Chemical Properties
CP-830-39416

VER™900

Bisphenol-A Epoxy Based Vinyl Ester Resin

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

PRODUCT DESCRIPTION

CTech-LLC® VER™900 is a Bisphenol a type Vinyl Ester Resin. CTech-LLC® VER™900 provides excellent corrosion resistance to a broad range of organic and inorganic acids, alkalis, oxidizing chemicals and salt solutions etc. It also provides very good mechanical strength such as tensile and flexural while incorporated with reinforcement such glass fiber, carbon fiber or kevlar fiber etc. CTech-LLC® VER™900 is designed to provide superior toughness with excellent fatigue resistance due to high heat distortion temperature.

CTech-LLC® VER™900 Vinyl Ester Resins are actually polymers dissolved in styrene monomer. The fabricator cures these resins to a solid state, reacting the polymer together with the styrene in the presence of glass reinforcements to produce a fiber reinforced rigid structure. They have been used to fabricate thousands of different types of corrosion resistant FRP equipment. Many versions of CTech-LLC® VER™ 900 have been developed for ease of handling during hand lay-up, spray-up, filament winding, pultrusion, centrifugal casting, resin transfer molding and other methods of commercial fabrication. CTech-LLC® VER™900 combines superior retention of mechanical properties at high temperature.

ADVANTAGES

- Excellent corrosion resistance
- Excellent impact strength
- High tensile elongation
- High Heat Resistance
- Low Viscosity
- Superior corrosion resistance to a wide range of acids, bases, chlorides, solvents, and oxidize

TYPICAL USES

- Can be easily applied by hand lay-up laminating, spray-up, pultrusion, resin transfer molding (RTM) and filament winding.
- Can be used in polymer concrete casting.
- Can comply with US FDA regulation 21 CFR 177.2420 if the resin is properly formulated postcure.

DESIGN

The gel time of CTech-LLC® VER™900 is affected primarily by catalyst concentration and temperature. The variations of cure characteristics may be caused by the variations of catalyst, humidity, pigment, fillers and other additives. It is recommended that the fabricators check the cure characteristics with a small quantity resin before proceeding for bulk production.

INSTALLATION PROCEDURE

Barcol hardness values are taken as an indication of surface cure. ASTM standards indicate that FRP equipment should have a Barcol hardness of at least 90% of the manufacturer's published value for each resin.

Experience indicates that Barcol hardness values are subject to a number of variables. In the case of a molded surface, these factors may be post cure, the curvature of a part or the use of one or more plies of synthetic surfacing veil. For non-molded resin surfaces, these factors may be paraffin wax, UV inhibitors, pigments, or other materials added to the resin. On a severely curved or irregular surface, an accurate Barcol hardness value may be impossible to obtain. In such cases, a flat sample using identical fabrication techniques should be monitored for cure during the manufacture of the actual part.

Experience indicates that Barcol hardness values of molded surfaces incorporating synthetic surfacing veil are less than the values of a comparable glass veil laminate. Reductions in Barcol hardness values of five units or more can be

expected. Barcol hardness determination is used to check surface cure and is often accompanied by an acetone sensitivity test. The acetone sensitivity test is also valuable in judging cure when the use of the Barcol instrument is impractical. In this test, acetone solvent is liberally wiped over the test surface and allowed to evaporate. A tacky or soft surface during evaporation indicates under-cure.

Technical Data

	Unit	VER™900
Physical State*	-	Solid
Viscosity	mPas	275
Specific Gravity	gm/cc	1.03
Shelf Life	month	3
Monomer Content	%	48

* Temperature at 25^{0}C

Typical Curing Characteristics

Hi Point 90 catalyst (phr)*	Temperature^{0}C	Gel Time, minutes
1.00	15-21	65-75
1.25	15-21	50-60
1.50	15-21	40-50
1.00	21-27	25-35
1.25	21-27	20-30
1.50	21-27	15-25
1.00	27-32	20-30
1.25	27-32	15-25
1.50	27-32	10-20

* Typical curing characteristics are measured using 100 phr resin with various levels of catalyst.

Property of Cured at 25^{0}C

	Unit	VER™900
Barcol Hardness	-	35
Tensile Strength	MPa	82
Tensile Modulus	MPa	3720
Tensile Elongation at Yield	%	4.6
Tensile Elongation at Break	%	7.9
Flexural Strength	MPa	131
Flexural Modulus	MPa	3450
Heat Distortion Temperature	^{0}C	98

APPLICATION

- Chemical storage tanks, pipes, fume gas desulfurizing systems (FGD), scrubbers, ducts.
- Corrosion resistant flooring while incorporated with aggregates.
- Waste water treatment systems.
- Food storage tanks and pure water system.
- Marine use for yachts and boats.

