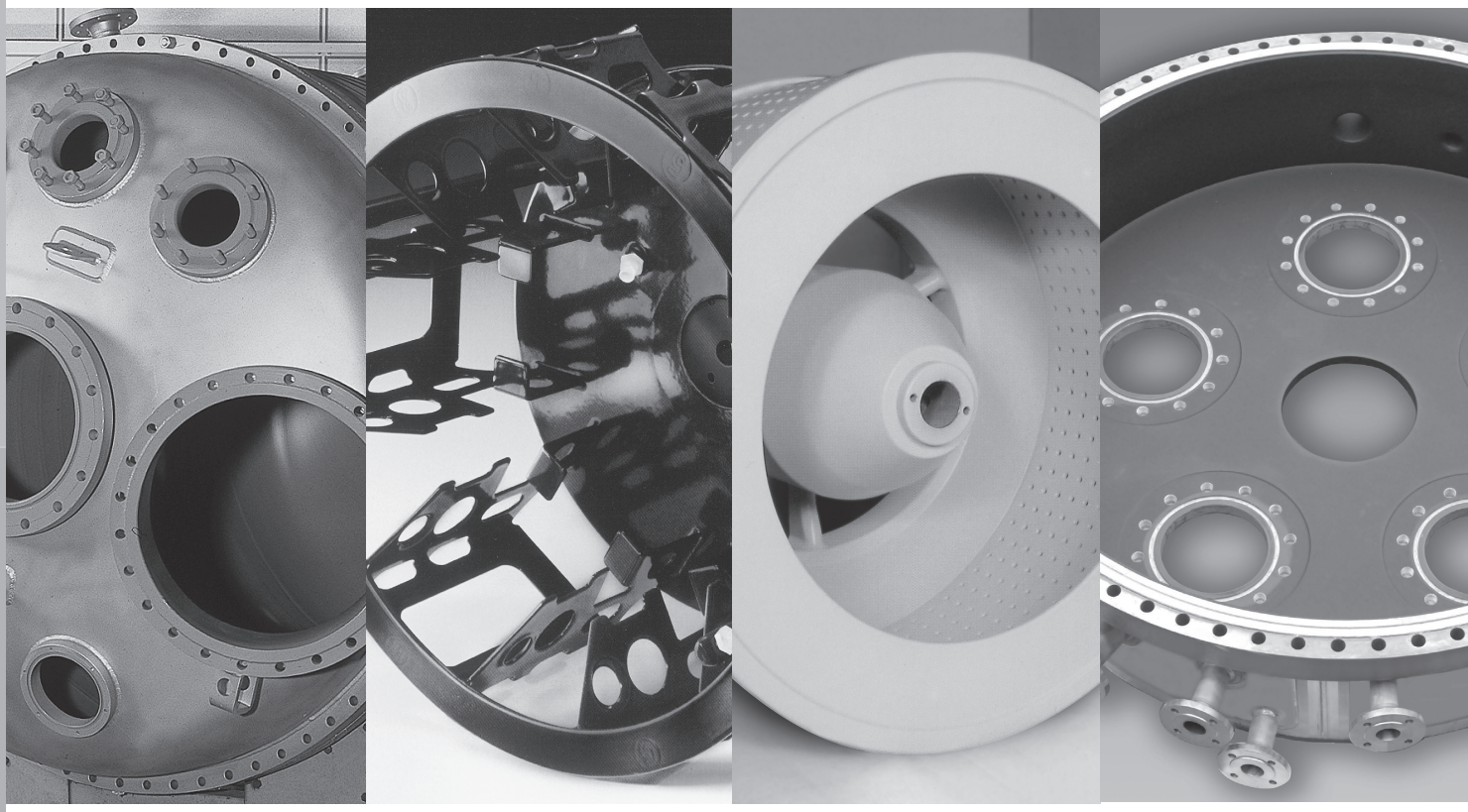
PFA EDLON™

E-CTFE

ETFE

Benchmark for Surface Protection

Gutbrod



FLUOROPOLYMER COATING

RESISTANCE LIST AND TECHNICAL DATA

COATING TECHNOLOGY TO MEET THE HIGHEST EXPECTATIONS

Rudolf Gutbrod GmbH in Swabian Dettingen/ Erms sets new standards in innovative coating technology. The company is leading in Europe as a processor of fluorinated polymers.

