

BonDuit®

Conduit Adhesive

TECHNICAL DATA SHEET

Description:

BonDuit® Conduit Adhesive joins polyethylene duct to PVC, fiberglass, and metal conduits using standard PVC couplings. This rapid-cure, two-part resin adhesive forms a durable bond for a strong, permanent, water-tight joint.

BonDuit® Conduit Adhesive is a versatile field solution. It works for multiple conduit types and sizes. It is easy to use and no special training is required.

Adhesive Shear Strength:

Typical bond strengths were measured by joining two pieces of HDPE conduit with BonDuit® Conduit Adhesive and a PVC coupling. The load to pull apart the joint after 24 hours at 70° F was measured.

<u>Conduit Diameter</u>	<u>Pullout Force</u>
1 Inch	724 lbs _f
1½ Inch	1233 lbs _f
2 Inch	2,025 lbs _f
4 Inch	5,333 lbs _f

Results based on 3rd-party laboratory testing.

Hydrostatic (Pressure) Testing:

BonDuit® Conduit Adhesive was used to join HDPE to PVC Schedule 80 duct. The ducts were filled with water, sealed, pressurized to 60 psi, and the joints were observed for leakage. The joint was then subjected to a short duration, high pressure test.

<u>Test Duration</u>	<u>Result</u>
1,000 Hours	No Leaks

Continuous pressure test based on ASTM D1598, "Time to Failure of Plastic Pipe Under Constant Internal Pressure".

Short Duration High Pressure (Burst Test)

<u>Maximum Pressure</u>	<u>Result</u>
>250 psi	No Leaks

Burst test based on ASTM D1599, "Resistance to Short-Time Hydraulic Pressure of Plastic Pipe, Tubing and Fittings (Burst Test)".



Product Benefits:

- Easy to use
- Fast cure
- Durable bond
- Water-tight and air-tight seal
- High tensile strength
- Suitable for most common ducts

End Use:

BonDuit® Conduit Adhesive bonds polyethylene to:

- PVC Couplings
- Concrete Vaults
- Transition Couplings
- Above Ground Conduits
- Steel Sweeps and Elbows
- Fiberglass and Composite Connections

Component Physical Properties:

BonDuit® Conduit Adhesive is a 2-part, thin paste packaged in a cartridge applicator.

<u>Property</u>	<u>Part A (Resin)</u>	<u>Part B (XL Agent)</u>
Color	Dark Grey/Black	White/Light Yellow
Form	Paste	Paste
Odor	No Odor	Slight Sulfur Odor
VOC:	0 g/L	0 g/L
Specific Gravity	< 2	< 2

Cured Properties and Typical Results:

BonDuit® Conduit Adhesive cures to form a solid, durable seal.

<u>Typical Property</u> 7 Days @ 70° F	<u>Result</u>
Color	Grey
Peak Exotherm @ 70° F	< 200° F
Hardness (Shore D Durometer)	70 – 80
Flexibility (ASTM D790)	> 2%
Dielectric Strength (ASTM D149)	450 Volts/Mil (Nonconductive)
Air-tight (no leakage):	120 psi

Typical Shear Strength:

<u>Substrate</u>	<u>Result</u>
HDPE to PVC	275 lbs/in ²
HDPE to Steel	550 lbs/in ²
HDPE to Aluminum	325 lbs/in ²
HDPE to Fiberglass	175 lbs/in ²
Fiberglass to Steel	525 lbs/in ²
Fiberglass to PVC	125 lbs/in ²
Fiberglass to Fiberglass	375 lbs/in ²

Tested using ASTM D1002. Samples sanded, cleaned and cured for 24 hours.