STORAGE & SHELF LIFE

CTech-LLC® VER™900 contains organic solvent (styrene). Keep away from heat, sparks and flames. CTech-LLC® VER™900 is a potentially reactive chemical. Please store it in dark and keep away from heat and direct sunshine.

CAUTION

If CTech-LLC® VER™900 is blended with cobalt-salt promoters, shelf life will be shortened. Promoted CTech-LLC® VER™900 must be used within four months. Containers, not completely emptied must be closed immediately after use.

Chemical Properties	Maximum Recommended Temperature for CTech-LLC® VER™900 (°F/°C)			
	Conc. (%)	101	110	210
A				
Acetaldehyde	100	NR	NR	210/99
AceticAcid	1-25	210/99	210/99	180/82
	26-50	180/82	180/82	150/65
	51-75	150/65	150/65	100/38
Acetic Anhydride	100	NR	NR	NR
Acetone	100	NR	NR	100/38
AcrylicAcid	25	100/38	100/38	120/49
Acrylic Latex	All	120/49	120/49	NR
Acrylonitrile	All	NR	NR	180/82
AdipicAcid	23	180/82	180/82	120/49
Alcohol, Butyl	100	120/49	120/49	150/65
Alcohol, Ethyl	10	150/65	150/65	100/38
	95	80/27	80/27	150/65
Alcohol.lsopropyf	10	150/65	150/65	120/49
	100	120/49	120/49	120/49
Alcohol, Methyl (Methanol)	5	120/49	120/49	100/38
	100	NR	NR	150/65
Alcohol, Methyllsobutyls	10	120/49	120/49	150/65
Alcohol, Secondary Butyls	10	150/65	150/65	80/27
Allyl Chloride	All	80/27	80/27	250/121
Alum	Sat'd	210/99	210/99	250/121
Aluminum Chloride	Sat'd	210/99	210/99	80/27
Aluminum Fluoride	All	80/27	80/27	200/93
Aluminum Hydroxide	100	180/82	180/82	210/99
Aluminum Nitrate	All	210/99	210/99	250/121
Aluminum Potassium Sulfate	Sat'd	210/99	210/99	200/93
Ammonia Aqueous	100	180/82	180/82	100/38
AmmoniaGas	100	100/38	100/38	NR
Ammonia	Liquified Gas	NR	NR	100/38
Ammonium Acetate	>0.5	80/27	80/27	160/71
Ammonium Bicarbonate	1-50	160/71	160/71	150/65
Ammonium Bisulfite	All	150/65	150/65	150/65
Ammonium Carbonate	All	150/65	150/65	210/99
Ammonium Chloride	All	210/99	210/99	210/99

Chemical Properties	Maximum Recommended Temperature for CTech-LLC® VER™900 (°F/°C)			
	Conc. (%)	101	110	210
Ammonium Citrate	All	150/65	150/65	150/65
Ammonium Fluoride	All	150/65	150/65	150/65
Ammonium Hydroxide	5	180/82	180/82	150/65
	10	150/65	150/65	100/38
	20	150/65	150/65	100/38
	29	100/38	100/38	100/38
Ammonium Nitrate	Sat'd	210/99	220/104	150/65
Ammonium Persulfate	All	210/99	210/99	210/99
Ammonium Phosphate	All	210/99	210/99	210/99
Ammonium Sulfate	Sat'd	210/99	220/104	250/121
Amyl Acetate	100	70/21	NR	120/49
Aniline	All	NR	NR	70/21
Aniline Hydrochloride	All	180/82	180/82	180/82
Aniline Sulfate	All	210/99	210/99	210/99
Arsenious Acid	19"Be	180/82	180/82	180/82
B				
Barium Acetate	All	180/82		180/82
Barium Carbonate	All	180/82	180/82	180/82
Barium Chloride	All	210/99	210/99	210/99
Barium Hydroxide	All	150/65	150/65	150/65
Barium Sulfate	Sat'd	210/99	210/99	250/121
Barium Sulfide	All	180/82	180/82	180/82
Beer	All	120/49	NR	NR
Benzene	100	NR	NR	100/38
Benzene SulfonicAcid	All	150/65	150/65	150/65
Benzoic Acid	Sat'd	210/99	210/99	210/99
o-Benzoyl Benzoic Acid	All	210/99	210/99	210/99
Benzyl Alcohol	All	NR	NR	100/38
Benzyl Chioride	100	NR	NR	80/27
Black Liquor Recovery Furnace gasses		325/163	325/163	400/204
Bleaches				
Calcium Hypochlorlte	All	180/82	180/82	100/38
Chlorine Dioxide	All	180/82	200/93	200/93

