
ChemLINE®
High Performance Coatings

ChemLINE® 784 Powered by GRIDLOCK® TECHNOLOGY

Advanced Polymer Coatings® is proud to bring you our Gridlock Technology™, one of the most groundbreaking discoveries in coating history.

Powered by Gridlock, ChemLINE® outperforms conventional tank lining technologies doubling, and even tripling the service life of our ChemLINE® Coating System providing superior chemical resistance, unmatched permeability protection, and strong abrasion and impact resistance.

These characteristics not only afford a reduction in the overall cost of ownership but a dramatic decrease in the maintenance of your tank lining system, further proving ChemLINE® is truly a one-of-a-kind product in the marketplace.

Gridlock provides 4-7 times more reactive sites per polymer versus the competition to generate the level of crosslinks that drive superior performance characteristics. By utilizing Gridlock Technology™, ChemLINE® can achieve up to 784 crosslinks compared to only four crosslinks in a traditional bi-functional epoxy.

With a low-to-moderate crosslink density, Novolac/Phenolic epoxies are susceptible to penetration from aggressive chemicals, which eventually will reach the substrate causing lining failure.

Functionality

=

Crosslinking

=

Density

=

Industry Leading Chemical Resistance

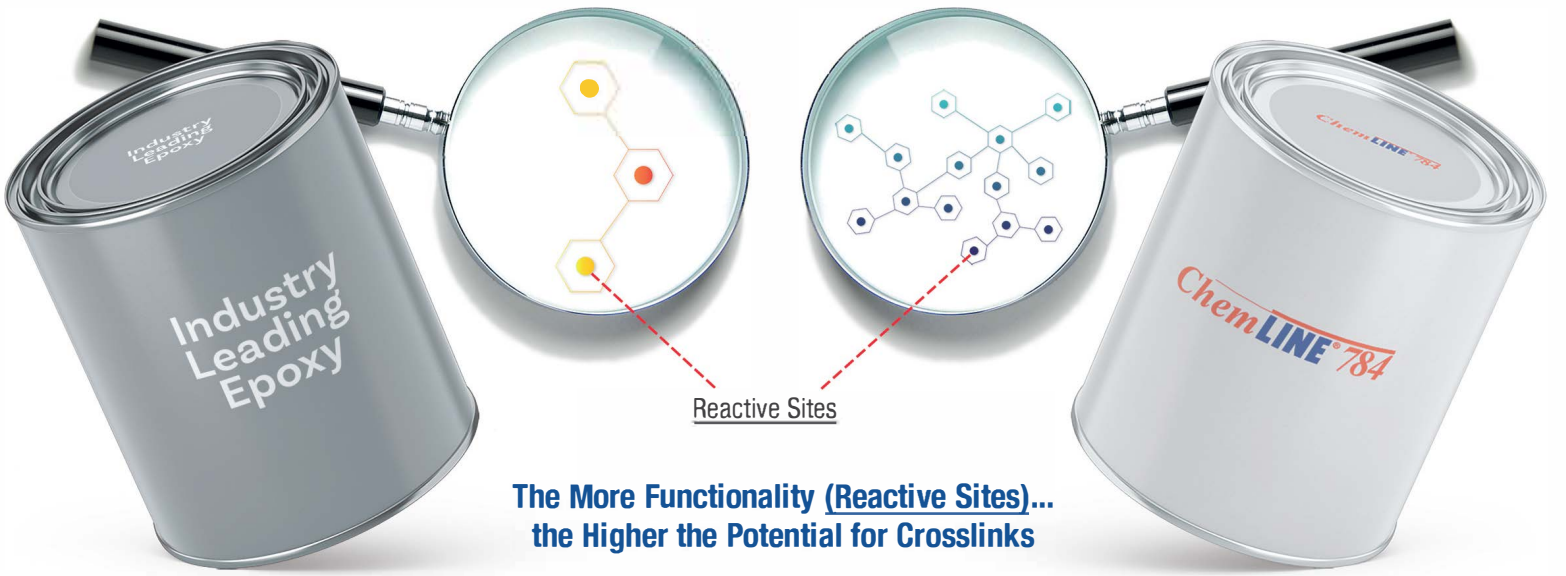
ChemLINE® 784 powered by GRIDLOCK® TECHNOLOGY

Functionality

Figure 1. Polymer vs. Polymer

The Novolac Epoxy Polymer and APC's Proprietary Polymer in a normal, un-heat-cured state. **Notice** the number of reactive sites each polymer contains. The depiction below represents a traditional Novolac/Phenolic Epoxy Polymer, compared to APC's Gridlock Technology™-driven, high functionality polymer that provides our ChemLINE® Coating System with unmatched chemical resistance.

