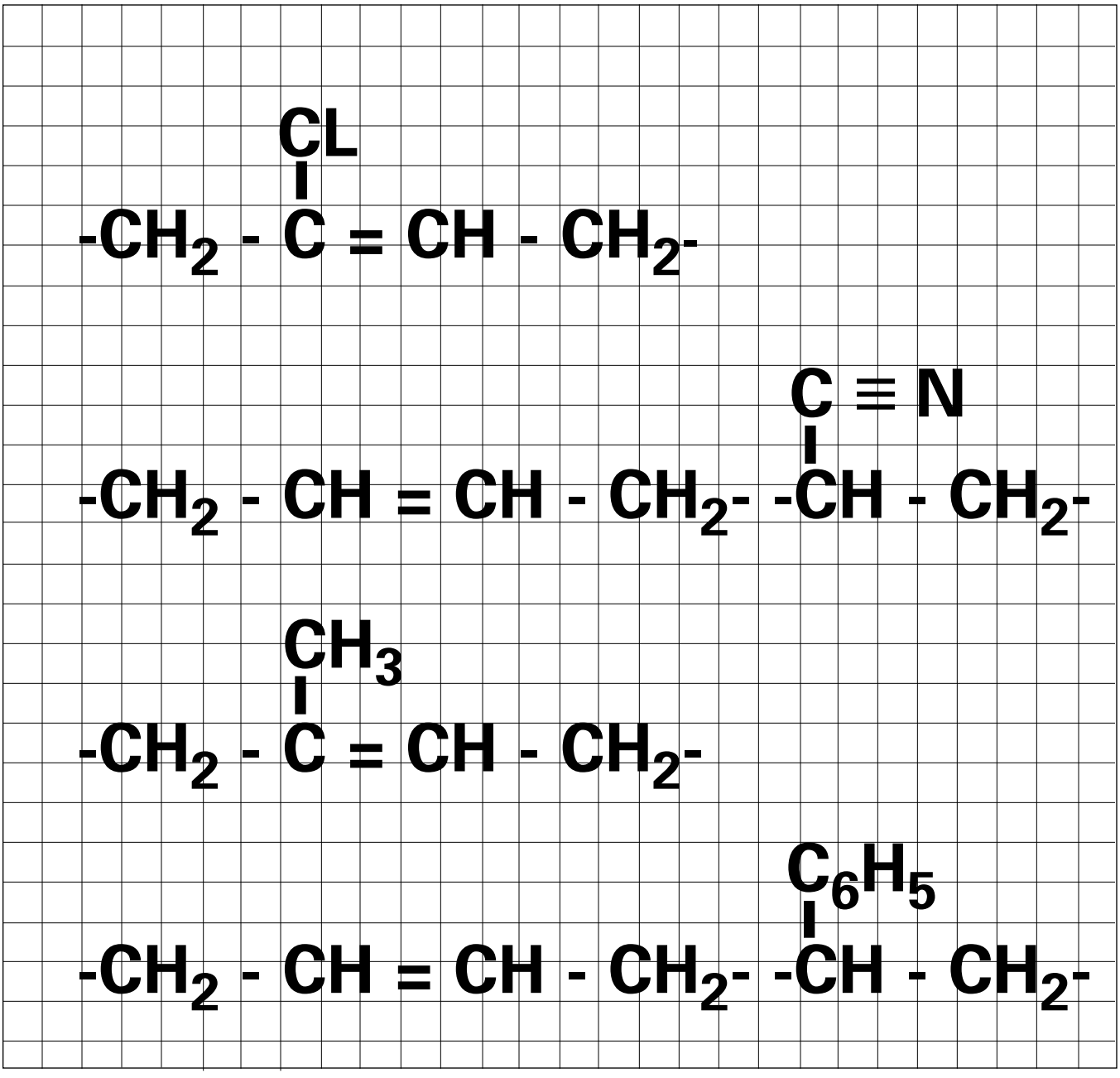
GEORGIA DUCK-Enerka

CONVEYOR BELTING

Chemical Resistance Chart

for Georgia Duck Conveyor and Elevator Belt Covers



A member of the UniPoly group of companies

Chemical Resistance Information

for Georgia Duck Conveyor and Elevator Belt Covers

This Bulletin should be used as a guide only

Important:
Please read the following carefully

In this brochure, we have attempted to characterize our various belting cover polymeric formulations with respect to the compound properties and with respect to their resistance toward various chemical and other agents. This information has been gathered from a multitude of sources. Accordingly, Georgia Duck cannot guarantee the accuracy of the information presented.

This bulletin should be used as a **guide only**, since the performance of any of our products may be affected dramatically by many factors, including the length of exposure to a particular substance, the concentration of any such substance, synergistic effects, exposure to more than one substance, and/or a wide range of temperatures. Georgia Duck makes no warranties with respect to the accuracy of the information contained in this bulletin and disclaims any liability for damages of any kind, including consequential damages, resulting from reliance on the information contained in this bulletin.

If you feel you need more than a "Guide", we will be happy to provide appropriate laboratory analyses at our standard laboratory rate. You will, of course, have to provide the parameters for any such tests.

The following rating system is used:

E	**Excellent**	Minor to no effect.
G	**Good**	Moderate effect—belt is functional throughout service life, but life will depend on severity of exposure.
F	**Fair**	Severe effect—belt function limited. Not particularly recommended, except that this cover may be best available.
NR	**Not Recommended**	

Covers/Formulation

Georgia Duck designs and manufactures a very broad variety of conveyor belt constructions designed to meet individual customer requirements. Cover quality and thickness are matched to the service life of the carcass involved. The specific cover formulation used in an individual belt construction is determined by the materials to be carried and the environment.

Georgia Duck uses an extremely wide variety of polymers including Polyvinyl chloride, Natural Rubber, Synthetic Rubber, and Urethane—to meet individual customer needs.

