

DESCRIPTION

UPR[™] PR Utility Pole Repair Sealant makes it easy to repair woodpecker damage and pole line hardware holes on utility poles. The two-part formula is installed using a standard caulking gun. It is mixed right in the nozzle so there is no direct handling of the resins.

UPR PR Pole Repair Kits include wood blocks as filler. The UPR-PR flows around the blocks, incorporating them into the cured seal. UPR PR expands in the hole to fill irregular shaped cavities and then integrates with the pole itself. This creates superior adhesion to the wood. It hardens like wood with compression strength similar to the cross-sectional hardness of a wood pole. Use it to repair penta treated wood, western red cedar, douglas fir, red pine, southern yellow pine, lodgepole pine, and other varieties of wood poles. Repairs are gaffable and will not chip out in chunks when a climber's hooks are embedded into surface structure.

COMPRESSIVE STRENGTH

UPR PR Pole Repair has similar compressive strength to wood, perpendicular to the grain. Common utility pole wood is compared.

COMPRESSIVE STRENGTH	
UPR PR	1500 psi (1035 N/cm ²)
Southern Yellow Pine	910 psi (630 N/cm ²)
Douglas Fir	760 psi (525 N/cm ²)

(Data from U.S. Forest Products Laboratory)

UPR PR Pole Repair matches wood pole strength. The repair area will not create a stress point when the pole flexes during storms and high winds.



Polywater UPR PR Pole Repair can be applied without drilling extra holes into the pole.

PRODUCT FEATURES

- Expands – completely fills irregularly shaped cavities
- Adheres – solidly integrates with surrounding wood
- Hardens – cures to the strength of wood poles
- Gaffable – will hold climbing gaffs
- Quick mixing – two-part formula mixes in nozzle when applied
- Economical – kit includes wood block filler

INSTALLATION BENEFITS

UPR PR Pole Repair comes in convenient packaging and kitting.

- No special tools needed – less expensive, more convenient
- No drilling to deploy the product – less labor time
- No mixing or direct handling of the product – less mess and safer
- Single kit will repair one hole – less waste

COMPONENT PROPERTIES

UPR PR Pole Repair is a two-part, urethane structural foam mixed at a 1:1 ratio.

PROPERTY	PART A (RESIN)	PART B (CURING AGENT)
Color	Brown	Light amber
Form	Liquid 200 – 250 cps	Liquid 1050 cps
VOC content	0 g/L	0 g/L
Specific gravity	1.22 – 1.23	1.02

CURED PROPERTIES

UPR PR Pole Repair cures to solid, closed-cell foam.

UPR PR POLE REPAIR	
PROPERTY	TYPICAL RESULT
Appearance	Brown with small, even cells
Closed Cell Percent	> 90%
Density (static mixer)	26 lbs/ft ³ (417 kg/m ³)
Compressive Strength (ASTM D1691)	1500 psi (1035 N/cm ²)

MOISTURE TEST

UPR PR Pole Repair does not absorb water, so it will not increase the chance of pole decay. It is good practice to use a dry fungicide prior to deploying any wood pole repair product to reduce or negate any fungal growth that is present.

Moisture Repellency Testing:

Six 1½-inch cubes of reacted UPR were aged in water for 7 days at 122°F (50°C). Weight gain was measured.

	WATER WEIGHT GAIN
UPR PR	<1%

The UPR PR Pole Repair acts to seal the hole from water and protect the pole from further degradation.

OSHA REQUIREMENTS

OSHA 1910.269 App D requires poles to be inspected and tested before climbing. The standard notes that “hollow spots and woodpecker holes can reduce the strength of the wood pole.” UPR PR Pole Repair satisfies OSHA requirements and reduces the likelihood of decay.

GAFF TEST

Cut-Out Test:

The “Pole Cut-Out Test”¹ was used as a guideline to test Polywater’s UPR PR repair seals. In this test, the climber jabbed the gaff into the pole at a 30° angle to a depth of ¼ inch. Pressure was exerted onto the gaff and the point of the gaff penetrated the wood. The pole surface cut was measured to no more than 2 inches.

¹ Buckingham Manufacturing Company, Inc. *Buckingham Gaff & Climber Information*; “How to Perform the Pole Cut-Out Test.”

GAFF SURFACE CUT	RESULT
½ to 1½ inch (13 to 38 mm)	Pass

The Pole Cut-Out Test showed that UPR PR Pole Repair is gaffable.

Penetration Test:

UPR PR Pole Repair was molded into 7-inch cylinders. A Buckingham gaff was used to penetrate the side of the form. An Instron unit set to 50 mm/minute drove the gaff into the form to a depth of 0.475 inches. Load force was measured. An average of three tests were calculated:

SUBSTRATE	PENETRATION FORCE
UPR PR	165 lb _f (75 kg)
Douglas Fir	244–290 lb _f (111-132 kg)
Southern Yellow Pine	232–475 lb _f (105-216 kg)

UPR PR Pole Repair falls within the same range as the wood poles² and is relatively easy to penetrate.

² Shupe, Todd F. and Freeman, Mike H. (October 2011), *Effect of Preservative Type and Gaff Type on Gaff Penetration Into Wood Poles*. Eastern Utility Pole Conference, Baltimore, MD.

INSTALLATION

UPR PR Pole Repair is packaged in kit form. Everything needed to repair damage to wood poles caused by woodpeckers is included.

