Product Datasheet

EpoPro 103HP-A/B

RAPID SETTING EPOXY ADHESIVE

EpoPro 103HP-A/B is a very rapid-setting, high performance epoxy adhesive system that provides a tough, translucent bondline and a medium, flowable viscosity. It is designed to adhere to many different materials include most metals, glass, rubber, ceramics, stone, and rigid plastics. The adhesive cures at temperatures as low as 50ºF(10ºC), and cures very rapidly at room temperature. The EpoPro 103HP has a convenient 1:1 by weight and volume mix ratio and is easy to apply.

Custom colored and non-running/non-sagging versions of this product are available on request. Please contact us to discuss your application if a modified version might be of interest.

TYPICAL APPLICATIONS

- Bonding of small parts and automated assembly operations
- Excellent for rapid repairs
- Bonds metals, ceramics, wood, cardboard, glass, plastics and many other materials.

HANDLING PROPERTIES	VALUE	TEST METHOD
EpoPro 103HP-A		
Density, g/cm³	1.17	ASTM E-201
Viscosity @ 25ºC, cps	35,000	ASTM D-2393
EpoPro 103HP-B		
Density, g/cm³	1.17	ASTM E-201
Viscosity @ 25ºC, cps	30,000	ASTM D-2393
Mixed Properties		
Mix Ratio By Weight	1A:1B	Calculated
Mix Ratio By Volume	1A:1B	Calculated
Mixed Viscosity @ 25ºC, cps	30,000	ASTM D-2393
Gel Time @ 25ºC, 120g mass	4-5 minutes	ASTM D-2471
Gel Time @ 25ºC, 1/16" thick film	6-7 minutes	ASTM D-2471
Time to achieve Handling Strength	20 minutes	
Lap Shear Strength Development @ 25C		ASTM D-1002
Cure time	Shear Strength@ 25C	
30 minutes	800 psi	
60 minutes	1270 psi	
4 hours	1840 psi	
8 hours	2120 psi	
16 hours	2420 psi	
24 hours	2540 psi	

Recommended Cure Schedule: Functional cures are achieved in as little as 60 minutes and full strength is developed within 24 hours @ 25ºC. Optimum Properties are developed with a 24 hour room temperature cure followed by a 30 minute cure at 80C (176F)

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PHYSICAL PROPERTIES	VALUE	TEST METHOD
Color	light yellow* (*custom colors available)	Visual
Shore D Hardness	83	ASTM D-2240
Tensile Strength, psi	4,600	ASTM D-638
Tensile Elongation at break	7%	ASTM D-638
Lap Shear Strength		ASTM D-1002

Aluminum Lapshear Coupons, tested at various test temperatures and with 2 different cures:

Test Temperature	**Cured 7 days @ 25C** Shear Strength	**Cured 24 hrs @ 25C + 30 min @80C** Shear Strength
-40ºC (-40ºF)	1600 psi (11 mPa)	3500 psi (24 mPa)
-4ºC (-20ºF)	1500 psi (10 mPa)	3600 psi (24.8 mPa)
0ºC (-32ºF)	1500 psi (10 mPa)	3900 psi (26.8 mPa)
25ºC / 77ºF	2600 psi (17.9 mPa)	4800 psi (33.1 mPa)
40ºC /104ºF	2700 psi (18.6 mPa)	4300 psi (29.6 mPa)
60ºC /140ºF	1100 psi (7.6 mPa)	2000 psi (13.7 mPa)
80ºC /176ºF	500 psi (3.4 mPa)	800 psi (5.5 mPa)

After Tropical Aging at 40ºC & 92% Relative Humidity:

Aging Period	Shear Strength @ 25ºC
0 Days	2600 psi (17.9 mPa)
30 days	3500 psi (24.1 mPa)
60 days	3000 psi (20.6 mPa)
90 days	2400 psi (16.5 mPa)

After heat Aging at 70ºC:

Aging Period	Shear Strength@ 25ºC
0 Days	2600 psi (17.9 mPa)
30 days	5000 psi (34.4 mPa)
60 days	4800 psi (33.1 mPa)
90 days	5000 psi (34.4 mPa)

Bond Strength with Other Materials:

Material (substrate thickness)	Shear Strength@ 25ºC
Carbon Steel (1mm)	3000 psi (20.6 mPa)
Stainless Steel (1mm)	4000 psi (27.5 mPa)
Galvanized Steel (1.5mm)*	1800 psi (12.4 mPa)
Copper (1.5mm)	2800 psi (19.3 mPa)
Brass (1.5mm)	3100 psi (21.3 mPa)

*Surface degreased only, not roughened

T-Peel Strength	2 pli	
Glass Transition Temp. (Tg)	136ºF (58ºC)	ASTM D-648
Coefficient of Thermal Expansion (CTE):	72.3 ppm/ºC	ASTM E-831

NOTE : Typical Properties determined using EpoPro 103HP-A/B cured for for 24 hours @ 25ºC + 30 minutes at 80ºC. All testing is run at 25ºC unless otherwise noted. Values based on laboratory or average production results – not for specification purposes.

SUGGESTED PROCESSING GUIDELINES

EpoPro 103HP-A/B can be applied by stiff brush, roller, squeegee, knife, or spatula. They are also suitable for meter-mix dispensing and can be supplied in dual syringes cartridges for use with static mixing nozzles.

Weigh Part A and Part B in the recommended ratio as accurately as possible into a clean mixing container. Always use weighing equipment having accuracy in proportion to the amounts being weighted. Blend by using a spatula or stirring stick for 1-2 minutes using a kneading motion. Scrape the bottom and sides of the mixing container carefully and frequently to produce a uniform mixture.

Apply to clean, dry surfaces. For best adhesion, abrade the surface with a wire brush, scouring pad, steel wool or coarse sand paper. After abrasion, clean the surface of any loose material and degrease with solvent or detergent to remove any contaminants. The material may then be applied with any suitable application method include brushes, spatulas, trowels, etc.

Optimal bond strengths are typically achieved with an adhesive bondline thickness of 3 – 5 mils, but larger gaps and thicker bondlines are possible with this adhesive without major loss of mechanical strength.

Allow to cure at room temperature for at least 20 minutes before handling. Allow 60 minutes before subjecting the bond to significant stress and if possible allow 4-8 hours for a functional cure to be achieved before applying significant stress to the bond. After the EpoPro 103HP-A/B or has cured at least 4 hours @ 25ºC, it may be post cured for at least 30 minutes at 80ºC to yield even higher bond strengths and increased heat and chemical resistance.

PACKAGING AVAILABLE

This product is available in a wide range of kits including pints, quarts, and gallons. It can also be supplied in 50ml dual syringe cartridges that eliminate the need for hand mixing.

Please call use with any special packaging requests, or for information on custom kitting.

STORAGE GUIDELINES

Store this material in a clean, cool and dry environment in its tightly closed original containers. Products may settle during storage and should be thoroughly re-mixed prior to use. Avoid extended exposure to high humidity. Tightly re-seal after use. If the recommended storage conditions are observed the products will have a minimum shelf-life of 24 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 103HP-A

CAUTION! May cause eye irritation. Prolonged or repeated skin contact may cause irritation, may cause allergic skin reaction. Harmful if inhaled or swallowed. Avoid contact with eyes, skin, or clothing. Wear eye protection and impervious gloves when handling. Wash thoroughly

after handling. Avoid breathing vapor or mist. Keep containers closed when not in use. Use only with adequate ventilation. Do not take internally.

EpoPro 103HP-B
WARNING! Causes skin and eye irritaion. May cause allergic skin and respiratory reactions. Harmful if inhaled or swallowed. Do NOT get in eyes, on skin, or clothing. Wear chemical splash goggles and impervious gloves when handling. Wash skin and clothing thoroughly after handling. Avoid breathing vapor or mist. Use only with adequate ventilation. Keep containers closed when not in use. 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

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