The enterprise was founded in 1964 and is a pioneer in Germany in surface coating technology with fluoropolymers. And as a licensee of well-known raw material manufacturers to some of Europe's top addresses, as far as functional coatings with non-stick effect, low friction, chemical

protection and corrosion protection are concerned. State-of-the-art technology is ensured through continuous development work.

Raw material procurement is undertaken on a worldwide basis. International and permanent exchange of ideas will ensure that the highest possible quality will be maintained in solving the different requirements of our customers also in the future.

EDLON™ PFA – Table 1

The data is based on long-term experience and the results from the development department and is not binding. In case of doubt, it will be necessary to establish suitability by experiment. This may be particularly so with combinations of media that can react differently on the coating than the individual media themselves.

Chemical	Chemical	Chemical
A Acetaldehyde	Beet	Creosole
Acetamide	Bett Sugar	Cresyldipherryl Phosphate
Acetate Solvents	Benzaldehyde	Cresylic Acid
Acetic Acid	Benzene	Crude Oil
Acetic Anhydride	Benzene Sulfonic Acid	Cupric Chloride
Acetone	Benzonic Acid	Cyclohexane
Acetonitrile	Benzonitnle	Cyclohexanol
Acetophenone	Benzyl Alcohol	Cyclohexanone
Acetylene	Blood	
Acetyl Chloride	Borax	**D** Defergens
Acid Mine Water	Boric Acid	Diacetone Alcohol
Acrylonitrile	Bromine	Dibutyphthalate
Adipic Acid	Buladiene	Dichlorobenzene
Allyl Alcohol	Butane	Dichlorodilluaro Methane
2 Aminoethanol Alcohol	Buttermilk	Dichlorethane
Amyl Alcohol	Butyl Acetate	Dichlorethylene
Atmosphere, Industrial	Butyl Amine	Diesel Fuel
Atmosphere, Marine	Butyl Chloride	Diethanolamine
Atmosphere, Rural	Butyl Ether	Diethylamine
Alcohol, Butyl	Butyl Pihalate	Diethylene Glycol
Alcohol, Ethyl	Butylene	Diethylether
Allyl Chloride	Butyric Acid	Diisobutylene
Aluminium Chloride		Dimethyl Aniline
Aluminium Chlorohydroxide	**C** Calcium Bisulfite	Dimethyl Foramide
Aluminium Fluoride	Calcium Carbonate	Dimethyl Pthalate
Aluminium Hydroxide	Calcium Chloride	Dimethyl Sulfoxide
Aluminium Nitrate	Calcium Hydroxide	Dioctyl Phthalate
Aluminium Potassium Sulphate	Calcium Hypochlorite	P-Dioxane
Aluminium Sulphaterate	Calcium Nitrate	Diphenyl Ether
Amines	Calcium Sulfate	Dipropylene Glycol
Ammonia	Carbolic Acid	Dow Therm
Ammonium Bifluoride	Carbon Dioxide	
Ammonium Carbonate	Carbon Disulfide	**E** Epichlorohydrin
Ammonium Chloride	Carbon Monoxide	Ethane
Ammonium Fluoride	Carbon Tetrachloride	Ethanolamine
Ammonium Hydroxide	Carbonic Acid	Ethers
Ammonium Nitrate	Caustic Potash	Ethyl Acetate
Ammonium Persulfate	Caustic Soda	Ethyl Benzene
Ammonium Sulfate	Cellosolves	Ethyl Benzoate
Amyl Acetate	Chloric Acid	Ethyl Butyrate
Amyl Chlonde	Chlonnated Water	Ethyl Chloride
Aniline	Chlonne	Ethyl Ether
Antimony Trichloride	Chloroacetic Acid	Ethyl Sulfate
Aqua Regia	Chlorobenzene	Ethylene Bromide
Aroclor	Chloroethanol	Ethylene Chloride
Arsenic Acid	Chloroform	Ethylene Chlorohydrin
Asphalt	Chlorochenol	Ethylene Diamine
	Chlorosulfonic Acid	Ethylene Dibromide
B Barium Carbonate	Chromic Acid	Ethylene Dichloride
Barium Chloride	Citric Acid	Ethylene Glycol
Barium Cyanide	Copper Cyanide	Ethylene Oxide
Barium Hydroxide	Copper Fluoride	
Barium Nitrate	Copper Nitrate	**F** Fatty Acids
Barium Sulfate	Copper Sulfate	Femic Chloride
Barium Sulfide	Cottonseed Oil	Ferric Nitrate
	Creosol	Ferric Sulfate