Individual cover formulations are usually blends consisting of one principle polymer and assorted modifiers such as other polymers, antioxidants, accelerators, curatives, pigments, extending and reinforcing fillers, plasticizers, etc.

Specific applications seldom require the belt cover to meet one or two conditions. More usually, a broad variety of required and desired properties are encountered. The specific cover formulation is quite likely to be a compromise which seeks to meet the customer's criteria and still remain cost effective.

For many applications the blending of polymers adds properties that cannot be obtained in a single polymer compound.

Cover Compound Properties

COVER	Abrasion Resistance	Cut/Gouge Resistance	Oil Resistance	Tempurature Range Low	Tempurature Range High Fines	Tempurature Range High Coarse	MSHA	Static Conductive **
PVC-SAR	G***	G	G	0˚ F	180˚ F	180˚ F	YES *	YES
PVC-SOR	G	G	E	0˚	180˚	180˚	YES *	YES
PVC-FDA	F	G	G	0˚	180˚	180˚	YES *	YES
PVC-CD	G	G	F	-30˚	180˚	180˚	NO	YES
NATURAL GUM-RMA 1	E	E	NR	-40˚	180˚	200˚	NO	YES
SBR	E	G	NR	-25˚	200˚	220˚	NO	YES *
MSHA-FR Under Ground	G	G	NR	-10˚	200˚	225˚	YES	YES
MSHA-FR Above Ground	G	G	NR	-20˚	200˚	225˚	YES	YES
MSHA-FOR	G	G	G	-20˚	200˚	225˚	YES	YES
MOR	G	G	G	-20˚	200˚	220˚	NO	YES *
SOR	G	G	E	-10˚	200˚	225˚	NO	YES
FR/MOR/SC	G	G	G	-20˚	200˚	225˚	YES	YES
MHR	G	G	NR	-20˚	300˚	350˚	NO	YES *
EPDM	G	G	NR	-20˚	350˚	400˚	NO	YES *
OHR	G	G	E	-10˚	250˚	350˚	NO	YES *
NITRILE	G	G	E	-10˚	200˚	225˚	NO	YES *
NEOPRENE	E	G	G	-20˚	225˚	250˚	YES *	YES *
BUTYL	G	G	NR	-10˚	300˚	350˚	NO	YES *
URETHANE	E	E	E	0˚	180˚	325˚	NO	NO

* On Request
** Check Individual Belt/static Specification
*** Sliding - Not Impinging

Polyvinyl Chloride — PVC

Georgia Duck's PVC belting product line utilizes a formulation known as SAR (Special Age Resistant). This particular formulation is designed to resist plasticizer extraction which provides extended life in comparison to ordinary PVC formulations. The standard black compound used in (Cover X Cover) constructions is water resistant, very resistant to petroleum based oils, unaffected by acids, alkalines and other corrosive chemicals. PVC can handle strong oxidizing agents such as potassium permanganate, chromic acid, nitric acid, hydrogen peroxide, sodium perborate, and chlorine. It resists abrasion, is smooth and nonporous, and can be readily formed to a variety of surface textures.

PVC is flame retardant per the current MSHA 2G test and/or ASTM D-378. PVC can be made static conductive to less than 300 Meg-Ohms. It will safely dissipate a static charge on a conveyor or elevator system providing the system is **properly grounded**.

Solvents such as benzene and toluene extract plasticizer from the PVC formulation, resulting in premature aging. Continued exposure will result in stiffening of the formulation. Solvents such as aldehydes, ketones, and tetrahydrofurans dissolve PVC.

Typically, PVC formulations do not age by oxidation, but by plasticizer extraction over an extended period of time. This "aging" can be accelerated by high temperatures, chemicals such as solvents, vegetable and animal fats, and other extractants.

PVN

A "top of the line" premium polymeric coating with exceptional resistance to plasticizer extraction. Resists the effects of vegetable, animal, and mineral fats, oils, and chemicals to a remarkable degree. Available on request on most belting styles. Food grade SOR fully meets USDA and FDA requirements. Approved for direct food contact up to 212 degrees Fahrenheit. Standard on "heavy cover/heavy duty" **food** belt.

PVC-CD

Our cold duck is a specially formulated PVC compound designed to provide excellent flexibility at very low temperatures. It is designed for operation in minus 30 degrees Fahrenheit to plus 212 degrees Fahrenheit. This belt has very low oil resistance.

Rubbers

The broad family of rubbers (including natural and synthetic) offer physical properties somewhat similar to those offered by the broad family of PVC formulations. However they do offer significantly greater resiliency. This can be quite important in handling material like gravel or rocks, etc. Accordingly, while we would think of a PVC formulation as being appropriate for handling soft minerals we would think in terms of rubber for the broad mineral spectrum **including hard rock.**

Natural Gum—RMA Grade I

Natural rubber (polyisoprene) offers an excellent balance of properties which result in outstanding performance in many demanding mechanical applications. It offers high resilience, high tensile strength, and excellent flexibility at low temperatures. When properly compounded with appropriate additives, natural gum can exhibit excellent abrasion/wear resistance, and good oxygen, ozone and sunlight resistance. It does have drawbacks however, such as: lack of oil resistance, and poor heat aging characteristics.

Natural gum is recommended for those applications requiring superior resistance to cutting, gouging, and abrasion. It is particularly effective for use when conveying heavy logs, hard rock ores, glass cullet, trap and other sharp, abrasive materials.

SBR-General Purpose — RMA Grade II

SBR (styrene butadiene rubber) is a polymer which has been the general purpose rubber of the belting industry for many years. it is recommended for the majority of above ground applications, including aggregate, log handling from the wood yard to debarkers, run of mine and sized coal, coal mine refuse, crushed ores, phosphate, potash, salt, sand, crushed materials and general mining applications.

It is a tough rugged, compound which ideally meets the demands of the mining industry. However, it does have a limitation of poor oil resistance, but is compounded for medium heat resistance and good oxygen, ozone and sunlight resistance.

