Product Datasheet

Bond 24 / HRD 22

Two Component, Low viscosity, Transparent Epoxy Adhesive and Encapsulant

Typical Properties

(Not for specification purposes. All tests run at 25°C unless otherwise noted)

Bond 24 Properties:

Appearance	Visual	Clear Liquid
Specific Gravity	ASTM-D-2393	1.14 g/cc
Viscosity at 25°C	ASTM-D-792	1,300 cP
Flash Point, closed cup	ASTM-D-92	> 95°C (> 203°F)

HRD 22 Properties:

Appearance	Visual	Amber Liquid
Specific Gravity	ASTM-D-2393	0.98 g/cc
Viscosity at 25°C	ASTM-D-792	200 cP
Flash Point, closed cup	ASTM-D-92	> 96°C (>205°F)

Mix Ratio:

Parts by weight (volume) 100A : 25 – 28B* (100A:30B)

* 100A:25B is the standard mix ratio – the use of small amounts of additional hardener will shorten the pot life of the system.

Mixed Properties:

Initial Viscosity,100g c	ASTM-D-792	< 1,000 cP
Pot life (100 g. mass)	OC-WI-001	30 minutes
Handling Strength (time to achieve 1000 psi @ 25C)		3-4 hours

Recommended Cure Schedules:

24 hrs at 25°C **or** 1-2 hours at 65°C **or** 30 minutes at 100°C.

Please note: any cure schedule selected for use should be confirmed through testing as being appropriate for your particular processing methods and for your intended application.

Cured Properties (cured 7 days at 25°C)

Appearance	Visual	Clear
Cured Density	ASTM-D-792	1.11 g/cc
Shore Hardness	ASTM-D-2240	78D
Linear shrinkage	ASTM-D-2566	0.21%
Coefficient of Thermal Expansion(CTE) (per °C)	ASTM-E-831	43.2 x 10^{-6}
Glass Transition Temp. (Tg)	ASTM-E-1545	61°C
Heat Deflection Temp.		110°C (230°F)
Thermal Conductivity	ASTM D-2214	0.00068 cal/cm-sec-°C or 0.28 W/mK
Ultimate Tensile Strength	ASTM-D-638	6,600 psi
Compressive Strength	ASTM-D-638	10,000 psi
Weight loss after 1000 hours aging @ 175C		1.46%
Volume resistivity @ 25°C & 100 KHz	ASTM-D-257	1.5 x 10^{15} ohm-cm.
Dielectric Strength	ASTM-D-149	420 volts/mil
Dielectric Constant @100KHz	ASTM-D-150	4.0
Dissipitation Factor @100 KHz	ASTM-D-150	0.055

Bond 24 with HRD 22 is a two part epoxy adhesive and encapsulating system that contains no solvents, but when mixed provides a very low viscosity. It has exceptional air release properties that reduces the likelihood for air entrapment in the cured material and increases the reliability of the encapsulated components. It is recommend for adhesive bonding of transparent substrates or where invisible bond-lines are desired as it is quite transparent. It is also recommended for the encapsulation of closely spaced components or tightly wound coils due to its excellent wetting and flow characteristics. It is especially useful in encapsulant applications where visual inspection is desired.

Benefits:

- Low viscosity and excellent impregnation or tightly spaced or wire wound devices
- Tough, semi-flexible polymer with Excellent performance from -40°C to 125°C.
- Excellent bond strength to metals & ceramics and good bonds to many plastics including epoxies, polystyrene, polysulfone, polycarbonate, rigid PVC & PVDC
- Excellent for bonding dissimilar materials

Suggested Processing Guidelines:

Once fully mixed Bond 24 /HRS 22 can be applied by brush, roller, squeegee, knife, spatula, or syringe. It is also suitable for meter-mix dispensing. Using vacuum processing is generally not necessary to remove air bubbles due to the excellent air release of this system, but may speed the removal of air bubbles and assist in speeding the impregnation of tightly wound wire coils and the filling of other small gaps.

To prepare the system for use, 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. (preferably with an accuracy that is 0.5% or less of the quantity being weighed out.)

Blend by using a spatula or stirring stick for 2-3 minutes using a kneading motion. Scrape the bottom and sides of the mixing container carefully and frequently to produce a uniform mixture.

For adhesive applications, apply the mixed material to all surfaces to be bonded & then join together using ay clamp or otherwise methods to hold the surfaces in place until the adhesive is set. Only contact pressure is required - do not use excessive clamping pressure as this may squeeze the adhesive out of the bond-line.

For encapsulating applications, pour or dispense the fully mixed material into the components to be encapsulated. If not using vacuum, pour the fully mixed system into the device in a one continuous thin stream and allow the material to flow through the device and force out any air as the material level increases. Do not move the stream of liquid around and use a pour height and rate that minimized the folding of the stream over itself as it pours into the device. This precaution will minimize the amount air introduced into the encapsulant during filling.

Once the material is applied as desires, allow the system to cure as indicated in the recommended cure schedules. Please not that when using a heat cure it is often advisable to first allow the epoxy to gel at room temperature prior to heat curing. This step will minimize shrinkage during curing and reduce the possibility of thermally induced stress or cracking. Also please note that many custom cure schedules are possible. If you are interested in using a modified cure schedule please contact SP&S and we will be happy to make recommendation suitable for your specific application.

Storage Guidelines:

Store this material in a clean, cool and dry environment in its tightly closed original container. The products may crystallize during storage if subject to cold. If crystallization is observed (increased viscosity, haziness, or the appearance of crystals), the products may be reliquified by warming the contents of the shipping containers, loosely covered, to 65°C for 2-4 hours. Allow contents to slowly cool to room temperature prior to use. Avoid extended exposure to extreme humidity. 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.

Exotherm Warning: when large masses of epoxy compounds such as Bond 24 with HRD 22 are mixed they may generate excessive heat if allowed to remain in a large mass for an extended period. Take care when mixing quantities large than 1 kilograms (~2.2 lbs.) to use the material as quickly as possible or to divide the material into smaller containers or to spread the material out into thin sections so that the heat generated by the reacting material does not create a catastrophic exotherm. Contact SP&S to discuss your application and ways to minimize exotherm if any excessive heat is observed or if you are working with large mixes of this system.

Personal Hygiene:

Bond 24

WARNING!!! Causes severe eye irritation. Causes skin irritation and possible allergic skin reaction. Harmful if inhaled. Harmful if 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.

HRD 22

WARNING! CORROSIVE! Causes severe eye and skin burns and possible allergic skin reaction. Vapor irritating to eyes, skin and nasal mucous membranes. Harmful if 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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