COOLGUARD™ HR
(KEE - Elvaloy® Terpolymer)

COOLGUARD™ HR (KEE - Elvaloy® Terpolymer)

The technology of blending Elvaloy has been tried by many over the years, but none as successful as with Cooley's Coolguard line of products. A resin developed by Dupont, Cooley first used Elvaloy in its roofing products. The experience and knowledge gained from the roofing provided the basis for development of the Coolguard product. Not all Elvaloy® technologies produce the same end product and not all Ethylene Interpolymer Alloys (EIA), as they are generically referred to, are created equal.

The technology developed with Cooley roofing was further refined to meet the needs for an oil resistant geomembrane liner. Cooley's team of polymer chemists developed Coolguard for a wide variety of uses.

Why Use Coolguard?

The Coolguard formulation can handle many petrochemicals and chemicals and when used for secondary containment, offer a great degree of comfort to both the engineers and end-user. Tough, durable, yet extremely flexible Coolguard can be easily installed in the most complex areas. It is thermal welded (or RF) so that large panels and pipe, or similar penetrations and complex details can be handled very efficiently and effectively.
Coolguard does not need to be buried, it is dimensionally stable and has excellent UV resistance.
Coolguard geomembranes are backed by up to a 10 year written weathering warranty.

Cooley Product Performance

The high performance of the Coolguard liners is a combination of a high strength scrim, tough highly complex combination of Elvaloy and other base resins, secondary and tertiary ingredients to form a unique polymer alloy utilizing a proprietary manufacturing process. In addition to its high chemical resistance, the Coolguard exhibits very high physical performance. These characteristics are shown in the 'Physical Properties' data sheets for the respective thicknesses. The reinforcing scrim was developed to provide the product with a 'Total Package' of physical performance to meet the real needs of the engineer and the installation. Coolguard has a high strength specially woven rip-stop scrim that provides enhanced overall physical performance that exceeds industry requirements.

Coolguard has:

- High Tensile Strength
- High Tear Strength
- High Puncture Resistance
- Excellent Dimensional Stability
- High Burst Strength
- Thicker and Wider (almost 24% wider than the leading competitor for better performance and fewer seams)
- Excellent Conformance and Lay Flat Characteristics (flexibility)
- Excellent Cold Crack Performance at Low Temperatures (-30°F)
- High Ultraviolet Resistance (up to 10 year weathering warranty)
- Excellent Seaming Characteristics by Thermal Fusion or RF
- High Peel and Shear Performance (seam welding)
- Excellent Chemical Resistance
- Easy to Repair (user friendly)
- Available in Large Panels to Reduce Field Seaming and Installation Time

Coolguard is available in 36 mils (0.914 mm) and 45 mils (1.14 mm).
Heavier gauges are also available.

Elvaloy is a registered ® of E.I.DuPont

Panel Sizes

Cooley Coolguard™ provides the end-user with a liner product that can be supplied in panels up to half acre in size to expedite installation and minimize the amount of field seaming. These large panels are supplied through our network of fabricators throughout the USA and abroad.

Field Installation

To expedite installation the Coolguard can be prefabricated and delivered to the site in large custom sized panels. This method enables the area to be lined with the minimum of material and field seaming. With the excellent seaming and related characteristics of Coolguard, the usually expected problems with field seaming of other products is eliminated.

Typical Installations

Cooley Coolguard geomembrane liners offer superior performance over other products for all aspects of lining lagoons, ponds, tanks or other impoundments, floating covers and similar containments. Cooley's high performance, scrim reinforced Coolguard provides the end-user with the optimum state-of-the-art liner material which is very 'user friendly'.
Complying with the strict requirements of the Corps of Engineers, Coolguard is used for primary and secondary containment applications such as tank farms, wash-down facilities, airport de-icing collection systems, digesters and many other applications, to contain chemically aggressive waste streams.

Coolguard is in service throughout North, South and Central America, Europe and the Pacific Rim.

COOLGUARD™ HR
KEE - Elvaloy® Terpolymer

Cooley Engineered Membranes developed the Coolguard™ liner to meet the need for an effective material for primary and secondary (long-term) containment of a broad range of chemicals, including both dilute acids and organics. The very cost-effective Coolguard product is a terpolymer alloy coating consisting primarily of Elvaloy® and PVC resins. This unique blend of resins has been optimized to produce a high performance product which is not susceptible to plasticizer migration as found in standard PVC membranes. Coolguard is heat, RF and chemically sealable.

