ECM Duro-Bond Chlorobutyl Sheet Lining

Description

ECM Duro-Bond Chlorobutyl is an uncured chlorobutyl elastomer applied in sheet form and vulcanized after application using exhaust steam. Sheet thicknesses of 120 mils (2.3 mm), 150 mils (3.4 mm), and 180 mils (4.6 mm) are available.

Uses

Duro-Bond Chlorobutyl is used as a lining for tanks, valves and other equipment where chemical and heat conditions require a special lining.

It is used primarily for handling specific acids at high concentrations such as hydrofluoric acid at 70%.

Advantages

EC Duro-Bond Chlorobutyl exhibits excellent abrasion and corrosion resistant properties. The lining is applied while in the soft uncured state. It readily conforms to curved surfaces allowing it to be applied to a wide variety of equipment with complex shapes.

Service Temperature

The maximum temperature for which **Duro-Bond Chlorobutyl** is recommended is 180°F (82°C). However, it can withstand higher intermittent temperatures. In constant elevated temperatures elastomers can harden and age prematurely, resulting in cracks and lining failure. It is sometimes desirable to provide thermal insulation, thereby increasing the service life of the lining. Corrosion resistant shale, fire-clay, or carbon brick are generally used for this purpose. One or more courses of brick joined with one of the Electro Chemical Manufacturing corrosion resistant cements may be required to obtain the desired temperature reduction.

Chemical Resistance

The information listed may be considered as a basis for recommendation, but not as a guarantee, unless sold and installed by Electro Chemical Manufacturing. For resistance of **Duro-Bond Chlorobutyl** to chemicals not listed, contact us at 330-313-6372, knightmaterials.com, or info@knightmaterials.com.

Key to Rating:

E Excellent.
G Good service life, but there will be some degradation of properties after continued exposure.
F Fair service life if exposure is limited and operating temperatures are never exceeded.
NR NOT RECOMMENDED

Chemical	Conc. (%)	Max.Temp. 180°F
Acetaldehyde	40	G-150°
Acetic Acid	10	F-150°
Acetone	100	F-70°
Acetyl Chloride	100	NR
Acid Mine Water	Sat.	G
Activated Alumina	Sat.	F
Activated Silica	Sat.	G
Allyl Chloride	Sat.	NR
Aliphatic Hydrocarbons	Sat.	NR
Alum	Sat.	E-150°
Aluminum Acetate	Sat.	G-150°
Aluminum Chloride	Sat.	G
Aluminum Fluoride	Sat.	G
Aluminum Hydroxide	Sat.	G
Aluminum Nitrate	Sat.	G
Aluminum Sulfate	Sat.	G
Ammonia Gas - Dry	Sat.	G
Ammonia Water	Sat.	G-150°
Ammonium Acetate	Sat.	G
Ammoniated Brine	Sat.	G
Ammonium Bifluoride	Sat.	G
Ammonium Bicarbonate	Sat.	G
Ammonium Carbonate	Sat.	G
Ammonium Chloride	Sat.	G
Ammonium Fluoride	Sat.	E
Ammonium Fluorosilicate	Sat.	E
Ammonium Formate	Sat.	G
Ammonium Hydrosulfide	Sat.	G
Ammonium Hydroxide	Sat.	G -
Ammonium Metaphosphate	Sat.	G -
Ammonium Nitrate Neutral	Sat.	G
Ammonium Oxalate	Sat.	G
Ammonium Picrate	Sat.	G
Ammonium Phosphate	Sat.	G
Ammonium Persulfate	Sat.	F-G
Ammonium Sulfate	Sat.	G
Ammonium Sulfide	Sat.	F-G
Ammonium Thiocyanate	Sat.	G
Amyl Acetate		NR
Amyl Chloride		NR
Aniline		NR
Aqua Regia		NR
Aromatic Hydrocarbons		NR
Arsenic Acid		G
rylsulfonic Acid		G
Barium Chloride	Sat.	G
Barium Hydroxide	Sat.	G
Barium Sulfide	Sat.	F-G

Chemical	Conc. (%)	Max.Temp. 180°F
Benzaldehyde		NR
Benzene		NR
Beryllium Sulfate		G
Black Liquor (Sulfate)		G-150°
Bleach Laundry 15% Act. Cl2		E-70°
Borax		G
Boric Acid		G
Boron Trifluoride (Liquid)		NR
Brine Solution - No Chloride		G
Brine Solution - Chlorinated		NR
Bromic Acid		NR
Bromine Liquid		NR
Bromine Water		F
Butyl Acetate	Sat.	NR
Butyl Phenol	Sat.	NR
Butyl Cellosolve	Sat.	NR
Calcium Hypochlorite	Sat.	G-125°
Carbon Bisulfide	Sat.	NR
Carbon Dioxide (Wet)	Sat.	G
Carbon Tetrachloride	Sat.	NR
Carbonic Acid	Sat.	G
Caustic Soda	50	E-150°
Chlorinated Water	Sat.	NR
Chlorine Dioxide	Sat.	NR
Chlorine Gas (Dry)	Sat.	NR
Chlorine Gas (Wet)	Sat.	NR
Chloracetic Acid	Sat.	NR
Chlorobenzene (Mono)	Sat.	NR
Chloroform	Sat.	NR
Chlorosulfonic Acid	50	NR
Chromic Acid	Sat.	NR
Chrome Liquor	Sat.	NR
Chrome Plating Bath	Sat.	NR
Chromium Chloride	Sat.	NR
Copper Cyanide	Sat.	G
Copper Nitrate	Sat.	G
Copper Plating (Acid)	Sat.	G
Copper Plating (Alkaline)	Sat.	G
Copper Sulfate	Sat.	E
Corn Oils	Sat.	NR
Cotton Seed Oil	Sat.	NR
Corn Syrup	Sat.	NR