MSHA — FR (Below Ground)

This is basically a SBR rubber which has been formulated to be flame retardant. MSHA-FR is designed for service in coal, potash, salt and other underground mining where fire resistant belts are mandatory. It meets the fire resistant standards of the US Department of Labor, Mine Safety and Health Administration-Standard 2G and ASTM D-378.

MSHA — FR

(Above Ground Applications)

Same as above but compounded to be sunlight and ozone resistant. Will retain flexibility at the lower temperatures anticipated in above ground applications (see table).

MSHA — FOR

A premium formulation which will meet the current flame retardant requirements and which will provide oil resistance for applications like oil treated coal in power plants. It is ideal for above ground coal preparation plants, coal fired steam plants, etc.

MOR

A premium formulation designed to provide moderate oil resistance. It will withstand attack in moderate oil environments such as wood chips, oil treated coal, and whole grains like corn and soybeans.

SOR

SOR (special oil resistant) is a premium formulation made especially for applications requireing extreme oil resistance. It has execellent abrasion, tear, ozone, and water resistance and is highly resistant to mineral oil and most other oils that cause swelling and sponginess in other elastomers. SOR is recommended for handling oily metal parts, crushed soybeans, and other materials where animal or vegitable fats are a deterioriating factor.

Classic Grain Handler — CGH

Classic Grain Handler is a specially formulated rubber which has been specifically engineered for handling grain products including wheat, corn, whole soybeans, cotton seed, flax seed, and sunflower seeds. When exposed to oily grains, CGH will not soften, peel, or flake. CGH is **fire resistant** (per MSHA-2G and ASTM D-378), as well as **moderately oil resistant** and **static conductive**. Electrical resistance is less than 1 megohm – exceeds RMA standards substantially.

Ultrs Grain Handler - UGH

A premium compound designed to convey oil-treated grain, crushed soybeans and other materials where mineral, animal or vegetable fat are a deteriorating factor and where combustion properties are a concern. UGH also meets MSHA 2-G and ASTM D-378 flame retardant requirements and OSHA requirements.

MHR—Moderate Heat Resistant

EPDM (ethylene propylene diene methylene tripolymar) blend offers excellent resistance to the effects of high temperature payloads and abrasive materials in a range up to 350 degrees Fahrenheit. Resists hardening and cracking, and is oxygen, ozone and sunlight resistant.

EPDM (Heat Resistant)

EPDM (ethylene propylene diene methylene tripolymer) offers excellent resistance to the effects of high temperature payloads and abrasive materials in a range up to 350 degrees Fahrenheit (fines) and 400 degrees Fahrenheit (lumps). Excellent resistance to hardening and cracking within its recommended temperature service range is offered. It is highly chemical, oxygen, ozone and sunlight resistant.

OHR—Oil/Heat Resistant

OHR is an oil and heat resistant compound designed to service applications or combinations of high temperature and oil. It has good abrasion resistance and retains flexibility at temperatures to 350 degrees Fahrenheit. This compound is recommended for conveying hot asphalt, paving mix, carbon/pitch mixes, and any hot service involving petroleum oils. It is ideally suited for applications in oil extractors and other plants handling oily grains and seeds where the belt must withstand the effects of vegetable oils at high temperatures as well as moisture from steam.

Nitrile—Buna N

Nitrile (Butadiene Acrylonitrile) is a co-polymer recommended for applications requiring excellent resistance to petroleum oils, mineral oils, and vegetable oils. Nitrile's resistance to the more aromatic distillants of petroleums is better than neoprene, but it offers relatively poor resistance to the swelling action of oxygenated solvents such as acetone, and ketones. It resists acids and bases with the exception of those having strong oxidizing affects. Resistance to heat aging is good.

Nitrile is frequently compounded with other polymers such as PVC. It does well in food belt applications.

Neoprene—Chloroprene

Neoprene has good all around properties. It is a tough elastomer with good aging characteristics, chemical resistance, good ozone resistance, good sunlight resistance, good resistance to oxidation, and is highly resilient. Certain compounds of Neoprene are flame retardant and will not support combustion — per current MSHA requirements

Butyl—(Isobutylene Isoprene)

Butyl has outstanding dielectric properties, good resistance to tearing, good aging properties at elevated temperatures (to 350˚ Fahrenheit), and good chemical stability. Butyl resists weathering, sunlight, ozone, mineral acids, ketones, alcohols, water absorption, and animal and vegetable oils.

However, butyl rubber has low resilience.

Urethane

Urethane offers excellent physical properties, superior abrasion resistance, and excellent oil and solvent resistance. It is a superior product for rough applications.

Urethane is a costly polymer and frequently loses out in terms of cost per unit function. Some urethanes can hydrolize under certain specific conditions which involve high humidity and elevated temperatures. When hydrolized, durometer and strength are compromised.