Novolac Epoxy Polymer | **APC's Proprietary Gridlock Polymer**



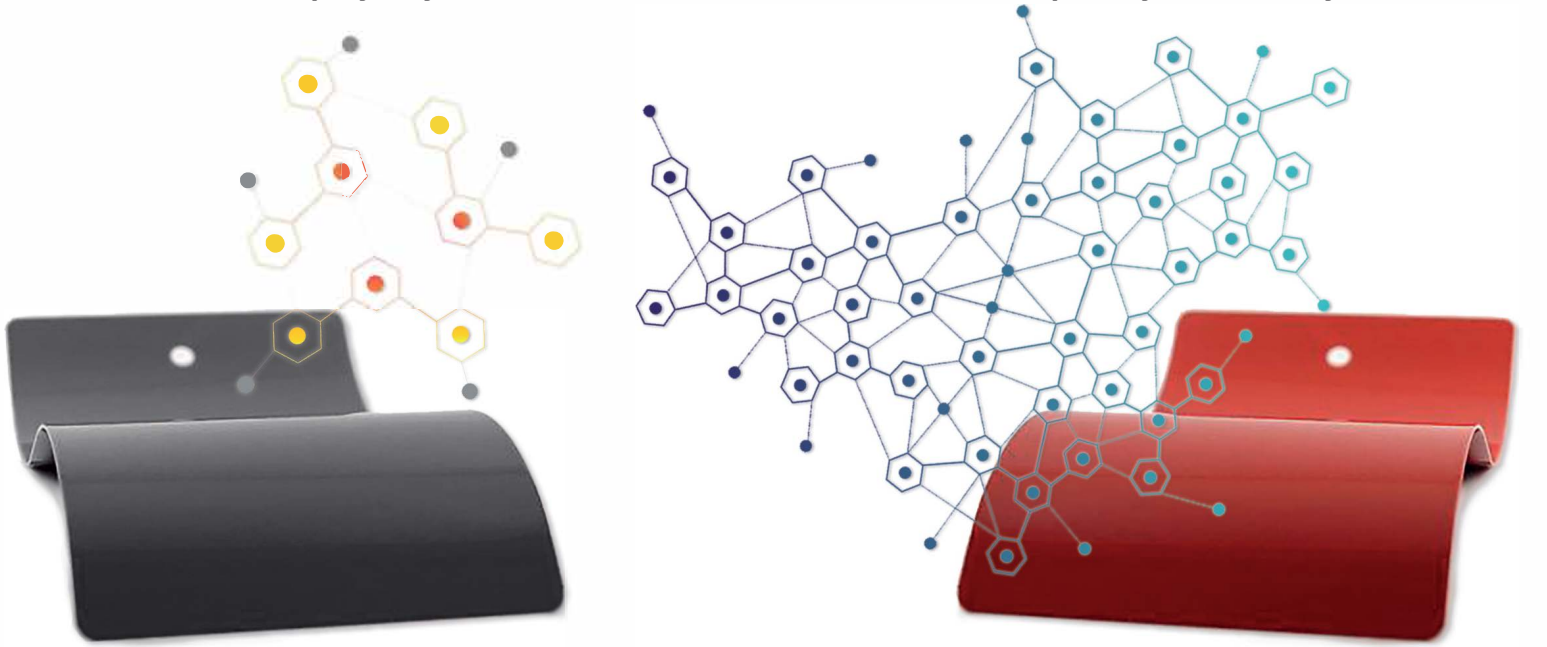
The More Functionality (Reactive Sites)... the Higher the Potential for Crosslinks

Crosslinking

Figure 2. After the Coating is Applied, the Crosslinking Begins...

The Novolac Epoxy binds with curatives, creating the structure on the left achieving low crosslink density, leaving it open to chemical attack. APC's Gridlock Technology™ seeks out lower molecular weight reactive components and curatives to form the structure shown on the right achieving the industry's highest crosslink density and closed screen structure which is impermeable to chemical attack.

