

Material Selection

Information contained in the Material Selection Chart is a combination of theoretical and application data, and should be taken as a guide only. Pressure-temperature rating, material compatibility and other parameters also to be considered for rubber selection. Please consult our Technical Department for a particular application. With constant material / process changes, Diaval® cannot accept responsibility for diaphragm and/or body material performance resulting from such changes.

Fluid	Body Material		Diaphragm		Recommendations
Abrasive slurry - non acidic	Soft rubber lined	Ductile iron	D10		
Abrasive slurry - acidic	Butyl lined		D20 or D30		
Acetic acid up to 50%	Halar® lined	FEP lined	D20 or D30		
Acetic acid over 50%	Halar® lined	FEP lined	D20 or D30		
Acetic acid (glacial)	Halar® lined	FEP lined	D20 or D30		Sealed bonnet
Acetoacetic ester	Halar® lined	Stainless steel	D90		
Acetone	Ductile iron		D20 or D30		
Acetylene	Ductile iron	Cast steel	D20 or D30		No copper
Alum	Hard rubber lined	Soft rubber lined	D10	D20 or D30	
Alumina	Ductile iron	Soft rubber lined	D20 or D30	D10	
Aluminium sulphate	Hard rubber lined	Butyl rubber lined	D10	D20 or D30	
Ammonia, aqueous	Ductile iron	Stainless steel	D10	D20 or D30	Sealed bonnet
Ammonia gaseous	Ductile iron	Stainless steel	D10	D20 or D30	Sealed bonnet
Ammonium nitrate	Butyl rubber lined	FEP lined	D20 or D30	D50	
Ammonium phosphate	Butyl rubber lined		D10	D20 or D30	
Ammonium sulphate	Butyl rubber lined		D20 or D30		
Aniline	FEP lined	Stainless steel	D92		
Antifreeze	Ductile iron	Butyl rubber lined	D20 or D30		
Apple juice	Stainless steel		D15		
Asbestos cement	Soft rubber lined	Ductile iron	D10		
Ash handling	Soft rubber lined	Ductile iron	D10		
Asphalt	Ductile iron	Cast steel	D20 or D30		
Avcat	Stainless steel	Cast steel	D70	D20 or D30	
Avgas	Stainless steel	Cast steel	D70		
Avtag	Stainless steel	Cast steel	D70	D20 or D30	
Avtur	Stainless steel	Cast steel	D70	Butyl	
Barium carbonate	Hard rubber lined	Stainless steel	D20 or D30	D50	
Barium sulphate	Soft rubber lined	Hard rubber lined	D20 or D30		
Barytes	Soft rubber lined	Hard rubber lined	D10		
Basic slag	Soft rubber lined	Ductile iron	D10		
Battery acid	Hard rubber lined	Butyl rubber lined	D20 or D30		
Bauxite	Soft rubber lined		D10		
Beet juice	Ductile iron	Hard rubber lined	D20 or D30		
Benzene	Butyl rubber lined	Halar® lined	D92		
Benzyl alcohol	FEP lined	Halar® lined	D92		Sealed bonnet
Bilge (ships)	Ductile iron	Cast steel	D40		
Blast furnace gas	Ductile iron	Ductile iron	D20 or D30		
Bleaching powder	Hard rubber lined	Hypalon lined	D60		
Borax	Hard rubber lined		D10		
Brine	Hard rubber lined	Stainless steel	D10	D92	
Brine, chlorinated	Hard rubber lined	Hypalon lined	D60		
Bromine	FEP lined		D92		Sealed bonnet
Bcf	Ductile iron		D92		
Butane	Ductile iron	Cast steel	D40	D50	Sealed bonnet
Butanol	Ductile iron	Cast steel	D20 or D30		
Calcium carbonate	Ductile iron	Soft rubber lined	D10	D20 or D30	
Calcium chloride	Hard rubber lined		D10	D20 or D30	
Calcium hydroxide	Ductile iron	Soft rubber lined	D10	D20 or D30	