Chemical Properties	Maximum Recommended Temperature for CTech-LLC® VER™900 (°F/°C)			
	Conc. (%)	101	110	210
Sodium Hypochlorite	1-5	150/65	150/65	120/49
	5-15	180/82	180/82	120/49
BoricAcid	>0.5	210/99	210/99	210/99
Brass Plating Solution		180/82	180/82	180/82
3% Copper Cyanide				
6% Sodium Cyanide				
1 % Zinc Cyanide				
3% Sodium Carbonate				
Bromine, Liquid	100	NR	NR	NR
Bromine, Water	5	180/82	180/82	200/93
Bronze Plating Solution		180/82	180/82	190/88
4% Copper Cyanide				
5% Sodium Cyanide				
3% Sodium Carbonate				
4.5% Rochelle Salts				
Butyl Acetate	100	NR	NR	80/27
Butyl Benzyl Phthalate, BBP	100	180/82	180/82	210/99
Butyl Carbitol, BC	100	100/38	100/38	100/38
Butyl Cellosolve, BCS	100	100/38	100/38	100/38
Butylene Glycol, BG	100	160/71	160/71	180/82
Butyric Acid	1-50	210/99	210/99	210/99
	100	80/27	80/27	120/49
C				
Cadmium Chloride	All	210/99	210/99	210/99
Cadmium Cyanide Plating Solutlon		180/82	180/82	180/82
3% Cadmium Oxide				
10% Sodium Cyanide				
1 % Caustic Soda				
Calcium Bisulfite	All	210/99	210/99	210/99
Calcium Carbonate	All	180/82	180/82	180/82
Calcium Chlorate	All	210/99	210/99	210/99
Calcium Chloride	Sat'd	210/99	210/99	250/121
Calcium Hydroxide	100	210/99	210/99	210/99
Calcium Hypochlorite	All	180/82	180/82	100/38
Calcium Nitrate	All	210/99	210/99	210/99
Calcium Sulfate	All	210/99	210/99	210/99

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	Conc. (%)	101	110	210
Calcium Sulfite	All	210/99	210/99	210/99
Cane Sugar Liquor	All	180/82		
Caprylic Acid	100	180/82	180/82	210/99
CarbonAcid		150/65	150/65	150/65
Carbon Dioxide, Gas		325/165	325/165	400/205
Carbon Disulfide	100	NR	NR	NR
Carbon Monoxide, Gas		325/165	325/165	400/205
Carbon Tetrachloride	100	150/65	150/65	180/82
Carbowax (PEG)	100	150/65	150/65	180/82
Castor Dil	100	160/71	160/71	160/71
Carboxy Methyl Cellulose	10	150/65	150/65	150/65
Chlorinated Brine Liquors				190/88
Chlorinated Wax	All	180/82	180/82	
Chlorine Dioxide, Air	15	200/93	200/93	180/82
Chlorine Dioxide, Wet Gas	Sat'd	180/82	180/82	200/93
Chlorine, Dry Gas	100	210/99	220/104	180/82
Chlorine, Wet Gas	100	210/99	220/104	250/121
Chlorine, Liquid	Sat'd Cl_2	NR	NR	250/121
Chlorine, Water	All	180/82	180/82	NR
Chloroacetic Acid	25	120/49	120/49	150/65
	50	100/38	100/38	150/65
	Conc.	NR	NR	100/38
Ohlorobenzene	100	NR	NR	NR
Chloroform	100	NR	NR	100/38
Chlorosulfonic Acid	100	NR	NR	NR
Chrome Plating Bath		120/49	120/49	NR
19% Chromic Acid with Sodium Fluorosillicate and Sulfate				
Chromic Acid	10	150/65	150/65	150/65
	20	120/49	150/65	150/65
	30	NR	NR	NR
Chromium Sulfate	All	210/99	210/99	210/99
CitricAcid	All	210/99	210/99	210/99
Coconut Dil	100	180/82	180/82	200/93
Copper Chloride	Sat'd	210/99	220/104	250/121
Copper Cyanide	All	210/99	210/99	210/99

