Polywater®
Solutions at work.

TECHNICAL DATA SHEET
POLYWATER® AIR REPAIR® PRESSURIZED LEAK REPAIR

polywater.com

DESCRIPTION

AirRepair® Sealant is a two-part, rapid-cure, resin system for pressurized telephone cables and splices. AirRepair seals air leaks in lead-sheathed cables and splice enclosures, polyethylene Stalpeth® cable jackets, load coils, end-plates, and more. AirRepair eliminates messy and dangerous molten lead "hot wipe" procedures. The cured resin maintains a high level of adhesion and structural integrity to ensure a quality leak repair.

AirRepair Sealant is sold as a field repair system and includes materials to seal active leaks. It is a fast-cure sealant designed for quick and easy use. AirRepair allows a single craftsperson, with minimal training, to effectively and economically seal 20 or more leaks per day. The sealant bonds to polyethylene, lead, aluminum, ceramic, and steel

PERFORMANCE

AirRepair Sealant is designed specifically for the field repair of air-pressurized cable systems.

To test the performance, specialized test methods were developed. A 1/16-inch (1.6 mm) hole was punched into the center of a lead disk and placed into a small, specially designed pressure chamber set to 10 psi (69 kPa). Repaired disks were kept under pressure for 24 hours to pass the test.

AGING CONDITION ON LEAD	RESULT
Initial application	Pass
6 months ambient aging	Pass
6 months immersion, tap water	Pass
6 months immersion, salt water	Pass

In similar testing, an air-core polyethylene cable and a galvanized steel pipe were punctured with a 1/16-inch (1.6 mm) hole, sealed, and pressurized.

AGING CONDITION	RESULT
Polyethylene cable, 80 psi (550 kPa)	Pass
Galvanized pipe, 200 psi (1380 kPa)	Pass

The AirRepair Leak Repair System seals air leaks in pressurized cables and splices.

PRODUCT FEATURES

- Quick plugging action
- Easy to install, fast repair time
- Permanent, long-lasting seal
- Durable, withstands environmental extremes
- Impervious to water and other manhole contaminants
- Seals and protects oil-filled systems
- Convenient, field-ready kit

TYPICAL APPLICATIONS

- Lead splice
- Load coil
- Manifold
- Waffle case
- End plate
- Polyethylene “air-core” cables

COMPONENT PROPERTIES

AirRepair Sealant is a 2-part, thick paste sold ready to mix and use.

PROPERTY	PART A (RESIN)	PART B (CURING AGENT)
Color	Black	White
Form	Thick paste	Thick paste
VOC content	0 g/L	0 g/L
Specific gravity	1.7	1.4

CURED PROPERTIES

AirRepair Sealant cures to form a solid patch. Pre-measured packaging contains enough material to seal one typical leak, approximately 6 square inches at ¼-inch (6 mm) thickness.

PROPERTY	TYPICAL RESULT
Color	Dark grey
Peak Exotherm @ 70ºF (21°C)	< 200°F (93°C)
Hardness 7 days @ 70ºF (21°C) (Shore D Durometer)	85
Flexural strength (ASTM D790)	6,925 lb_f/in^2 (47.7 MPa)
Flexural strain (ASTM D790)	1.43 X 10^{-2} in/in (mm/mm)

TYPICAL IMPACT RESISTANCE

SUBSTRATE	RESULT
Air-core polyethylene cable	55 in-lbs (9,800 cm-g)
Air-core lead cable	65 in-lbs (11,600 cm-g)

Testing used ASTM G14. Samples were sanded, cleaned, and allowed to cure for 24 hours.

TYPICAL SHEAR STRENGTH

SUBSTRATE	RESULT
Aluminum	>1,000 lbs/in^2 (6,900 kPa)
Polyethylene	114 lbs/in^2 (786 kPa)
PVC	148 lbs/in^2 (1,020 kPa)

Testing used ASTM D1002. Samples were sanded, cleaned, and allowed to cure for 24 hours.

TYPICAL PEEL STRENGTH

SUBSTRATE	RESULT
HDPE (90°)	49 pli (8,580 N/m)
Glass-filled PPO resin	34 pli (5,950 N/m)
PVC (90°)	46 pli (8,050 N/m)
Ceramic (90°)	>100 pli (17,500 N/m)
Galvanized steel (180°)	>100 pli (17,500 N/m)
Aluminum (180°)	>100 pli (17,500 N/m)
Lead (180°)	16.5 pli (2,900 N/m)
Copper (180°)	>100 pli (17,500 N/m)
Stainless steel (180°)	>100 pli (17,500 N/m)

Testing used ASTM C794. Samples were sanded, cleaned, and allowed to cure for 24 hours.

CHEMICAL RESISTANCE

AirRepair Sealant is chemically resistant to dielectric fluids, SF_6 gas, UV, water, and oil.

ASTM D1002 was used to test the shear strength of the AirRepair Sealant on steel after exposure to solvent. The sample was allowed to cure 7 days, immersed in solvent, and aged at 50°C.

FLUID*	APPEARANCE (6 MONTHS)	COMPARISON TO CONTROL
Mineral oil	No change	100% (Pass)
Polybutene fluid	No change	100% (Pass)
Hydrocarbon fluid	No change	100% (Pass)
Silicone oil	No change	100% (Pass)

**Mineral Oil (Holland 70), Polybutene (Duddek PLIC), Hydrocarbon Fluid (Bio Temp), Silicone Oil (GE Silicone SF 96-100)*

APPLICATION

AirRepair Sealant is easy to use. For full installation information, please see AirRepair Use Instructions. (www.polywater.com/ARinstructions.pdf)

For applications on polyethylene Stalpeth cable jackets, AirRepair Plastic Primer is available.