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Calcium hypochlorie	Hard rubber lined	Ductile iron	D60	D10	
Calcium phosphate	Butyl rubber lined	Hard rubber lined	D10	D20 or D30	
Calcium sulphate	Soft rubber lined	Ductile iron	D10	D20 or D30	
Calor gas	Ductile iron		D40		
Cane juice	Ductile iron	Soft rubber lined	D20 or D30		
Carbon black	Soft rubber lined	Ductile iron	D10		
Carbon dioxide	Ductile iron	Fductile iron	D20 or D30		
Carbon monoxide	Ductile iron		D20 or D30		Sealed bonnet
Carbon tetrachloride	Ductile iron	Ductile iron	D92		
Castor oil	Ductile iron		D20 or D30		
Caustic potash	Ductile iron	Butyl rubber lined	D10	D20 or D30	Sealed bonnet
Caustic soda	Ductile iron	Butyl rubber lined	D10	D20 or D30	Sealed bonnet
Cement (dry and slurry)	Soft rubber lined	Ductile iron	D10		
Chalk	Ductile iron	Soft rubber lined	D10		
China clay	Ductile iron	Soft rubber lined	D10		
Chlorinated brine	FEP lined	Hard rubber lined	D60	D10	
Chlorine gas dry	Ductile iron	Halar® lined	D97		
Chlorine gas moist	FEP lined	Halar® lined	D97		
Chlorine gas wet	FEP lined	Halar® lined	D97		
Chlorine water	Hard rubber lined	Halar® lined	D10		
Chloroform	FEP lined	Stainless steel	D92		
Chrome alum	Butyl rubber lined	Halar® lined	D20 or D30		
Chrome plating solns	Butyl rubber lined	Halar® lined	D20 or D30		
Chrome tanning solns	Butyl rubber lined	Halar® lined	D20 or D30	D92	
Clays and slips	Soft rubber lined	Ductile iron	D10		
Coal dust	Soft rubber lined	Ductile iron	D10		
Coal gas	Ductile iron	Ductile iron	D20 or D30	D40	
Coal slurry	Soft rubber lined	Ductile iron	D10		
Coke oven gas	Ductile iron	Ductile iron	D20 or D30	D40	
Compressed air (oil free)	Ductile iron	Cast steel	D40	D20 or D30	
Compressed air (oily)	Ductile iron	Cast steel	D40	D70	
Concrete	Soft rubber lined	Ductile iron	D10		
Copper plating solutions	Butyl rubber lined	Halar® lined	D20 or D30		
Copper sulphate	Butyl rubber lined	Halar® lined	D20 or D30		
Creosote	Hard rubber lined	Halar® lined	D70		
Creosote	Ductile iron	Halar® lined	D70		
Crude oil	Cast steel	Ductile iron	D70	D92	
Cutting oil	Hard rubber lined		D40		
Demineralised water	Hard rubber lined	Stainless steel	D20 or D30	D92	
Detergents	Hard rubber lined	Halar® lined	D20 or D30	D10	
Dibutyl phthalate	Halar® lined	Ductile iron	D92		
Dichlorodiluoromethane	Ductile iron	Cast steel	D92		
Diesel oil	Ductile iron	Cast steel	D70		
Diethyl ether	Stainless steel	Ductile iron	D92		Sealed bonnet
Diethylene glycol	Ductile iron	Stainless steel	D20 or D30		
Disinfectant (general)	Ductile iron	Halar® lined	D50		
Dye liquors	FEP lined	Butyl rubber lined	EPDM	D20 or D30	
Electrolytic tinplating solutions	Butyl rubber lined	FEP lined	D20 or D30		
Ethane	Ductile iron	Cast steel	D40	D50	
Ethanol	Ductile iron	Stainless steel	D20 or D30	D20 or D30	
Ether	Ductile iron	Stainless steel	D92		Sealed bonnet
Ethyl acetate	Stainless steel	Halar® lined	D20 or D30		
Ethyl alcohol	Ductile iron	Stainless steel	D20 or D30		
Ethylene	Ductile iron	Stainless stee	D20 or D30		

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Ethylene glycol	Ductile iron	Stainless steel	D20 or D30		
Ferric sulphate	Butyl rubber lined	Halar® lined	D10		
Fertilizers (dry powders)	Soft rubber lined	Ductile iron	D10		