Georgia Duck Chemical Resistance Chart							
Chemical	**PVC**			**Urethane**	**Rubber**		
	PVC-SAR	**PVN**	**PVC CD**		**GR. I Natural Gum**	**GR. II General Purpose**	**Fire Resis MSHA-FR**
Acetaldehyde	NR	NR	NR	NR	F	NR	NR
Acetic Acid-Glacial	NR	NR	NR	E	F	F	F
Acetic Acid-30%	E	E	E	E	E	F	F
Acetic Anhyride	F	F	F	F	F	F	F
Acetone	NR	NR	NR	NR	NR	NR	NR
Alcohols	F	F	F	NR	G	G	G
Aluminum Chloride	E	E	E	E	E	E	E
Alumina Non-Activeted	NR	NR	NR	E	G	G	G
Alumina Nitrate	E	E	E	E	E	E	E
Ammonium Carbonate	E	E	E	E	E	E	E
Ammonium Hydroxide (dil)	E	E	E	E	NR	NR	NR
Ammonium Nitrate	E	E	E	E	F	E	E
Ammonium Persulfate	NR	NR	NR	NR	E	NR	NR
Ammonium Phosphate	G	E	F	E	G	E	E
Ammonium Sulfate	G	E	F	E	E	G	E
Aniline Dyes	G	G	G	G	G	G	G
Animal Fats	NR	G	F	G	NR	NR	NR
Asphalt-Hot	F	E	NR	E	NR	NR	NR
Barium Chloride	E	E	E	E	E	E	E
Barium Hydroxide	E	E	E	E	E	E	E
Barium Sulfide	E	E	E	E	E	G	E
Benzene	NR	NR	NR	NR	NR	NR	NR
Benzyl Alcohol	F	G	F	NR	NR	NR	NR
Borax	E	E	E	E	G	G	G
Boric Acid (dil)	E	E	E	E	E	E	E
Brine	E	E	E	E	E	E	E
Bunker Oil	F	E	NR	E	NR	NR	NR
Butter	F	E	F	G	NR	NR	NR

Georgia Duck Chemical Resistance Chart									
Chemical	**Rubber**								
	MSHA-FOR	**MOR**	**SOR**	**UGH FR/MOR/SC**	**MHR + EPDM**	**OHR**	**Nitrile**	**Neoprene**	**Butyl**
Acetaldehyde	NR	NR	NR	NR	G	NR	NR	F	G
Acetic Acid-Glacial	NR	NR	NR	NR	F	NR	NR	F	E
Acetic Acid-30%	F	F	F	F	F	F	F	F	F
Acetic Anhyride	F	F	F	F	NR	F	NR	E	F
Acetone	NR	NR	NR	NR	F	F	NR	F	G
Alcohols	G	G	E	G	G	E	E	E	E
Aluminum Chloride	E	E	E	E	E	E	E	E	E
Alumina Non-Activeted	E	E	E	E	E	E	E	E	E
Alumina Nitrate	E	E	E	E	E	E	E	E	E
Ammonium Carbonate	E	E	E	E	E	E	NR	E	E
Ammonium Hydroxide (dil)	NR	NR	NR	NR	E	NR	NR	E	E
Ammonium Nitrate	E	E	E	E	E	E	E	G	E
Ammonium Persulfate	NR	NR	NR	NR	E	NR	NR	E	
Ammonium Phosphate	E	E	E	E	E	E	E	E	E
Ammonium Sulfate	E	E	E	E	E	E	E	E	E
Aniline Dyes	F	F	NR	NR	G	NR	NR	G	G
Animal Fats	F	F	G	F	G	G	G	G	G
Asphalt-Hot	NR	NR	NR	NR	NR	E	G	NR	NR
Barium Chloride	E	E	E	E	E	E	E	E	E
Barium Hydroxide	E	E	E	E	E	E	E	E	E
Barium Sulfide	E	E	E	E	E	E	E	E	E
Benzene	NR	NR	NR	NR	NR	NR	NR	NR	NR
Benzyl Alcohol	NR	NR	NR	NR	NR	G	NR	E	G
Borax	G	G	G	G	E	G	G	E	E
Boric Acid (dil)	E	E	E	E	E	E	E	E	E
Brine	E	E	E	E	E	E	E	E	E
Bunker Oil	F	F	E	G	NR	E	E	E	NR
Butter	N R	N R	G	N R	F	G	E	E	G

Georgia Duck Chemical Resistance Chart							
Chemical	**PVC**			**Urethane**	**Rubber**		
	PVC-SAR	**PVN**	**PVC CD**		**GR. I Natural Gum**	**GR. II General Purpose**	**Fire Resis MSHA-FR**
Butyl Acetate	NR	NR	NR	NR	NR	NR	NR
Butylaldehyde	NR	NR	NR	F	NR	NR	NR
Calcium Bisulfite	NR	NR	NR	NR	NR	NR	NR
Calcium Chloride	E	E	E	E	E	E	E
Calcium Hydroxide	E	E	E	E	E	E	E
Calcium Hypochlorite	G	G	G	E	NR	NR	NR
Calcium Nitrate	E	E	E	E	E	E	E
Calcium Sulfide	E	E	E	E	G	G	E
Caliche-(Sodium Nitrate)	E	E	E	E	G	G	G
Carbolic Acid Destroys PE/Nylon	NR	NR	NR	NR	NR	NR	NR
Carbon Bisulfide	NR	NR	NR	NR	NR	NR	NR
Carbon Tetrachloride	NR	NR	NR	F	NR	NR	NR
Castor Oil	F	E	F	G	NR	NR	NR
Cellosolve	NR	NR	NR	NR	NR	NR	
Chinawood Oil	NR		G	F	G	NR	NR
Chlorinated Solvents	NR	NR	NR	NR	NR	NR	NR
Chlorine Solutions	E	E	E	E	G	G	G
Chrome Plating Solution	F	G	NR	NR	NR	NR	NR
Chromic Acid	NR	NR	NR	NR	NR	NR	NR
Citric Acid	E	E	E	E	E	E	E
Coal-Oil Treated	F	E	NR	E	NR	NR	NR
Coconut Oil	F	E	F	E	NR	NR	NR
Copper Chloride	E	E	E	E	E	E	E
Copper Sulfate	E	E	E	E	G	G	E
Corn Oil	NR	G	F	G	NR	NR	NR
Cotton Seed Oil	NR	G	F	G	NR	NR	NR
Cresol Destroys PE/Nylon	NR	NR	NR	NR	NR	NR	NR
Creosote	F	E	NR	E	NR	NR	NR

