



adhesives, sealants & coatings for harsh environments

BONDIT^M B-4X Series

High Performance epoxies for bonding, sealant, coating and primer applications

B-4811, B-481, B-482, B-45, B-4682, B-46

RELTEK, specializing in adhesives, sealants, potting compounds, coatings, primers and adhesion promoters for dissimilar materials and difficult-to-bond substrates for surviving harsh environments, introduces the B-4X Series epoxy. Seven different configurations are available making this an ideal solution for a wide array of applications and environments. These epoxies are provided unfilled for potting applications and thixotropic for adhesive applications. The B-Series can be configured in caulking paste, thermally conductive, ESD and electrically conductive formulations. RELTEK provides primers for coatings and adhesion promoters for thermoplastics such as polyolefin, elastomers such as urethane and rubbers, as well as thermo set materials.

The RELTEK BONDIT B-4X Series proprietary epoxy system offers a wide range of mechanical, chemical and electrical properties. This technology provides complete integration with a large variety of substrates. Stand alone or in any combination, these products may be matched and will bond seamlessly together with little or no preparation. Custom formulation, engineering and manufacturing services are also available to meet your R&D and manufacturing needs

Configurations

- Unfilled for potting and coating applications, can be colored
- Thixotropic for adhesive applications
- Optically opaque
- Caulking compound (trowelable)
- Thermally conductive
- Electrically conductive
- Primer for under coating





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Range of Properties

Temperature range -50°F to +350°F

Mechanical

Elongation 10% to 500%
Tensile strength 5000 PSI to 20 PSI
Viscosity 9000 cps at ambient typical
High impact & thermal shock resistance

Chemical resistance

Moisture < 0.5% to < 1.0%
Good for high temperature water and seawater applications
pH range 2 to 12
Solvents Effective for most polar and non-polar solvents

Electrical

Non-conductive
Suitable for high voltage applications
Electrical adhesive and potting applications
Can be made conductive for ESD and down to <100 ohms in three dimensions with no metal particles – excellent for composite stealth applications

Color

Clear in thin coats
Slight amber color in thick cross sections.

Curing and Handling

24 hour ambient or 3 hrs at 200degF
Low HAZMAT
Suitable for clean room applications
One year shelf life /ambient storage
Pot life: 45 minute for up to one quart mix and low exotherm
Clean up with alcohol /soap and warm water
Simple 1:1 and 2:1 mix ratios
No limit on cross section – as thin as .001” to many inches thick

Adhesive – Potting – Sealant – Coating – Primer

Bonds to almost anything:
Bonds difficult-to-bond materials
Bonds dissimilar materials
Will cure underwater and in high moisture conditions
Thermoplastics including polyethylene, polypropylene, delrin, nylon, Teflon and other fluoropolymers, thermoplastic urethane
Thermosets – virtually any kind
Elastomers – polyurethane, neoprene, EPDM, butyl and many others such as TPE
All metals, glass, ceramic and composites – excellent for pottery repair
Concrete and aggregate
Wood, cellulous, fabrics



Chemical exposure guidelines

The following is generally true for all the BONDiT B-4X series epoxy products, but will vary depending on the degree of crosslinking and to some degree on the filler present. In other words, B-481 is highly crosslinked resulting generally in much increased chemical resistance compared to B-46. However, it is not the case across the board because the B-46 will have almost the same moisture resistance as B-481 for common ambient applications

Splash zone: suitable with most chemicals. No data for any specific incompatibilities is available, and none expected.

Full submergence less than 24 hours: suitable with most chemicals, but will swell with highly polar solvents such as 100% (neat) methanol in 24 to 96 hours, but no permanent damage is anticipated. Solvent will normally evaporate and product will restore itself to its state prior to the exposure.

Continuous full submersion: Generally suitable for most chemicals, but will swell with resulting decrease in modulus and tensile properties in highly polar solvents and reach equilibrium saturation; typically less than 20%. Some minor extraction will occur under these conditions beyond eight days exposure but little other change in properties.

Other conditions:

High alkalinity of >pH 11.5 above 65degC will tend to degrade the cured material. At 95degC with >pH 11.5 the material will tend to breakdown in about 24 hours. However, that is not necessarily the case with B-481 and B-4811.

While a full range of organic solvents has not been tested, in general high tolerance to a particular organic solvent is more likely than not.

Moisture: no issues with DI water, tap water, saltwater, detergents; in general very tolerant to all moisture conditions such as splash zone, waterline and full submersion.

Tolerant to most gasses including sulfur dioxide. Testing advised.

Not tested for super heated steam such as for autoclave, but expect highly crosslinked system such as B-481 and B-4811 to be good.