Chemical	Conc. (%)	Max.Temp. 180°F
Cresol	Sat.	NR
Cresylic Acid	50	NR
Crude Oil (Sour)	Sat.	NR
Crude Oil (Sweet)	Sat.	NR
Cupric Chloride	Sat.	NR
Cuprous Chloride	Sat.	NR
Cyanide Plating Solution	Sat.	G
Cyclohexanol	Sat.	NR
Cyclohexanone	Sat.	NR
Deionized Water	Sat.	NR
Demineralized Water	Sat.	F
Dextrose	Sat.	NR
Diammonium Phosphate	Sat.	G
Diazo Salts	Sat.	NR
Dichloromethane	Sat.	NR
Diethylene Glycol	Sat.	G
Diglycolic Acid	Sat.	G
Dimethylamine	Sat.	G
Disodium Phosphate	Sat.	G
Ethyl Acetate	Sat.	NR
Ethyl Chloride	Sat.	NR
Ethyl Ether	Sat.	NR
Ethylene Bromide	Sat.	NR
Ethylene Chloride	Sat.	NR
Ethylene Chlorohydrin	Sat.	NR
Ethylene Dichloride	Sat.	NR
Ethylene Glycol	Sat.	G
Ethylene Oxide	Sat.	NR
Fatty Acids	Sat.	NR
Ferric Chloride	Sat.	G
Ferrous Sulfate	Sat.	G
Fish Solubles	Sat.	NR
Fluoride Salts	Sat.	E
Fluorine Gas (Dry)	Sat.	NR
Formaldehyde	40	E-125°
Formic Acid	Sat.	NR
Freon	Sat.	NR
Fructose	Sat.	NR
Fuel Oil	Sat.	NR
Gas (Coke Oven)	Sat.	NR
Gas (Natural) Wet	Sat.	NR
Gasoline	Sat.	NR
Glaubers Salts	Sat.	G
Glycerine (Glycerol)	Sat.	G
Glycols	Sat.	G
Green Liquor (Paper Ind.)	Sat.	G
Gluten	Sat.	G
Grease	Sat.	NR
Hexanol Tertiary	Sat.	G
Hydrocarbons (Aliphatic)	Sat.	NR
Hydrocarbons (Aromatic)	Sat.	NR
Hydrochloric Acid (Muriatic)	Sat.	NR
Hydrochloric/Hydrofluoric	Sat.	E-150°
Hydrofluoric Acid	70	E
Hydrofluosilicic Acid	Sat.	E
Hydrogen	Sat.	G
Hydrogen Peroxide	10	NR
Hypochlorite Sodium	15	G-125°
Hypochlorous Acid	Sat.	G
Kerosene	Sat.	NR
Lacquers	Sat.	NR
Lauric Acid	Sat.	NR
Lauryl Chloride	Sat.	NR
Lime Slaked	Sat.	G
Linoleic Acid	Sat.	NR
Linseed Oil	Sat.	NR
Lubricating Oil #1	Sat.	NR
Magnesium Hydroxide	Sat.	G
Magnesium Nitrate	Sat.	G
Magnesium Sulfate	Sat.	G
Manganese Sulfate	Sat.	G
Mercury	Sat.	G
Methyl Chloride	Sat.	NR
Methyl Ethyl Ketone	Sat.	NR
Methylene Chloride	Sat.	NR
Mineral Oils	Sat.	NR
Molasses	Sat.	NR
Monochlor Acetic Acid	70	NR
Naphtha	Sat.	NR
Naphthalene	Sat.	NR
Nitric Acid Anhydrous	Sat.	NR
Nitric Acid	10	E-1 25°
Nitric Acid	20	G-100°
Nitric Acid Fuming	Sat.	NR
Nitrobenzene	Sat.	NR
Nitrogen Solutions	Sat.	G
Nitroglycerine (Neutral)	Sat.	NR
Oil ASTM #1 & #3	Sat.	NR
Oils - Petroleum	Sat.	NR
Oleum	Sat.	NR
Oxygen	Sat.	F
Ozone	Sat.	F
Pectin Solution Acid	Sat.	G
Pentracrythritol	Sat.	G
Perchlorethylene	Sat.	NR
Peroxide Bleach	Sat.	NR
Petroleum Crude	Sat.	NR
Phenol (Carbolic Acid)	Sat.	F
Phosgene Gas (Wet)	Sat.	NR
Phosphoric Acid	85	E-150°
Phosphorus Pentoxide (Wet)	Sat.	G
Plating Solutions - General	Sat.	G
Polyvinyl Acetate	Sat.	NR
Potassium Alum Sulfate	Sat.	G
Potassium Bicarbonate	Sat.	G
Potassium Dichromate	Sat.	NR
Potassium Borate	Sat.	G