Georgia Duck Chemical Resistance Chart									
Chemical	**Rubber**								
	MSHA-FOR	**MOR**	**SOR**	**UGH FR/MOR/SC**	**MHR + EPDM**	**OHR**	**Nitrile**	**Neoprene**	**Butyl**
Butyl Acetate	NR	NR	NR	NR	G	NR	NR	NR	G
Butylaldehyde	NR	NR	NR	NR	G	F	F	F	G
Calcium Bisultite	NR	NR	NR	NR	NR	NR	NR	NR	NR
Calcium Chloride	E	E	E	E	E	E	E	E	E
Calcium Hydroxide	E	E	E	E	E	E	E	E	E
Calcium Hypochlorite	F	F	F	F	E	F	F	F	E
Calcium Nitrate	E	E	E	E	E	E	E	E	E
Calcium Sulfide	F	F	G	F	E	E	G	E	E
C al i c h e (Sodium Nitrate)	G	G	G	G	E	E	G	E	E
Carbolic Acid-Destroys PE/Nylon	NR	NR	NR	NR	NR	NR	NR	NR	NR
Carbon Bisulfide	NR	NR	F	NR	NR	NR	F	NR	NR
Carbon Tetrachloride	NR	NR	NR	NR	NR	NR	F	NR	NR
Castor Oil	F	F	E	F	G	E	E	E	G
Cellosolve	N R	N R	N R	N R	G	N R	N R	N R	G
Chinawood Oil	F	F	G	F	NR	NR	G	G	G
Chlorinated Solvents	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chlorine Solutions	G	G	G	G	E	E	G	E	E
Ch rome Plating Solution	NR	N R	NR	N R	N R	NR	NR	N R	N R
Chromic Acid	NR	NR	NR	NR	F	NR	NR	NR	F
Citric Acid	E	E	E	E	E	E	E	E	E
Coal-Oil Treated	G	G	E	G	NR	E	E	G	NR
Coconut Oil	F	F	E	F	E	G	E	G	E
Copper Chloride	E	E	E	E	E	E	E	E	E
Copper Sulfate	E	E	E	E	E	E	E	E	E
Corn Oil	F	F	G	F	F	E	G	G	G
Cotton Seed Oil	F	F	G	F	E	E	G	G	F
Cresol Destroys PE/Nylon	N R	N R	N R	N R	N R	N R	N R	N R	N R
Creosote	NR	NR	NR	NR	NR	NR	G	F	NR

Georgia Duck Chemical Resistance Chart							
Chemical	**PVC**			**Urethane**	**Rubber**		
	PVC-SAR	**PVN**	**PVC CD**		**GR. I Natural Gum**	**GR. II General Purpose**	**Fire Resis MSHA-FR**
Cresylic Acid	NR	NR	NR	NR	NR	NR	NR
Denatured Alcohol	E	E	E	F	E	E	E
Developing Liquids	E	E	E	E	E	G	G
Diacetone Alcohol	NR	NR	NR	NR	NR	NR	NR
Diesel Oil	F	E	NR	E	NR	NR	NR
Diethylene Glycol	E	E	E	E	G	G	G
Ethyl Acetate	NR	NR	NR	NR	NR	NR	NR
Ethyl Alcohol	G	G	G	NR	E	E	E
Ethyl Cellulose	E	E	E	E	G	G	G
Ethylene Glycol	NR	NR	NR	G	G	G	G
Fatty Acids	NR	G	NR	G	NR	NR	NR
Ferric Chloride	E	E	E	E	E	E	E
Ferric Sulfate	E	E	E	E	E	E	E
Formaldebyde (Aqueous)	E	E	E	E	NR	NR	NR
Formic Acid Destroys Nylon	NR	NR	NR	NR	NR	NR	NR
Fuel Oil	F	E	NR	E	NR	NR	NR
Furfural	NR	NR	NR	NR	NR	NR	NR
Gasoline	NR	NR	NR	G	NR	NR	NR
Gelatin	E	E	E	E	E	E	E
Glucose	E	E	E	E	E	E	E
Glycerine	E	E	E	E	E	E	E
Glycols	F	E	F	E	E	E	E
Green Sulphate Liquor	E	E	F	G	G	G	G
Hydraulic Oil	NR	G	NR	NR	NR	NR	NR
Hydrochloric Acid Diluted	E	E	E	E	G	G	G
Hydrogen Peroxide	E	E	E	NR	NR	NR	NR
Hydrobromic Acid Diluted	E	E	E	E	E	F	E
Isoctane (Gasoline)	NR	NR	NR	E	NR	NR	NR

Georgia Duck Chemical Resistance Chart									
Chemical	**Rubber**								
	MSHA-FOR	**MOR**	**SOR**	**UGH FR/MOR/SC**	**MHR + EPDM**	**OHR**	**Nitrile**	**Neoprene**	**Butyl**
Cresylic Acid	NR	NR	NR	NR	NR	NR	F	F	NR
Denatured Alcohol	E	E	E	E	E	E	E	E	E
Developing Liquids	G	G	E	G	G	E	E	E	G
Diacetone Alcohol	NR	NR	NR	NR	E	NR	NR	E	E
Diesel Oil	F	F	E	F	NR	E	E	G	NR
Diethylene Glycol	E	E	E	E	E	E	E	E	E
Ethyl Acetate	NR	NR	NR	NR	G	NR	NR	F	G
Ethyl Alcohol	E	E	E	E	E	E	E	E	E
Ethyl Cellulose	G	G	G	G	G	G	G	G	G
Ethylene Glycol	E	E	E	E	E	E	E	E	E
Fatty Acids	F	F	G	F	NR	G	G	G	NR
Ferric Chloride	E	E	E	E	E	E	E	E	E
Ferric Sulfate	E	E	E	E	E	E	E	E	E
Formaldehyde (Aqueous)	F	F	G	F	E	G	G	G	E
Formic Acid Destroys Nylon	NR	NR	NR	NR	NR	NR	NR	NR	NR
Fuel Oil	F	F	E	F	NR	E	E	G	NR
Furfural	NR	NR	F	NR	G	E	E	F	G
Gasoline	F	F	G	F	NR	E	E	G	NR
Gelatin	E	E	E	E	E	E	E	E	E
Glucose	E	E	E	E	E	E	E	E	E
Glycerine	E	E	E	E	E	E	E	E	E
Glycols	E	E	E	E	E	E	E	E	E
Green Sulphate Liquor	G	G	G	G	E	G	G	G	E
Hydraulic Oil	F	G	G	F	NR	G	G	G	NR
Hydrochloric Acid Diluted	G	G	G	G	E	G	G	G	E
Hydrogen Peroxide	NR	NR	NR	NR	F	NR	NR	NR	F
Hydrobromic Acid	E	E	E	E	E	E	NR	E	E
Isoctane (Gasoline)	NR	NR	NR	NR	NR	NR	E	G	NR