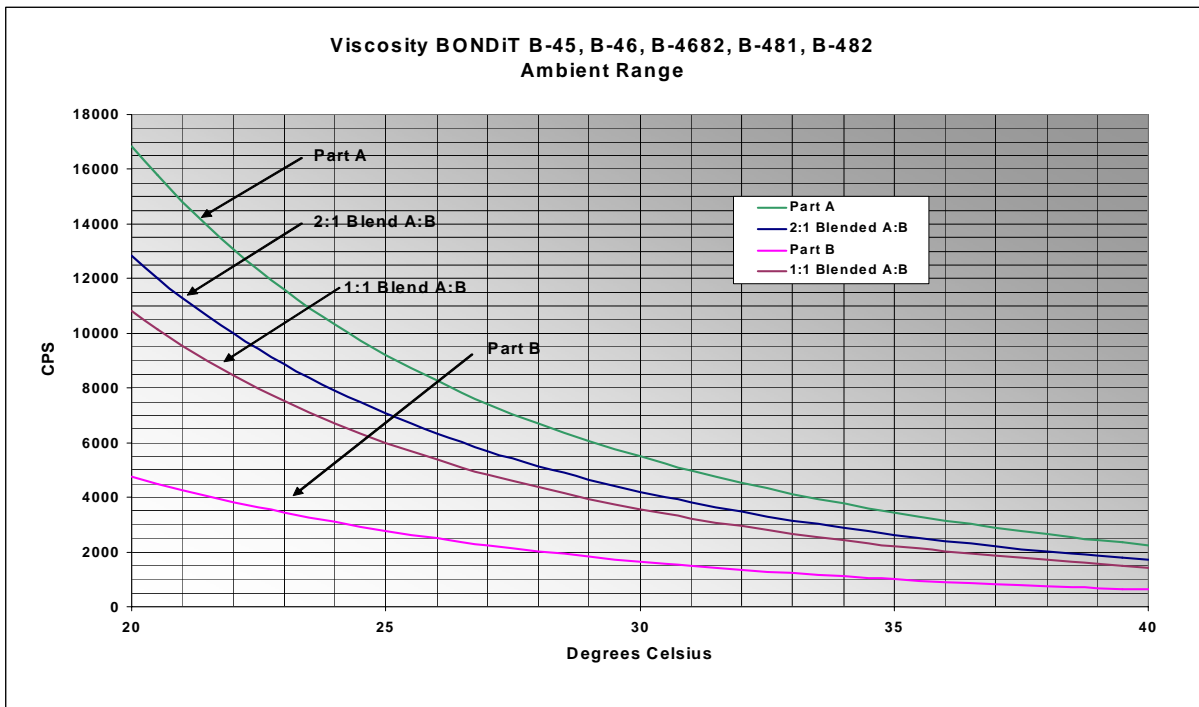
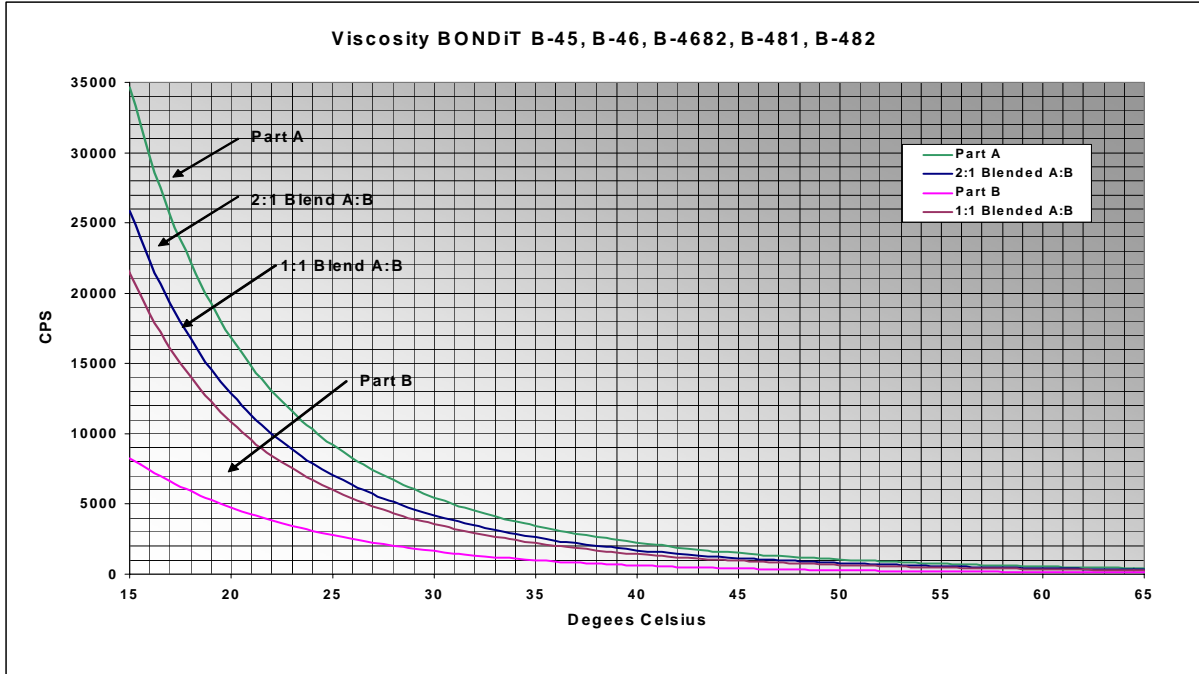
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Product	Elongation	Tensile Strength	Durometer	Key property
B-46	400% to 500%	Low Can creep but is elastic and will return to original state on release of load.	30 A-Shore	Very high tack, bonds low surface energy substrates without surface prep such as PTFE (Teflon) and LDPE. Very high shock resistance. Good electrical properties. Suitable for very low temperature adhesive and potting applications.
B-4682	200% to 300%	Low Not prone to creep and much stiffer compared to B-46 while still elastic.	45 A-Shore	High tack (but less compared to B-46), bonds low surface energy substrates without surface prep such as Delrin. Very good shock resistance. Good electrical properties. Suitable for very low temperature adhesive and potting applications.
B-45	100% to 130%	1300 PSI Flexible, urethane rubber-like properties.	80 A-Shore	Excellent balance of strength, chemical resistance, good adhesion to very wide range of substrates including Delrin and HDPE (lightly abraded), good electrical properties. Suitable for adhesive, potting and coating applications
B-482	20% to 30%	2700 to 3200 PSI Semi-flexible	72 D-Shore	High strength, toughness, shock resistance, good chemical resistance, adhesion to wide range of substrates (but less so compared to B-45,) good thermal stability, excellent electrical properties. Suitable for adhesive, potting and coating applications
B-481	2% to 17%	5600 to 6000 PSI Semi-rigid	77 D-Shore	High strength, toughness and resilience, shock and compression resistant, excellent thermal stability, high chemical resistance, good adhesion to most substrates, superior electrical properties. Suitable for adhesive, potting and coating applications



