HLA/HLS Series Enclosures

Carlon® Himeline® HLA/HLS Series Enclosures are large Fiber Reinforced Polyester Cabinets ranging in sizes 20 x 20 x 17 to 50 x 40 x 17 and 20 x 20 x 12 to 50 x 40 x 12, respectively. They have operating temperatures of -50° to 150° C and can accommodate large devices and equipment for a wide range of applications including junction and terminal wiring boxes, instruments, and control housings. They are ideal for indoor/outdoor industrial, MRO and OEM applications, and offer superior strength and high resistance to corrosion, moisture, dust, oil and UV light, enabling them to withstand the harshest of environments.

The HLA/HLS Series Enclosures are fitted with a watertight gasket and are available in one-and two-door configurations. These cabinets have a closed top and bottom and the two-door version includes a central upright to maintain rigidity.

To maintain the watertight seal, the locking mechanism is positioned outside the gasketed area. A wide variety of accessories are available such as steel and nonmetallic back panels, self-positioning panel depth adjusters, and ventilator kits.

Carlon Enclosures…the ideal alternative to expensive stainless steel enclosures.

Features

- Fiber reinforced polyester.
- Temperature range of -58° to 302° F (-50° to 150° C).
- Indoor/outdoor applications.
- Superior strength.
- High resistance to harsh environments.
- Watertight gasket seal.
- One- and two-door configurations.
- Locking mechanism and hinge are outside gasketed area.
- Floor or wall mounted.

Applications

- Contain large devices and equipment.
- Junction and terminal wiring boxes.
- Instrument and control housings.

Standards

- IP 65 Rating (Single door versions only)
- 4/4X Rated (Single door versions only)
- UL Listed
- CSA Certified

Gross Automation (877) 268-3700 · www.carlonsales.com · sales@grossautomation.com

HLA/HLS Series Single and Double Hinged Cover Enclosures with Latches

c UL us LISTED E54381 LR96563

One Door NEMA Types 1, 2, 3, 3R, 4, 4X, 5, 12, 13

HLA One Door (17" Deep)

Part No.	Dimensions H	W	D	Std. Ctn. Qty.	Std. Ctn. Wt.
HLA2020	20	20	17	1	38.3
HLA2030	20	30	17	1	53.9
HLA3020	30	20	17	1	53.9
HLA3030	30	30	17	1	60.7
HLA4020	40	20	17	1	63.1
HLA4030	40	30	17	1	81.0
HLA5020	50	20	17	1	78.7
HLA5030	50	30	17	1	96.7

HLS One Door (12" Deep)

Part No.	Dimensions H	W	D	Std. Ctn. Qty.	Std. Ctn. Wt.
HLS2020	20	20	12	1	29.8
HLS2030	20	30	12	1	40.59
HLS3020	30	20	12	1	49.5
HLS3030	30	30	12	1	55.1
HLS4020	40	20	12	1	56.81
HLS4030	40	30	12	1	61.7
HLS5020	50	20	12	1	67.56
HLS5030	50	30	12	1	76.83

Two Door NEMA Types 1, 2, 12, 13

HLA Two Door (17" Deep)

Part No.	Dimensions H	W	D	Std. Ctn. Qty.	Std. Ctn. Wt.
HLA30402	30	40	17	1	81.0
HLA40402	40	40	17	1	114.7
HLA40502	40	50	17	1	135.0
HLA50402	50	40	17	1	135.0

HLS Two Door (12" Deep)

Part No.	Dimensions H	W	D	Std. Ctn. Qty.	Std. Ctn. Wt.
HLS30402	30	40	12	1	62.57
HLS40402	40	40	12	1	87.59
HLS40502	40	50	12	1	104.28
HLS50402	50	40	12	1	104.28

Accessories

Nonmetallic Thermosetting Plastic (Bakelite)

One Door

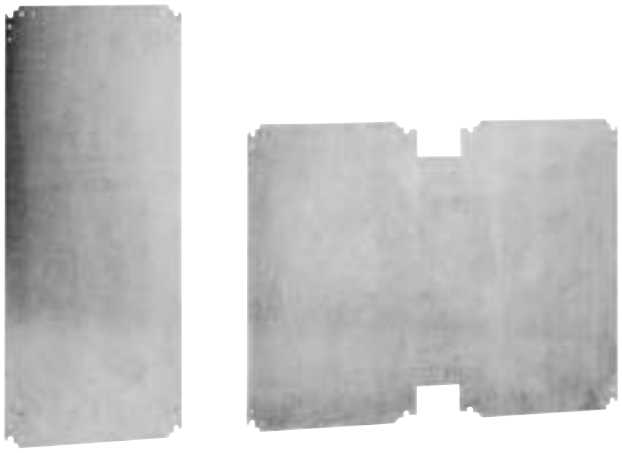
Part No.	Dimensions H	W	Std. Ctn. Qty.	Std. Ctn. Wt.
LP2020BP	15.4	14.8	1	2.1
LP3020BP*	25.2	14.8	1	3.0
LP3030BP	25.2	24.6	1	6.3
LP4020BP	35.0	14.8	1	5.2
LP4030BP	35.0	24.6	1	8.8
LP5020BP	44.3	14.8	1	6.7
LP5030BP	44.3	24.6	1	11.2

