

## Carboline Global Marine Chemical Service

<b>Cargo to be Carried</b>	<b>Phenoline 353</b>	<b>Phenoline 385</b>	<b>Plasite 4500 FS</b>	<b>Plasite 9060 LT</b>	<b>Carbozinc 11</b>
Absolute Ethanol	R	R		R	R
Aircraft gasoline	R			R	R
Alcohol, linear primary C12-C15	R			R	R
Alcohol Ethoxy Sulfates	R	R		R	R
Alkane (Dodecyl benzene)	R			R	R
Alkyl benzene	R	R		R	R
Alpha-hydroxytoluol (Benzyl alcohol)	R			R	R
Alpha olefins	R			R	R
Alpha-n-Amylene (1-Pentene)	R			R	R
Aluminum Hydroxide dry			R	R	
Aluminum nitrate 30%	R		R	R	
Aluminum sulfate 30%	R		R	R	
Ammonia fertilizer solutions			R	R	
Ammonium nitrate 10% - 50% solution in water	R	R	R	R	
Ammonium sulfate 40% (no heat)	R		R	R	
Ammonium sulfide 45% or less	R	R	R	R	
Amyl alcohol (iso, normal, secondary, and tertiary)				R	R
Amyl carbinol (hexanol)	R			R	R
Amyl hydride (Pentane)	R			R	R
Amylene (1-Pentene)	R			R	R
Amylene hydrate (Amyl alcohol)				R	R
Anivax SX 3158	R			R	R
Antifreeze (glycol-based)	R			R	R
Arachis oil				R	R, See note # 2
Aroma (Extender oils)	R			R	R
Aromatic 100	R	R		R	R
Aromatic Concentrate (carbon black/feed stock)	R			R	R, See note # 7
Aromatic hydrocarbons	R	R		R	R, See note # 6
Aromatic oils (Extender oils)	R			R	R
Aromatic petroleum solvents	R			R	R
Atrazine				R	
Aviation gasoline	R			R	R
Aviation kerosene	R			R	R
Avocado oil	R		R	R	
Axle oil (lube oil)	R		R	R	R
2-Butoxy ethanol (Butyl cellosolve)	R			R	R
Benzene				R	R
Benzene trimethyl				R	R
Benzene, industrial nitration grade				R	R
Benzol				R	R



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Benzyl alcohol	R			R	R
Brake Fluid glycol base	R	R	R	R	R
Brake Fluid glycol ether base	R	R	R	R	
Brine	R	R	R	R	R, See note # 4
Bunker C oil and solvent	R			R	R
Bunker oil	R		R	R	R
Butane	R			R	R
Butanol (iso, normal, secondary and tertiary)	R			R	R
Butyl alcohol (iso, normal, secondary, tertiary)	R			R	R
Butyl carbinol (n-Amyl alcohol)				R	R
Butyl carbitol (Diethylene glycol monobutyl ether)				R	R
Butyl cellosolve (Ethylene glycol monobutyl ether)				R	R
Butyl dioxitol	R			R	R
Butyl glycol ether				R	R
Butyl glycol monomethyl ether				R	R
Butyl oxitol (Ethylene glycol monobutyl ether)				R	R
Butyl phthalate	R			R	R
Butyl stearate	R			R	R
Butylene glycol	R			R	R
Butylene, alpha, 2	R			R	
Butylene, poly	R			R	R
n-Butyl butyrate	R			R	
n-Butyl ether				R	R
Cajaputene (Dipentene)	R			R	R
Calcium alkyl salicylate	R			R	R
Calcium bromide 48%, 53%	R			R	R, See note # 1, # 4
Calcium carbonate solution (130°F maximum)	R			R	
Calcium chloride (saturated)	R	R	R	R	
Calcium hydroxide 10% - 50%	R	R	R	R	
Calcium hypochlorite 15%				R	
Capric acid	R			R	
Caproic acid				R	
Capryl alcohol				R	R
Caprylic acid (Oxylic acid)	R			R	
Carbitol solvent (Diethylene glycol monethyl ether)				R	R
Carbon tetrabromide				R	R, See note # 3
Carbon tetrachloride				R	R, See note # 3
Carbonic acid 10%	R			R	
Carbowax 200, 300 polyethylene glycol, 600	R			R	R
Carnation Oil (white mineral oil)	R		R	R	R