EDLON™ PFA – Table 1 (continued)

Chemical	Chemical	Chemical
Ferrous Chloride	**L** Lacquers and Laquer Soly	**N** Naphtha
Ferrous Sulfate	Lactic Acid	Naphthalene
Flueboric Acid	Lard	Nickel Chloride
Flursilic Acid	Latex	Nickel Nitrate
Formaldehyde	Lead Acetate	Nickel Sulphate
Formic Acid	Lead Nitrate	Nitric Acid
Freon	Lead Sulfamate	Nitrobenzene
Fuel Oils	Lime-Sulpher	Nitrogen
Furan	Lime	Nitromethane
Futural	Linoleic Acid	Nitrous Acid
G Gallic Acid	Linseed Oil	Nitrous Oxide
Gas Natural	Lithium Chloride	N-octane
Gasoline	Lithium Hydroxide	**O** Oil, Animal
Gelatin	LPG Propane	Oil, Crude
Glucose	Lubricating Oil	Oil, Mineral
Glue	Lye	Oil, Vegetable
Glycerine	**M** Magnesium Bisulfate	Oleic Acid
Glycol	Magnesium Carbonate	Oxalic Acid
Glycolic Acid	Magnesium Chloride	Oxygen
H Helium	Magnesium Hydroxide	Ozone
Hectane	Magnesium Nitrate	**P** Palmitic Acid
Hexamine	Magnesium Sulfate	Praffin
Hexane	Maleic Acid	Pentane
Hydraulic Fluid (Petroleum)	Malic Acid	Perchloroethylene
Hydraulic Fluid (Synthetic)	Manganese Chloride	Perchloric Acid
Helium	Manganese Sulfate	Petroleum
Hydrobromic Acid	Mercuric Chloride	Petroleum Ether
Hydrochloric Acid	Mercuric Cyanide	Phenol Sulphonic Acid
Hydrocyanic Acid	Mercurous Nitrate	Phosphoric Acid
Hydrofluoric Acid	Mercury	Phosphorous Pentachloride
Hydrofluorosilicic Acid	Methane	Phosphorous Trichloride
Hydrofluosilicic Acid	Methyl Acetate	Photografic Solutions
Hxdrogen Chloride Gas	Methyl Acetone	Phthalic Acid
Hydrogen Cyanide	Methyl Alcohol	Phthalic Anhydride
Hydrogen Fluoride	Methyl Amine	Piaric Acid
Hydrogen Gas	Methyl Bromide	Planting Solutions
Hydrogen Peroxide	Methyl Cellosolve	Potassium Acetate
Hydrogen Sulfide Iodine	Methyl Chloride	Potassium Aluminium Sulphate
Hexanol Tertiary	Methyl Ethyl Ketone	Potassium Bicarbonate
Hydrazine	Methylene Chloride	Potassium Bichromate
Hypochlorous Acid	Milk	Potassium Bromide
I ISO Butyl Alcohol	Mineral Oil	Potassium Carbonate
ISO Octane	Mixed Acids	Potassium Chlorate
ISO Propyl Acetate	Molasses	Potassium Chloride
ISO Propyl Ether	Monochloro Benzene	Potassium Chromate
J Jet Fuel	Monochloroacetic Acid	Potassium Cyanide
K Kerosene	Monochlorodifluro Methane	Potassium Dichromate
Ketones	Monoethylamine	Potassium Ferricyanide
	Morpholine	Potassium Ferrocyanide
	Motor Oil	Potassium Hydrate
	Mustard	Potassium Hydroxide
		Potassium Hypochlorite
		Potassium Iodide-iodine

EDLON™ PFA – Table 1 (continued)