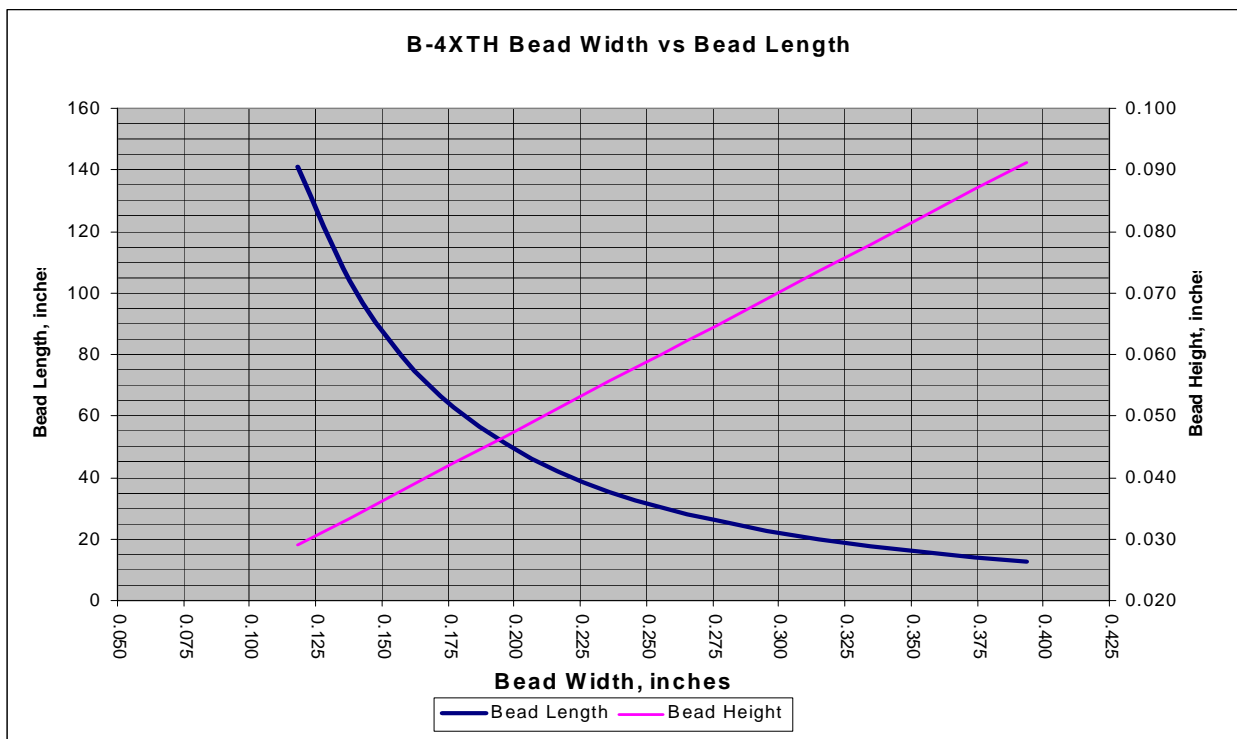
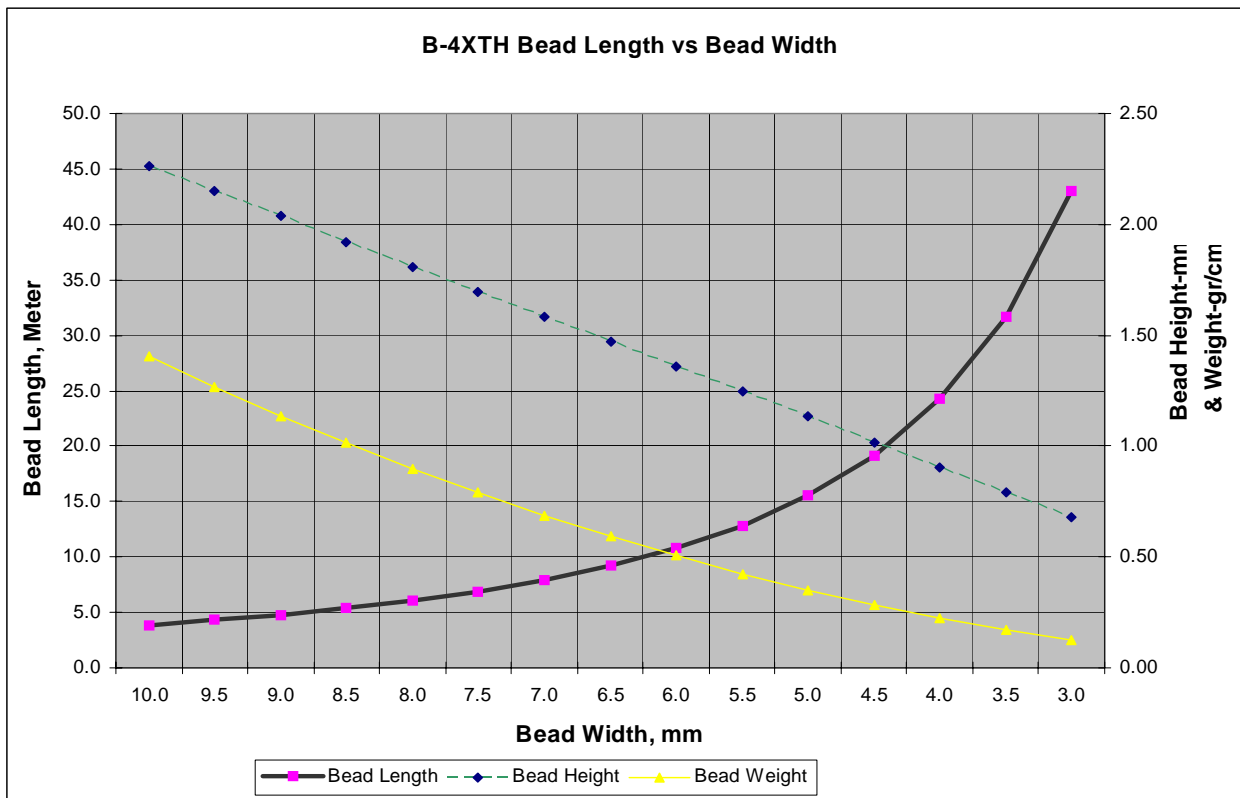
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Viscosity vs Temperature Charts





B-4XTH - 50ml Cartridge Bead Length Estimated Yield





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Electrical Insulation Resistance

Insulation Resistance (IR) >500VDC for 0.001" thick sample

1000 VDC for 1 minute hold, >3Tohm (off scale) for 0.0035" thick sample

5000 VDC for 2 minute hold >2Tohm on 0.125" thick samples

Breakdown <1250VDC for 0.001" thick sample

Leakage current <33 micro amp @ 290 VDC on .0035" thick sample

Test Conditions

Testing at ambient temperature 65degF and 61RH, oven cured with 48 hours ambient conditioning