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Carnauba wax	R			R	
Caustic potash	R		R	R	
Caustic soda (NaOH) 10%, 20%, 50%			R	R	
Cellosolve (Ethylene glycol monoethyl ether )			R	R	R
Certrex's mineral spirits	R		R	R	R
Chlorotoluene (all isomers)				R	R, See note # 3
Choline chloride				R	
Cinene (Dipentene)				R	R
Circosol oil (extender oil)	R		R	R	R
Citric acid 25% and 50%	R	R	R	R	
Coal tar benzene	R			R	R
Coal tar naphtha	R		R	R	R
Cocoa nut oil, crude	R		R	R	
Cocoa oil	R	R		R	R, See note # 2
Copra oil (Coconut oil)	R		R	R	R, See note # 3
Coray 40	R			R	R
Cotton seed oil (sulfuric acid-free)	R		R	R	R, See note # 3
Crude condensate (naphtha, petroleum)	R			R	R
Crude glycerine			R	R	
Crude Oil (sour)	R	R	R	R	See note # 9
Crude Oil (sweet)	R	R	R	R	R, see note # 9
Cumene	R		R	R	R
Cumene, pseudo	R		R	R	R
Cycloheptane	R			R	R
Cyclohexane	R	R		R	R
Cyclohexanol	R			R	R
Cyclohexene				R	R
Cyclopentane				R	R
Cyclopentene	R			R	R
Cyclo-Sol 53	R			R	R
Cylinder steam refined stock oil	R		R	R	R
p-Cymene (Isopropyltoluene)	R		R	R	R
Diesel	R	R	R	R	R
Dimethylcarbinol (Isopropyl alcohol)			R	R	R
Dinonyl phthalate (DNP)	R			R	R
Diocetyl phthalate (DOP)	R			R	R
Diol 80 (lube oil)	R		R	R	R
Dipropyl ketone (Heptanone)	R			R	R
Dipropylene glycol	R			R	R
Distearyl dimethyl ammonium chloride				R	



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Ditridecyl phthalate (DTDP)				R	R
Diundecyl phthalate				R	R
Dobanes	R			R	R
Dobanols (fatty alcohols)	R			R	R, See note # 2
Dodecanoic acid (Lauric acid)	R			R	
Dodecanol (Lauryl alcohol)	R		R	R	R
Dodecene (Tetrapropylene)	R			R	R
Dodecyl alcohol			R	R	R
Dodecylbenzene (Alkane)				R	R
Dowanol DB (Diethylene glycol butyl ether)	R	R		R	R
Dowanol DE (Diethyl glycol ethyl ether)	R	R		R	R
Dowanol DESG (Modified Dowanol DE)	R	R		R	R
Dowanol DM (Diethylene glycol methyl ether)	R	R		R	R
Dowanol EB (Ethylene glycol n-butyl ether)	R	R		R	R
Dowanol EM (Ethylene glycol methyl ether)	R	R		R	R
Dowanol EP (Ethylene glycol propyl ether)	R	R		R	R
Dowanol PM (Propylene glycol methyl ether)	R	R		R	R
Dowanol PMIX (PM + DPM + TPM)				R	R
Dowanol TPM (Tripropylene glycol methyl ether)				R	R
Drilling Brine	R		R	R	
Drilling mud	R		R	R	
2-Ethylbutanol	R			R	R
2-Ethylhexanol	R			R	R
2-Ethylhexyl alcohol	R			R	R
Beta-Ethoxy ethyl methacrylate monomer				R	
Engine oils	R		R	R	R, See note # 1
Ethanol (technical)	R		R	R	R
Ethidene (Norbonene)				R	
Ethoxol (Ethylene glycol monoethyl ether)	R	R		R	R
Ethoxyethanol (Cellosolve)	R	R		R	R
Ethyl alcohol Crude, denatured, fuel grade	R	R	R	R	R
Ethyl butyrate	R			R	
Ethyl cellosolve	R			R	R
Ethyl phthalate	R			R	
Ethyl silicate, condensed	R			R	R
Ethylbenzene	R	R		R	R
Ethylcyclohexane				R	R
Ethylene (Ethene)	R			R	R
Ethylene glycol (Ethylene alcohol)	R		R	R	R
Ethylene glycol methyl ether	R		R	R	R