* Use Back Panel LP3020BP for Enclosures HLA2030, HLA3020, HLS2030 and HLS3020

Two Door

Part No.	Dimensions H	W	Std. Ctn. Qty.	Std. Ctn. Wt.
LP30402BP	25.2	34.4	1	8.8
LP40402BP	35.0	34.4	1	12.3
LP40502BP	35.0	44.3	1	16.1
LP50402BP	44.3	34.4	1	16.1

Metal – Galvanized Steel



One Door

Part No.	Dimensions H	W	Std. Ctn. Qty.	Std. Ctn. Wt.
LA2020BP	15.4	14.8	1	5.6
LA3020BP*	25.2	14.8	1	8.6
LA3030BP	25.2	24.6	1	17.6
LA4020BP	35.0	14.8	1	14.6
LA4030BP	35.0	24.6	1	24.3
LA5020BP	44.3	14.8	1	19.4
LA5030BP	44.3	24.6	1	31.9

* Use Back Panel LA3020BP for Enclosures HLA2030, HLA3020, HLS2030 and HLS3020

Two Door

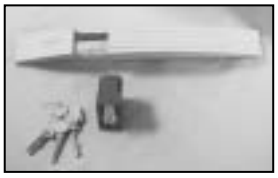
Part No.	Dimensions H	W	Std. Ctn. Qty.	Std. Ctn. Wt.
LA30402BP	25.2	34.4	1	24.1
LA40402BP	35.0	34.4	1	33.8
LA40502BP	35.0	44.3	1	43.4
LA50402BP	44.3	34.4	1	43.7

Accessories

Mounting Feet

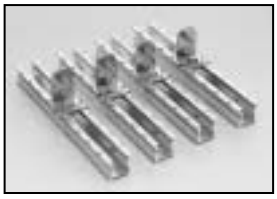
Part No.	Std. Ctn. Qty.	Std. Ctn. Wt. (lbs.)
HLAMFSS	1 ea. (set of 4)	.6

Replacement Handle with Cylinder Key Lock



Part No.	Std. Ctn. Qty.	Std. Ctn. Wt. (lbs.)
HLATEL	1 ea.	.41

Panel Adjuster Kit

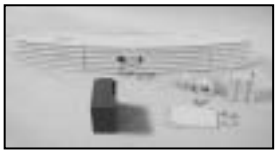


Part No.	Std. Ctn. Qty.	Std. Ctn. Wt. (lbs.)
HLABPA4	1 ea. (set of 4)	.31

Standard Replacement Bar Lock with Key

Part No.	Std. Ctn. Qty.	Std. Ctn. Wt. (lbs.)
HLATD	1 ea.	.21

Padlock Device

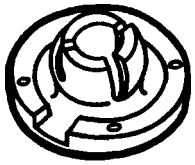


Part No.	Std. Ctn. Qty.	Std. Ctn. Wt. (lbs.)
HLAPAD	1 ea.	.61

Replacement Handle with Push Button

Part No.	Std. Ctn. Qty.	Std. Ctn. Wt. (lbs.)
HLAHAN	1	.40

Draining Device*



Part No.	Std. Ctn. Qty.
HPVEA9	1

For 3R Rating and condensation build-up.

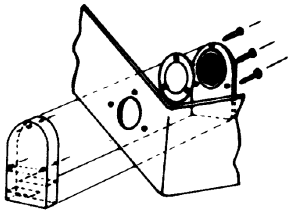
Air Vents*

Part No.	Style	Std. Ctn. Wt. (lbs.)
HPVM25	For fitting outside of all enclosures	1
HPVM35	For fitting inside of all enclosures	1

NEMA 1 Rated only.

*Factory installation available.

Enclosure Ventilator*



Part No.	Std. Ctn. Qty.
HVM27	1

Allows any size enclosure to breathe, yet remains watertight.

For All Enclosures

Painted JIC enclosure with painted back panel. Installed clear cover with handle and quick-release latch.

Color molded JIC unit with addition of window and pushbuttons.

Molded junction box painted with addition of mounted in-use weatherproof cover.

Painted JIC enclosure with pocket installed in cover for control pad.

Color Molded Enclosures

All Circuit Safe® enclosures can be molded in a variety of colors. Minimum quantities for single shipment or releases against blanket orders are required.

Painted/Silkscreened Enclosures

All enclosures can be painted, interior and exterior, or by special request. Enclosure covers can also be silkscreened on request.

EMI/RFI Protection

For applications where Radio Frequency Interference is a factor, the interior can be coated with an acrylic base paint with a nickel filler. Windows can be covered with fine copper mesh.

Other Modifications Available

Our factory is capable of modifying any of our enclosures to a customer's specifications. Factory's capabilities include:

- Precision milling of button holes, windows, and pockets for keypad installations.
- Hole tapping.
- Ventilators.
- Mounting bosses.
- Access windows.
- Hinged windows.
- Mounted in use weatherproof covers.
- Handles for portable units.
- Latches.
- Enclosure coolers.
- Cylinder locking systems.
- And more!

NEMA Types – Definitions Pertaining to Nonhazardous Locations

Enclosures for Electrical Equipment

An enclosure is a surrounding case constructed to provide protection from accidental contact with the enclosed equipment and to provide protection to the enclosed equipment from specified environmental conditions. A brief description of the more common types of enclosures used by the electrical industry follows.

