughener to give the surface a roughened profile needed for the application. A roughened surface is imperative for good adhesion. Always be sure the bonding surfaces are prepared in advance before starting a new cartridge or mixing product. If at all possible, schedule dispensing to consume an entire cartridge at one time with no interruption of epoxy flow.

ROUGHENED HOLE EXAMPLE SHOWN.

HOLE PREPARATION

1. Drill hole to the required diameter & depth. Hole diameter shall be a 1/4" larger than the selected anchor rod diameter
2. A hole-roughening device shall be used when the hole has been cored using a diamond drill bit. This is an important step vital to the bond performance of the AF35LVE.
3. Flush hole with running water removing any slurry from hole. Vacuum water from hole.
4. Brush the hole with an appropriate sized nylon brush 2 times. Blow the hole clean with compressed air 2 times. This shall be completed with rotary percussive adapters and extensions. REPEAT Step 4.



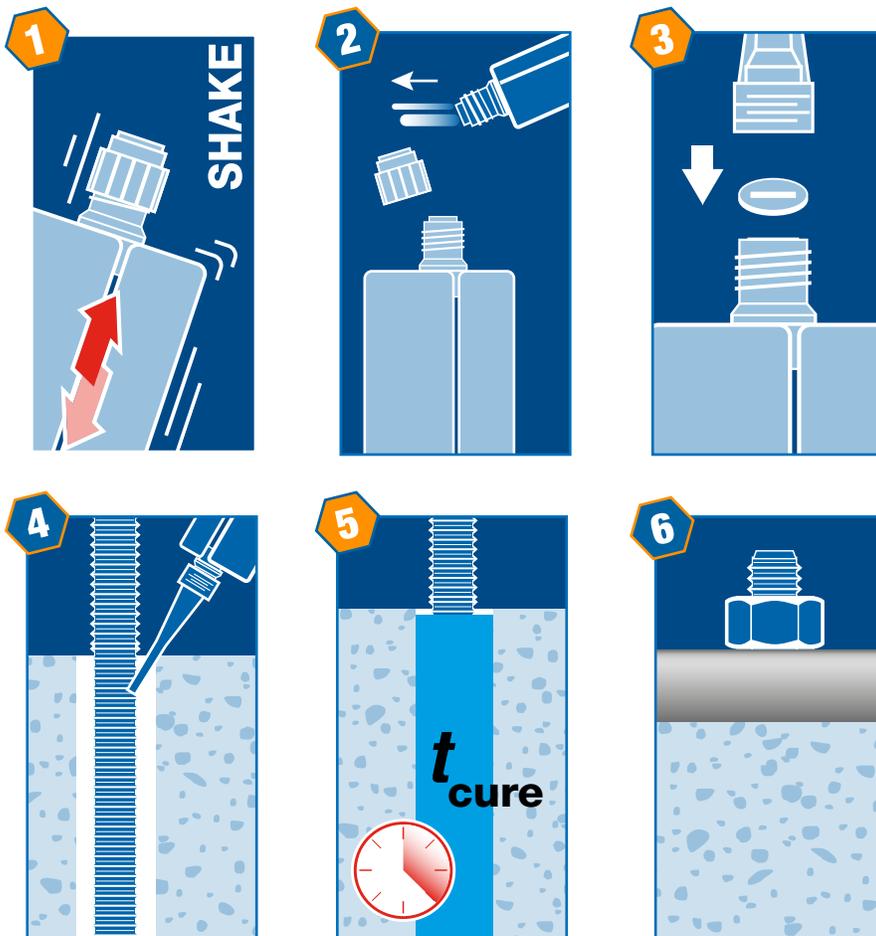


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CARTRIDGE PREPARATION

1. Shake the cartridge vigorously for 60 seconds, then stand cartridge in upright position for a further minimum 60 seconds allowing any bubbles to rise to the top.
2. Insert cartridge into dispensing tool, remove cap and dispense first full stroke of mixture.
3. Install the flow-controller and attach the mixing nozzle.
4. Rod should be free of oil/grease or other contaminants. Insert anchor rod into position. Inject the required amount of epoxy until visible at the top of the hole. AF35LVE is a low viscosity epoxy and shall flow freely around the anchor.
5. Do not move, load or torque the anchor until the recommended full cure time has elapsed (72hr @ 75°F).
6. After AF35LVE has fully cured the add-on/fixture can be installed to the specified requirements. Contact Allfasteners for application specific details.



t_{cure} : Reference page 3.



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PUMP & PNEUMATIC DISPENSING

DO NOT EXCEED 40 psi (0.28 MPa) PRESSURE TO THE PNEUMATIC DISPENSING TOOL OR INJECTION PUMP. An air pressure regulator MUST be used with a pneumatic dispenser. Start at a low setting and gradually increase pressure as needed until desired epoxy flow is achieved. Use maximum 40 psi (0.28 MPa) air pressure. Excessive pressure may result in cartridge plunger leakage.

Allow injection resin to cure for at least 48 hours.

ADHESIVE DESIGN TABLE

THREADED ROD DIAMETER (in.)	ROD MATERIAL	STEEL STRENGTH YIELD/ ULTIMATE F_y/F_u (ksi)		STEEL STRESS AREA (in. ²)	STEEL YIELD STRENGTH MIN. (kips)	AF35LVE CHARACTERISTIC BOND STRENGTH (psi) ^{1,2,3,4,5}	DRILL HOLE SIZE (in.)
1.00	ASTM A193 GRADE B7	105	125	0.606	64	1,762	1.25
1.25				0.969	102		1.50
1.50				1.405	148		1.75
1.75				1.900	200	1,717	2.00
2.00				2.500	263		2.25
2.25				3.250	341		2.50

1. Anchorages performed in core drilled roughened holes prepared in accordance with Allfasteners AF35LVE installation instructions.
2. Based upon tested population with cleaning method normalized at 30" tests condition in nominal 4,000 psi dry, uncracked concrete.
3. For 3,000 psi concrete, reduce the bond strength by a factor of 0.94 or 6%. Linear interpolations may be used for intermediate strengths up to 4,000 psi strength concrete.
4. Concrete and reinforcement assumed to be of sufficient strength and placement to preclude concrete failure, splitting or cracking.
5. Final loads used for design are to be calculated based upon the specific design conditions for the particular application and are the responsibility of the EOR.

WARRANTY

Allfasteners warrants the AF35LVE Epoxy shall be of good quality and conform to the specifications in force on the date of manufacture when stored, installed, and used in accordance with and as directed in the technical literature (TDS) ("Specifications"). The AF35LVE Epoxy is designed and tested to be used for deep embedment's for installing large diameter anchor rods for the tower modification industry.

The AF35LVE Epoxy has been tested per the details as outlined in the TDS. If defects of the product are discovered due to the material properties of the AF35LVE Epoxy, AllFasteners shall warranty the product which shall be limited to the replacement of the product.

Allfasteners shall not be liable for any injury, loss, damage, claim, liability, or cost arising out of or related to the use of the AF35LVE Epoxy sold by Allfasteners in any way that is not in accordance with the Specifications.

For the warranty set forth in this letter to be effective, the AF hole roughener (9HR-14) is a necessary requirement for the hole preparation and achieving the bond strength requirements.