Fertilizer slurries (wet process)	Butyl rubber lined	Ductile iron	D20 or D30	D20 or D30	
Fire foam	Ductile iron	Cast steel	D40		
Flue gas	Ductile iron	Cast steel	D40	D20 or D30	
Fly ash	Ductile iron	Soft rubber lined	D10	Butyl	
Freon	Ductile iron	Ductile iron	D92	D50	
Fuel oil	Ductile iron	Cast steel	D40		
Gas (coal)	Ductile iron	Cast steel	D40		
Gas (natural)	Ductile iron	Cast steel	D40		
Gasoline	Cast steel	Ductile iron	D70		
Glucose	Stainless steel	Stainless steel	D20 or D30		
Glycerine	Stainless steel	Hard rubber lined	D20 or D30		
Gravel	Soft rubber lined	Ductile iron	D10		
Grease	Ductile iron	Cast steel	D40		
Gypsum	Soft rubber lined	Ductile iron	D10		
Hydraulic oils (vegetable based)	Ductile iron	Ductile iron	D20 or D30		
Hydraulic oils (mineral based)	Ductile iron	Ductile iron	D40		
Hydrobromic acid	FEP lined	Halar® lined	D92		
Hydrochloric acid	Hard rubber lined	Halar® lined	D10	D92	
Hydrofluoric acid	Butyl rubber lined	Halar® lined	D20 or D30		
Hydrogen	Ductile iron	Cast steel	D20 or D30	D10	Sealed bonnet
Hydrogen peroxide	Hard rubber lined	Stainless steel	PTFE/D70	D20 or D30	
Hypo	Hard rubber lined	Halar® lined	D10	D60	
Inert gases	Ductile iron	Ductile iron	D20 or D30		
Inks	Stainless steel	Halar® lined	D92	D20 or D30	
Insecticide solutions	Ductile iron	Ductile iron	D40	D20 or D30	
Instrument air	Ductile iron	Stainless steel	D20 or D30	D40	
Iron oxide slurry	Soft rubber lined	Ductile iron	D20 or D30		
Isopropanol	Ductile iron	Hard rubber lined	D10	D20 or D30	
Kaolin	Soft rubber lined	Ductile iron	D10		
Kerosene	Ductile iron	Stainless steel	D70	D92	
Laundry bleach	Hard rubber lined	Halar® lined	D60	D10	
Lime	Ductile iron	Soft rubber line	D10		
Liquid parafin	Ductile iron	Ductile iron	D40	D70	
Liquid petroleum gases (I.P.G.)	Ductile iron	Cast steel	D40	D20 or D30	Sealed bonnet
Lubricating oils	Hard rubber lined	Cast steel	D40	D70	
Magnesium chloride	Ductile iron	Butyl rubber lined	D10	D20 or D30	
Magnesium oxide	Butyl rubber lined	Hard rubber line	D10	D20 or D30	
Magnesium sulphate	Soft rubber lined	Ductile iron	D10	D20 or D30	
Magnetite	Hard rubber lined	Ductile iron	D10		
Methane	Ductile iron	Ductile iron	D20 or D30	D40	
Methanol	Ductile iron	Stainless steel	D20 or D30		
Methanol/water mixture	Ductile iron	Hard rubber lined	D20 or D30	D10	
Methylated spirits	Ductile iron	Stainless steel	D20 or D30		
Methyl ethyl ketone (mek)	Stainless steel	FEP lined	D92		
Methyl isobutyl ketone	Stainless steel	FEP lined	D92	D20 or D30	
Milk	Stainless steel		D15		
Mineral oil	Ductile iron	Cast steel	D70	D40	
Molasses	Ductile iron	Stainless steel	D20 or D30		
Monosodium glutamate	Hard rubber lined	Stainless steel	D10		

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Mortar and cement	Soft rubber lined	Ductile iron	D10	D20 or D30	
Naphtha	Ductile iron	Cast steel	D70		
Napthalene	Ductile iron	Cast steel	D70		
Natural gas	Ductile iron	Stainless steel	D40	D50	
Nickel plating solutions	Butyl rubber lined	Halar® lined	D20 or D30	D60	
Nickel plating sludge	Butyl rubber lined	Halar® lined	D20 or D30	D60	
Nitric acid	FEP lined	Stainless steel	D92	D70	Check grade of S.S.