Chemical	Conc. (%)	Max.Temp. 180°F
Potassium Bromate	Sat.	G
Potassium Carbonate	Sat.	G
Potassium Chloride	Sat.	G
Potassium Hydroxide	Sat.	E-150°
Propylene Dichloride	Sat.	NR
Salt Brine Alkaline	Sat.	E-150°
Sea Water	Sat.	G
Sodium Acetate	Sat.	NR
Sodium Aluminate	Sat.	E
Sodium Bichromate	Sat.	F-150°
Sodium Carbonate	Sat.	G
Sodium Chlorate	Sat.	NR
Sodium Chlorite	Sat.	G
Sodium Hydroxide	Sat.	E-150°
Sodium Hypochlorite	15	G-100°
Sodium Nitrate	Sat.	E
Sodium Phosphate (Acid)	Sat.	E-150°
Sodium Silica Fluoride	Sat.	E-150°
Stearic Acid	Sat.	NR
Stoddard's Solvent	Sat.	N
Sulfite Liquor	Sat.	G
Sulfuric Acid	35	G
Sulfuric Acid	50	F
Sulfuric Acid	65	NR
Sulfuric Acid	75	NR
Tanning Liquors	Sat.	G
Tetrahydrofurane	Sat.	NR
Thionyl Chloride	Sat.	NR
Tin Salts	Sat.	G
Toluene	Sat.	NR
Tributyl Phosphate	Sat.	NR
Trichloroethylene	Sat.	NR
Tricresyl Phosphate	Sat.	NR
Trichloroacetic Acid	Sat.	NR
Trisodium Phosphate	Sat.	E
Tungstic Acid	Sat.	G
Turpentine	Sat.	NR
Urea	Sat.	G
Varnish	Sat.	NR
Vinegar	Sat.	NR
Vinyl Acetate Emulsion	Sat.	NR
Vinyl Chloride Emulsion	Sat.	NR
Water (Acid Mine Water)	Sat.	F
Water (Demineralized)	Sat.	F
Water (Desalted)	Sat.	F
Water (Distilled)	Sat.	E
Water (Fresh)	Sat.	F
Water (Salt)	Sat.	G
Water (Saline)	Sat.	F
Water (Zeolite)	Sat.	G
Xylene	Sat.	NR
Zinc Acetate	Sat.	NR
Zinc Nitrate	Sat.	E
Zinc Sulfate	Sat.	E

Physical Properties

Specific Gravity	Approx. 1.14
Tensile	1,000 psi. minimum
Elongation at Break	600%
Hardness Shore "A"	Approx. 50 ±5
Water Absorption 72 hrs. @ 212'F	6**%** max.
Flammability	Burns and supports combustion
Color	Black
Abrasion Resistance	Excellent

Application

The installation of **Duro-Bond Chlorobutyl** sheet lining is described in the following steps:

1. The metal surfaces are sand or grit blasted to a white metal finish.

2. One coat of primer is applied immediately after blasting metal to prevent rusting. Additional coats of primer are applied, if necessary.

3. The required coats of intermediate or tie cement are applied allowing sufficient drying time so that the coat being applied does not lift the preceding cost.

4. Edges of all sheets are skived at an angle from the top surface to the bottom of the sheet.

5. The **Duro-Bond Chlorobutyl** sheet is wiped with the recommended solvent and allowed to dry before application. The **Duro-Bond Chlorobutyl** sheet is then applied using the minimum number of seams consistent with good lining practice. Edges should overlap approximately 2" unless restricted by dimensional tolerances. During application, sheets are rolled and all seams and corners carefully stitched to eliminate all trapped air between lining and cemented surfaces.

6. Steam is required to vulcanize **Duro-Bond Chlorobutyl** to produce the required physical and chemical properties and adhesion to the metal substrate.

Method of Testing

All lined surfaces are inspected for blisters, lifted edges and surface defects. Any special dimensional tolerances required after lining are also checked.

All areas are spark tested for leaks using a dielectric spark tester adjusted to 5,000 volts. The tester is moved constantly and quickly over the lining surface to prevent a burn through.

Repair Procedures

Most defects will be blisters between lining and substrate, blow holes where the lining is actually ruptured, small cracks in the lining or physical damage which may result in a scuffed or broken lining.

If a defect occurs, the defective lining is removed to a point where firm adhesion to the substrate is found, a suitable repair made with the same or equivalent lining material and subsequently testing the repaired areas as described in "Method of Testing".

Additional Information

For additional technical or safety information, contact us at 330-313-6372, knightmaterials.com, or info@knightmaterials.com.

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