PROPERTY	TEST METHOD	VALUE
Gauge, nominal (mils)	—	45 36
Plies, reinforcing (6.5 oz.) 10 x 11 polyester blend scrim 2520d x 2000d double rip stop	—	1 1
Grab Tensile minimum (lbs. min.)	ASTM D751 Method A	500 x 450
Strip Tensile minimum (lb.) Procedure B	ASTM D751	400 x 300
Low Temperature flexibility 1/8 in mandrel @ °F 4 hrs.	ASTM D2136	30
Puncture Resistance, min. (lbs.)	ASTM D751 1" Ball	600
Tongue Tear minimum (lb.)	ASTM D751 Procedure B	135 x 135
Trapezoid Tear minimum (lb.)	ASTM D1117 Section 14	75 x 75
Hydrostatic Resistance minimum (psi)	ASTM D751 Method A Procedure 1	600
Ply Adhesion, minimum lbs./in)	ASTM D751	10
Dimensional Stability % max. 1 hr. @ 212°F	ASTM D1204	2

Typical Factory Seam Properties:

Property	Test Method	Value
Bonded Seam Strength (lbs./width)	ASTM D751	270 lbs. min.
Peel Adhesion, minimum (lbs./inch)	ASTM D413	10 or FTB

Coolguard™ HR

Guideline Specification
for
Coolguard Geomembrane
Liner Installation

COOLGUARD™ HR

Guide Specification

1.0 GENERAL

1.1 SCOPE OF WORK

The work covered by these specifications consists of installing a 36 or 45 mil thick scrim-reinforced Coolguard Geomembrane in the areas shown on the Project drawings. All work shall be done in strict accordance with the project drawings, these specifications and the Fabricator's approved shop drawings. All work is subject to the terms and conditions of the contract.
Sufficient materials shall be furnished to cover all areas as shown on the drawings including seam areas, anchor trenches and appurtenances as required. The Fabricator/Installer of the liner shall allow for any anticipated or planned shrinkage or wrinkles in the field panels, installing the membrane free of stress or tension.

1.02 MANUFACTURER/FABRICATOR/INSTALLER INFORMATION

The following shall be the minimum information submitted at the time of the bid, relating to the polypropylene Manufacturer, proposed Fabricator and Installer: Name, Address, Phone, Fax, Qualifications of the individuals who will personally be assigned to the project.

1.03 PRODUCTS

The geomembrane material shall be a 36 or 45 mil thick, scrim-reinforced, KEE/PVC geomembrane as manufactured by Cooley Engineered Membranes of Pawtucket, RI. The geomembrane shall be manufactured by the extrusion coating process, consisting of first quality ingredients, suitably compounded. The finished compound shall be uniform in color, thickness, size and surface texture.

The finished membrane shall consist of two (2) plies of terpolymer laminated over one (1) ply of reinforcing scrim. The reinforcing scrim shall be a 6.5 ounce rip-stop woven polyester to create an open-type weave that permits strike-through of the KEE/PVC. The Coolguard shall fully encapsulate the scrim and shall extend a minimum of 1/8" beyond the reinforcing scrim roll edges. Exposed fabric along the longitudinal edges of the roll stock shall not be permitted. The finished membrane shall meet or exceed the physical property values as shown on following Table 1:

Table 1.

PROPERTY	TEST METHOD	VALUE
Gauge, nominal (mils)	-	36 or 45 mils (+/- 10%)
Plies, reinforcing 6.5 oz Polyester woven scrim	-	1
Tongue Tear (lbs. min.)	ASTM D751 Procedure B	135 x 135 lbs.
Trapezoid Tear (lbs. min.)	ASTM D1117 Section 14	75 x 75 lbs.
Grab Tensile (lbs. min.)	ASTM D751 Procedure A	500 x 450 lbs.
Strip Tensile (lbs. min.)	ASTM D751 Procedure	400 x 300 lbs.
Ply Adhesion (lbs. min.)	ASTM D751	10 lbs.
Hydrostatic Resistance minimum (psi)Method A	ASTM D751	600 lbs.
Puncture Resistance (1" Ball)	ASTM D751	600 lbs.
Low Temperature flexiblity (°F)	ASTM D2136	-30° F
Dimensional Stability (% change, maximum)	ASTM D1204 212 F @ 1 hour	2% Max.