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Ethylene glycol monethyl ether (2-Ethoxyethanol)	R	R	R	R	R
Ethylene glycol monobutyl ether (2-Butoxyethanol)	R	R	R	R	R
Ethylene glycol monomethyl ether (2-Methoxyethanol)	R	R	R	R	R
Ethylene glycol monophenyl ether	R	R	R	R	R
Ethylene glycol phenyl ether			R	R	R
Ethylene polyglycol	R			R	R
Ethylenediaminetetraacetic acid 10% (EDTA)	R			R	
Ethylhexanol	R			R	R
Ethyltoluene	R			R	R
Fatty alcohol, natural and synthetic	R			R	R, See note # 2
Ferric sulfate (up to 20%)	R		R	R	
Fertilizer solutions			R	R	
Fish oil	R		R	R	R, See note # 2
Flexol DIOP (Diisooctyl phthalate, 10-10 Diisodecyl phthalate)	R			R	R
Flexol NHDP (Normal, heavy, n-octyl, n-decyl phthalate)	R			R	R
Foots soapstock oil (sulfuric acid-free)	R			R	
Fuel oil #2	R	R	R	R	R
Fuel, jet JP4, JP5	R	R	R	R	R, See note #1
Gas oil	R		R	R	R
Gasoline	R	R	R	R	R
Gasoline blended	R	R		R	R, See note # 1
Glycerin synthetic	R		R	R	R
1-Heptanol (Enanthic alcohol)	R			R	R
1-Heptene (1-Heptylene)	R			R	R
1-Hexadecanol (Hexadecyl alcohol)	R			R	R
2-Heptanone (Methyl n-amyl ketone)	R			R	R
3-Heptanol	R			R	R
3-Heptanone (Ethyl butyl ketone)	R			R	R
Heart cut distillate (Exxon solvent blend)	R			R	R
Heptane (all isomers)	R		R	R	R
Heptyl alcohol (all isomers)	R			R	R
Hexadecane (Cetane)	R			R	R
Hexane (all isomers)	R	R	R	R	R
Hexane triol	R		R	R	R
Hexanoic acid (Caproic acid)	R			R	
Hexanol (all isomers)	R			R	R
Hexene	R			R	R
Hexoic Acid (Caproic Acid)	R			R	
Hexyl alcohol (iso, normal)	R			R	R
Hydrazine 5%				R	R-60 days



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Hydrocarbons, alpha and aromatic	R	R		R	R
Hydroxylamine, solution	R			R	
Jet fuel, JP4, JP5, JP6	R	R	R	R	R, See note # 1
Kerosene	R	R	R	R	R
KMC Oil (Diisopropyl naphthalene)	R			R	R
Kodaflex (Hexanol isobutyrate)	R			R	R
Lanolin	R			R	R, See note # 2
Lard	R		R	R	R, See note # 2
Lauryl alcohol	R			R	R, See note # 2
Lignosite (50% lignin liquor)	R	R	R	R	
Linseed oil	R			R	R, See note # 2
Lube oil	R		R	R	
Methanol (less than 1% water)			R	R-60 days	R
Mineral spirit #3, #4, #10	R	R		R	R
Mineral spirits	R	R	R	R	R
Monchlorobenzene				R	R, See note # 3
Mononitro benzene				R	R, See note # 3
Monopropylene glycol	R	R		R	R
MTBE	R			R	R
1-Nitropropane and 2-Nitropropane	R			R	R, See note # 3
Naphtha	R		R	R	R
Nitrobenzene	R			R	R, See note # 3
Nitroethane	R			R	R, See note # 3
Nitrogen fertilizers			R	R	
Nonane (all isomers)	R			R	R
Nonanol	R			R	R
Nonene	R			R	R
Nonyl alcohol	R			R	R
Nonyl phenol			R	R	R, See note # 8
Normal amyl alcohol	R			R	R
n-octyl n-decyl adipate (NODA)	R			R	R, See note # 3
Octadecane	R			R	R
Octadecene	R			R	R
Octane (iso and normal)	R			R	R
Octanol and Octene	R			R	R
Octyl alcohol (iso and normal)	R			R	R
Olefin mixture (C5-C7) and (c8-C12)	R			R	R
Olefins	R			R	R
Ortho nitrotoluene	R			R	R
Oxalic acid, dry	R			R	