Type 1 Enclosure: Intended for indoor use primarily to provide protection against contact with enclosed equipment and a degree of protection against falling dirt.

Type 2 Enclosure: Intended for indoor use primarily to provide a degree of protection against limited amounts of falling water and dirt.

Type 3 Enclosure: Intended for outdoor use primarily to provide a degree of protection against wind-blown dust, rain, sleet and external ice formation.

Type 3R Enclosure: Intended for outdoor use primarily to provide a degree of protection against falling rain, sleet and external ice formation.

Type 3S Enclosure: Intended for outdoor use primarily to provide a degree of protection against wind-blown dust, rain, and sleet, and to provide for operation of external mechanism when ice laden.

Type 3X Enclosure: Intended for outdoor use primarily to provide a degree of protection against wind-blown dust, rain, sleet, external ice formation, and corrosion.

Type 3SX Enclosure: Intended for outdoor use primarily to provide a degree of protection against wind-blown dust, rain, sleet, and corrosion,and to provide for operation of external mechanism when ice laden.

Type 4 Enclosure: Intended for indoor or outdoor use primarily to provide a degree of protection against wind-blown dust and rain, splashing water and hose-directed water.

Type 4X Enclosure: Intended for indoor or outdoor use primarily to provide a degree of protection against corrosion, wind-blown dust and rain, splashing water and hose-directed water.

Type 6 Enclosure: Intended for indoor or outdoor use primarily to avoid a degree of protection against contact with enclosed equipment, falling dirt, hose-directed water, entry of water during occasional temporary submersion at a limited depth and external ice formation.

Type 6P Enclosure: Intended for indoor or outdoor use primarily to provide a degree of protection against contact with enclosed equipment, falling dirt, hose-directed water, entry of water during prolonged submersion at a limited depth and external ice formation.

Type 12 Enclosure: Intended for indoor use primarily to provide a degree of protection against dust, falling dirt and dripping noncorrosive liquids.

Type 13 Enclosure: Intended for indoor use primarily to provide a degree of protection against dust, spraying of water, oil and noncorrosive coolant.

International Standards IP Protection Classification Data

The letters IP followed by three characteristic numbers symbolize the degree of protection.

First Digit

Protection Against Solid Bodies

IP	Test
0	No protection
1	Protection against solid bodies larger than 50 mm (for example accidentally touching with the hand)
2	Protection against solid bodies larger than 12 mm (for example a finger)
3	Protection against solid bodies larger than 2.5 mm (tools, wires)
4	Protection against solid bodies larger than 1 mm (tools, small wires)
5	Protection against dust (no harmful deposits)
6	Complete protection against dust

Second Digit

Protection Against Liquids

IP	Test
0	No protection
1	Protection against vertical water drops condensation
2	Protected against water drops at up to 15° from the vertical
3	Protected against rain at up to 60° from the vertical
4	Protected against water splashing from all directions
5	Protected against water sprayed from a hose from all directions
6	Protected against water projections similar to sea wave splashes
7	Protected against the effector immersion (15 cm mini, 1 m)
8	Protected against effects of prolonged immersion under pressure (...m)

Clearance Holes For Carflex® Fittings or PVC Male Terminal Adapters

Carflex Fittings & PVC Male Terminal Adapters Trade Sizes	Nominal Size (in.)	Actual Size (in.)	Actual Size (mm)
½	.875	.879	22.4
¾	1.093	1.107	28.2
1	1.344	1.357	34.6
1 ¼	1.813	1.699	43.2
1 ½	1.938	1.949	49.6
2	2.375	2.413	61.5
2 ½	2.875	2.914	74.0
3	3.5	3.539	89.8
3 ½	4	4.044	102.7
4	4.5	4.544	115.4
5	5.625	5.675	143.7

Engineering Properties Of Enclosures

Property	Test Method	Opaque Polycarbonate Covers & Boxes	Clear Polycarbonate Cover	FRP
Thermal And Mechanical				
Temperature Range (°F)	-	-30° to 230°	-30° to 230°	-58° to 320°
Specific Gravity (oz./in^3)	ASTM D792	1.20	1.20	1.79
Thermal Conductivity (BTU•in/hr•ft^2•°F)	ASTM D177	1.35	1.35	1.68
Heat Deflection Temperature @ 264 PSI (°F)	ASTM D648	265	260	392
Tensile Strength (PSI)	ASTM D638	8,800	9,000	13,000
Flexural Strength (PSI)	ASTM D790	13,500	14,000	19,000
Compressive Strength @ 10% Deformation (PSI)	ASTM D695	12,500	12,500	24,000
Impact Strength IZOD Notched (ft.lbs./in.)	ASTM D256	12	12	12
Water Absorption – 24 hrs. @ 73°F (%)	ASTM D570	0.15	0.15	0.17
Electrical				
Dielectric Strength (VOLTS/MIL.)	ASTM D149	380	380	467
Dielectric Constant	ASTM D150			
60 Hz		3.0	3.0	-
100 Hz		-	-	-
106		2.96	2.96	-
Volume Resistivity @ 73°F (OHM-CM)	ASTM D257	>10^{16}	>10^{16}	2.0 x 10^{15}
Arc Resistance (SEC)	ASTM D495	120	120	200+