1.04 SUBMITTALS

The Coolguard roll goods shall be factory fabricated into large panels. The Fabricator shall furnish a proposed geomembrane panel layout which is to be approved in writing by the Engineer prior to the installation. The drawings shall show the extent, the direction of factory seams and the size of panels, consistent with the requirements of the project drawings.

These details shall include the recommended termination details of the geomembrane. Except for special requirements due to configuration and/or terminating the geomembrane, maximum use of large size panels shall be made to reduce field seaming to a minimum.

1.05 FACTORY FABRICATION

The Fabricator shall be an experienced firm customarily engaged in factory-fabricating individual widths of scrim-reinforced roll stock into large panels. The fabricator shall have experience in fabricating a minimum of 2,000,000 square feet of geomembranes by the thermal fusion methods.
Prior to factory seaming, all roll goods shall be inspected. All factory seams shall be made by thermal fusion methods. All factory seams shall have a minimum scrim-to-scrim overlap of one and one-half inches (11¼2") when fabricated. Fabricated seams found to have less than the specified minimum overlap shall be repaired by adding an overlap or cap strip which does prove the mimimum specified overlap or it will be rejected. All seams shall be made so that the thermal fusion bond extends fully to the top edge of the sheet so that no loose edges are present on the top side of the sheet.

1.06 INSPECTION AND TESTING OF FACTORY SEAMS

1.06.1 Inspection

All sheets and seams shall be 100% visually inspected during fabrication. No defective seams or exposed scrim will be allowed. All exposed scrim edges shall be sealed with an approved edge caulk or capped. All indicated repairs shall be made by the geomembrane Fabricator before the panels are packaged for shipment.

1.06.2 Testing

In addition to visual inspection, a 48 inch (1.2M) sample shall be taken from each factory seam welding unit used in this work at the beginning of every work shift and every four hours of production thereafter. Samples shall be non-destructive, i.e., will not require patching of fabricated panels. Test specimens shall be cut at quarter points from each 48 inch seam sample (a total of three places) and tested for factory seam strength and peel adhesion. The shear seam strength shall be tested in accordance with ASTM D751 as modified in Annex A of ANSI/NSF 54.

The peel adhesion shall be
tested in accordance with ASTM D413 as modified in Annex A of ANSI/NSF 54.
A log shall be maintained showing the date, time, panel number and test results. Failure of the material and/or seams to meet all the requirements of these specifications may be cause for rejection of the material and/or seams as appropriate. The Fabricator shall provide the test results to the Owner or Engineer upon request.

1.07 CERTIFICATION AND TEST REPORTS

Prior to installation of the panels, the Fabricator/Installer shall provide the Engineer with the following certification and test reports:

1.07.1 Written certification that the material meets all of the requirements of Section 1.03.

1.07.2 Written certification that the factory seams were inspected and tested in accordance with Section 1.06.

1.08 Coolguard PANEL PACKAGING AND STORAGE

Each factory fabricated panel shall be rolled and/or accordion-folded and placed onto a sturdy wooden pallet designed to be moved by a forklift or similar equipment. Each panel shall be given prominent and unique identifying markings indicating the proper direction of unrolling and/or unfolding to facilitate layout and positioning in the field. The panels shall be packaged in heavy cardboard or wood crates fully enclosed and protected to prevent damage during shipment and each crate is to be prominently marked in the same fashion as the panels within. Until needed, packaged factory fabricated panels shall be stored in their original unopened crates in a dry area, and protected from the direct heat of the sun. Pallets should not be stacked.

2.0 INSTALLATION AND SEAMING

2.01 SUBGRADE PREPARATION (New Excavation)

The surfaces on which the lining is to be placed shall be maintained in a firm, clean, dry and smooth condition during the lining installation. All earthen reservoir surfaces shall be compacted and smooth graded with anchor trenches provided as required and detailed. All reservoir surfaces shall be free of rocks, roots, gravel, grade stakes or debris that may puncture the geomembrane. The subgrade shall be compacted to a minimum of 95% of the dry density (as determined by ASTM D398 Standard Proctor Method). Geotextiles may be used as a cushioning agent. All vegetation, if present, shall be removed and a soil sterilant applied. The soil sterilant shall be selected for the geographical area and native grasses and growth. A partial list of soil sterilant suppliers is available from Cooley Engineered Membranes. Cooley does not endorse or recommend any specific manufacturer or product. If groundwater is present within 12 inches below the surface to be lined, the General Contractor shall de-water the area prior to and during installation of the liner.