Georgia Duck Chemical Resistance Chart							
Chemical	**PVC**			**Urethane**	**Rubber**		
	PVC-SAR	**PVN**	**PVC CD**		**GR. I Natural Gum**	**GR. II General Purpose**	**Fire Resis MSHA-FR**
Isopropyl Acetate	NR	NR	NR	NR	NR	NR	NR
Kerosene	NR	F	NR	G	NR	NR	NR
Lacquers	NR	NR	NR	NR	NR	NR	NR
Lacquer Solvents	NR	NR	NR	NR	NR	NR	NR
Lactic Acid	E	E	E	E	E	E	E
Lard	NR	G	NR	G	NR	NR	NR
Latex Adhesives	G	E	G	NR	NR	NR	NR
Lime Sulfur	F	E	F	NR	NR	NR	NR
Limestone	E	E	E	E	E	E	E
Linolic Acid	F	F	F	G	NR	NR	NR
Linseed Oil	G	G	F	NR	NR	NR	NR
Lube Oil	F	E	F	E	NR	NR	NR
Lubricating Oils	F	E	F	E	NR	NR	NR
Magnesium Chloride	E	E	E	E	E	E	E
Magnesium Hydroxide	E	E	E	E	G	G	G
Magnesium Sulfate	E	E	E	E	G	G	E
Meat & Bone Meal	NR	G	F	G	NR	NR	NR
Methyl Alcohol	G	G	G	E	E	E	E
Methyl Butyl Ketone	NR	NR	NR	G	NR	NR	NR
Methyl Ethyl Ketone	NR	NR	NR	G	NR	NR	NR
Milk	E	E	E	E	E	E	E
Mineral Oil	F	E	F	E	NR	NR	NR
Mineral Spirits	NR	NR	NR	G	NR	NR	NR
Molasses	E	E	E	E	E	E	E
Mustard	NR	G	F	G	NR	NR	NR
Naptha	NR	NR	NR	F	NR	NR	NR
Nickel Chloride	E	E	E	E	E	E	E
Nickel Sulfate	E	E	E	E	G	G	G

Georgia Duck Chemical Resistance Chart									
Chemical	**Rubber**								
	MSHA-FOR	**MOR**	**SOR**	**UGH FR/MOR/SC**	**MHR + EPDM**	**OHR**	**Nitrile**	**Neoprene**	**Butyl**
Isopropyl Acetate	NR	NR	NR	NR	E	NR	NR	NR	E
Kerosene	NR	NR	G	NR	N R	G	G	F	NR
Lacquers	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lacquer Solvents	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lactic Acid	E	E	E	E	E	E	E	E	E
Lard	F	F	G	F	NR	G	G	F	NR
Latex Adhesives	F	F	G	F	NR	E	E	G	NR
Lime Sulfur	NR	NR	NR	NR	E	NR	NR	E	E
Limestone	E	E	E	E	E	E	E	E	G
Linolic Acid	NR	NR	G	NR	F	G	G	NR	F
Linseed Oil	F	F	E	F	G	E	E	G	G
Lube Oil	F	F	E	F	NR	E	E	G	NR
Lubricating Oils	F	F	E	F	NR	E	E	G	NR
Magnesium Chloride	E	E	E	E	E	E	E	E	E
Magnesium Hydroxide	G	G	G	G	E	G	G	E	E
Magnesium Sulfate	E	E	E	E	E	E	E	E	E
Meat & Bone Meal	F	F	G	F	NR	G	G	F	NR
Methyl Alcohol	E	E	E	E	E	E	E	E	E
Methyl Butyl Ketone	NR	NR	NR	NR	E	NR	NR	NR	E
Methyl Ethyl Ketone	NR	NR	NR	NR	E	NR	NR	NR	E
Milk	E	E	E	E	E	E	E	E	E
Mineral Oil	F	F	E	F	NR	E	F	G	G
Mineral Spirits	NR	NR	NR	NR	E	NR	NR	NR	F
Molasses	E	E	E	E	E	E	E	E	E
Mustard	F	F	G	F	NR	G	G	F	NR
Naptha	NR	NR	F	G	NR	F	F	NR	NR
Nickel Chloride	E	E	E	E	E	E	E	E	E
Nickel Sulfate	E	E	E	E	E	E	E	E	E