Novolac Epoxy Polymer | **APC's Proprietary Gridlock Polymer**

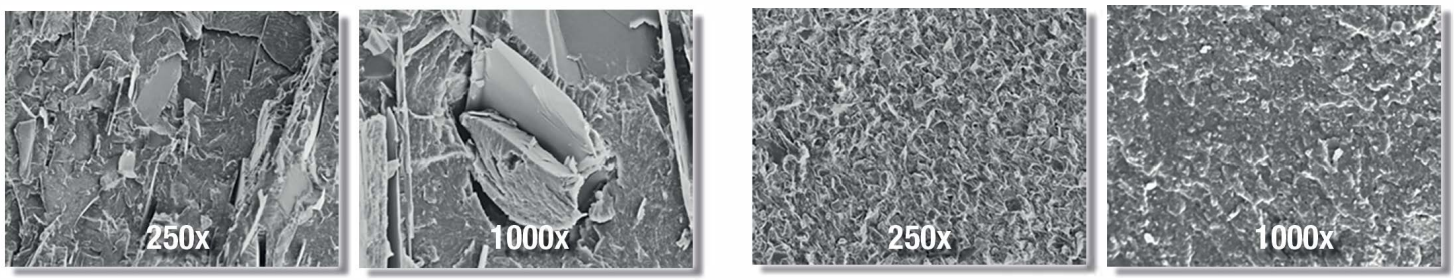


Density

Figure 3. Gridlock Technology Magnified

A magnified view of a Novolac Epoxy coating compared to the ChemLINE® Coating System shows the crosslink density achieved through Gridlock Technology™ at 250x and 1 000x magnification. The image on the right clearly shows that a higher crosslink density produces a lining that forms a virtually impermeable barrier for maximum substrate protection. *Images courtesy of TUBITAK Research Facility in Ankara, Turkey.*

Novolac Epoxy Polymer | **ChemLINE® Coating System**



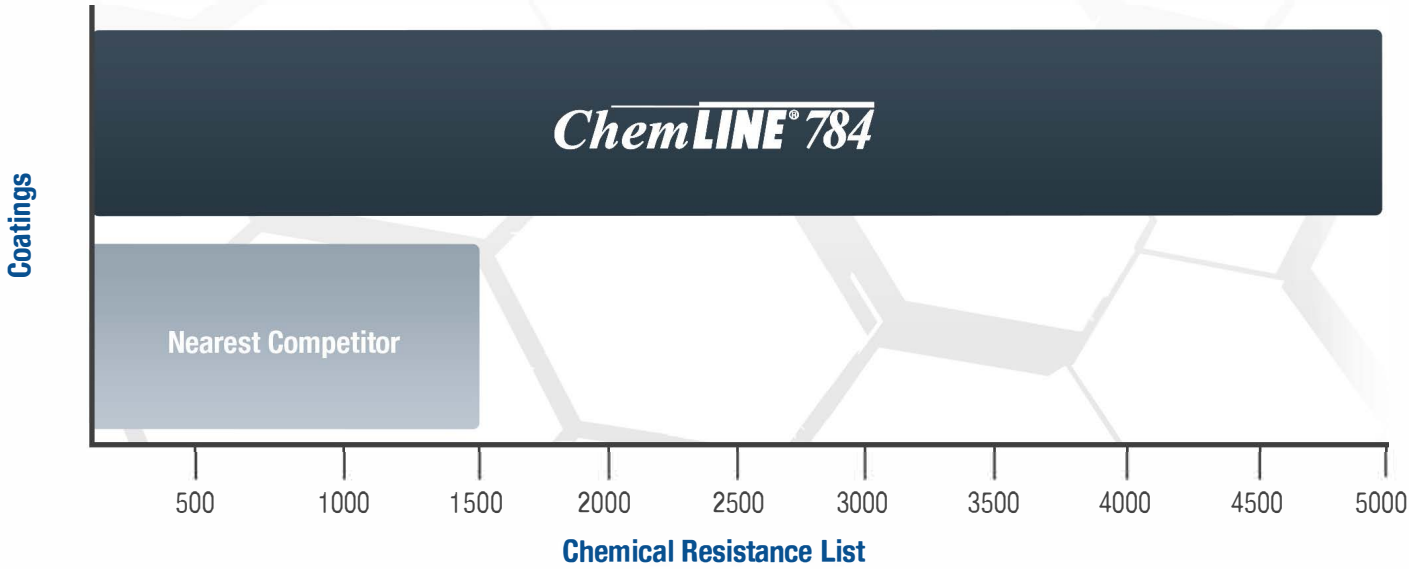
Higher Crosslink Density Delivers:

- Higher chemical resistance
- Higher heat resistance
- Higher toughness
- Higher resistance to abrasion

Industry Leading Chemical Resistance

Figure 4. ChemLINE® vs. The Competitor

In a study of chemical resistance, ChemLINE® boosts superior chemical resistance to a list topping over 5,000 where our nearest competition only protects against 1,500 chemicals. Some of the most common aggressive chemicals ChemLINE® can resist are 1% to 98% Sulphuric Acid, 1% to 37% Hydrochloride Acid, 50% Sodium Hydroxide, MEG, Methylene Chloride, and Acetic Acid.