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	Conc. (%)	101	110	210
Copper Fluoride	All	210/99	210/99	210/99
Copper Nitrate	All	210/99	210/99	210/99
Copper Cyanide Plating Solutions:		160m	160m	160m
10.5% Copper and 14% Sodium Cyanide 6% Rochelle Salts				
Copper Brite Plating		160m	160m	190/88
Caustic - Cyanide				
Copper Plating Solution		180/82	180/82	180/82
45% Copper Fluoborate				
19% Copper Sulfate				
8% Sulfonic				
Copper Matte Dipping Bath		180/82	200/93	200/93
30% Ferric Chloride				
19% Hydrochloric				
Copper Pickling Bath 10% Ferric Sulfate		200/93	200/93	200/93
Copper Sulfate	Sat'd	210/99	210/99	250/121
Com Oil	100	180/82	180/82	210/99
Com Starch	Slurry	210/99		
Com Sugar	All	180/82		
Cottonseed Oil	100	210/99	210/99	210/99
Cresylic Acid	100	NR	NR	NR
Crude Oil, Sour	100	210/99	210/99	250/121
Crude Oil,Sweet	100	210/99	210/99	250/121
Cyclohexane	100	120/49	120/49	150/65
Cyclohexanone		120/49	120/49	150/65
D				
Detergents, Organic	100	160m	160m	200/93
Diallyl Phthalate (DAP)	All	180/82		210/99
Di-Ammonium Phosphate	>0.5	210/99	210/99	210/99
Dibromophenol	100	NR	NR	100/38
Dibutyl Ether	100	80/27		180/82
Dichlorobenzene	100	NR	NR	120/49
Dichloroethane	100	NR	NR	80/27
Dlchloroethylene	100	NR	NR	NR

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	Conc. (%)	101	110	210
Dichloromethane	100	NR	NR	NR
Dlchloropropane	100	NR	NR	100/38
Dlchloropropene	100	NR	NR	80/27
Diesel Fuel	100	180/82	180/82	210/99
Diethanol Amine	100	120/49	120/49	150/65
Diethyl Amine	100	NR	NR	NR
Diethyl Benzene	100	100/38	100/38	150/65
Diethyl Carboriate	100	NR	NR	100/38
Diethylene Glycol	100	180/82	180/82	210/99
Diethylhexyl Phosphoric Acid	20	180/82	180/82	180/82
Diethyl Sulfate	100	100/38	100/38	120/49
Diisobutylene	100	100/38	100/38	100/38
Diisobutyl Phthalate	100	150/65	150/65	150/65
Diisopropanol Amine	100	120/49	120/49	150/65
Dimethyl Forrnamide	100	NR	NR	NR
Dimethyl Morpholine	100	NR	NR	120/49
Dimethyl Phthalate (DMP)	100	150/65	150/65	180/82
Dioctyl Phthalate (Dap)	100	150/65	150/65	210/99
Dipropylene Glycol	100	180/82	180/82	210/99
DMA 4 Weed Killer	100	120/49	120/49	120/49
DMA 6 Weed Killer	100	120/49	120/49	120/49
Dodecyl Alcohol	100	150/65	150/65	180/82
E				
ELECTRasaL (Antistatic Agent)	All	150/65	150/65	150/65
Epichlorohydrin	100	NR	NR	80/27
Epoxidized Soybean Oil	100	150/65	150/65	150/65
Esters, Fatty Acids	100	180/82	180/82	180/82
Ethyl Acetate, EAC	100	NR	NR	70/21
Ethyl Acrylate, EA	100	NR	NR	80/27
Ethyl Benzene	100	80/27	80/27	120/49
Ethyl Brornide	100	NR	NR	NR
Ethyl Chlorlde	100	NR	NR	80/27
Ethyl Ether	100	NR	NR	NR
Ethylene Chlorohydrin	100	100/38	100/38	100/38
Ethylene Glycol (EG)	All	210/99	210/99	210/99

