Pressurized Leak Repair

TECHNICAL DATA SHEET

Description:

AirRepair® Paste 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 insure 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. Sealant bonds to polyethylene, lead, aluminum, ceramic and steel.

Performance:

AirRepair® Paste 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 hole is punched into the center of a lead disk and placed into a small, specially designed pressure chamber set to 10 psi. Repaired disks are 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 are punctured with a 1/16-inch hole, sealed and pressurized.

Aging Condition	Result
Polyethylene Cable, 80 psi	Pass
Galvanized Pipe, 200 psi	Pass

Product Benefits:

- 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 system
- 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 thickness.

Property	Typical Result
Color	Dark Grey
Peak Exotherm @ 70º F	< 200°F
Hardness 7 Days @ 70º F (Shore D Durometer)	75
Flexural Strength (ASTM D790)	6,925 lb_f/in^2 1.43 X 10^{-2} in/in

Typical Impact Resistance:

Substrate	Result
Air-core polyethylene cable	55 in-lbs
Air-core lead cable	65 in-lbs

Tested using ASTM G14. Samples are sanded, cleaned and allowed to cure for 24 hours.

Typical Shear Strength:

Substrate	Result
Aluminum	> 1,000 lbs/in^2
Polyethylene	114 lbs/in^2
PVC	148 lbs/in^2

Tested using ASTM D1002. Samples are sanded, cleaned and allowed to cure for 24 hours.

Typical Peel Strength:

Substrate	Result
HDPE (90°)	49 pli
Glass-filled PPO Resin	34 pli
PVC (90°)	46 pli
Ceramic (90°)	>100 pli
Galvanized Steel (180°)	>100 pli
Aluminum (180°)	>100 pli
Lead (180°)	16.5 pli
Copper (180°)	>100pli
Stainless Steel (180°)	>100 pli

Tested using ASTM C794. Samples are 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 is used to test the shear strength of the PowerPatch® Sealant on steel after exposure to solvent. The sample is 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, AirRepair® Plastic Primer is available.

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

Cure Rate:

Application temperature is 40°F to 120°F. Cure rate depends on temperature.

Temperature	Working Time	Functional Cure
35° F	40 Minutes	7 Hours
52° F	20 Minutes	3 ½ Hours
60° F	10 Minutes	1 ½ Hours
70° F	6 Minutes	60 Minutes
88° F	4 Minutes	40 Minutes

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

Aging Condition	Seal Time	Result
Seal time at 70°F	6 Minutes,	Holds 10 psi air pressure

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

Vertical Sag:

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

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

Temperature	Displacement from Center
60°F	0 inches
75°F	1/16 inch
95°F	3/32 inch
110°F	3/16 inch

AirRepair® Paste shows minimal sag within a large temperature range.

Environmental Resistance:

Temperature Range:

Application:	40°F to 120°F
Usage:	-40°F to 400°F

Temperature Cycle Testing
(-22 ºF/203 ºF 10 Cycles)
No significant change in adhesion:

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.

Approved air pressure repair compound is 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 on lead, 40 pli on polyethylene, 100 pli on steel, and 100 pli on ceramic when measured by ASTM C 794. 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 -50°F to 250°F. 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 on lead and 55 in-lbs on polyethylene as measured by ASTM G14. It shall have a minimum flexural strain of 1.1 in/in 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-KIT97	1 Set Two-Part AirRepair® Sealant (parts A and B) 1-3/4" Putty Stick 2 Type RP Cleaning and Preparation Wipes 12" Strip Sanding Cloth 2 Mixing Sticks 1 Pair disposable gloves 1 Instruction sheet
AR-KIT97P ***(Special Order)***	AR-KIT97 Components 1 Plastic Primer Wipe (PW-1) 1 Cotton Swab Primer Applicator
AR-KIT99	1 Set Two-Part AirRepair® Sealant (parts A and B) 1-3/4" Putty Stick 3 Type RP Cleaning and Preparation Wipes 12" Strip Sanding Cloth 2 Mixing Sticks 1 Plastic Primer Wipe (PW-1) 1 Cotton Swab Primer Applicator 1 Trowel Tool 1 Pair disposable gloves 1 Instruction sheet

***Custom kits available. Call factory for details*

Makers of Polywater® and Dyna-Blue® Cable Lubricants and Pull-Planner™ Software

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