Chemical Resistance Data

Environmental Resistance Table: ***E–Excellent, G–Good, L–Limited, U–Unsatisfactory***

IMPORTANT: These environmental resistance ratings are based upon tests where the specimens were placed in complete submergence in the reagent listed. Ratings listed in this chart apply to a 48-Hour exposure period. **(The information in this chart is to be used ONLY as a guide in selecting equipment for appropriate chemical compatibility. Before permanent installation, test the equipment with the chemicals and under the specific conditions of your application.)**

Chemical	PVC Himeline HE - Opaque Cover w/Base	Polycarbonate Circuit Safe NEMA Circuit Safe JIC Himeline HE - Clear Cover w/Base Himeline HS - Opaque w/Clear Lids	FRP (Fiberglass Reinforced Polyester) Himeline HS - Bases Himeline HP Himeline HLA/HLS Himeline HLP	Noryl Circuit Safe Medium JIC
Acetaldehyde	U	L	-	-
Acetamide	U	U	-	-
Acetate Solvent	U	-	-	U
Acetic Acid	U	G	E	E
Acetic Acid 20%	U	E	E	E
Acetic Acid 80%	L	G	E	E
Acetic Acid, Glacial	U	G	E	E
Acetic Anhydride	U	U	E	U
Acetone	U	U	U	U
Acetyl Bromide	U	-	-	-
Acetyl Chloride (dry)	L	U	-	U
Acetylene	E	U	-	-
Acrylonitrile	G	U	-	-
Adipic Acid	E	-	-	-
Alcohols:Amyl	E	G	-	L
Alcohols:Benzyl	U	-	-	U
Alcohols:Butyl	E	E	-	E
Alcohols:Diacetone	G	-	-	E
Alcohols:Ethyl	L	G	-	E
Alcohols:Hexyl	E	-	-	E
Alcohols:Isobutyl	E	-	-	E
Alcohols:Isopropyl	E	E	-	E
Alcohols:Methyl	E	G	-	E
Alcohols:Octyl	-	-	-	E
Alcohols:Propyl	E	-	-	E
Aluminum Chloride	E	E	E	E
Aluminum Chloride 20%	E	E	-	E
Aluminum Fluoride	E	-	-	E
Aluminum Hydroxide	E	G	-	E
Aluminum Nitrate	G	E	-	-
Aluminum Potassium Sulfate 10%	E	E	-	E
Aluminum Potassium Sulfate 100%	E	E	-	E
Aluminum Sulfate	E	E	E	E
Amines	U	U	-	U
Ammonia 10%	G	U	-	E
Ammonia Nitrate	G	-	-	E
Ammonia, anhydrous	E	U	-	G
Ammonia, liquid	E	U	L	-
Ammonium Acetate	E	-	-	-
Ammonium Bifluoride	E	-	-	E
Ammonium Carbonate	E	-	L	E
Ammonium Caseinate	-	-	-	E
Ammonium Chloride	E	E	E	E
Ammonium Hydroxide	E	U	L	E
Ammonium Nitrate	E	-	L	E
Ammonium Oxalate	E	E	-	-
Ammonium Persulfate	E	-	-	E
Ammonium Phosphate, Dibasic	E	E	-	E
Ammonium Phosphate, Monobasic	E	-	-	E
Ammonium Phosphate, Tribasic	E	-	-	E
Ammonium Sulfate	E	E	E	E
Ammonium Sulfite	E	-	E	E
Amyl Acetate	U	U	L	U
Amyl Alcohol	E	G	L	L
Amyl Chloride	U	-	U	U
Aniline	L	U	U	U
Aniline Hydrochloride	G	U	-	-
Antifreeze	E	-	-	E
Antimony Trichloride	E	E	E	E
Aqua Regia (80% HCl, 20% HNO3)	L	U	-	U

