

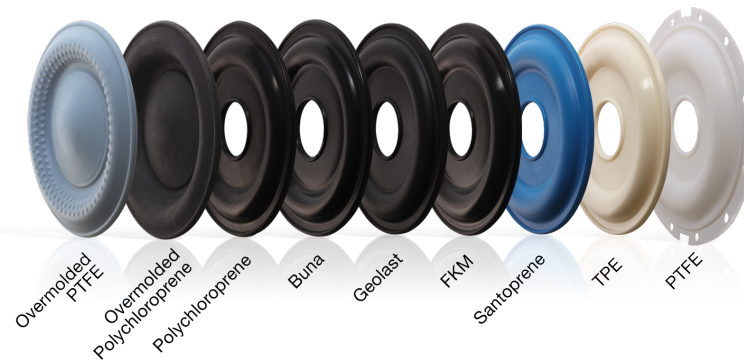
MATERIALS OF CONSTRUCTION GUIDE

MATERIAL	*TEMPERATURE RANGE	PRICE	AVAILABILITY			CONDITIONS				***SPECIFIC GRAVITY	COLOR	NOTES
			SEAT	BALL	DIAPHRAGM	**MILD CHEMICALS	**AGGRESSIVE CHEMICALS	*HIGH TEMPERATURE	ABRASIVES			
POLYPROPYLENE	32° to 150°F (0° to 66°C)	\$	X	X		X				NA	White	Wide chemical compatibility. General purpose.
GEOLAST	-40°F to 150°F (-40° to 66°C)	\$	X	X	X	X			X	0.97	Black	Good abrasion resistance. Approximately same chemical compatibility as Buna.
EPDM	-60°F to 275°F (-51° to 135°C)	\$			X	X		X		NA	Black	High heat resistance. Good resistance to gas permeability and to steam. OK with caustic solutions, dilute acids, ketones and alcohols. Recommended for use with CIP Sanitizing Agent OXONIA.
TPE (HYTREL)	-20°F to 150°F (-29° to 66°C)	\$	X	X	X	X			X	1.19	Cream	Good low temperature properties. Good abrasion resistance.
ACETAL (DELTRIN)	10°F to 180°F (-12° to 82°C)	\$	X	X		X			X	1.32	Orange or White	Wide range of solvent resistant and withstands extreme fatigue. Good level of abrasion resistance. Not for use with acids or bases.
ALUMINUM	-100° to 400°F (-73° to 204°C)	\$	X			X		X	X	NA	Silver	Medium corrosion and abrasion resistance. Not for use with halogenated hydrocarbons.
SANTOPRENE	-40°F to 180°F (-40° to 82°C)	\$\$	X	X	X	X			X	0.84	Blue	Good abrasion and chemical resistance. OK for use with some solvents, (e.g. MEK, acetone) caustic solutions, dilute acids, and alcohols. Often substituted for EPDM or EPR.
UHMWPE	-40° to 158°F (-40° to 70°C)	\$\$	X			X	X		X <i>recommended</i>	NA	White	Best option for abrasion resistance — high level of chemical resistance.
STANDARD POLYCHLOROPRENE (NEOPRENE)	0°F to 180°F (-18° to 82°C)	\$\$		X	X	X			X	1.42	Black	High resilience. Good with whiskey, wine, beer and natural gas. Good with animal and vegetable oil, moderate chemicals, fats and greases. Not for use with strong oxidizing acids, esters, ketones, chlorinated aromatic and nitro hydrocarbons.
OVERMOLDED POLYCHLOROPRENE	0°F to 180°F (-18° to 82°C)	\$\$\$			X	X			X	NA	Black	Longer life than standard polychloroprene. Great in abrasive applications. High resilience.
BUNA N (NITRILE/NBR)	10°F to 180°F (-12° to 82°C)	\$\$	X	X	X	X				1.43	Black w/ yellow dot	Good for petroleum-based fluids, water, oils, hydrocarbons and MILD chemicals (e.g. mineral spirits). Not for use with strong solvents or chemicals (e. g. acetone, MEK, ozone, chlorinated hydrocarbons, and nitro hydrocarbons).
PVDF (KYNAR)	10°F to 225°F (-12° to 107°C)	\$\$\$	X			X	X	X		NA	Milky White	Strong chemical resistance: Acids and bases. Good abrasion resistance. High temperature resistance.
VITON (FKM)	-40°F to 320°F (-40° to 160°C)	\$\$\$	X	X	X	X	X	X <i>recommended</i>		1.80	Black or White	High heat resistance. Good resistance to aggressive chemicals including acids and some solvents (e. g. Xylene and mineral spirits). Good resistance to steam as well as animal, vegetable and petroleum oils. Resists unleaded fuels. Not for use with ketones, low molecular weight ester and nitro containing compounds.
PTFE	40°F to 212°F (4° to 100°C)	\$\$\$	X	X	X	X	X <i>recommended</i>	X		2.16	White	Widest chemical compatibility, extreme corrosion resistance, very low frictional coefficient, non-adhesive, high heat resistance. Poor abrasion resistance.
OVERMOLDED PTFE	14°F to 180°F (-10° to 82°C)	\$\$\$			X	X	X	X	X	NA	Blue	Overmolded design improves wear and diaphragm life with no exposed diaphragm plate on the fluid side. Longer diaphragm life in more abrasive applications that still require PTFE. Available for sanitary and industrial diaphragm pumps.
STAINLESS STEEL	-40° to 920°F (-40° to 493°C)	\$\$\$	X	X		X	X	X	X	7.95	Silver	High level of corrosion and abrasion resistance. Passivated 316 grade.
WEIGHTED POLYCHLOROPRENE (NEOPRENE)	0°F to 180°F (-18° to 82°C)	\$\$\$		X		X			X	9.42	Black	High resilience. Good with whiskey, wine, beer and natural gas. Good with animal and vegetable oil, moderate chemicals, fats and greases. Not for use with strong oxidizing acids, esters, ketones, chlorinated aromatic and nitro hydrocarbons.