Georgia Duck Chemical Resistance Chart							
Chemical	**PVC**			**Urethane**	**Rubber**		
	PVC-SAR	**PVN**	**PVC CD**		**GR. I Natural Gum**	**GR. II General Purpose**	**Fire Resis MSHA-FR**
Nitric Acid-Diluted	E	E	E	NR	NR	NR	NR
Oleic Acid	NR	G	F	G	G	G	NR
Olive Oil	NR	G	F	G	NR	NR	NR
Oil Sands	F	E	F	E	NR	NR	NR
Oil Shale	F	E	NR	E	NR	NR	NR
Oxalic Acid	E	E	E	E	G	G	G
Oxygen	E	E	E	E	G	G	G
Ozone	E	E	E	E	NR	NR	NR
Palmitic Acid	NR	G	F	G	G	G	G
Paraffin	G	E	F	F	NR	NR	NR
Peanut Oil	NR	G	F	G	NR	NR	NR
Peel Oil	NR	G	F	G	NR	NR	NR
Perchioric Acid	NR	NR	NR	NR	NR	NR	NR
Petroleum Oils	F	E	F	E	NR	NR	NR
P h e n o l - Destroys PE/Nylon	E	E	E	G	N R	N R	N R
Phosphate Ore	G	G	NR	E	E	E	E
Phosphate-Processed	G	E	NR	E	F	F	F
Phosphoric Acid Diluted	E	E	E	E	G	F	F
Pine Oil	F	E	F	G	NR	NR	NR
Pine Resin	F	E	F	G	NR	NR	NR
Potassium Chloride	E	E	E				E
Potassium Hydroxide	E	E	E	E	G	G	E
Potassium Nitrate	E	E	E	E	E	E	E
Potassium Sulfate	E	E	E	E	G	G	G
Rapeseed Oil	NR	G	F	G	NR	NR	NR
Salicylic Acid	E	E	E	E	E	G	G
Salt Water	E	E	E	E	E	E	E
Sewage	F	E	G	E	NR	NR	NR

Georgia Duck Chemical Resistance Chart									
Chemical	**Rubber**								
	MSHA-FOR	**MOR**	**SOR**	**UGH FR/MOR/SC**	**MHR + EPDM**	**OHR**	**Nitrile**	**Neoprene**	**Butyl**
Nitric Acid-Diluted	NR	NR	NR	NR	G	NR	NR	NR	G
Oleic Acid	F	F	F	F	G	F	F	F	G
Olive Oil	F	F	G	F	G	E	E	G	G
Oil Sands	F	F	E	F	NR	E	E	G	NR
Oil Shale	F	F	E	F	NR	E	E	G	NR
Oxalic Acid	F	F	G	F	E	G	G	G	E
Oxygen	G	G	G	G	E	G	G	G	E
Ozone	NR	NR	NR	NR	E	G	NR	G	G
Palmitic Acid	G	G	E	G	G	G	E	G	G
Paraffin	G	G	E	G	G	G	E	G	G
Peanut Oil	F	F	G	F	G	F	G	F	F
Peel Oil	F	F	G	F	G	F	G	F	F
Perchloric Acid	NR	NR	NR	NR	G	NR	NR	E	G
Petroleum Oils	F	F	E	F	NR	E	E	G	G
Phenol-Destroys PE/Nylon	N R	N R	N R	N R	N R	N R	N R	N R	N R
Phosphate Ore	E	E	E	E	E	E	E	E	E
Phosphate-Processed	F	F	F	F	G	NR	NR	G	G
Phosphoric Acid Diluted	F	F	G	NR	E	G	G	G	E
Pine Oil	F	F	G	F	NR	G	G	F	NR
Pine Resin	F	F	G	F	NR	G	G	F	NR
Potassium Chloride	E	E	E	E	E	E	E	E	E
Potassium Hydroxide	G	G	G	G	E	G	G	E	E
Potassium Nitrate	E	E	E	E	E	E	E	E	E
Potassium Sulfate	E	E	E	E	E	E	E	E	E
Rapeseed Oil	F	F	G	F	E	G	G	G	E
Salicylic Acid	G	G	E	G	E	E	E	E	E
Salt Water	E	E	E	E	E	E	E	E	E
Sewage	F	F	E	F	F	E	E	G	N R

Georgia Duck Chemical Resistance Chart							
Chemical	**PVC**			**Urethane**	**Rubber**		
	PVC-SAR	**PVN**	**PVC CD**		**GR. I Natural Gum**	**GR. II General Purpose**	**Fire Resis MSHA-FR**
Shellac (Flakes)	E	E	E	E	E	E	E
Silicone Oil	F	E	F	E	F	F	F
Soap Solutions	E	E	E	E	G	G	G
Soda Ash	E	E	E	E	E	E	E
Sodium Bicarbonate	E	E	E	E	E	E	E
Sodium Bisulfate	E	E	E	E	E	G	G
Sodium Chloride	E	E	E	E	E	E	E
Sodium Hydroxide-Diluted	E	E	E	E	E	E	E
Sodium Hypochlorite	E	E	E	E	F	F	F
Sodium Nitrate	E	E	E	E	G	G	G
Sodium Perborate	E	E	E	E	G	G	G
Sodium Peroxide	E	E	E	E	G	G	G
Sodium Phosphates	E	E	E	E	E	E	E
Sodium Silicate	E	E	E	E	E	E	E
Sodium Sulfate	E	E	E	E	G	G	G
Sodium Sulfide	E	E	E	E	F	F	F
Sodium Thiosulfate	E	E	E	E	G	G	G
Sodium Chloride	E	E	E	E	E	E	E
Stearic Acid	G	G	G	E	F	F	F
Sugar Beets	E	E	E	E	E	E	E
Sugar Cane	E	E	E	E	E	E	E
Sugar Syrup	E	E	E	E	E	E	E
Sulfur	E	E	E	E	NR	NR	NR
Sulfuric Acid Diluted	E	E	E	E	F	F	F
Sulfurous Acid	E	E	E	E	F	F	F
Sunlight	E	E	E	E	F	G	G
Tannic Acid	E	E	E	E	E	G	G
Tanning Liquor	F	E	F	G	NR	NR	NR