The location of both the top and bottom of all slopes shall be completed within plus or minus 1 foot of the planned location. The completed subgrade and finished grades shall be within plus or minus 0.1 foot of the specified elevation. Immediately prior to the installation of the Coolguard geomembrane, a complete and detailed inspection of the embankments shall be performed by the Field Engineer, Earthwork Contractor and the Geomembrane Installer to determine acceptance of the finished subgrade and elevations. Any erosion or other damage to the base material which has occurred since placement shall be corrected by the Earthwork Contractor.

2.02 COOLGUARD GEOMEMBRANE INSTALLATION

The Coolguard geomembrane shall be placed over the prepared surfaces in such a manner as to insure minimum handling and in accordance with the approved shop drawings. The linings shall be sealed to all concrete structures and other openings in accordance with details shown on the plan and shop drawings. The geomembrane lining shall be closely fitted and sealed around all inlets, outlets and other projections through the lining, using prefabricated fittings where possible as shown in the construction details. Liner sheets, damaged from any cause, shall be removed, repaired or covered with additional sheeting.

2.02 COOLGUARD GEOMEMBRANE INSTALLATION Continued

Only those sheets of lining material which can be anchored and seamed together the same day shall be unpacked and placed into position. In areas that high wind is prevalent, the lining installation should begin on the upwind side of the project and proceed downwind. The leading edge of the liner shall be secured at all times with sandbags sufficient to hold it down during high winds. The leading edges of the liner material left exposed after the day's work shall be anchored to prevent damage or displacement due to wind.

Materials, equipment or other items shall not be dragged across the surface of the Coolguard liner or be allowed to slide down slopes on the lining. All parties walking or working on the lining materials shall wear soft-soled shoes.

2.03 FIELD SEAMS

Lap joints shall be used to seal factory fabricated sheets together in the field. The lap joint shall be formed by lapping the edges of the sheets four (4) to six (6) inches. The contract surfaces of the sheets shall be wiped clean of all dirt, dust, moisture and other foreign matter. A minimum one and a half inch (11¼2") bond shall apply to all field seams. Extreme care should be taken throughout the work to avoid fishmouths, wrinkles, folds or pleats in the seam area. If fishmouths do occur, they should be slit out far enough from the seam to dissipate them, lapped, seamed together in the lapped area and patched. Any necessary repairs to the geomembrane shall be done using an additional piece of the specified sheeting applied as stated in Section 2.04.2 of this specification.

Cleanup within the lining compound shall be an ongoing responsibility of the Lining Contractor. Particular care should be taken to ensure that no stones, scrap material, trash, tools or other unwanted items are trapped beneath the geomembrane liner.

All field seams shall be made utilizing the hot air, hot wedge welding or chemical seaming techniques as outlined in appropriate Sections of the EPA Technical Guidance Document: "Inspection Techniques for the Fabrication of Geomembrane Field Screens."

2.04 INSPECTION AND TESTING OF SEAMS

2.04.1 INSPECTION

Upon completion of the liner installation, all seams shall be visually inspected for compliance with these specifications. In addition to visual inspection, all field seams shall be checked using an air lance nozzle directed on the upper edge and surface to detect any loose edges or riffles indicating unbonded areas within the seam (per ASTM D4437).

All field seams, on completion of the work shall be tightly bonded. Any geomembrane surface showing injury due to scuffing, penetration by foreign objects, or distress from other causes shall be replaced or repaired. All exposed scrim edges shall be sealed with an approved edge caulk or capped.

2.04.2 REPAIRS

Any repairs made to the lining shall be patched with the lining material. Patches shall be cut with rounded corners and shall extend a minimum of four (4) inches in each direction from the damaged area. The entire surface of the patch shall be bonded to the lining material.

2.04.3 TESTING OF FIELD SEAMS

Test seams are to be made by each seaming crew at the beginning of the seaming process, and every four (4) hours thereafter, or every time equipment is changed. Each seaming crew and the materials they are using must be traceable and identifiable to their test seams. The samples shall be numbered, dated, identified as to the personnel making the seam, and location made, by appropriate notes on a print of the panel layout for the project. The completed field seam sample shall measure not less than 14 inches in width and 24 inches in length.

The field test seams are to be tested for seam strength and peel adhesion. Seam shear strength shall be tested in accordance with ASTM D751 as modified in Annex A of ANSI/NSF 54. The peel adhesion shall be tested in accordance with ASTM D413 as modified in Annex A of ANSI/NSF 54.