*Temperature limits are based on mechanical stress only. Certain chemicals will further limit the fluid temperature range. Stay within the temperature range of the most-restricted wetted component. Operating at a fluid temperature that is too high or too low for the components of your pump may cause equipment damage.

**Consult Graco's [Chemical Compatibility Guide](#). This guide is intended to be used as a general guideline for pump material selection. If you are unsure of the compatibility of your chemical, we recommend testing a sample of the material in question with the chemical.

***The specific gravity of a liquid or solid is defined as the ratio of the weight of a given volume of the material to the weight of an equal volume of water: s.g. = (weight of a given volume of a material) / (weight of an equal volume of water)



To order a diaphragm pump, use the online selector tool at www.graco.com/process click on "Online Diaphragm Pump Selector Tool"



TEN QUESTIONS TO ASK: PUMP SELECTION

POPULAR DIAPHRAGM PUMP APPLICATIONS

1. What material is being pumped?
 - a) What is the material make up in terms of solid content?
 - b) What is the material's pH level?
 - c) What is the material's viscosity (cps)?
 - d) Is the material abrasive?
 - e) Specific gravity?
2. What is the desired flow rate?
3. Where is the feed tank relative to the pump?
 - a) Overall suction length?
 - b) Vertical rise?
4. What is the discharge distance?
5. What is the inlet and outlet hose diameter?
6. What is the material temperature?
7. What is the desired price range?
8. What is the shop air pressure?
9. What certifications are required?
10. Other installation requirements?



Chemical, Petrochemical, Solvents, & Cleaners

General Chemical Transfer
Filter Presses
Water Treatment Facilities

Husky Sizes: 205-3300, 1050e
ChemSafe Sizes: 205-1590

Wetted Section: Plastic, SST or Hastelloy
Diaphragms: PTFE (Overmolded or 2-piece), Santoprene
Ball Checks: PTFE and Santoprene
Seats: Polypropylene, Santoprene, PVDF, SST

Windshield Wash Mix & Transfer
Sanitary CIP
Circuit Board Etching



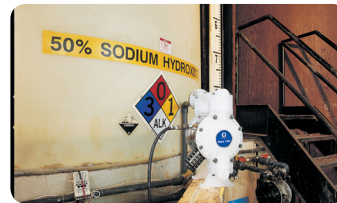
Wastewater Treatment

Sump Pumps
Shipyards
Water Treatment Facilities

Husky Sizes: 515-2200, 1050e

Wetted Section: Plastic
Diaphragms: PTFE (Overmolded or 2-piece) and Santoprene
Ball Checks: PTFE and Santoprene
Seats: Polypropylene, Santoprene, PVDF, SST

Power Plants
Parts Washing (Automotive & General Industry)
Car & Truck Wash



Plating & Finishing

Filter Presses
Precious Metal Processing

Husky Sizes: 1050-3300, 1050e
ChemSafe Sizes: 205-1590

Wetted Section: Plastic
Diaphragms: PTFE (Overmolded or 2-piece), Santoprene
Ball Checks: PTFE and Santoprene
Seats: Polypropylene, Santoprene, PVDF, SST

Foundries
Plating



Oils, Lubricants & Fuels

Oil and Grease Transfer
Maintenance Facilities
Oil Mix and Batching

Husky Sizes: 716, 1050, 1590, 2150, 3300, 1050e

Wetted Section: Metal
Diaphragms: Geolast, TPE, Buna
Ball Checks: Geolast, TPE, Buna
Seats: Geolast, TPE, Buna

Anti-Freeze Mix & Transfer
Machine Tool Coolant and Evacuation



Ceramic Slip & Glaze

Ceramic Slurry
Drywall Manufacturing
Well Casting Grout Supply (Concrete)

Husky Sizes: 1050-3300, 1050e
ChemSafe Sizes: 205-1590

Wetted Section: Metal or Plastic
Diaphragms: Polychloroprene and Geolast
Ball Checks: Geolast and Polychloroprene
Seats: Aluminum, Geolast, SST



Paint, Ink & Coatings

Paint Manufacturing
Paint & Solvent Transfer
Ink Transfer

Husky Sizes: 716, 1050, 1590, 2150, 3300, 1050e

Wetted Section: Metal
Diaphragms: PTFE (Overmolded or 2-piece) and Santoprene
Ball Checks: PTFE and Santoprene
Seats: Polypropylene, Santoprene, PVDF, SST

Pipe Coating
Adhesive Supply and Transfer
Supply and Transfer of Wood Preservatives



Mining

Dewatering

Husky Sizes: 1590, 2150, 3300

Wetted Section: Metal
Diaphragms: Geolast, TPE, Buna
Ball Checks: Geolast, TPE, Buna
Seats: Geolast, TPE, Buna



Oil & Gas

Oil and Gas Drilling
Drilling Mud
Drilling Lubricants

Husky Sizes: 1050, 1590, 2150, 3300 (FKM Air Valve Seals)

Wetted Section: Metal
Diaphragms: Geolast, TPE, Buna
Ball Checks: Geolast, TPE, Buna
Seats: Geolast, TPE, Buna

Oil Platforms
Ethylene Glycol Transfer and Circulation