Nitric acid / hydrofluoric acid mix	FEP lined	Halar® lined	D92		
Nitrogen	Ductile iron	Stainless steel	D20 or D30		
Nitrous oxide (dry)	Stainless steel	FEP lined	D20 or D30		
Oils, animal	Ductile iron	Stainless steel	D40	D92	
Oils, cutting	Ductile iron	Stainless steel	D70	D40	
Oil fuel	Ductile iron	Stainless steel	D70	D40	
Oils, lubricating	Ductile iron	Stainless steel	D70	D40	
Oils, mineral	Ductile iron	Cast steel	D70	D40	
Oil, rolling	Ductile iron	Cast steel	D70	D40	
Oil, transformer	Ductile iron	Stainless steel	D70	D40	
Oils, vegetable	Stainless steel	Ductile iron	D40	D70	
Oleum	FEP lined	Halar® lined	D92		
Olive oil	Stainless steel	Ductile iron	D40	D92	
Oxygen	Ductile iron	Stainless steel	D50	D20 or D30	Degreased for oxygen
Paint (oil based)	Ductile iron	Stainless steel	D40	D20 or D30	
Paint (water based)	Ductile iron	Stainless steel	D20 or D30	D92	
Paper pulp	Hard rubber lined	Butyl rubber lined	D10	D20 or D30	
Paper stock	Hard rubber lined	Butyl rubber lined	D10	D20 or D30	
Parafin	Ductile iron	Stainless steel	D70	D40	
Parafin wax	Ductile iron	Cast steel	D40	D70	
Paraquet	Ductile iron	Halar® lined	D40		Sealed bonnet
Pentane	Ductile iron	Cast steel	D70	D92	
Perchloroethylene	Ductile iron	Cast steel	D70	D92	
Petrol	Ductile iron	Cast steel	D70		Sealed bonnet
Petroleum jelly	Ductile iron	Halar® lined	D70	D40	
Phosphoric acid	Butyl rubber lined	Halar® lined	D20 or D30		
Photographic developers	Halar® lined	FEP lined	D20 or D30	D92	
Plating solutions	Butyl rubber lined	Halar® lined	D20 or D30		
Polyethylene glycol	Ductile iron	Stainless steel	D10	D20 or D30	
Potassium chloride	Hard rubber lined	Halar® lined	D10	D20 or D30	
Potassium cyanide	Hard rubber lined	Halar® lined	D10	D20 or D30	Sealed bonnet
Potassium ferricyanide	Hard rubber lined	Halar® lined	D20 or D30	D10	
Potassium hydroxide	Ductile iron	Hard rubber lined	D20 or D30	D10	Sealed bonnet
Potassium hypochlorite	Hard rubber lined	Halar® lined	D60	D10	
Potassium phosphate	Hard rubber lined	Butyl rubber lined	D20 or D30	D10	
Pottery slip	Soft rubber lined	Ductile iron	D10		
Producer gas	Ductile iron	Cast steel	D20 or D30	D40	
Propane (gas or liquid)	Ductile iron	Cast steel	D40	D50	
Radioactive effluents	Butyl rubber lined	Stainless steel	D20 or D30		No copper parts.