In cold weather, materials should be kept as warm as possible. Store materials in a warm vehicle and use a chemical warming pad to increase the temperature of the repair area.

CURE RATE

Application temperature is 40°F (4°C) to 120°F (49°C). Cure rate depends on temperature.

TEMPERATURE	WORKING TIME	FUNCTIONAL CURE
35°F (2°C)	40 minutes	7 hours
52°F (11°C)	20 minutes	3½ hours
60°F (16°C)	10 minutes	1½ hours
70°F (21°C)	6 minutes	60 minutes
88°F (31°C)	4 minutes	40 minutes

Installation:
A pressure test was used to determine seal time under ambient conditions. The lead disk was prepared and placed into a specially designed pressure chamber.

AGING CONDITION	SEAL TIME	RESULT
Seal time at 70°F (21°C)	6 minutes	Holds 10 psi (69 kPa) air pressure

At ambient temperatures, seal is completed in less than 10 minutes.

VERTICAL SAG

AirRepair Sealant clings to vertical surfaces and other difficult angles common in field repairs. Once applied, it stays in place.

In this test, the AirRepair Sealant was mixed and applied to a metal platen at a 90° angle. Displacement was measured and recorded.

TEMP	DISPLACEMENT FROM CENTER
60°F (16°C)	0 inches (0 mm)
75°F (24°C)	1/16 inch (1.6 mm)
95°F (35°C)	3/32 inch (2.4 mm)
110°F (43°C)	3/16 inch (4.8 mm)

AirRepair Sealant shows minimal sag within a large temperature range.

ENVIRONMENTAL RESISTANCE

TEMPERATURE RANGE:	
Application:	40°F to 120°F (4°C to 49°C)
Usage:	- 40°F to 300°F (-40°C to 150°C)

Temperature Cycle Testing
(-22ºF/203ºF (-30°C/95°C) 10 Cycles)
No significant change in adhesion occurred.

MATERIAL	ADHESION COMPARED TO NON-AGED CONTROL
Galvanized steel	100% (Pass)
Aluminum	100% (Pass)
Ceramic	100% (Pass)
Copper	100% (Pass)
Stainless steel	100% (Pass)
Lead	100% (Pass)

AirRepair Sealant is resistant to ultraviolet exposure and withstands direct sunlight with no decrease in functionality.

SAFETY

AirRepair Sealant has a low level of toxicity. Good industrial hygiene practice and appropriate precautions should be employed during use. Avoid inhalation of vapors and personal contact with the product. Provide appropriate ventilation/respiratory protection against decomposition products during welding/flame operations (i.e., torches used to install heat shrink products) on or near cured product. See SDS for specific details.

STORAGE AND HANDLING

Keep containers cool, dry, and away from sunlight. Keep containers tightly closed.

Product shelf life is 15 months.

MODEL SPECIFICATION

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

The approved air pressure repair compound shall be the AirRepair® Sealant. The air pressure repair compound shall be available in a system that allows rapid, permanent repairs without any special equipment. It shall be possible to make the repairs under low air pressure. The product shall not sag during cure so that it may be applied to the bottom side of leaking surfaces without running or dripping. Once cured, the adhesive patch shall have the following properties.

The adhesive repair patch shall have excellent adhesion to a variety of substrates with minimum peel strength of 15 pli (2,620 N/m) on lead, 40 pli (7,000 N/m) on polyethylene, 100 pli (17,500 N/m) on steel, and 100 pli (17,500 N/m) on ceramic when measured by ASTM C794. The adhesive repair patch will retain 100% of the adhesion as measured by peel strength after 5 freeze/thaw cycles. The adhesive repair patch shall withstand temperatures from -40°F to 300°F (-40°C to 150°C). It shall be impervious to water, salt water, oils, and dilute acids and bases.

The repair patch shall have the flexibility to withstand a steel ball impact of at least 65 in-lbs (11,600 cm-g) on lead and 55 in-lbs (9,800 cm-g) on polyethylene as measured by ASTM G14. It shall have a minimum flexural strain of 1.43 X 10^{-2} in/in (mm/mm) as measured by ASTM D790. The adhesive patch shall not contain any metals. It shall be non-conductive and shall not corrode.

ORDER INFORMATION

CAT #	PACKAGE DESCRIPTION
AR-KIT	Customized AirRepair® kit. Call for details.
ARCT-KIT8	8 - AirRepair® cartridges 4 - static mixers 4 - putty sticks 16 - Type RP™ surface prep wipes 8 - PW-1 primer towelettes 1 - sanding cloth 6 - application sticks 8 - pairs of gloves 1 - instructions
TOOL-50-11	1 - dispensing tool for ARCT-KIT8
AR-STICK	12- 7-in/18-cm putty stick for temporary leak plugging.
PW-1	Plastic primer towelette
RP-1	Type RP™ surface prep wipes
***Custom kits available. Call factory for details.*	

CONTACT US

+1-651-430-2270 Main | +31 10 233 0578 Europe & Africa | +971 4 5521709 APAC & GCC | email: support@polywater.com