Chemical	PVC Himeline HE - Opaque Cover w/Base	Polycarbonate Circuit Safe NEMA Circuit Safe JIC Himeline HE - Clear Cover w/Base Himeline HS - Opaque w/Clear Lids	FRP (Fiberglass Reinforced Polyester) Himeline HS - Bases Himeline HP Himeline HLA/HLS Himeline HLP	Noryl Circuit Safe Medium JIC
Aromatic Hydrocarbons	U	-	-	U
Arsenic Acid	E	E	-	E
Arsenic Salts	E	-	-	-
Asphalt	E	U	-	-
Barium Carbonate	E	E	E	E
Barium Chloride	E	E	E	E
Barium Cyanide	U	-	-	-
Barium Hydroxide	E	U	U	E
Barium Nitrate	E	U	-	E
Barium Sulfate	G	U	E	E
Barium Sulfide	E	-	E	E
Beer	E	E	-	E
Beet Sugar Liquids	E	-	-	E
Benzaldehyde	U	U	U	G
Benzene	L	U	L	U
Benzene Sulfonic Acid	E	U	E	E
Benzoic Acid	E	G	-	G
Benzol	-	U	-	G
Benzonitrile	-	E	-	-
Benzyl Chloride	-	-	-	U
Bleaching Liquors	E	-	-	-
Borax (Sodium Borate)	E	-	-	E
Boric Acid	E	-	E	E
Bromine	L	L	-	E
Butadiene	L	U	-	U
Butane	L	U	-	U
Butanol (Butyl Alcohol)	L	G	-	E
Butyl Amine	U	U	-	U
Butyl Ether	E	-	-	U
Butyl Phthalate	-	U	-	E
Butylacetate	U	U	U	G
Butylene	E	U	-	-
Butyric Acid	G	U	-	U
Calcium Bisulfate	-	U	-	-
Calcium Bisulfide	E	-	-	E
Calcium Bisulfite	G	U	-	E
Calcium Carbonate	E	L	E	E
Calcium Chlorate	G	-	E	-
Calcium Chloride	L	-	E	E
Calcium Hydroxide	G	U	U	E
Calcium Hypochlorite	G	U	L	E
Calcium Nitrate	E	E	E	E
Calcium Oxide	G	-	-	E
Calcium Sulfate	G	E	E	E
Calgon	-	-	-	E
Cane Juice	E	-	-	-
Carbolic Acid (Phenol)	U	U	-	U
Carbon Bisulfide	U	-	L	-
Carbon Dioxide (dry)	E	-	-	E
Carbon Dioxide (wet)	E	-	-	E
Carbon Disulfide	U	U	-	U
Carbon Monoxide	E	-	-	E
Carbon Tetrachloride	U	U	E	U
Carbon Tetrachloride (dry)	-	-	-	U
Carbon Tetrachloride (wet)	-	-	-	U
Carbonated Water	E	-	-	E
Carbonic Acid	E	E	-	E
Catsup	E	-	-	E
Chloric Acid	E	-	-	U
Chlorine (dry)	U	-	-	G

Chemical Resistance Data

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Chlorine Water	E	-	E	L
Chlorine, Anhydrous Liquid	U	L	-	G
Chloroacetic Acid	G	U	-	-
Chlorobenzene (Mono)	U	U	U	U
Chlorobromomethane	U	-	-	-
Chloroform	U	U	-	U
Chlorosulfonic Acid	U	L	-	U
Chocolate Syrup	-	E	-	E
Chromic Acid 10%	E	G	E	E
Chromic Acid 30%	E	L	-	U
Chromic Acid 5%	E	G	-	E
Chromic Acid 50%	U	U	-	U
Chromium Salts	E	-	-	-
Citric Acid	G	E	E	E
Citric Oils	-	-	-	E
Clorox® (Bleach)	E	-	-	E
Copper Chloride	E	-	-	E
Copper Cyanide	E	U	-	E
Copper Fluoborate	E	-	-	-
Copper Nitrate	E	U	-	E
Copper Sulfate >5%	E	E	-	E
Copper Sulfate 5%	E	E	-	E
Cresols	U	U	U	U
Cresylic Acid	U	U	-	-
Cupric Acid	E	E	-	E
Cyclohexane	U	G	-	U
Cyclohexanone	U	U	-	U
Detergents	E	E	-	E
Diacetone Alcohol	U	U	-	-
Dichlorobenzene	U	U	-	-
Dichloroethane	U	U	-	E
Diesel Fuel	E	E	-	U
Diethyl Ether	U	U	-	-
Diethylamine	U	U	-	-
Diethylene Glycol	L	G	-	E
Dimethyl Aniline	U	U	U	U
Dimethyl Formamide	U	U	-	U
Diphenyl Oxide	U	-	-	-
Dyes	G	-	-	E
Epsom Salts (Magnesium Sulfate)	E	E	-	E
Ethane	E	-	-	-
Ethanol	L	G	-	E
Ethanolamine	U	-	-	E
Ether	U	-	L	U
Ethyl Acetate	U	U	L	E
Ethyl Benzoate	U	U	-	E
Ethyl Chloride	U	U	L	U
Ethyl Ether	U	-	U	U
Ethylene Bromide	U	U	-	-
Ethylene Chloride	U	U	-	U
Ethylene Chlorohydrin	U	U	E	-
Ethylene Diamine	U	E	-	U
Ethylene Dichloride	U	U	U	U
Ethylene Glycol	E	G	E	E
Ethylene Oxide	U	L	-	E
Fatty Acids	E	G	-	E
Ferric Chloride	E	E	E	E
Ferric Nitrate	E	E	E	E
Ferric Sulfate	E	E	E	E
Ferrous Chloride	E	U	E	E