UPR PR is available in a 250-mL coaxial caulking tube that fits into a standard caulking gun. The two-part formula is dispensed through a static mixing nozzle. Hand mixing is not required. Use of a static mixer allows for multiple applications and makes it easier to direct the product into the hole when deployed. The curing temperatures are not dangerously hot, as are some other repair products, yet may be warm enough to reduce pole decay.

Once a skin has formed, the foam may be visually inspected through the stretch wrap to determine whether the hole has been completely filled.

To decrease cure time in cold temperatures, warm the UPR PR cartridges prior to use. UPR PR *must be warmed* to 50°F (10°C).

STANDARD USAGE QUANTITY UPR PR			
HOLE DEPTH (IN)	PRODUCT REQUIRED	HOLE DIAMETER	
		6 INCHES (15 CM)	8 INCHES (20 CM)
8 (20 cm)	Cartridge	3	6
	Blocks	5	7
12 (30 cm)	Cartridge	5	9
	Blocks	6	10
16 (40 cm)	Cartridge	6	11
	Blocks	11	18

SAFETY

UPR PR Pole Repair is a two-part urethane foam containing reactive chemicals. Polyurethanes are common in the construction industry and have been used for many years. Some individuals may become sensitized to components in the unreacted resin. Precautions must be observed during the use and handling of these materials.

For more information on safe use of urethanes, please see the white paper: "MDI Monitoring on American Polywater Foaming and Non-foaming Urethane Products," [MDI Monitoring Paper](#).

CURE RATE

UPR PR Pole Repair can be used in temperatures down to 20°F (-6°C). Keep cartridges between 50°F and 80°F (10°C and 27°C) for best performance. At low temperatures, reaction is slow, but will completely foam and cure with time. At cold temperatures, material is more viscous and flows through the mixing nozzle at a slower rate. This higher viscosity may block the UPR PR nozzle if it is not warmed. Cure times are as follows:

UPR PR	REACTION TIME (MINUTES)	
	40°F (4°C)	70°F (21°C)
Complete expansion	8–9	4–5
Hardened structure	15–18	7–9

STORAGE AND HANDLING

Keep cartridges cool, dry, and away from sunlight. Leave in protective pouch until ready to use/reuse.

Product shelf life is 18 months. Use within one month of opening.

ENVIRONMENTAL RESISTANCE

UPR PR Pole Repair withstands the rigors of the changing outdoor environment.

Cured Sealant Temperature Use Range:
-40°F to 150°F (-40°C to 66°C)

CLEANUP

Any unreacted material may be cleaned from surfaces with a solvent wipe such as Polywater's Type HP™ Cleaner/Degreaser. The Part A amber resin will react with water if surfaces are washed with a soap and water solution. Once reacted, the foam has strong adhesion, and may be scraped or cut from surface. The reacted product is an inert, non-hazardous solid.

The use of UPR PR in the prepackaged cartridges controls and reduces exposure. Once reacted, the foams are solid, closed-cell polyurethanes. The finished products may be considered non-toxic. See the SDS for more information.

MODEL SPECIFICATION

The statement below may be inserted into a customer specification to help maintain engineering standards and ensure work integrity.

The UPR™ PR Pole Repair Sealant is an approved utility pole repair sealant. The repair sealant shall come in a multiple-use cartridge to fill various sized defects in poles. The sealant shall be an expanding foam system to best fill all voids in the defect.

The packaging shall automatically meter and mix the sealant. The cure rate of the sealant shall be fast. It shall reach full expansion in less than 5 minutes at 70°F (21°C) and form a hard, non-sticky skin in less than 10 minutes at 70°F (21°C). The reaction temperature of the sealant should reach a minimum of 212°F (100°C) to help kill microbes present in the defect.

Once cured, the sealant shall be waterproof. The sealant shall have compressive strength similar to utility wood as measured perpendicular to the grain. It shall be between 750 and 2,000 psi (515 and 1380 N/cm²). The foamed sealant shall have a density of 26 lbs/ft³ (417 kg/m³). The foamed sealant shall pass the Cut-Out Test to determine gaffability. The sealant shall yield less than 300 lbf (135 kg) in the Gaff Penetration Test. No substitutions are permitted without certification from an officer of the manufacturer that the substitute product meets all the requirements of this specification.

ORDER INFORMATION

CAT #	PACKAGE DESCRIPTION
UPR-PRKIT3 (1 unit/case)	3 – 250-mL UPR PR Pole Repair cartridges 4 – mixing nozzles 5 – green-treated wood blocks 1 – roll stretch wrap 1 – pair gloves 1 – instructions
UPR-PRKIT12 (1 unit/case)	12 – 250-mL UPR PR Pole Repair cartridges 16 – mixing nozzles 18 – green-treated wood blocks 1 – roll stretch wrap 4 – pair gloves 1 – instructions
TOOL-250	High ratio caulking gun

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IMPORTANT NOTICE: The statements here are made in good faith based on tests and observations we believe to be reliable. However, the completeness and accuracy of the information is not guaranteed. Before using, the end- user should conduct whatever evaluations are necessary to determine that the product is suitable for the intended use.

American Polywater expressly disclaims any implied warranties and conditions of merchantability and fitness for a particular purpose. American Polywater's only obligation shall be to replace such quantity of the product proven to be defective. Except for the replacement remedy, American Polywater shall not be liable for any loss, injury, or direct, indirect, or consequential damages resulting from product's use, regardless of the legal theory asserted.

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