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	Conc. (%)	101	110	210
Ethylene Glycol Monobutyl Ether	100	100/38	100/38	100/38
Ethyl Sulfate	100	80/27	80/27	100/38
F				
Fatty Acids	All	210/99	210/99	250/121
Ferric Chloride	All	210/99	210/99	210/99
Ferric Nitrate	All	210/99	210/99	210/99
Ferric Sulfate	All	210/99	210/99	210/99
Ferrous Chloride	All	210/99	210/99	210/99
Ferrous Nitrate	All	210/99	210/99	210/99
Ferrous Sulfate	All	210/99	210/99	210/99
8-8-8 Fertilizer		150/65	150/65	150/65
Fertilizer- Urea Ammonium Nitrate		150/65	150/65	150/65
Flue Gas, Dry		325/163	325/163	400/204
Fluoboric Acid	All	210/99	210/99	210/99
Fluosilicic Acid	10	180/82	180/82	180/82
	11-35	100/38	100/38	100/38
Formaldehyde	All	120/49	120/49	150/65
FormicAcid	10	180/82	180/82	180/82
	50	120/49	120/49	120/49
Freon 11		80/27	80/27	100/38
Fuel Dil	100	180/82	180/82	210/99
Furfural	10	100/38	100/38	120/49
	100	NR	NR	NR
G				
Gas, Natural		210/99	210/99	210/99
Gasoline, Auto		180/82	180/82	180/82
Gasoline, Aviation		180/82	180/82	180/82
Gasoline, Ethyl	100	180/82	180/82	180/82
Gasoline, Sour		180/82	180/82	180/82
Gluconic Acid	50	180/82	180/82	180/82
Glucose	100	180/82		
Glutaric Acid	50	120/49	120/49	120/49
Glycerine	100	210/99	210/99	210/99

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	Conc. (%)	101	110	210
Glycolic Acid	7	100/38	100/38	100/38
Glyoxal	0	100/38	100/38	100/38
Gold Plating Solution	40	210/99	210/99	210/99
23% Potassium Ferrocyanide				
0.2% Potassium Gold Cyanide				
0.8% Sodium Cyanide				
H				
N-Heptane	100	210/99	210/99	210/99
Hexane	100	160/71	160/71	160/71
Hexylene Glycol		150/65	150/65	150/65
Hot Stack Gas		325/163	325/163	400/204
Hydraulic Fluid	100	180/82	180/82	180/82
Hydrazine	100	NR	NR	NR
Hydrobromic Acid	0-25	180/82	180/82	180/82
	25-50	150/65	150/65	150/65
	50-60	100/38	100/38	100/38
Hydrochloric Acid	0-20	180/82	210/99	230/110
	20-32	150/65	150/65	180/82
	37	100/38	100/38	120/49
Hydrocyanic Acid	All	210/99	210/99	210/99
Hydrofluoric Acid	10	150/65	150/65	150/65
	20	100/38	100/38	100/38
Hydrofluosilicic Acid	10	180/82	180/82	180/82
Hydrogen Bromide, Wet Gas	100	180/82	180/82	180/82
Hydrogen Chloride, Dry Gas	100	210/99	210/99	350/177
Hydrogen Fluoride, Dry Vapor (if wet max 1 00oF/40^{0}C)		180/82	180/82	180/82
Hydrogen Peroxide	0-30	150/65	150/65	150/65
Hydrogen Sulfide, Dry Gas	All	210/99	210/99	230/110
Hydrogen Sulfide, Aqueous	All	210/99	210/99	210/99
Hydrosulfite Bleach		180/82	180/82	180/82
Hypochlorous Acid	10	100/38	100/38	100/38
I				

Chemical Properties	Maximum Recommended Temperature for CTech-LLC® VER™900 (°F/°C)			
	Conc. (%)	101	110	210
Iron Plating Solution 45% $FeCl_2$; 15% $CaCl_2$; 20% $FeSO_4$; 11% $(NH_4)_2SO_4$		180/82	180/82	250/121
Iron and Steel Cleaning Bath 9% Hydrochloric 23% Sulfuric	9	180/82	180/82	210/99
Isopropyl Amine	0.5-50	100/38	100/38	100/38
Isopropyl Palmitate	100	210/99	210/99	230/110
Itaconic Acid	40	140/60	140/60	140/60
J				
Jet Fuel	100	140/60	140/60	140/60
K				
Kerosene	100	180/82	180/82	180/82
L				
LacticAcid	All	210/99	210/99	210/99
LASSO Herbicide		NR	NR	120/49
Latex	All	120/49	120/49	120/49
LauricAcid	All	210/99	210/99	210/99
Lauroyl Chloride	100	100/38		120/49
Lead Acetate	Sat'd	210/99	210/99	230/110
Lead Nitrate	All	210/99	210/99	210/99
Lead Plating Solution 8% Lead 0.8% Fluoboric Acid 0.4% Boric Acid		180/82	180/82	180/82
Levulinic Acid	Sat'd	210/99	210/99	230/110
Linseed Oil	100	210/99	210/99	230/110
Lithium Bromide	Sat'd	210/99	210/99	250/121
Lithium Sulfate	All	210/99	210/99	210/99
M				
Magnesium Bisulfite	All	210/99	210/99	210/99
Magnesium Carbonate	All	180/82	180/82	180/82

