

TECHNICAL DEPARTMENT COMMUNICATION

Bulletin No.: CHEMCOM – 001.R (Document Circulation: General; Distributor; Internal & confidential)

PRODUCT: All *INERTEX*® 100% Expanded PTFE Products

SUBJECT: Chemical Compatibility of *INERTEX*® Gasketing Products

The *INERTEX*® gasketing materials are 100% expanded virgin PTFE which are made of PTFE fluoropolymer resins. The *INERTEX*® gasketing materials possess a unique degree of chemical inertness because of the chemical structure of the PTFE resins. Molecules of the PTFE resins are formed simply from strong carbon-carbon and super-strong carbon-fluorine inter-atomic bonds; moreover, the fluorine atoms form a protective sheath around the carbon core of each molecule. This structure also produces other special properties, such as insolubility and low surface adherability and friction.

PTFE products are essentially chemically inert. Up to the upper use temperature for PTFE, only very few chemicals are known to chemically react with these resins, i.e., molten alkali metals, acrylic monomer, turbulent liquid or gaseous fluorine; and a few fluorochemicals, such as chlorine trifluoride, or oxygen difluoride, which readily liberate free fluorine at elevated temperatures.

To a minor degree, halogenated organic chemicals may be absorbed by fluoropolymer resins. This will cause a very small weight change and in some cases slight swelling. If absorption is very high, it usually indicates a fabricated part of high porosity. Fluoropolymer resins may be permeated to a limited extent by some substances. Permeation rates are generally comparable to those observed for other thermoplastics.

For more detailed lists of chemicals compatible or incompatible with expanded PTFE, please see the Technical Department Communication Bulletin No. CHEMCOM - 001.1.

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TECHNICAL DEPARTMENT COMMUNICATION

Bulletin No.: CHEMCOM - 001.1 (Document Circulation: General; Distributor; Internal & confidential)

PRODUCT: All *INERTEX*® 100% Expanded PTFE Gasketing Products

SUBJECT: Chemical Compatibility List

The following information is based on known chemical compatibility data for PTFE, and should only be considered as reference. Further laboratory tests may be required to verify the compatibility of a particular chemical with expanded PTFE products.

CHEMICALS COMPATIBLE WITH EXPANDED PTFE

ABIETIC ACID	AQUA REGIA	CALCIUM HYDROXIDE
ACETALDEHYDE	ARSENIC ACID	CALCIUM HYPOCHLORITE
ACETAMIDE	ASPHALT	CALCIUM NITRATE
ACETIC ACID	BARIUM CHLORIDE	CALCIUM SULFATE
ACETIC ANHYDRIDE	BARIUM CYANIDE	OAPROLACTAM
ACETONE	BARIUM HYDROXIDE	CARBOLIC ACID (PHENOL)
ACETOPHENONE	BARIUM SULFIDE	CARBON DIOXIDE
ACETYLENE	BEER	CARBON DISULFIDE
ACRYLIC ANHYDRIDE	BENZALDEHYDE	CARBON MONOXIDE
ADIPIC ACID	BENZENE	CARBON TETRACHLORIDE
ALLYL ACETATE	BENZOIC ACID	CARBONIC ACID
ALLYL ALCOHOL	BENZOL	CETANE (HEXADECANE)
ALLYL CHLORIDE	BENZONITRILE	CHLORAZOTIC ACID
ALLYL METHACRYLATE	BENZOYL CHLORIDE	CHLORIC ACID
ALUMINUM CHLORIDE	BENZYL ALCOHOL	CHLORINATED SOLVENTS
ALUMINUM FLUORIDE	BENZYL CHLORIDE	CHLORINATED WATER
ALUMINUM HYDROXIDE	BLACK LIQUOR (SULFATE	CHLORINE
ALUMINUM NITRATE	LIQUOR)	CHLORINE DIOXIDE
ALUMINUM POTASSIUM	BORAX	CHLOROACETIC ACID
SULFATE	BORIC ACID	CHLOROBENZENE
ALUMINUM SULFATE	BRINE	CHLOROETHYLENE
ALUMS	BROMINE	CHLOROFORM
AMMONIA	BUTADIENE	CHLORONITROUS ACID
AMMONIUM CARBONATE	BUTANE	CHLOROSULFONIC ACID
AMMONIUM CHLORIDE	BUTYL ACETATE	CHROMIC ACID
AMMONIUM FLUORIDE	BUTYL ALCOHOL (BUTANOL)	CHROMIC ANHYDRIDE
AMMONIUM HYDROXIDE	BUTYL AMINE	CHROMIUM TRIOXIDE
AMMONIUM NITRATE	BUTYL CHLORIDE	CITRIC ACID
AMMONIUM PHOSPHATE	BUTYL ETHER	COPPER ACETATE
AMMONIUM SULFATE	BUTYL PHTHALATE	COPPER CHLORIDE
AMYL ACETATE	BUTYL METHACRYLATE	COPPER FLUORIDE
AMYL ALCOHOL	BUTYLENE	COPPER SULFATE
AMYL CHLORIDE	BUTYRIC ACID	COTTONSEED OIL
ANILINE	CALCIUM BISULFITE	CREOSOTE
ANILINE DYES	CALCIUM BISULPHATE	CRESOLS (CRESYLIC ACID)
ANILINE OIL	CALCIUM CHLORIDE	CRUDE OIL