Chemical	PVC Himeline HE - Opaque Cover w/Base	Polycarbonate Circuit Safe NEMA Circuit Safe JIC Himeline HE - Clear Cover w/Base Himeline HS - Opaque w/Clear Lids	FRP (Fiberglass Reinforced Polyester) Himeline HS - Bases Himeline HP Himeline HLA/HLS Himeline HLP	Noryl Circuit Safe Medium JIC
Ferrous Sulfate	E	E	E	E
Fluoboric Acid	E	-	-	E
Fluorine	U	L	-	-
Fluosilicic Acid	U	E	-	E
Formaldehyde 100%	E	E	-	E
Formaldehyde 40%	E	E	E	E
Formic Acid	E	E	L	E
Freon 113	G	G	-	U
Freon 12	E	-	-	U
Freon 22	E	-	-	G
Freon TF	G	-	-	-
Freon® 11	E	-	-	G
Fuel Oils	E	G	-	G
Furan Resin	E	-	-	-
Furfural	U	U	L	U
Gallic Acid	G	-	-	E
Gasoline (high-aromatic)	E	E	-	G
Gasoline, leaded, ref.	G	E	E	G
Gasoline, unleaded	L	E	-	U
Gelatin	G	-	-	E
Glucose	E	E	E	E
Glue, P.V.A.	L	-	-	-
Glycerin	E	E	E	E
Glycolic Acid	G	-	-	-
Grease	E	-	-	-
Heptane	L	G	E	G
Hexane	G	U	U	G
Hydraulic Oil (Petro)	E	-	-	-
Hydraulic Oil (Synthetic)	E	-	-	-
Hydrazine	-	U	-	-
Hydrobromic Acid 100%	E	-	-	G
Hydrobromic Acid 20%	G	-	-	G
Hydrochloric Acid 100%	U	U	-	E
Hydrochloric Acid 20%	E	G	E	E
Hydrochloric Acid 37%	G	U	L	E
Hydrochloric Acid, Dry Gas	E	-	-	E
Hydrocyanic Acid	G	-	-	E
Hydrocyanic Acid (Gas 10%)	E	G	-	L
Hydrofluoric Acid 100%	L	U	-	U
Hydrofluoric Acid 20%	G	U	-	L
Hydrofluoric Acid 50%	G	U	-	U
Hydrofluoric Acid 75%	L	U	-	U
Hydrofluosilicic Acid 100%	G	-	-	G
Hydrofluosilicic Acid 20%	E	-	-	G
Hydrogen Gas	E	E	-	E
Hydrogen Peroxide 10%	E	E	-	E
Hydrogen Peroxide 100%	E	E	-	E
Hydrogen Peroxide 30%	E	E	E	E
Hydrogen Peroxide 50%	E	E	E	-
Hydrogen Sulfide (aqua)	G	E	-	E
Hydrogen Sulfide (dry)	E	-	-	-
Hydroquinone	G	-	-	-
Hydroxyacetic Acid 70%	U	-	-	-
Ink	L	-	-	-
Iodine	E	-	-	L
Iodine (in alcohol)	E	-	-	-
Iodoform	E	-	-	-
Isooctane	E	G	-	U
Isopropyl Acetate	U	U	-	-
Isopropyl Ether	G	U	-	-

Chemical Resistance Data

Environmental Resistance Table: ***E–Excellent, G–Good, L–Limited, U–Unsatisfactory***

IMPORTANT: These environmental resistance ratings are based upon tests where the specimens were placed in complete submergence in the reagent listed. Ratings listed in this chart apply to a 48-Hour exposure period. **(The information in this chart is to be used ONLY as a guide in selecting equipment for appropriate chemical compatibility. Before permanent installation, test the equipment with the chemicals and under the specific conditions of your application.)**

Chemical	**PVC** Himeline HE - Opaque Cover w/Base	**Polycarbonate** Circuit Safe NEMA Circuit Safe JIC Himeline HE - Clear Cover w/Base Himeline HS - Opaque w/Clear Lids	**FRP** (Fiberglass Reinforced Polyester) Himeline HS - Bases Himeline HP Himeline HLA/HLS Himeline HLP	**Noryl** Circuit Safe Medium JIC
Isotane	E	-	-	-
Jet Fuel (JP3, JP4, JP5)	L	E	-	U
Kerosene	E	U	-	U
Ketones	U	U	-	U
Lacquer Thinners	U	G	-	U
Lacquers	U	U	-	U
Lactic Acid	G	G	E	E
Lard	E	E	-	E
Lead Acetate	G	-	-	E
Lead Nitrate	E	-	-	E
Lead Sulfamate	G	E	-	-
Lime	G	-	-	-
Linoleic Acid	E	-	-	-
Lithium Chloride	U	G	-	-
Lithium Hydroxide	-	U	-	-
Lubricants	G	E	-	L
Lye: Ca(OH)2 Calcium Hydroxide	G	U	-	E
Lye: KOH Potassium Hydroxide	G	U	-	E
Lye: NaOH Sodium Hydroxide	E	U	-	E
Magnesium Bisulfate	E	E	-	-
Magnesium Carbonate	G	E	E	E
Magnesium Chloride	G	E	E	E
Magnesium Hydroxide	E	E	G	E
Magnesium Nitrate	E	E	-	E
Magnesium Oxide	-	-	-	-
Magnesium Sulfate (Epsom Salts)	E	E	E	E
Maleic Acid	E	-	-	E
Malic Acid	E	-	-	-
Manganese Sulfate	L	E	-	E
Mayonnaise	U	-	-	-
Melamine	U	-	-	-
Mercuric Chloride (dilute)	E	E	-	E
Mercuric Cyanide	E	-	-	-
Mercurous Nitrate	E	E	-	E
Mercury	E	U	-	E
Methane	G	-	-	-
Methanol (Methyl Alcohol)	E	G	L	E
Methyl Acetate	U	U	-	-
Methyl Acetone	U	-	-	-
Methyl Alcohol 10%	E	G	-	E
Methyl Bromide	U	-	-	-
Methyl Butyl Ketone	E	U	-	-
Methyl Cellosolve	U	U	-	-
Methyl Chloride	U	U	-	U
Methyl Dichloride	E	-	-	-
Methyl Ethyl Ketone	U	U	E	U
Methyl Isobutyl Ketone	U	U	-	U
Methyl Isopropyl Ketone	U	U	-	U
Methyl Methacrylate	E	-	-	-
Methylamine	U	-	-	-
Methylene Chloride	U	U	U	U
Mineral Spirits	E	L	-	E
Monochloroacetic acid	-	U	-	-
Monoethanolamine	U	-	-	E
Morpholine	-	U	-	U
Motor oil	G	E	-	E
Naphtha	E	G	E	U
Naphthalene	U	-	-	U
Natural Gas	E	-	-	-
Nickel Chloride	E	E	-	E