Rock salt	Soft rubber lined	Hard rubber lined	D10	D20 or D30	
Rolling oil	Ductile iron	Cast steel	D70	D10	
Salt	Soft rubber lined	Hard rubber lined	D10	D20 or D30	
Sand	Soft rubber lined	Ductile iron	D10	D20 or D30	
Sea water	Stainless steel	Hard rubber lined	D10	D20 or D30	
Sewage	Ductile iron	Hard rubber lined	D10	D50	
Silver plating solutions	Butyl rubber lined	Halar® lined	D20 or D30		

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Slaked lime	Ductile iron	Soft rubber lined	D10	D20 or D30	
Slip (pottery)	Soft rubber lined	Ductile iron	D10		
Soap lye	Ductile iron	Butyl rubber lined	D10	D20 or D30	
Soap solutions	Ductile iron	Butyl rubber lined	D10	D20 or D30	
Sodium bicarbonate	Ductile iron	Halar® lined	D20 or D30	D92	
Sodium chloride	Soft rubber lined	Hard rubber lined	D10	D20 or D30	
Sodium hydroxide	Ductile iron	Hard rubber lined	D20 or D30	D10	Sealed bonnet
Sodium hydroxide (oily)	Ductile iron	Stainless steel	D50	D40	
Sodium hypochlorite	Hard rubber lined	Halar® lined	D10	D70	
Solvent naphtha	Ductile iron	Cast steel	D70	D40	
Stannic chloride	Halar® lined	FEP lined	D20 or D30	D92	
Starch solutions	Ductile iron	Halar® lined	D20 or D30	D60	
Stearic acid	Stainless steel	Halar® lined	D92		
Sugar	Ductile iron	Stainless steel	D20 or D30	D15	
Sulphur dioxide	Butyl rubber lined	Hard rubber lined	D20 or D30		
Sulphuric acid below 75%	Butyl rubber lined	Halar® lined	D20 or D30	D70	
Sulphuric acid 75-95%	Halar® lined	FEP lined	D92	D70	
Sulphuric acid 95-99%	Ductile iron	Halar® lined	D92	D70	Sealed bonnet
Sulphuric acid over 99%	FEP lined	Halar® lined	D92		
Syrups (sugar)	Ductile iron	Stainless steel	D20 or D30	D15	
Tetrachloroethane	Ductile iron	Stainless steel	D92	D70	Sealed bonnet
Textile dyes	Halar® lined	Butyl rubber lined	D20 or D30	D92	
Tin plating solutions	Halar® lined	Butyl rubber lined	D92	D20 or D30	
Titanium dioxide	Butyl rubber lined	Hard rubber lined	D20 or D30	D10	
Toluene	Ductile iron	Cast steel	D92		
Transformer oil	Stainless steel	Ductile iron	D70		
Trichloroethylene	Ductile iron	Stainless steel	D92	D70	Sealed bonnet
Turpentine	Ductile iron	FEP lined	D40	D70	Sealed bonnet
Vegetable oils	Ductile iron	Stainless steel	D70	D92	
Vinegar	Stainless steel		D92		
Water cold	Ductile iron	Stainless steel	D10	D20 or D30	
Water de-mineralised	Hard rubber lined	FEP lined	D10	D92	
Water drinking	Stainless steel	Stainless steel	D20 or D30		
Water oily	Ductile iron	Gunmetal	D40	D50	
Water (salt and brackish)	Stainless steel	Hard rubber lined	D10	D20 or D30	
Wood pulp	Ductile iron	Soft rubber lined	D10	D20 or D30	
Wort	Ductile iron	Stainless steel	D20 or D30		
Xylene	Ductile iron	Cast steel	D92	D70	
Zinc chloride	Soft rubber lined	Stainless steel	D10	D20 or D30	
Zinc oxide	Stainless steel	Butyl rubber lined	D20 or D30	D92	
Zinc plating solutions	Butyl rubber lined	Hard rubber lined	D20 or D30		