CHEMICALS COMPATIBLE WITH EXPANDED PTFE (CONTINUED)

CYANIC ACID	GREEN LIQUOR (SULFATE LIQUOR)	NAPHTHOLS
CYCLOHEXANE	HEPTANE	NATURAL GAS
CYCLOHEXANOL	HEXACHLOROETHANE	NICKEL CHLORIDE
CYCLOHEXANONE	HEXANE	NICKEL NITRATE
DIBUTYL PHTHALATE	HEXAMINE	NICKEL SULFATE
DIBUTYL SEBACATE	HYDRAULIC FLUID	NITRIC ACID
DICHLOROBENZENE	HYDRAZINE	NITROBENZENE
DICHLOROETHANE	HYDROBROMIC ACID	2-NITRO-BUTANOL
DICHLOROETHYLENE	HYDROCHLORIC ACID	NITROCALCITE (CALCIUM NITRATE)
DIESEL FUEL	HYDROCYANIC ACID	NITROHYDROCHLORIC ACID
DIETHYLENE GLYCOL	HYDROFLUORIC ACID	NITROGEN
DIETHYL CARBONATE	HYDROFLUOROSILICIC ACID	NITROGEN TETROXIDE
DIETHYL ETHER	HYDROFLUOSILICIC ACID	2-NITRO-2-METHAL-PROPANOL
DIMETHYL ANILINE	HYDROGEN	NITROMETHANE
DIMETHYL ETHER	HYDROGEN CHLORIDE	NITROMURIATIC ACID
DIMETHYL FORMAMIDE	HYDROGEN FLUORIDE	NITROUS ACID
DIMETHYL HYDRAZINE (UNSYMMETRICAL)	HYDROGEN PEROXIDE	NITROUS OXIDE
DIPROPYLENE GLYCOL	HYDROGEN SULFIDE	N-OCTADECYL ALCOHOL
DIOXANE	HYPOCHLOROUS ACID	OCTANE
DOW THERM	IODINE	OLEIC ACID
ETHANE	IODINE PENTAFLUORIDE	OLEUM
ETHANOLAMINE	ISOBUTANE	OXALIC ACID
ETHERS	ISOBUTYL ALCOHOL	OXYGEN
ETHYL ACETATE (ACETIC ESTER)	ISOPROPYL ACETATE	OZONE
ETHYL ALCOHOL (ETHANOL)	ISOPROPYL ALCOHOL	PALMITIC ACID
ETHYL BENZENE	ISOPROPYL ETHER	PENTACHLOROPHENOL
ETHYL CELLULOSE	JET FUELS	PENTANE
ETHYL CHLORIDE	KEROSENE	PERCHLORIC ACID
ETHYL ETHER	LACTIC ACID	PERCHLOROETHYLENE
ETHYL HEXOATE	LEAD ACETATE	PERFLUOROXYLENE
ETHYL SULFATE	LIME (CALIUM OXIDE)	PETROLEUM OIL
ETHYLENE	LINSEED OIL	PETROLEUM BENZENE
ETHYLENE BROMIDE	LUBRICATING OIL	PETROLEUM ETHER
ETHYLENE CHLORIDE	LYE	PHENOL
ETHYLENE GLYCOL (DIHYDROXYETHANE)	MAGNESIUM CHLORIDE	PHOSPHORIC ACID
ETHYLENE OXIDE	MAGNESIUM HYDROXIDE	PHOSPHORUS
FERRIC CHLORIDE	MAGNESIUM SULFATE	PENTACHLORIDE
FERRIC PHOSPHATE	MERCURY	PHOSPHORUS TRICHLORIDE
FERRIC SULFATE	MERCURIC CHLORIDE	PHTHALIC ACID
FERROUS CHLORIDE	METHANE	PICRIC ACID
FERROUS SULFATE	METHYL ACETATE	PINENE
FORMALDEHYDE (FORMALIN)	METHYL ACETONE	PIPERIDENE
FORMIC ACID	METHYL ALCOHOL (METHANOL)	POTASH (POTASSIUM CARBONATE)
FREON	METHYLACRYLIC ACID	POTASSIUM ACETATE
FUEL OIL	METHYL AMINE	POTASSIUM BICHROMATE
FURAN	METHYL BROMIDE	POTASSIUM BROMIDE
FURFURAL	METHYL CHLORIDE	POTASSIUM CHLORATE
(FURFURALDEHYDE)	METHYL ETHYL KETONE	POTASSIUM CHLORIDE
GLYCERINE (GLYCEROL)	METHYL METHACRYLATE	POTASSIUM CHROMATE
GLYCOL (ETHYLENE GLYCOL)	METHYLENE CHLORIDE	POTASSIUM CYANIDE
GLYCOLIC ACID	MINERAL OIL	POTASSIUM DICHROMATE
GRAIN ALCOHOL	MONOCHLOROETHANE	POTASSIUM HYDRATE
	MURIATIC ACID	POTASSIUM HYDROXIDE (CAUSTIC POTASH)
	NAPHTHA	POTASSIUM HYPOCHLORITE
	NAPHTHALENE	