Superior Corrosion Resistance Performance

	ChemLINE®	Phenolic Epoxy	Vinylester	Stainless Steel
Acetaldehyde	A	L	N	A
Acetic Acid	A	N	N	A
Acrolein Acid	A	N	–	A
Acrylic Acid	A	N	N	A
Acrylonitrile, (35°C)	A	N	N	A
Ammonium Persulfate	A	A	A	L
Azabenzene	A	N	N	A
Benzene	A	A	N	A
Benzene Carboxylic Acid	A	A	N	A
Benzoyl Chloride	A	N	N	N
B-Methacrylic Acid	A	N	N	A
Bichromate of Soda	A	N	A	A
Bromine	A	N	N	A
Butanoic Acid	A	N	–	A
Butyric Aldehyde	A	N	A	A
Calcium Hydroxide	A	A	A	A
Calcium Hypochlorite	A	A	A	L
Caustic Potash	A	N	N	A
Carbolic Acid	A	N	N	A
Chlorine Water	A	N	A	N
Chlorosulfonic Acid	A	N	N	N
Chlorinated Acetone	A	N	N	L
Chloracetic Acid	A	N	N	L
Chromic Acid, 20%	A	N	A	N
Coal Tar Oil	A	N	A	A
Coconut Fatty Acid	A	A	A	A
Colamine	A	N	N	A
Cresol	A	N	–	A
Dichloromethane	A	N	N	A
Detergents	A	A	A	A
Diethyl Formamide	A	N	N	A
Diethylamine	A	N	N	A
Diethylene Chloride	A	N	N	L
Diethyl Ether	A	N	N	A
Dimethylamide Acetate	A	N	–	A
Disulphuric Acid	A	N	–	A
EDTA	A	N	A	A
Ethanolamine	A	N	N	A
Ethonic Acid Anhydride	A	N	–	A
Ethyl Acrylate	A	A	N	A
Fatty Acids	A	A	A	A
Fatty Acid, Palm	A	A	A	A
Ferric Chloride	A	N	A	N

	ChemLINE®	Phenolic Epoxy	Vinylester	Stainless Steel
Flaked Stearic Acid	A	N	A	A
Fluoraboric Acid*	A	N	–	N
Formaldehyde	A	A	A	A
Formamide	A	N	–	A
Green Liquor	A	N	A	L
Glycerol	A	N	N	A
Grape Juice	A	A	A	A
Grapefruit Juice	A	A	A	A
Grease Oil	A	A	A	A
Heptanoic Acid	A	A	–	A
Herring Oil	A	A	A	A
Hexahydroanaline	A	N	–	A
HMDA	A	N	–	A
Hydrazine	A	N	N	A
Hydrobromic Acid	A	N	A	N
Hydrochloric Acid*	A	N	A	N
10% Hydrofluoric Acid*	A	N	A	N
10%-30% Hydrogen Sulfate	A	N	A	A
Isobutanol	A	N	A	A
Isobutyric Acid	A	N	–	A
Isopropyl Amine	A	N	A	A
Javelle Water	A	N	A	N
Juices, Fruit	A	A	A	A
Lactic Acid	A	A	A	A
Lactonitrile	A	N	–	A
Latex	A	A	A	A
Liquified Ammonia	A	N	N	A
Liquid Pitch Oil	A	N	A	A
M-Phosphoric Acid*	A	N	A	L
Maleic Anhydride	A	N	A	A
MCA	A	N	–	A
Methacrylonitrile, (35°C)	A	N	N	A
Methanamide	A	N	–	A
Methanol	A	N	N	A
MEK	A	L	N	A
Methylene Chloride	A	N	N	N
Monochloro Benzene	A	N	N	N
Naphtalene	A	N	A	A
Nitric Acid 1-5%	A	N	A	A
Nitro Benzene	A	A	N	A
Nitrogen Fertilizers	A	A	–	A