Typical Impact Resistance:

<u>Substrate</u>	<u>Result</u>
HDPE	24.8 in-lbs
PVC	37.2 in-lbs
Galvanized Steel	22.3 in-lbs
Fiberglass	37.2 in-lbs

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

Bonding Materials:

BonDuit® Conduit Adhesive adheres to:

- Polyethylene
- PVC, CPVC
- Composite
- PEX
- ABS
- Polypropylene
- Fiberglass
- Concrete
- Porcelain
- Steel
- Aluminum
- Copper

Environmental Resistance:

BonDuit® Conduit Adhesive can withstand the rigors of the environment.

Temperature Cycle Testing
(0° F/130° F 10 Cycles)
No significant change in adhesion

BonDuit® Adhesive can be applied and frozen, then allowed to cure at a later time with no significant change in adhesion.

BonDuit® Conduit Adhesive is resistant to ultraviolet exposure and withstands direct sunlight with no decrease in functionality.

Chemical Resistance:

Water & Oil Soak Test (over 6 months aging)
No significant change in adhesion

ASTM D1002 is used to test the shear strength of the BonDuit® Adhesive polyethylene to PVC bond after exposure to solvent. The joint is allowed to cure 7 days, immersed in solvent and aged at ambient temperature.

<u>Chemical Exposure</u>	<u>Chemical Resistance, 3 Months Aging</u> <u>Compare to Control</u>
Salt Water (4%)	85% (Pass)
Alkaline Soap Solution (pH 12)	100% (Pass)
Odorless Mineral Spirits	>100% (Pass)

BonDuit® Adhesive is resistant to salt water, alkaline solutions, and odorless mineral spirits.



For more information or to place an order, please contact Supply Solutions at 866-978-7759. Courtesy of Polywater Corp.

Application:

BonDuit® Adhesive is easy to use. For full installation information, please see [BonDuit® Usage Instructions](http://www.polywater.com/BTInstructions.pdf). (www.polywater.com/BTInstructions.pdf)

Quantity in one 50-ml cartridge BonDuit® Adhesive will produce a 1/4-inch bead, 42 inches long.

Preparation:

Proper surface preparation ensures a strong, long-lasting, airtight and watertight bond. The surface should be sanded and cleaned with TR™ Cleaner Wipe to remove oils and displace any remaining water. Adhesion using different surface preparation methods was tested using a lap shear test. In this test, BonDuit® Conduit Adhesive is applied to create an overlapping bond between HDPE and PVC.

<u>Surface Preparation</u>	<u>Percent Increase of Bond Shear Strength</u>
No Prep	Control
Cleaner Only	20%
Sanding Only	310%
Cleaner & Sanding	380%

Application Temperature

Working temperature for BonDuit® Conduit Adhesive is 35°F to 95°F (2°C to 35°C).

Cool Weather Application

In cool weather (below 60°F, 16°C) keep BonDuit® Conduit Adhesive warm before using, above 60°F (16°C). Keep couplings in a warm area before use. It may be necessary to heat the transition joint to force the BonDuit® Adhesive cure. Below 35°F (2°C), the joint should be heated to cure the adhesive.

Warm Weather Application

In warm weather (above 85°F, 29°C), keep BonDuit® Conduit Adhesive cool, below 70°F (21°C). This will help keep the adhesive from curing before coupling is attached. If possible, use adhesive to make bonds in the cooler mornings and out of direct sunlight to slow down cure rate.

Safety:

BonDuit® Conduit Adhesive has a low level of toxicity. Good industrial hygiene practice and appropriate precautions should be employed during use. 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 MSDS for specific details.

Cure Rate:

BonDuit® Conduit Adhesive develops a strong bond, allowing movement or burial quickly.

<u>Temp.</u>	<u>Working Time</u>	<u>Set Time</u>
35°F (2°C)	40 Minutes	7 Hours
52°F (11°C)	20 Minutes	3 1/2 Hours
60°F (16°C)	10 Minutes	1 1/2 Hours
70°F (21°C)	6 Minutes	60 Minutes
88°F (31°C)	4 Minutes	40 Minutes

After one hour at 70°F (21°C) the BonDuit® has achieved approximately 50% of its cure strength and has set. It will continue to cure and will reach maximum bond strength at 70°F (21°C) after approximately 24 hours.