Chemical	Chemical	Chemical
Potassium Nitrate	Sodium Ferricyanide	Toluene
Potassium Oxalate	Sodium Fluoride	Tomato Juice
Potassium Permanganate	Sodium Hydroxide	Transformer Oil
Potassium Silicide	Sodium Hypochlorite	Tri Butyl Citrate
Potassium Sulphate	Sodium Hyposulfite	Tri Butyl Phosphate
Potassium Sulphide	Sodium Metaphosphate	Trichloroacetic Acid
Potassium Sulphite	Sodium Metasilicate	Trichloroethane
Propane	Sodium Nitrate	Trichloroethylene
Propyl Acetate	Sodium Nitrite	Trichloromonofluoroe
Propyl Alcohol	Sodium Perborate	Trichloropropane
Propylene	Sodium Peroxide	Trichlorotrifluoroethan
Propylene Chlorohydrin	Sodium Phosphates	Tricresylphosphate
Propylene Glycol	Sodium Silicate	Triethanolamine
Propylene Oxide	Sodium Sulfate	Triethyl Phosphate
Pydraul	Sodium Sulfide	Triethylamine
Pyridine	Sodium Sulfite	Triethylene Glycol
Pyrogallic Acid	Sodium Tetraborate	Triphenyl Phospite
Pyroligneous Acid	Sodium Thiosulfate	Tripropylene Gylcol
	Soy Bean Oil	Trisodium Phosphate
Q Quinine Bisulfate	Stannic Chloride	Tung Oil
Quinine Sulfate	Stannous Chloride	Turpentine
	Starch	
R Resorcinol	Stearic Acid	**U** Undecyl Alcohol
Rosin	Stoddard Solvent	Urea
	Styrene	Uric Acid
S Salicylaldehyde	Sugar Juice	Urine
Salicylic Acid	Sulfinol	
Salt Brine	Sulfolane	**V** Varnish
Sea Water	Sulfur	Vinegar
Sewage	Sulfur Chloride	Vinyl Acetate
Shellac	Sulfur Dioxide	Vinyl Chloride
Silicone Oil	Sulfur Molten	Vinylidine Chloride
Silver Bromide	Sodium Trioxide	
Silver Chloride	Sulfuric Acid	**W** Water, Acid Mine
Silver Cyanide	Sulfuric Acid Fuming Oleum	Water, Salt
Silver Nitrate	Sulfurous Acid	Wax
Skydrol	Sulphate Black Liquor	Whiskey
Soap Solutions	Sulphate Green Liquor	White Liquor
Sodium Acetate	Sulphite Liquor	White Spirit
Sodium Acid Sulfate		Wine
Sodium Aluminate	**T** Tall Oil	Wood Pulp
Sodium Aluminium Sulfate	Tallow	
Sodium Benzoate	Tannic Acid	**X** Xylene
Sodium Bicarbonate	Tannic Liquor	
Sodium Bichromate	Tar Oil	**Z** Zinc Carbonate
Sodium Bisulfate	Tartaric Acid	Zinc Chloride
Sodium Bisulfite	Tetra Ethyl Lead	Zinc Cyanide
Sodium Borate	Tetrachloroacetic Acid	Zinc Nitrate
Sodium Bromide	Tetrachloroethane	Zinc Stearate
Sodium Carbonate	Tetrachloroethylene	Zinc Sulphate
Sodium Chlorate	Tetrahydrofuran	
Sodium Chloride	Tetrahydro Naphthal	
Sodium Chromate	Tetraphosphoric Acid	
Sodium Citrate	Thionyl Chloride	
Sodium Cyanide	Tin Tetrachloride	
Sodium Dichromate	Titanium Tetrachloride	

E-CTFE Chemical Resistance List – Table 2

The following chemical resistance list contains our recommendations at different application temperatures. The data is based on long-term experience and the results from the development department and is not binding. In case of doubt, it will be necessary to establish suitability by experiment. This may be particularly so with combinations of media that can react differently on the coating than the individual media themselves.

E-CTFE chemical resistance data according to ASTM D543 after 30 days of continuous exposure

Chemical resistance data

		Change in Properties			
Chemical Name	**Test Temp. °C**	**Tensile Strength**	**Elongation at Break**	**Weight Gain %**	**Color**
Acetic Acid	20	I	I	0.3	1
Acetic Acid	50	I	I	2.4	1
Acetic Acid	100	I	I	2.7	1
Acetone	20	I	I	2.4	1
Acetone	50	I	I	2.7	1
Acetone Cyanohydrin	50	I	I	0.0	1
Acetonitrile	50	I	I	1.3	1
Acetophenone	50	I	I	1.8	1
Acrylic Acid	100	I	I	0.4	1
Aluminum Chloride 50%	100	I	I	0.0	2
Ammonium Hydroxide 30%	100	I	I	1.0	1
Amyl Acetate, 99% *	50	I	I	4.7	1
Aniline	50	I	I	0.3	1
Aniline	100	I	I	2.5	3
Benzaldehyde	20	I	I	0.2	1
Benzaldehyde	50	I	I	2.7	2
Benzyl Chloride, 97% *	50	I	I	2.3	1