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Oxo alcohol (Isooctyl alcohol)				R	R
1-Pentene	R			R	R
1-Phenyl-1-xylyl ethane	R			R	R
n-Propyl alcohol	R			R	R
Palm kernel oil (sulfuric acid-free)	R	R		R	R, See note # 2
Palm olein, crude	R	R		R	R, See note # 2
Palm residue	R	R		R	R, See note # 2
Palmac 505, 55-16, and 98-12	R			R	
Palmitic acid	R			R	
Paper mill white/green liquor				R	
Paraffin	R	R		R	R
Paraffin wax	R	R		R	R
Pentane (all isomers)	R	R		R	R
Pentoxone	R			R	R
Petrolatum liquid (white mineral oil)	R			R	R
Petroleum crude, naphtha, refined, solvents, solvents aromatic and sulfonate oils	R		R	R	R, See note # 9
Petroleum wax	R	R		R	R
Phenol, dodecyl- and nonyl				R	R, See note # 8
Phthalate 911 (DIOP)	R			R	R
Potassium chloride (50%)	R		R	R	
Potassium hydroxide 20% and 50%	R		R	R	
Skydrol Y-91	R		R	R	R, See note # 6
Skydrol 500	R		R	R	R
Slackwax (petrolatum)	R		R	R	R
Sodium benzoate	R			R	
Sodium bisulfide (50% or less)			R	R	
Sodium bisulfite (50% or less)			R	R	
Sodium carbonate (saturated)	R		R	R	R
Sodium chloride (10 %)	R		R	R	R, See note # 4
Sodium chloride (saturated)	R	R	R	R	R, See note # 4
Sodium formate 10%	R			R	
Sodium formate 50%	R	R		R	
Sodium hydrogen sulfide (50% or less)	R			R	
Sodium hydrosulfide (50% or less)	R	R	R	R	
Sodium hydroxide 10% - 20% and 50 %	R	R	R	R	
Sodium nitrite solution	R			R	
Sodium silicate	R			R	
Sodium sulfide spent caustic	R		R	R	
Sodium sulfite (50% or less)	R	R	R	R	



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Sorbitol	R			R	
Sour crude oil	R		R	R	R, See note # 9
Toluene, industrial and nitration grade	R			R	R
Turkey red oil	R			R	R, See note # 2
U.S. White oil	R		R	R	R
Urea, ammonium nitrate solutions	R		R	R	
Urea, ammonium phosphate solution	R		R	R	
V,M,&P Naphtha	R		R	R	R
White oil	R		R	R	R
White spirit 100 (Mineral spirits)	R	R	R	R	R
White spirit 150 (mineral spirits)	R	R	R	R	R
White spirit 160/180	R	R	R	R	R
White spirits (Mineral spirits)	R	R	R	R	
Xylene	R	R	R	R	R

### NOTES

1. Requirements for pH of 5.5-10.0, there is a possibility of slight zinc pickup in water solutions when any zinc is used as a lining.
2. Animal or vegetable oils suitability is dependent upon the amount of free fatty acids (f.f.a) which is indicated as percent f.f.a. Animal oils, palm oil, coconut oil, grease, lard and tallow often contain high amounts of f.f.a. Products such as these should not be carried in zinc lined tanks unless the f.f.a. present has been determined to be less than 2.5% or the product has an acid value of 5.0 or less. Products with a f.f.a. level well below 2.5%, if pH is less than 5.5 free acid radicals will attack zinc. pH should be tested prior to loading zinc tank.
3. Esters, acrylates, acetates, halogenated compounds tend to hydrolyze in the presence of water and form organic or mineral acids. Chlorinated solvents should be properly stabilized. Water content should not exceed 200 parts per million (0.02%). In the case of products which are not dry or properly stabilized exposure should be limited to dry tanks and water leaks must be avoided. Temperatures must not exceed 40 C.
4. Carbozinc 11 withstands intermittent exposure to sea water but continuous immersion over prolonged periods will reduce the life of the coatings.
5. Caution must be used when cleaning the tanks and choosing next cargo.
6. Similar cargos have been carried successfully although no confirming test have been run. Always look for a specific cargo name when a general classification is listed.
7. Under certain conditions cargos such as fish oil and gas oil have been found to discolor organic coatings.
8. Carbozinc 11 is resistant to phenol (carbolic acid). Since phenol discolors if exposed to sunlight and/or trace alkalies, freedom from discoloration cannot be guaranteed. A nitrogen blanket is recommended. Tank must be completely clean and dry prior to loading.
9. Carbozinc 11 is normally satisfactory in sweet crude oil. Sour crudes may be high in sulfur content. Therefore, a specific recommendation should be requested from the Carboline representative, Sour crude should not be carried in Carbozinc 11.