CHEMICALS COMPATIBLE WITH EXPANDED PTFE (CONTINUED)

POTASSIUM IODIDE	SODIUM DIOXIDE	TETRACHLOROETHANE
POTASSIUM NITRATE	SODIUM FLUORIDE	TETRACHLOROETHYLENE
POTASSIUM PERMANGANATE	SODIUM HYDROXIDE (CAUSTIC SODA)	TOLUENE (TOLUOL)
POTASSIUM SULFATE	SODIUM HYPOCHLORITE	TRIBUTYL PHOSPHATE
PRODUCER GAS	SODIUM METABORATE	TRICHLOROACETIC ACID
PROPANE	PEROXYHYDRATE	TRICHLOROETHANE
PROPYL ACETATE	SODIUM METAPHOSPHATE	TRICHLOROETHYLENE
PROPYL ALCOHOL (PROPANOL)	SODIUM METASILICATE	TRICHLOROMONOFUOROETHANE
PROPYLENE	SODIUM NITRATE	TRICHLOROPROPANE
PROPYLENE GLYCOL	SODIUM NITRATE	TRICRESYL PHOSPHATE
PROPYL NITRATE	SODIUM PERBORATE	TRIETHANOLAMINE
PYDRAUL	SODIUM PEROXIDE	TRIETHYLAMINE
PYRIDINE	SODIUM PHOSPHATE	TURPENTINE
SALICYLIC ACID	SODIUM SILICATE (WATER GLASS)	UREA
SEA WATER	SODIUM SULFATE	VARNISH
SILICONE OIL	SODIUM SULFIDE	VINEGAR
SILVER BROMIDE	SODIUM SUPEROXIDE	VINYL ACETATE
SILVER CHLORIDE	SODIUM THIOSULFATE	VINYL CHLORIDE
SILVER NITRATE	STANNIC CHLORIDE	VINYL METHACRYLATE
SOAP	STANNOUS CHLORIDE	WATER, MILD ACID NO OXIDIZING SALT
SODA ASH (SODIUM CARBONATE)	STARCH	WATER, MILD ACID WITH OXIDIZING SALT
SODIUM ACETATE	STEAM	WATER, ACID MINE
SODIUM ACID SULFATE	STEARIC ACID	WATER, BOILER FEED
SODIUM ALUMINATE	STYRENE	WHISKEY
SODIUM ALUMINUM SULFATE	SULFATE LIQUOR, BLACK	WHITE LIQUOR, PULP MILL
SODIUM BICARBONATE (BAKING SODA)	SULFATE LIQUOR, GREEN	WHITE SPIRIT
SODIUM BISULFATE	SULFUR CHLORIDE	WINE
SODIUM BROMIDE	SULFUR DIOXIDE	WOOD ALCOHOL
SODIUM CHLORIDE	SULFUR TRIOXIDE	XYLENES (XYLOL XYLOLE)
SODIUM CHROMATE	SULFURIC ACID	ZINC CHLORIDE
SODIUM CYANIDE	SULFUROUS ACID	ZINC NITRATE
	TANNIC ACID	ZINC SULFATE
	TARTARIC ACID	
	TETRABROMOETHANE	

CHEMICALS NOT COMPATIBLE WITH EXPANDED PTFE

BROMINE TRIFLUORIDE	FLUORINE	OXYGEN DIFLUORIDE
CHLORINE TRIFLUORIDE	FLUORINE DIOXIDE	MOLTEN ALKALI METALS

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