

EpoPro[®] 190L

1-Component , B-Stageable Adhesive & Coating

EpoPro[®] 190L is an amber thermosetting adhesive & coating that has reduced volatile organic content and a lower viscosity than the standard EpoPro 190 adhesive coating. It provides high shear and peel strengths in adhesive applications and provides a tough coating protective coating for many electrical and electronic devices. EpoPro[®] 190L is excellent for bonding metals to themselves and other substrates. It is used to assemble laminated steel cores for motors and stators, to bond copper foil to B-staged epoxy composites during PCB manufacture, and for other rigid bonding applications. Once applied and allowed to air dry the adhesive coating will remain suitable for bonding for up to 3 months if protected from dust and other contaminants. The coating layers becomes liquid again when subject to heat and easily wets most surfaces. Because of the fluidity of the adhesive at curing temperatures the adhesive layers typically only has to be applied to one surface for full wetting and adhesion to develop. EpoPro[®] 190L can also be used as a protective coating. It forms a tough protective coating that seals, unitizes and insulates coils and electronic sub-assemblies.

Many variations on the standard EpoPro[®] 190L are possible including custom colors, modified viscosities, and many other special properties. Please contact us to discuss your application if you think such a variant would be helpful for your application.

APPLICATIONS & BENEFITS:

- Exceptional Shear & peel strength
- Dried coating bondable for up to 3 months
- Meets SCAQMD VOC requirements
- Heat, Chemical, & Radiation resistant
- Easy to Use

<u>HANDLING PROPERTIES</u>	<u>VALUE</u>	<u>TEST METHOD</u>
Visual Appearance	Clear to Light Amber liquid	
Specific gravity – lbs. /gallon	6.2 – 7.2	ASTM E-201
Viscosity @ 25°C	30-60 cps	ASTM D-2393
Percent Solids (non-volatile %)	10% - 15%	
Base Chemistry	Epoxy – phenolic (phenoxy)	
Primary Solvents	Acetone & Methyl Ether Ketone (MEK)	
Flash Point	-18.9°C (-2°F)	
VOC Content	455 g/L	SCAQMD rule 1168

Drying time: EpoPro 190L will air dry to a tack-free coating in about 15 – 25 minutes at room temperature. However for an optimum performance the dried coating should be air dried for 45 minutes at 93°C (200°F), or 30 minutes at 121°C (250°F) or 10 minutes at 149°C (300°F). This will drive off any remaining solvent and make the coating stable and resistant to mechanical damage until you are ready to bond the adhesive or finally cure the coating.

Curing Schedule: Cure for 30 – 60 minutes minimum at 177°C (350°F). For adhesive applications apply a bond-line pressure of approximately 75 psi. Ensure that the bond-lines have reached the curing temperature before starting to time the cure cycle.

PHYSICAL PROPERTIES

	<u>VALUE</u>	<u>TEST METHOD</u>
Color	Amber	Visual
T-Peel Strength	>10 pli	ASTM D-1876
Lap Shear Strength (etched aluminum)		ASTM D-1002
at -55°C (-67°F)	5000 psi	
at 25°C (77°F)	5000 psi	
at 82°C (180°F)	3500 psi	
at 121°F (250°F)	1200 psi	
at 150°C (300°F)	300 psi	
Lap Shear Strength - Environmental Aging		ASTM D-1002
30 days in tap water at 25°C (77°F)	5000 psi	
30 days in 20% salt solution at 35°C (95°F)	5000 psi	
7 days in hydraulic oil at 25°C (77°F)	5000 psi	
7 days in aromatic fuel at 25°C (77°F)	5000 psi	
Glass Transition Temperature (T _g)	95°C (203°F)	ASTM D-648
Coefficient of Thermal Expansion (CTE)		ASTM E-831
Alpha 1 (below T _g)	262 ppm/°C	
Alpha 2 (above T _g)	543 ppm/°C	

ELECTRICAL PROPERTIES

	<u>VALUE</u>	<u>TEST METHOD</u>
Dielectric Constant at 1 kHz & 25°C (77°F)	5.2	ASTM D-150
Dissipation Factor at 1 kHz & 25°C (77°F)	0.11	ASTM D-150
Dielectric Strength at 1 mil thickness	2000 V/ mil	ASTM D-149
Volume Resistivity at 25°C (77°F)	1.2 x 10 ¹⁵ ohm-cm	ASTM D-257

NOTE : Values above are based on laboratory or average production results – not for specification purposes. All properties generated on samples cured for 60 minutes at 350°F (177°C). Adhesive samples subject to 75 psi bond-line pressure applied using a platen press.

SUGGESTED PROCESSING GUIDELINES:

Apply by brush, roller, dipping or spraying. If spraying, the material may be thinned with small amounts of Acetone or MEK to produce a lower viscosity to lower application thickness, but this is seldom necessary. Typical application thickness is around 1 mil dry coating. For adhesive application apply 1 mil dry thickness to one surface or 0.5 mil thickness to each surface to be bonded. Coverage is typically about 100 sq. feet per gallon of the EpoPro® 190L.

For best results ensure surfaces to be bonded are clean and lightly roughened. Surfaces that have had the adhesive applied and allowed to B-stage remain bondable for up to 3 months, but

most be protected from dust, oil, and other contaminated. Wrapping or covering the surface in unplasticized kraft paper is generally suitable to protect the surface from most contamination, and n pressure over the surface.

STORAGE GUIDELINES:

Store this material in a clean, cool and dry environment in its tightly closed original container. Keep from freezing and if frozen immediately warm to room temperature rather than allowing to remain frozen. Tightly reseal containers after use to prevent evaporation. If the recommended storage conditions are observed the products will have a minimum shelf-life of 12 months from the date of shipment.

HANDLING PRECAUTIONS:

Mandatory and recommended industrial hygiene procedures should be followed whenever these products are being handled and processed. For additional information please consult the corresponding material safety data sheets.

PERSONAL HYGIENE:

EpoPro® 190L

WARNING: FLAMMABLE KEEP AWAY FROM OPEN FLAMES, SPARKS, AND HEAT. Avoid breezing vapors. Avoid contact with eyes, skin, or clothing. Wear eye protection and impervious gloves when handling. May cause respiratory irritation and overexposure may cause nausea or dizziness. Use only with good mechanical ventilation and/or respirator. Do not take internally.

FIRST AID

In case of contact:

Skin – Immediately wash skin thoroughly with mild soap and water. Remove contaminated clothing and wash before reuse. Destroy contaminated shoes and other articles made of leather.

Eyes – Immediately flush eyes with plenty of water for 15 minutes and get prompt medical attention.

Inhalation - Remove person to fresh air. Administer oxygen or artificial respiration if necessary. Call a physician.

Ingestion - Do not induce vomiting. Dilute with plenty of water and contact physician immediately. Never give anything by mouth to an unconscious person.

DISCLAIMER:

IMPORTANT: The following supersedes Buyer's documents. **SELLER / MANUFACTURER MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** No statements herein are to be construed as inducements to infringe any relevant patent. Under no circumstances shall Seller / Manufacturer be liable for incidental, consequential or indirect damages for alleged negligence, breach of warranty, strict liability, tort or contract arising in connection with the product(s). Buyer's sole remedy and Seller's sole liability for any claims shall be Buyer's purchase price. Data and results presented are based on controlled or laboratory work and must be confirmed by Buyer by testing for its intended conditions of use. The product(s) has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended

Specialty Polymers & Services, Inc. (SP&S)

27822 Fremont Court

Valencia, CA 91355

www.spolymers.com

Tel: 661-294-1790

Fax: 661-294-0640

info@spolymers.com