

BODY MATERIALS AND LININGS

Material	Application
Alloy 20	Applicable in a wide range of chemical and water treatment services.
Aluminum	Available in sizes through 2". Recommended for compressed air and instrument air lines.
Bronze	Suitable for marine services, sugar refining, and other areas where external corrosion is a problem.
Butyl Lined	Excellent for hydrochloric, hydrofluoric, and phosphoric acids, acid recovery services, inert and other industrial gases and fertilizer plants.
Glass Lined	Recommended for dye stuffs, pharmaceuticals, and latex. 3431 (green) has superior qualities for latex and paint services. 3432 (blue) glass is excellent for difficult, corrosive services with high temperatures.
HALAR® Ethylene Chlorotrifluoroethylene Lined	Excellent for strong mineral acids, oxidizing acids, and alkalis. Good impact resistance for mining and heavy chemical industries.
Hard Rubber Lined	Ideally suited for acid, effluent, brine services (especially chlorinated brine), and water treatment services (especially boiler feed and de-ionization processes).
Hypalon Lined	Offers good resistance to acid and ozone attack. Suitable for some chlorine services.
Ductile Iron Cast Iron	General industrial services. Sulfuric acid 85% and higher, alkalis, sugar refining, LP gas and vacuum services. Malleable iron bodies are available through 2". Above 2" cast iron is supplied.
Neoprene Lined	Ideally suited for animal and vegetable oils, grease, oily water and fertilizer plants.
Perfluoro Alkoxy Teflon® (PFA) Lined	Exceptional balance of properties. Inert to strong mineral, oxidizing and inorganic acids and is resistant to bases, halogens, metal salt solutions, organic acids and anhydrides. Aromatic and aliphatic hydrocarbons, alcohols, aldehydes, ketones, ethers, amines and esters. Mechanical properties are superior to other liners at elevated temperatures. Available in ductile iron body.
Polypropylene (PPL) Lined	Excellent for water treatment, effluent lines (especially hot effluents from dyestuffs), chemical processing, plating fluids, steelworks pickling lines, food and drinking water. All compounds FDA approved. Available in cast and ductile iron bodies.
Polyvinylidene fluoride (PVDF) Lined	Resistant to most inorganic acids and bases. Highly recommended for sodium hypochlorite, aliphatic and aromatic hydrocarbons, as well as wet and dry chlorine. Exhibits good temperature and general resistance, especially when handling halogens, halogenated solvents, and alcohol services. Available in cast and ductile iron bodies. FDA approved.
PVC	Resistant to a wide variety of chemicals. Provides internal and external resistance.
Soft Rubber Lined	Recommended for extremely abrasive services (sand, cement, etc.) where more expensive metals wear rapidly.
Stainless Steel	Applicable in a wide range of chemical services. Inherent resistance to external corrosion.
Ethylene Tetrafluoroethylene (ETFE) Lined	Outstanding balance of properties and chemical resistance. High resistance to abrasion. Ideal for process lines, filtration, and effluents. Resists strong acids, bases, solvents. Available in cast and ductile iron bodies.

DIAPHRAGM MATERIALS

Grade	Material	Application
AA	Natural Rubber	Highest resistance against abrasive media, fly ash slurry, coal slurry, cement, limestone, gravel.
B	Butyl Rubber	Acid and alkalis. Up to 85% sulphuric acid at ambient temperature. Hydrochloric, hydrofluoric, phosphoric acids, caustic alkalis and many esters. Very low vapor and gas permeability. Inert gases and many industrial gases.
C	Nitrile Rubber	Animal, vegetable and mineral oils and fats. Paraffins, kerosene, fatty acids and fuel oils.
D	Butyl Rubber	For hot water services and applications involving steam sterilization therefore ideally suited for brewing and pharmaceutical applications. For services involving continuous high temperature/pressure combinations consult Saunders Valve, Inc.
E	Ethylene Propylene	A good general purpose diaphragm recommended for hot water, oxygenated water, intermittent steam sterilization, also good abrasion and chemical resistance.
HT	Neoprene	General purpose. Many animal, vegetable and fatty oils and greases. Compressed air, general work services. Many gases, e.g., natural gas, coal gas, hydrogen, nitrogen, and radioactive fluids.
P1	TFE/Butyl backed	Highest chemical resistance. Resistant to all fluids except alkali metals although permeable to some, especially chlorine. Alternative backing diaphragms available to deal with this and other applications. Note: TFE diaphragms have a bayonet fitting in all sizes except ¼" and ⅜" requiring a corresponding slotted compressor. See page 8 for service applications.
P2	TFE/Hypalon backed	
P3	TFE/Viton® backed	
P4	TFE/EP backed	
P5	TFE/PVDF membrane/ Viton backed	
Q	Natural/Synthetic Rubber	Abrasives, water purification, brewing, inorganic salts, dilute mineral acids.
U	Hypalon	Good acid and ozone resistance, certain chlorine services.
V	Viton	Paraffinic and aromatic hydrocarbons, acids, particularly concentrated sulphuric and chlorine applications. Not recommended for ammonia and its derivatives or for polar solvents, e.g., acetone.
W	White Natural Rubber	Chemical resistance similar to Q grade. For use where a white diaphragm is preferred. Acetone, alcohol and methylated spirit. Not for mineral acids.
W1	White Butyl	Natural color for foodstuffs, plasticizers and pharmaceuticals. May be sterilized with intermittent low pressure steam. Not suitable for chlorine based sterilants.