Chemical	**PVC** Himeline HE - Opaque Cover w/Base	**Polycarbonate** Circuit Safe NEMA Circuit Safe JIC Himeline HE - Clear Cover w/Base Himeline HS - Opaque w/Clear Lids	**FRP** (Fiberglass Reinforced Polyester) Himeline HS - Bases Himeline HP Himeline HLA/HLS Himeline HLP	**Noryl** Circuit Safe Medium JIC
Nickel Nitrate	E	U	-	E
Nickel Sulfate	E	E	-	E
Nitrating Acid (<15% HNO3)	U	-	-	-
Nitrating Acid (>15% H2SO4)	U	-	-	-
Nitrating Acid (_1% Acid)	U	-	-	-
Nitrating Acid (_15% H2SO4)	U	-	-	-
Nitric Acid (20%)	E	G	G	G
Nitric Acid (50%)	G	G	-	G
Nitric Acid (5-10%)	E	E	-	E
Nitric Acid (Concentrated)	G	L	-	G
Nitrobenzene	U	U	L	U
Nitromethane	G	U	-	U
Nitrous Acid	E	-	-	-
Nitrous Oxide	E	-	-	-
Oils:Aniline	U	-	-	U
Oils:Citric	G	E	-	E
Oils:Creosote	L	-	-	U
Oils:Diesel Fuel (20, 30, 40, 50)	G	-	-	U
Oils:Fuel (1, 2, 3, 5A, 5B, 6)	E	G	-	E
Oils:Hydraulic Oil (Petro)	E	-	-	-
Oils:Hydraulic Oil (Synthetic)	E	-	-	-
Oils:Mineral	G	G	-	E
Oils:Olive	L	E	-	E
Oils:Orange	L	L	-	-
Oils:Pine	U	E	-	-
Oils:Rosin	L	-	-	-
Oils:Silicone	E	-	-	E
Oils:Transformer	G	-	-	-
Oils:Turbine	E	-	-	-
Oleic Acid	L	-	E	E
Oleum 100%	U	-	-	E
Oleum 25%	U	-	-	-
Oxalic Acid (cold)	G	-	E	E
Ozone	G	E	-	-
Palmitic Acid	G	-	-	-
Paraffin	G	E	-	E
Pentane	E	E	-	-
Perchloric Acid	L	-	-	-
Perchloroethylene	L	U	-	U
Petrolatum	G	-	-	-
Petroleum	-	-	-	U
Phenol (10%)	L	G	L	U
Phenol (Carbolic Acid)	U	U	-	U
Phosphoric Acid (>40%)	G	E	-	E
Phosphoric Acid (crude)	G	E	-	E
Phosphoric Acid (molten)	U	-	-	-
Phosphoric Acid (_40%)	G	E	-	E
Phosphoric Acid Anhydride	-	U	-	-
Phosphorus	E	-	-	-
Phosphorus Trichloride	U	L	-	-
Photographic Developer	E	E	-	E
Photographic Solutions	E	E	-	E
Phthalic Anhydride	U	E	-	-
Picric Acid	U	U	-	-
Potash (Potassium Carbonate)	E	-	L	E
Potassium Bicarbonate	E	-	-	E
Potassium Bromide	E	E	-	E
Potassium Chlorate	E	E	-	E
Potassium Chloride	E	E	E	E
Potassium Chromate	E	-	E	E

Chemical Resistance Data

Environmental Resistance Table: *E–Excellent, G–Good, L–Limited, U–Unsatisfactory*

IMPORTANT: These environmental resistance ratings are based upon tests where the specimens were placed in complete submergence in the reagent listed. Ratings listed in this chart apply to a 48-Hour exposure period. **(The information in this chart is to be used ONLY as a guide in selecting equipment for appropriate chemical compatibility. Before permanent installation, test the equipment with the chemicals and under the specific conditions of your application.)**