If a test seam fails to meet the field seam design specification, then additional test seam samples will have to be made by the seaming crew, using the same tools, equipment and seaming materials, and retested.

3.0 WARRANTY

The KEE/PVC Geomembrane Manufacturer shall confirm in writing that the material to be furnished will be free of defects in materials and workmanship at the time of sale, and against deterioration due to the effects of ozone, ultraviolet or other normal weathering on a pro-rata basis for 10 years from the date of completed installation.

The KEE/PVC Geomembrane Manufacturer shall furnish a sample warranty for review and approval prior to shipment.

End of Specification

Cooley /Engineered Membranes
WHERE CHEMISTRY MAKES THE DIFFERENCE

COOLGUARD™ HR
CHEMICAL RESISTANCE GUIDELINE

	Concentration	
A		
Acetic Acid	5%	A
Acetic Acid	50%	X
Acetic Acid Glacial		X
Acetic Anhydride		X
Acetone		C
Alkyl Alcohol		T
Alkyl Chloride		X
Aluminum Chloride		T
Aluminum Fluoride		T
Aluminum Sulfate		T
Ammonia Carbonate		T
Ammonium Chloride		T
Ammonium Fluoride	20%	T
Ammonium Hydroxide	30%	T
Ammonium Nitrate		T
Ammonium Phosphate		T
Ammonium Sulfate		T
Ammonium Sulfide		T
Amyl Acetate		X
Amyl Alcohol		T
Amyl Chloride		X
Aniline		X
Animal Oil		T
Antimony Chloride		A
Aqua Regia		X
ASTM Fuel A		A
ASTM Fuel B		A
ASTM Fuel C		B
ASTM Oil #1		T
ASTM Oil #2		A
ASTM Oil #3		T
Asphalt		T

	Concentration	
B		
Barium Carbonate		T
Barium Hydroxide		T
Barium Sulfate		T
Benzene	<1%	B
Benzene	25%	B
Benzene	100%	7 DAYS
Benzoic Acid		T
Bismuth Carbonate		T
Borax Solutions		T
Boric Acid	10%	T
Bromic Acid		X
Bromine Anhydrous		X
Butyl Acetate		X
Butyl Alcohol		T
Butyl Phenol		X
Butyric Acid		X
C		
Calcium Bisulfate		T
Calcium Carbonate		T
Calcium Chloride		T
Calcium Hydroxide		T
Calcium Hypochlorate		T
Calcium Nitrate	50%	T
Calcium Sulfate		A
Calcium Disulfide		X
Carbon Tetrachloride		C
Carbonic Acid		T
Castor Oil		T
Chlorine Gas		X
Chloracetic Acid		X
Chlorobenzene		X
Chloroform		X
Chlorosulfonic Acid		X
Chrome Aluminum		T
Chromic Acid 30%		X
Chromium Trioxide		X
Citric Acid		T
Copper Chloride		T

A-Fluid has little to minor effect
B- Fluid has minor to moderate effect
C- Fluid has severe effect
T- No test data, likely to have minor effect

Cooley /Engineered Membranes
WHERE CHEMISTRY MAKES THE DIFFERENCE

COOLGUARD HR CHEMICAL RESISTANCE GUIDELINE

	Concentration	
Copper Nitrate		T
Copper Sulfate		T
Corn Oil		T
Cottonseed Oil		T
Crude Oil		T
Cyclohexane		T
Cyclohexanol		T
Cyclohexanone		X
D		
Dextrine		T
Dibutyl Phthalate		X
Diesel Fuel		A
Diethyl Ether		X
Diethyl Sebacate		X
Dimethylamine		X
Diethyl Ketone		X
Disodium Phosphate		T
E		
Epichlorohydrine		C
Ethyl Acetate		C
Ethyl Alcohol		B
Ethyl Bromide		C
Ethyl Chloride		C
Ethylene Dichloride		X
Ethylene Glycol		T
Ethylene Oxide		A

	Concentration	
G		
Gallic Acid		X
Gasoline	<25% BTX	A
Gasoline	>25% BTX	A
Glucose		T
Glycerine		T
H		
Hexane		A
Hydraulic Fluid		X
Hydrazine		X
Hydrobromic Acid		X
Hydrochloric Acid	20%	X
Hydrochloric Acid	37%	X
Hydrocyanic Acid		T
Hydrofluoric Acid	20%	X
Hydrofluoric Acid	75%	X
Hydrofluosilic Acid	30%	C
Hydrogen Peroxide	3%	A
Hydrogen Peroxide	10%	T
Hydrogen Sulfide		T
Hydroquinone		B
I		
Iso-Octane		A
Isopropyl Alcohol		A
J		
JP-4 Jet Fuel		A
Jet A		T
Jet B		T
K		
Kerosene		A