	ChemLINE®	Phenolic Epoxy	Vinylester	Stainless Steel
Norval Amine	A	N	N	A
Octanoic Acid	A	A	–	A
Orthonitro Benzene	A	N	N	N
Oleum	A	N	N	A
Olive Oil Fatty Acid	A	A	A	A
Palm Oil Fatty Acid	A	A	A	A
Perchloroethylene	A	N	N	A
Perchloric Acid	A	N	N	N
Phenol	A	N	N	A
Phosphoric Acid	A	N	A	N
Phthalic Anhydride	A	N	A	A
Piperzine	A	N	–	A
Polyethylene Polyamines	A	N	–	A
Potassium Hydroxide	A	A	L	L
Potassium Permanganate	A	A	A	L
Propionic Acid	A	N	N	A
Pyridine	A	N	N	A
Rubber Extender Oils	A	A	A	A
Rum	A	A	A	A
Sodium Carbonate	A	N	A	N
Sodium Dichromate	A	N	A	A
Sodium Hydroxide	A	A	A	L
Sodium Sulfide	A	A	N	N
Stannic Chloride	A	A	A	N
Stearic Acid	A	A	A	A
Spent Sulfuric Acid	A	N	N	A
Sulfur	A	N	N	A
Sulfuric Acid 1-70%	A	A	A	N
Sulfuric Acid 70-99%	A	N	N	L
Sulphurous Acid	A	N	N	A
Tall Oil	A	A	A	A
Tallow Acid	A	A	N	A
Tar Acid	A	N	A	A
Tetra Chloroacetic Acid	A	N	N	N
Tetra Hydrofurfuryl Alcohol	A	N	N	A
Toluene Diamine	A	N	N	A
Toluol	A	L	L	A
Valeraldehyde	A	N	–	A
Vinegar	A	N	A	A
Vitriol Oil 65%	A	N	A	A
Water, Acid	A	N	N	A
Xylenol	A	N	N	A

A = Good at ambient temperatures (35°C/95°F) **L** = Limited Service **N** = Not recommended
* = Contact APC for approved, appropriate lining.

Corrosion resistance data for Phenolic Epoxy, Vinylester and Stainless Steel from published literature.

This is Only A Reference Guide. Contact your ChemLINE® Representative or the ChemLINE® Customer Service Hotline +1 440-937-6218 for detailed specifications prior to any final coatings recommendation or application.

ChemLINE®

Coating	Description	Typical Applications	System/DFT
ChemLINE® 784 *previously: ChemLINE® 784/32*	Excellent chemical resistance, high functionality, two component low temperature cure polymer coating.	Reactors, chemical storage tanks, scrubbers, piping, ducts, rail cars, ISO tanks, OTR tankers, barge tanks, secondary containment, clean rooms, structural steel, manhole covers, vaults, & floors.	**Steel:** 2 coats. 300-350 microns. (12-14 mils). **Concrete:** 2 coats. 500-600 microns. (20-24 mils).
ChemLINE® 784 ES Elevated Service *previously: ChemLINE® 784/31*	Highly chemically resistant, high functionality, two component high temperature cure polymer coating, with high cure.	Tanks, pipes, & scrubbers.	**Steel:** 2 coats. 300-350 microns. (12-14 mils).
ChemLINE® HS High Solids *previously: ChemLINE® 784/32 PC*	High solids, 1 or 2 coats, chemically resistant two component low temperature cure polymer coating.	Transportation - rail cars, OTR tankers, ISO tanks, barge tanks, & tanker ships.	**Steel:** 1 or 2 coats to achieve 300-350 microns. (12-14 mils).
ChemLINE® 784 AS Anti-Static	Static dissipating, chemically resistant, high functionality, two component low temperature cure polymer coating.	Clean rooms, flooring, ducts, structural steel, hopper cars, and where a static dissipating lining is required.	**Steel:** 2 coats. 300-350 microns. (12-14 mils). **Concrete:** 2 coats. 500-600 microns. (20-24 mils).
ChemLINE® 784 WS Wine & Spirits *previously: ChemLINE® EF*	FDA (GRAS) two component low temperature cure polymer coating for wine and spirits tanks.	Wine & spirits tanks.	**Steel:** 2 coats. 300-350 microns. (12-14 mils).
ChemLINE® 2400 Abrasion Resistant *previously: ChemLINE® 2400/32*	Abrasion and chemically resistant two component low temperature cure polymer coating.	Slurry tanks, scrubbers, dump trucks, bag houses, FGD units, tank containers, hopper cars, ion exchange vessels, secondary containment, and floors.	**Steel:**2 coats. 400-450 microns. (16-18 mils). **Concrete:** 2 coats. 600-650 microns. (24-26 mils).
ChemLINE® 2400 ES Elevated Service *previously: ChemLINE® 2400/31*	Abrasion and highly chemically resistant two component high temperature cure polymer coating.	Tanks, pipes, & scrubbers.	**Steel:** 2 coats. 400-450 microns. (16-18 mils).

ADVANCED POLYMER COATINGS

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