Georgia Duck Chemical Resistance Chart									
Chemical	**Rubber**								
	MSHA-FOR	**MOR**	**SOR**	**UGH FR/MOR/SC**	**MHR + EPDM**	**OHR**	**Nitrile**	**Neoprene**	**Butyl**
Shellac (Flakes)	E	E	E	E	E	E	E	E	E
Silicone Oil	G	G	E	G	G	E	E	E	E
Soap Solutions	G	E	E	G	E	E	E	E	E
Soda Ash	E	E	E	E	E	E	E	E	E
Sodium Bicarbonate	E	E	E	E	E	E	E	E	E
Sodium Bisulfate	G	G	E	G	E	E	E	E	E
Sodium Chloride	E	E	E	E	E	E	E	E	E
Sodium Hydroxide Diluted	E	E	G	E	E	E	G	E	E
Sodium Hypochlorite	F	F	G	F	G	G	G	G	G
Sodium Nitrate	G	G	G	G	E	G	G	E	E
Sodium Perborate	G	G	G	G	E	G	G	E	E
Sodium Peroxide	G	G	G	G	E	G	G	E	E
Sodium Phosphates	E	E	E	E	E	E	E	E	E
Sodium Silicate	E	E	E	E	E	E	E	E	E
Sodium Sulfate	G	E	E	G	E	E	E	E	E
Sodium Sulfide	F	F	F	F	G	NR	NR	G	G
Sodium Thiosulfate	G	G	G	G	E	G	G	E	E
Sodium Chloride	E	E	E	E	E	E	E	E	E
Stearic Acid	F	F	F	F	F	F	F	F	F
Sugar Beets	E	E	E	E	E	E	E	E	E
Sugar Cane	E	E	E	E	E	E	E	E	E
Sugar Syrup	E	E	E	E	E	E	E	E	E
Sulfur	NR	NR	NR	NR	E	NR	NR	E	E
Sulfuric Acid-Diluted	F	F	F	F	G	NR	NR	G	G
Sulfurous Acid	F	F	F	F	G	NR	NR	G	G
Sunlight	G	G	G	G	G	G	G	E	E
Tannic Acid	G	G	E	G	E	E	E	E	E
Tanning Liquor	F	F	G	F	NR	G	G	F	NR

Georgia Duck Chemical Resistance Chart							
Chemical	**PVC**			**Urethane**	**Rubber**		
	PVC-SAR	**PVN**	**PVC CD**		**GR. I Natural Gum**	**GR. II General Purpose**	**Fire Resis MSHA-FR**
Tar, Bituminous	F	E	NR	E	NR	NR	NR
Tartaric Acid	E	E	E	E	E	G	G
Tetrachloroethylene	NR	NR	NR	NR	NR	NR	NR
Toluene (Toluol)	NR	F	NR	NR	NR	NR	NR
Transformer Oil	F	F	NR	G	NR	NR	NR
Transmission-Type A	F	G	F	G	NR	NR	NR
Trichloroethylene	NR	NR	NR	NR	NR	NR	NR
Trichloroethane	NR	NR	NR	NR	NR	NR	NR
Tricresyl Phosphate	F	E	NR	NR	NR	NR	NR
Trisodium Phosphate	E	E	E	E	E	E	E
Tung Oil	F	E	F	G	NR	NR	NR
Turpentine	NR	F	NR	NR	NR	NR	NR
Ultra-Violet	E	E	E	E	F	G	G
Urea	E	E	E	E	E	E	E
Urine	E	E	E	G	G	G	G
Vegetable Oils	NR	E	NR	G	NR	NR	NR
Vinegar	E	E	E	E	G	G	G
Water	E	E	E	E	E	E	E
Whiskey	G	E	G	G	E	E	E
Wines	G	E	G	G	E	E	E
White Pine Oil	F	E	F	G	NR	NR	NR
White Oil	F	E	F	E	NR	NR	NR
Wood Oil	F	E	F	E	NR	NR	NR
Wood Chips	G	E	G	E	F	F	F
Destroys Nylon	N R	N R	NR	N R	N R	N R	N R
Zinc Chloride	E	E	E	E	E	E	E
Zinc Sulphate	E	E	E	E	G	G	G

Georgia Duck Chemical Resistance Chart									
Chemical	**Rubber**								
	MSHA-FOR	**MOR**	**SOR**	**UGH FR/MOR/SC**	**MHR + EPDM**	**OHR**	**Nitrile**	**Neoprene**	**Butyl**
Tar, Bituminous	F	F	G	F	NR	E	E	G	NR
Tartaric Acid	G	G	E	G	G	E	E	G	G
Tetrachloroethylene	NR	NR	NR	NR	NR	NR	NR	NR	NR
Toluene (Toluol)	NR	NR	F	NR	NR	F	F	NR	NR
Transformer Oil	F	F	E	F	NR	E	E	G	NR
Transmission-Type A	G	G	E	G	NR	E	E	G	NR
Trichloroethylene	NR	NR	NR	NR	NR	NR	F	NR	NR
Trichloroethane	NR	NR	NR	NR	NR	NR	NR	NR	NR
Tricresyl Phosphate	NR	NR	NR	NR	F	NR	NR	G	E
Trisodium Phosphate	E	E	E	E	E	E	E	E	E
Tung Oil	G	G	E	G	F	E	E	G	F
Turpentine	G	G	E	F	NR	E	E	NR	NR
Ultra-Violet	G	G	G	G	G	NR	G	E	E
Urea	E	E	E	E	E	E	E	E	E
Urine	G	G	G	G	G	G	G	G	G
Vegetable Oils	G	G	E	G	F	E	E	G	F
Vinegar	G	G	G	G	E	G	G	E	E
Water	E	E	E	E	E	E	E	E	E
Whiskey	E	E	E	E	E	E	E	E	E
Wines	E	E	E	E	E	E	E	E	E
White Pine Oil	G	G	E	G	NR	E	E	G	NR
White Oil	G	G	E	G	NR	E	E	G	NR
Wood Oil	G	G	E	G	NR	E	E	G	NR
Wood Chips	G	G	E	G	NR	E	E	G	NR
Xylene-Destroys Nylon	NR	NR	NR	NR	NR	NR	NR	NR	NR
Zinc Chloride	E	E	E	E	E	E	E	E	E
Zinc Sulphate	E	E	E	E	E	E	E	E	E

NOTES

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