Technical Data Sheet
TDS-830-39403

CAH™

Curing Agent Hardener

Building & Transportation | Oil, Gas & Industrial | Offshore & Onshore | Water & Wastewater

PRODUCT DESCRIPTION

CTech-LLC® CAH™ Curing Agent Hardener is a medium-viscosity epoxy curing agent. It is used in a majority of situations, at lower temperatures and to produce a rapid cure that develops its physical properties quickly at room temperature. When mixed with the resin in a five-part resin to one-part hardener ratio, the cured resin/hardener mixture yields a rigid, high-strength, moisture-resistant solid with excellent bonding and coating properties. Not intended for clear coating. But Slow Hardener is a low-viscosity epoxy curing agent for use when extended working and cure time is needed or to provide adequate working time at higher temperatures. When combined with resin in a five-part resin to one-part hardener ratio, the cured resin/hardener mixture yields a rigid, high-strength, moisture-resistant solid with excellent bonding and coating properties. Not intended for clear coating.

CTech-LLC® CAH™ Curing Agent Hardener is used for general coating and bonding applications at lower temperatures and to produce a rapid cure that develops its physical properties quickly at room temperature.

CTech-LLC® CAH™ Curing Agent Hardener forms a high-strength, moisture-resistant solid with excel lent bonding and barrier coating properties. It will wet out and bond to wood fiber, fiberglass, reinforcing fabrics, foam and other composite materials, and a variety of metals. CTech-LLC® CAH™ Curing Agent Hardener with epoxy can be thickened with west system fillers to bridge gaps and fill voids and can be sanded and shaped when cured. With roller applications, it has excellent thin film characteristics, allowing it to flow out and self-level without “fish-eyeing.” Multiple coats of epoxy create a superior moisture barrier and a tough, stable base for paints and varnishes. It is formulated without volatile solvents resulting in a very low VOC content. It has a relatively high flash point, no strong solvent odor and does not shrink after curing. It is not intended for clear coating natural finished wood.

ADVANTAGES

- Acceptable ratio range by weight 4.83:1 to 6.20:1.
- Working time, thin film about 60 to 70 minutes and Epoxy cures faster at higher temperatures and in thicker applications.
- Cure to a solid, thin film about 6 to hours and Epoxy cures faster at higher temperatures and in thicker applications.
- Cure to working strength 1 to 4 days.

INSTALLATION PROCEDURE

CTech-LLC® PER™ can be cured or cross-linked with CTech-LLC® CAH™ Curing Agent Hardener. Some commonly used curing agents, recommended concentrations, typical cure schedules employed in major end-use applications, plus sources for these curing agents are displayed in Table Physical properties of cured epoxy.

PERFORMANCE CHARACTERISTICS

- Mechanical Properties: High performance, high strength materials are obtained when this resin is cured with CTech-LLC® CAH™ Curing Agent Hardener. Unfilled systems in common use have tensile values greater than 10,000 psi (69 MPa) with modulus values greater than 400,000 psi (2750 MPa). Such systems are normally very rigid. If greater flexibility is needed systems can be formulated to provide up to 300% elongation.
- Adhesive Properties: One of the most widely recognized properties of cured CTech-LLC® PER™ is strong adhesion to a broad range of substrates. Such systems exhibit shear strength of up to 6,000 psi (41 MPa). One factor which contributes to this property is the low shrinkage shown by these systems during cure. Compared to other

polymers, epoxy
resins have low internal stresses resulting in strong and durable finished products.

TECHNICAL DATA

	Unit	
Basic nitrogen content	%m/m	6-8
Viscosity at 25 °C	Pa.s	0.5 - 0.7
Mix viscosity	cps	975
Density at 25°C	Kg/l	1.04
Recommended proportion with Resin	phr	58
Pot life*	min	20 - 25
Cure to a solid state	h	9 - 12
Cure to maximum strength	^{0}C	16
Minimum recommended temperature	^{0}C	4

* Temperature at 22^{0}C

PHYSICAL PROPERTIES

Property	Test method	value
Specific gravity	-	1.18
Hardness	ASTM D-2240	83
Compression yield	ASTM D-695	11,400 psi
Tensile strength	ASTM D638	7,900 psi
Tensile elongation	ASTM D-638	3.4%
Tensile modulus	ASTM D-638	4.08e+05
Flexural strength	ASTM D-790	14,100 psi
Flexural modulus	ASTM D-790	4.61e+05
Heat deflection temperature	ASTM D-648	118°F

- Electrical Properties: CTech-LLC® PER™ cured systems have very good electrical insulating characteristics and dielectric properties. For example, systems can be obtained with anhydride and amine curing agents having volume resistivities up to 1 x 1016 ohm-cm, dielectric constants of 3-5 and dissipation factors of 0.002 to 0.020 at ambient conditions. Electrical encapsulations, laminates and molding compounds are frequently based on CTech-LLC® PER™.
- Chemical Resistance: Cured CTech-LLC® PER™ is highly resistant to a broad range of chemicals, including caustic, acids, fuels and solvents. Chemically resistant reinforced structures and linings or coatings over metal can be formulated with CTech-LLC® Triethylenetetramine Curing Agent TCA™.
- Formulating Techniques: The primary components of a thermosetting resin formula are the epoxy resin and the hardener or curing agent. However, in practice other materials are normally incorporated to achieve special properties. For example, inert fillers such as silicas, talcs, calcium silicates, micas, clays and calcium carbonate can be added to further reduce shrinkage and improve dimensional stability. Also, reactive diluents can be added to CTech-LLC® PER™ to reduce viscosity.

APPLICATION

- Adhesives, Casting and tooling
- Civil Engineering
- Composites Automotive Coatings
- Marine and Protective Coatings
- Potting and Encapsulation
- Fiber reinforced pipes, tanks and composites
- Tooling, casting and molding compounds
- Construction, electrical and aerospace adhesives
- High solids/low VOC maintenance and marine coatings
- Electrical encapsulations and laminates
- Chemical resistant tank linings, flooring and grouts

STORAGE & SHELF LIFE

Store at room temperature. Keep containers closed to prevent contamination. With proper storage, resin and hardeners should remain usable for many years. After a long storage, verify the metering ac cu racy of the pumps. Mix a small test batch to assure proper curing.

Over time, Resin will thicken slightly and will therefore require extra care when mixing. Repeated freeze/thaw cycles during storage may cause crystallization of Resin. Warm resin to 125°F and stir to dissolve crystals. Hardener may darken with age, but physical properties are not affected by color. Be aware of a possible color shift if very old and new hardener are used on the same project.

CAUTION

The generation of waste should be minimized or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way. Disposal of this product, process solutions, residues and by-products should at all times comply with the requirements of environmental protection and waste disposal legislation

and any local authority requirements. When handling waste, the safety precautions applying to handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Empty containers or liners may retain some product residues and hence be potentially hazardous.

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