Chemical Properties	Maximum Recommended Temperature for CTech-LLC® VER™900 (°F/°C)			
	Conc. (%)	101	110	210
Magnesium Chloride	All	210/99	210/99	250/121
Magnesium Hydroxide	All	210/99	210/99	210/99
Magnesium Sulfate	Sat'd	210/99	210/99	250/121
MaleicAcid	All	180/82	180/82	210/99
Mercuric Chloride	All	210/99	210/99	210/99
Mercurous Chloride	All	210/99	210/99	210/99
Methacrylic Acid	25	100/38	100/38	120/49
Methylene Chloride	100	NR	NR	NR
Methyl Ethyl Ketone (MEK)	100	NR	NR	70/21
Methyl Isobutyl Oarbltol	100	NR	NR	NR
Methyllsobutyl Ketone (MIBK)	100	80/27	80/27	120/49
Methyl Methacrylate (MMA)		NR	NR	80/27
Methyl Styrene	100	80/27	80/27	120/49
Mineral Olls, Aliphatic	100	210/99	210/99	250/121
Molybdenum Disulfide	100	200/93	200/93	200/93
Monochloroacetic Acid	100	NR	NR	NR
Monoethanolamine	100	80/27	80/27	100/38
Motor Oil		210/99	210/99	250/121
Myristic Acid	100	210/99	210/99	250/121
N				
Naphtha	100	180/82	180/82	210/99
Naphthalene	100	210/99	210/99	210/99
Nickel Chloride	All	210/99	210/99	210/99
Nickel Nitrate	All	210/99	210/99	210/99
Nickel Plating 8% Lead 0.8% Fluoboric Acid 0.4% Boric Acid		180/82	180/82	180/82
Nickel Plating 11 % Nickel Sulfate 2% Nickel Chloride 1 % Boric Acid		180/82	180/82	180/82
Nickel Plating 44% Nickel Sulfate 4% Ammonium Chloride		180/82	180/82	180/82

Chemical Properties	Maximum Recommended Temperature for CTech-LLC® VER™900 (°F/°C)			
	Conc. (%)	101	110	210
4% Boric Acid				
Nickel Sultate	All	210/99	210/99	210/99
Nitric Acid	5	150/65	150/65	180/82
	20	120/49	120/49	150/65
	40	NR	NR	100/38
Nitric Acid Furnes		180/82	180/82	180/82
Nitrobenzene	100	NR	NR	100/38
O				
OAKITE Rust Stripper		180/82	180/82	180/82
Octanoic Acid	100	180/82	180/82	210/99
Oil, Sour Crude	100	210/99	210/99	250/120
Oil, Sweet Crude	100	210/99	210/99	250/120
OleicAcid	All	210/99		
Oleum (Fuming Sulturic)		NR	NR	NR
OliveOil	100	210/99		
OxalicAcid	Sat'd	120/49	120/49	120/49
P				
Palmitic Acid	100	210/99		
Peanut Oil	100	180/82		
Perchloroethylene	100	80/27	80/27	120/49
Perchloric Acid	10	150/65	150/65	150/65
	30	100/38	100/38	100/38
Peroxide Bleach 2% Sodium Peroxide 96% 0.025% Epsom Salts 5% Sodium Silicate 42°Be 1.4% Sulturic Acid 66°Be		210/99	210/99	210/99
Phenol	100	NR	NR	NR
Phenol Sultonic Acid	100	NR	NR	NR
Phosphoric Acid	All	210/99	210/99	220/104
Phosphoric Acid Fumes		210/99	210/99	250/121
Phosphorous Pentoxide	0-54	210/99	210/99	210/99
Phosphorous Trichloride	100	NR	NR	NR
Phthalic Acid	All	210/99	210/99	210/99