Once cured, conduit joints made with BonDuit® Adhesive will hold air pressure.

<u>Air Pressure</u>	<u>Cure Time at 70°F</u>
150 psi	90 Minutes
200 psi	120 Minutes

Conduit system is prepared and pressurized. It holds pressure for 10 minutes.

Installation:

Joints made with BonDuit® Conduit Adhesive can be placed into position once the connection is made. Adhesive will cure under water or buried under ground. They can be put into service once cure is achieved.

** BonDuit® Conduit Adhesive is available in a slower-cure rate for larger applications that require more work time. (Product Code BTSC)*

Storage and Handling:

Keep cartridge tightly closed in a cool, dark, dry location. Reseal cartridge after use. Keep away from sources of ignition and protect from freezing. All cartridges should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

Unopened product has a shelf life of 18 months.



For more information or to place an order, please contact Supply Solutions at 866-978-7759. Courtesy of Polywater Corp.

Model Specification:

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

Approved conduit adhesive is BonDuit® Conduit Adhesive. The conduit adhesive shall be a multiple-use kit that will quickly bond various conduit connections with no special equipment required for assembly. Packaging shall automatically mix and meter the adhesive. Cure rate of adhesive shall be fast, reaching 50% full strength in one hour (75° F), and 80% strength at two hours (75°F). Peak exothermic temperature of mixed product shall not exceed 200° F (20 gram sample.) Product shall be designed for use on various materials, multiple duct diameters and connection types.

Once cured, the adhesive seal shall be airtight and watertight. A one-inch, PVC coupling sealed to a polyethylene duct with the adhesive shall hold 120 psi air pressure after curing one hour at 75° F. The pull-out strength of a two-inch polyethylene duct sealed to a PVC coupling shall be 910 lbs force after curing one hour at 75° F and 1820 lbs force after curing for 24 hours. The adhesive shall have a minimum flexural strain of 2% as measured by ASTM D790.

Cured product shall be resistant to water, salt water, oils and uv degradation. The cured bond shall withstand temperature extremes from -60° F to 250° F. It shall withstand multiple freeze-thaw cycles. The cured product shall be non-conductive with a minimum dielectric breakdown voltage of 40 kV as measured by ASTM D149.

Order Information:

<u>Cat #</u>	<u>Package Description</u>
BT-KITG	Kit contains: 2 50-ml BonDuit® Adhesive Cartridges 8 Mixing Nozzles 1 Strip of Sanding Cloth 8 TR-1 Cleaning Wipes 1 Instruction Sheet 1 Dispensing Tool
	Kit contains: 2 50-ml BonDuit® Adhesive Cartridges 8 Mixing Nozzles 1 Strip of Sanding Cloth 8 TR-1 Cleaning Wipes 1 Instruction Sheet (Dispensing tool not included.)
	Bulk kit contains 6 Individual Kits, BT-KIT 1 Dispensing Tool Included
	Bulk kit contains 6 Individual Kits, BT-KIT (Dispensing tool not included.)
	1 Dispensing Tool
BT-KIT	Kit contains: 2 50-ml BonDuit® Adhesive Cartridges 8 Mixing Nozzles 1 Strip of Sanding Cloth 8 TR-1 Cleaning Wipes 1 Instruction Sheet (Dispensing tool not included.)
BT-KITB6G	Bulk kit contains 6 Individual Kits, BT-KIT 1 Dispensing Tool Included
BT-KITB6	Bulk kit contains 6 Individual Kits, BT-KIT (Dispensing tool not included.)
BT-TOOL	1 Dispensing Tool
BT-10NOZZLE	10 Mixing Nozzles
BT-CART12PK	12 50-ml BonDuit® Adhesive Cartridges in a Package
<i>** Slower curing version BonDuit® Conduit Adhesive available (BTSC). Call factory for details.</i>	



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

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