Chemical	**PVC** Himeline HE - Opaque Cover w/Base	**Polycarbonate** Circuit Safe NEMA Circuit Safe JIC Himeline HE - Clear Cover w/Base Himeline HS - Opaque w/Clear Lids	**FRP** (Fiberglass Reinforced Polyester) Himeline HS - Bases Himeline HP Himeline HLA/HLS Himeline HLP	**Noryl** Circuit Safe Medium JIC
Potassium Cyanide Solutions	E	-	-	E
Potassium Dichromate	E	E	-	E
Potassium Ferricyanide	E	-	E	E
Potassium Ferrocyanide	E	-	E	E
Potassium Hydroxide (Caustic Potash)	E	U	L	E
Potassium Hypochlorite	G	-	-	-
Potassium Iodide	E	-	-	-
Potassium Nitrate	E	E	E	E
Potassium Oxalate	-	-	-	-
Potassium Permanganate	E	E	E	E
Potassium Sulfate	E	E	E	E
Potassium Sulfide	E	-	-	E
Propane (liquefied)	E	L	-	E
Propylene	G	-	-	-
Propylene Glycol	L	G	-	-
Pyridine	U	U	-	G
Pyrogallic Acid	E	-	-	-
Resorcinal	L	G	-	-
Rosins	L	-	-	-
Salicylic Acid	G	E	-	-
Salt Brine (NaCl saturated)	E	E	-	E
Sea Water	E	E	-	E
Silicone	E	E	-	E
Silver Bromide	-	-	-	E
Silver Nitrate	E	E	-	E
Soap Solutions	E	E	-	E
Soda Ash (see Sodium Carbonate)	E	E	-	E
Sodium Acetate	G	E	E	E
Sodium Aluminate	-	-	-	E
Sodium Benzoate	G	E	-	-
Sodium Bicarbonate	E	E	E	E
Sodium Bisulfate	E	E	-	E
Sodium Bisulfite	E	E	-	E
Sodium Borate (Borax)	E	E	-	E
Sodium Bromide	G	-	E	E
Sodium Carbonate	E	E	-	E
Sodium Chlorate	E	E	E	E
Sodium Chloride	E	E	E	E
Sodium Chromate	-	E	-	E
Sodium Cyanide	E	-	-	E
Sodium Ferrocyanide	E	-	E	E
Sodium Fluoride	E	-	-	E
Sodium Hydrosulfite	L	-	-	-
Sodium Hydroxide (20%)	E	E	U	E
Sodium Hydroxide (50%)	E	U	U	E
Sodium Hydroxide (80%)	E	U	U	E
Sodium Hypochlorite (<20%)	E	L	L	E
Sodium Hypochlorite (100%)	G	-	-	E
Sodium Metaphosphate	E	-	-	-
Sodium Metasilicate	E	-	-	-
Sodium Nitrate	E	-	U	E
Sodium Perborate	E	-	-	E
Sodium Peroxide	G	E	-	-
Sodium Polyphosphate	E	-	-	E
Sodium Silicate	E	-	-	E
Sodium Sulfate	E	E	E	E
Sodium Sulfide	E	U	U	E
Sodium Sulfite	E	-	E	E
Sodium Tetraborate	E	-	-	E
Sodium Thiosulfate (hypo)	E	U	-	E

Chemical	**PVC** Himeline HE - Opaque Cover w/Base	**Polycarbonate** Circuit Safe NEMA Circuit Safe JIC Himeline HE - Clear Cover w/Base Himeline HS - Opaque w/Clear Lids	**FRP** (Fiberglass Reinforced Polyester) Himeline HS - Bases Himeline HP Himeline HLA/HLS Himeline HLP	**Noryl** Circuit Safe Medium JIC
Stannic Chloride	E	E	-	E
Stannic Fluoborate	-	-	-	E
Stannous Chloride	E	-	-	E
Stearic Acid	G	E	-	E
Stoddard Solvent	L	E	-	U
Styrene	U	U	-	E
Sulfate (Liquors)	G	-	-	-
Sulfur Chloride	L	-	-	E
Sulfur Dioxide	E	-	-	E
Sulfur Dioxide (dry)	E	E	-	E
Sulfur Hexafluoride	G	-	-	-
Sulfur Trioxide	E	-	-	U
Sulfur Trioxide (dry)	E	-	-	U
Sulfuric Acid (<10%)	E	E	E	E
Sulfuric Acid (10-75%)	E	G	U	E
Sulfuric Acid (75-100%)	U	U	-	E
Sulfuric Acid (cold concentrated)	U	-	-	E
Sulfuric Acid (hot concentrated)	U	U	-	U
Sulfurous Acid	E	-	-	E
Tallow	-	-	-	E
Tannic Acid	E	L	-	E
Tanning Liquors	E	-	-	E
Tartaric Acid	E	-	E	E
Tetrachloroethane	L	-	-	U
Tetrachloroethylene	U	U	-	U
Tetrahydrofuran	U	U	L	U
Tin Salts	E	-	-	-
Toluene (Toluol)	U	U	-	U
Trichloroacetic Acid	G	U	-	-
Trichloroethane	L	U	-	U
Trichloroethylene	U	-	U	U
Trichloropropane	-	-	-	U
Tricresylphosphate	U	-	-	E
Triethylamine	G	-	-	G
Trisodium Phosphate	E	-	-	E
Turpentine	U	U	E	U
Urea	U	U	L	E
Uric Acid	E	-	-	-
Varnish	U	-	-	U
Vinegar	G	E	E	E
Vinyl Acetate	U	-	-	-
Vinyl Chloride	U	-	-	-
Water, Acid, Mine	G	G	-	-
Water, Deionized	E	-	-	E
Water, Distilled	E	E	-	E
Water, Fresh	G	E	-	E
Water, Salt	G	E	-	E
Whiskey & Wines	E	E	-	E
White Liquor (Pulp Mill)	E	-	-	E
White Water (Paper Mill)	E	-	-	U
Xylene	U	U	E	G
Zinc Chloride	G	E	E	E
Zinc Hydrosulfite	-	-	-	E
Zinc Sulfate	E	E	E	E