Chemical Properties	Maximum Recommended Temperature for CTech-LLC® VER™900 (°F/°C)			
	Conc. (%)	101	110	210
Pickling Acids, Sulfuric and Hydrochloric		210/99	210/99	210/99
Picric Acid, Alcohollc	10	NR	NR	100/38
Polyvinyl Acetate Latex (PVAC)	All	210/99	210/99	210/99
Polyvinyl Alcohol (PVA)	100	180/82	180/82	180/82
Polyvinyl Chloride Latex with 35 parts DOP		120/49	120/49	120/49
Potassium Aluminum Sulfate	Sat'd	210/99	210/99	250/121
Potassium Bicarbonate	All	180/82	180/82	180/82
Potassium Bromide	All	210/99	210/99	210/99
Potassium Oarborıate	50	180/82	180/82	150/65
Potassium Chloride	All	210/99	210/99	210/99
Potassium Dichromate	All	210/99	210/99	210/99
Potassium Ferricyanide	All	210/99	210/99	210/99
Potassium Ferrocyanide	All	210/99	210/99	210/99
Potassium Hydroxide	45	150/65	150/65	80/27
Potassium Nitrate	All	210/99	210/99	210/99
Potassium Permanganate	All	210/99	210/99	210/99
Potassium Persulfate	All	210/99	210/99	210/99
Potassium Sulfate	All	210/99	210/99	210/99
Propionic Acid	50	180/82	180/82	180/82
	100	NR	NR	100/38
Propylene Glycol	100	210/99	210/99	210/99
Pulp Paper Mill Effluent		180/82	180/82	180/82
Pyridine	100	NR	NR	NR
R				
Rayon Spin Bath			140/60	
S				
Salicylic Acid	All	160/70		
Sebacic Acid	All	210/99	210/99	210/99
Selenius Acid	All	210/99	210/99	210/99
Silver Nitrate	All	210/99	210/99	210/99
Silver Plating Solution 4% Silver Cyanide 7% Potassium Cyanide		180/82	180/82	180/82

Chemical Properties	Maximum Recommended Temperature for CTech-LLC® VER™900 (°F/°C)			
	Conc. (%)	101	110	210
5% Sodium Cyanide 2% Potassium Carbonate				
Soaps	All	210/99	210/99	210/99
Sodium Acetate	All	210/99	210/99	210/99
Sodium Alkyl Aryl Sulfonates	All	180/82	180/82	180/82
Sodium Aluminate	All	160/70	160/70	120/49
Sodium Benzoate	100	180/82	180/82	180/82
Sodium Bicarbonate	100	180/82	180/82	180/82
Sodium Bitluoride	All	120/49	120/49	120/49
Sodium Bisulfate	All	210/99	210/99	210/99
Sodium Bisulfite	Sat'd	210/99	210/99	210/99
Sodium Bromate	All	210/99	210/99	210/99
Sodium Bromide	All	210/99	210/99	210/99
Sodium Carbonate	All	180/82	180/82	150/65
Sodium Chlorate	All	210/99	210/99	210/99
Sodium Chloride	All	210/99	210/99	210/99
Sodium Chlorite, pH<6, Scrubber		170/77	170/77	
Sodium Chlorite,pH<6,Bleaching		180/82	196/91	199/93
Sodium Chlorite, pH>6	All	180/82	180/82	180/82
Sodium Chromate	All	210/99	210/99	210/99
Sodium Cyanide	All	210/99	210/99	210/99
Sodium Dichromate	All	210/99	210/99	210/99
Sodium Diphosphate	All	210/99	210/99	210/99
Sodium Ferricyanide	All	210/99	210/99	210/99
Sodium Ferrocyanide	All	210/99	210/99	210/99
Sodium Fluoride	All	180/82	180/82	180/82
Sodium Fluorosllicatet	All	120/49	120/49	120/49
Sodium Hexametaphosphates	All	180/82	180/82	180/82
Sodium Hydroxlde	5	180/82	180/82	100/38
	10	180/82	180/82	100/38
	25	180/82	180/82	100/38
	50	210/99	180/82	100/38
Sodium Hydrosulfide	All	180/82	180/82	180/82
Sodium Hypochlorite	0-5	150/65	150/65	120/49
	5-15	180/82	180/82	120/49
Sodium Lauryl Sulfate (SLS)	All	160/71	160/71	160/71