A-Fluid has little to minor effect
B- Fluid has minor to moderate effect
C- Fluid has severe effect
T- No test data, likely to have minor effect

COOLGUARD HR CHEMICAL RESISTANCE GUIDELINE

	Concentration	
L		
Lactic Acid		X
Lead Acetate		T
Linseed Oil		T
Lubricating Oils		T
M		
Magnesium Carbonate		T
Magnesium Chloride		T
Magnesium Hydroxide		T
Magnesium Nitrate		T
Magnesium Sulfate		T
Malic Acid		T
Mercuric Chloride		T
Methyl Ethyl Keytone		C
Mineral Oil		T
Mineral Spirits		T
N		
Naptha		X
Napthalene		X
Nitric Acid	10%	X
Nitric Acid	50%	X
Nitric Acid	70%	X
Nitrobenzene		X
O		
Oleic Acid		T
Oleum 25%		C
Oxalic Acid		T

	Concentration	
P		
Palmitic Acid		T
Perchlorethylene	<1%	T
Perchloroethylene	100%	C
Phenol		C
Phenol Formaldehyde		X
Phosphoric Acid	50%	C
Phosphoric Acid	75%	X
Phosphorous Yellow		X
Phosphorous Pentoxide		X
Photographic Solutions		T
Phthalate Plasticizer		C
Pickling Solutions		X
Potassium Bicarbonate		T
Potassium Carbonate		T
Potassium Chromate	40%	T
Potassium Cyanide		T
Potassium Dichromate		T
Potassium Hydroxide		T
Potassium Nitrate		T
Potassium Perchlorate	10%	T
Potassium Permanganate		T
Potassium Sulfate		A
Pyridine		X
S		
Salt Water		A
Silicon Grease		T
Silver Nitrate		T
Skydrol Hydraulic Fluid		C
Soap Solutions		A
Sodium Acetate		A
Sodium Bicarbonate		A
Sodium Bisulfate		T
Sodium Carbonate		T
Sodium Chlorate		T
Sodium Chloride		A
Sodium Dichromate	20%	T
Sodium Dichromate	100%	T
Sodium Ferrocyanide		T
Sodium Fluoride		T

A-Fluid has little to minor effect
B- Fluid has minor to moderate effect
C- Fluid has severe effect
T- No test data, likely to have minor effect

COOLGUARD HR CHEMICAL RESISTANCE GUIDELINE

	Concentration	
Sodium Hydroxide	25%	T
Sodium Hydroxide	60%	A
Sodium Hypochlorite		T
Sodium Nitrate		T
Sodium Sulfate		T
Soybean Oil		A
Stannous Chloride		X
Stearic Acid		A
Styrene		X
Sulfuric Acid 10%		X
Sulfuric Acid 40%		X
Sulfuric Acid 98%		X
T		
Tannic Acid		X
Tartaric Acid		T
Tetrahydrofuran		X
Toluene	<1%	T
Toluene	25%	T
Toluene	100%	C
Transformer Oil		T
Triethanolamine		B
Trisodium Phosphate		T
Tung Oil		T
Turpentine		B
U		
Urea		T
V		
Vegetable Oil		A
W		
Water		A
X		
Xylene	<1%	T
Xylene	25%	T
Xylene	100%	X
Z		
Zinc Chloride		T
Zinc Oxide		T

The data shown are the result of laboratory tests and are intended only as a guide. No performance warranty is intended or implied.

Ratings were determined by visual experimentation of coated fabric samples after contact with test fluid for 28 days at room temperature.

When considering Cooley Engineered Membranes for a specific application, it is important to study other requirements such as permeability, service temperature, concentration, size to be contained, etc.

A sample of material should be tested in actual service before specification. When impractical, tests should be devised which simulate actual service conditions as closely as possible. The Cooley Engineered Membranes Technical Department should be consulted for further recommendation. This table is presented and accepted at user's risk.

A-Fluid has little to minor effect
B- Fluid has minor to moderate effect
C- Fluid has severe effect
T- No test data, likely to have minor effect