Chemical Properties	Maximum Recommended Temperature for CTech-LLC® VER™900 (°F/°C)			
	Conc. (%)	101	110	210
Sodium Mono-Phosphate	All	210/99	210/99	210/99
Sodium Nitrate	All	210/99	210/99	210/99
Sodium Nitrite	All	210/99	210/99	210/99
Sodium Persulfate	All	210/99	210/99	210/99
Sodium Silicate	All	210/99	210/99	210/99
Sodium Sulfate	All	210/99	210/99	210/99
Sodium Sulfide	All	210/99	210/99	210/99
Sodium Sulfite	All	210/99	210/99	210/99
Sodium Tetraborate	All	180/82	180/82	180/82
Sodium Thiocyanate	All	180/82	180/82	180/82
Sodium Thiosulfate	All	180/82	180/82	180/82
Sodium Tripolyphosphate	All	210/99	210/99	210/99
Sodium Xylene Sulfonate	All	160/71	160/71	160/71
Sorbitol Solutions	All	160/71	160/71	180/82
Sour Crude Oil	100	210/99	210/99	250/121
SoyaOil	All	210/99	210/99	210/99
Stannic Chloride	All	210/99	210/99	210/99
Stannous Chloride	All	210/99	210/99	210/99
Stearic Acid	All	210/99	210/99	210/99
Styrene[s]	100	NR	NR	120/49
Succinonitrile	All	80/27	80/27	100/38
Sugar, Seet and Cane Liquor	All	180/82		
Sugar, Sucrose	All	210/99		
Sulfamic Acid	25	150/65	150/65	150/65
Sulfanilic Acid	All	210/99	210/99	210/99
Sulfated Oetergents	All	160/70	160/70	180/82
Sulfur Oioxide, Wet S02		180/82	180/82	210/99
Sulfur Trioxide/Ory	Fumes	210/99	210/99	300/149
Sulfuric Acid	0-50	210/99	210/99	210/99
Sulfuric Acid	51-70	180/82	180/82	180/82
Sulfuric Acid	71-75	100/38	100/38	180/82
Sulfuric Acid	Over 75	NR	NR	NR
Sulfurous Acid	10	120/49	120/49	120/49
Superphosphoric Acid	105%	210/99	210/99	210/99
76% P_2O_5				

Chemical Properties	Maximum Recommended Temperature for CTech-LLC® VER™900 (°F/°C)			
	Conc. (%)	101	110	210
T				
Tall Oil		210/99	210/99	220/104
Tannic Acid	All	210/99	210/99	210/99
Tartaric Acid	All	210/99	210/99	210/99
Tetrachloroethylene	100	80/27	80/27	120/49
Tetrasodium Ethylene	All	180/82	180/82	150/65
Thioglycolic Acid	All	NR	NR	100/38
Thionyl Chloride	100	NR	NR	NR
Tin Fluoborate 18% Stannous Fluoborate 7% Tın 9% Fluoboric Acid 2% Boric Acid		210/99	210/99	210/99
Toluene	100	80/27	80/27	120/49
Toluene Sulfonic Acid (PTSA)	All	180/82	200/93	210/99
Transformer Oils				
Mineral Oll Types		210/99	230/110	300/149
Chloro-Phenyl Types		NR	NR	NR
Trichloroacetic Acid	50	100/38	100/38	100/38
Trlohloroethansv"	100	100/38	100/38	120/49
Trlohloroethylene"	100	NR	NR	NR
Trichloromonofluoromethane 1,5,6	100	80/27	80/27	100/38
Trichlorophenol"	100	NR	NR	NR
Tricresyl Phosphate (TCP)	100	160/71	160/71	160/71
Tridecylbenzene Sulfonate	All	210/99	210/99	210/99
Triethanolamine	100	120/49	120/49	150/65
Trimethylene Ohlorobromide"	100	NR	NR	100/38
Trisodium Phosphate	Sat'd	210/99	210/99	250/121
Turpentine	100	150/65	150/65	210/99
Tween Surfactant	All	210/99	210/99	210/99
U				
Urea	0-50	160/71	160/71	160/71

Chemical Properties	Maximum Recommended Temperature for CTech-LLC® VER™900 (°F/°C)			
	Conc. (%)	101	110	210
V				
Vegetable Oils		210/99	210/99	210/99
Vinegar		210/99	210/99	210/99
Vinyl Aoetate" VAC	100	NR	NR	NR
Vinyltoluene	100	80/27	80/27	120/49
W				
Water				
Delonized"	100	180/82	180/82	180/82
Distilled[4]		180/82	180/82	180/82
Sea		180/82	180/82	180/82
White Liquor (Pulp Mill)		180/82	180/82	100/38
X				
Xylene	100			
Z				
Zine Chlorate	Sat'd	210/99	210/99	250/121
Zine Nitrate	Sat'd	210/99	210/99	250/121
Zine Plating Solution 9% line Cyanide 4% Sodium Cyanide 9% Sodium Hydroxide		180/82	180/82	100/38
Zine Plating Solutlon 49% line Fluoborate 5% Ammonium Chloride 6% Ammonium Fluoroborate		200/93	200/93	200/93
line Sulfate	All	210/99	210/99	250/121