LEGEND

CHANGE IN TENSILE PROPERTIES: **I** - insignificant **A** - reduced 25-50% **B** - reduced 50-75% **C** - reduced >75%

COLOR CHANGE: **1** - no change **2** - any shade of tan **3** - brown or black

* - tested for 28 days , ** - tested for 43 days , all others tested at 30 days. Values are comparable

Source: www.solvaysolexis.com

E-CTFE Chemical Resistance List – Table 2 (continued)

E-CTFE chemical resistance data according to ASTM D543 after 30 days of continuous exposure

		Change in Properties			
Chemical Name	**Test Temp. °C**	**Tensile Strength**	**Elongation at Break**	**Weight Gain %**	**Color**
Benzyl Alcohol	121	I	I	1.6	1
n-Butanol	121	I	I	1.9	1
Butylaldehyde *	50	I	I	2.8	1
Butyl Lactate *	50	I	I	0.5	1
Butyl Phthalate	100	I	I	2.4	1
Calcium Hydroxide, 0.5%	140	I	I	0.3	2
Cellosolve Acetate	20	I	I	0.3	1
Cellosolve Acetate	100	I	I	4.6	1
Chlorine Water, sat.	121	I	I	3.5	2
Chloroacetic Acid, 50%	100	I	I	0.3	3
Chlorobenzene	20	I	I	1.4	1
Chlorobenzene	50	I	I	4.8	1
Chlorosulfonic acid	50	I	I	4.3	3
a-Chlorotoluene	20	I	I	0.1	1
a-Chlorotoluene	50	I	I	2.9	2
Chromic Acid, 30%	100	I	I	0.0	2
Cyclohexylamine *	50	I	I	2.3	3
o-Cresol	50	I	I	0.3	1

LEGEND

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E-CTFE chemical resistance data according to ASTM D543 after 30 days of continuous exposure

		Change in Properties			
Chemical Name	**Test Temp. °C**	**Tensile Strength**	**Elongation at Break**	**Weight Gain %**	**Color**
o-Cresol	100	I	I	3.3	1
Cyclohexanone	20	I	I	0.2	1
Cyclohexanone	50	I	I	2.1	1
Diacetone Alcohol	50	I	I	0.1	1
Dibutyl Sebacate	100	I	I	2.4	1
Dibutyl Phthalate *	50	I	I	0.1	1
Diethyl Phthalate *	50	I	I	0.8	1
o-Dichlorobenzene	20	I	I	0.2	1
o-Dichlorobenzene	50	I	I	5.6	1
Dichloroethane	20	I	I	4.7	1
1,2-Dichloroethylene	20	I	I	1.8	1
Dichloropropane	20	I	I	0.6	1
Dichloropropane	50	I	I	5.2	1
a,a-Dichlorotoluene	20	I	I	0.1	1
N,N-Diethylethanolamine *	50	I	I	0.2	1
Diethylhydroxyamine, 85%	30	I	I	0.0	1
Diethylene glycol butyl ether acetate *	50	I	I	0.5	1
Diethyleneglycolmonobutyl ether*	50	I	I	0.2	1

LEGEND

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E-CTFE Chemical Resistance List – Table 2 (continued)

E-CTFE chemical resistance data according to ASTM D543 after 30 days of continuous exposure

		Change in Properties			
Chemical Name	**Test Temp. °C**	**Tensile Strength**	**Elongation at Break**	**Weight Gain %**	**Color**
Diethylene Triamine	50	I	I	0.2	2
Diisobutyl Ketone *	50	I	I	1.1	1
Diisopropyl Ketone	20	I	I	0.2	1
Diisopropyl Ketone	100	I	I	6.5	1
N,N-Dimethyl Acetamide	20	I	I	0.3	1
N,N-Dimethyl Acetamide	50	I	I	3.8	2
N,N-Dimethyldodecylamine	75	I	I	0.5	1
N,N-Dimethyl Formamide	20	I	I	0.3	1
N,N-Dimethyl Formamide	50	I	I	2.9	2
Dimethyl Phthalate	100	I	I	2.5	2
Dimethyl Sulfoxide	100	I	I	1.9	1
Dimethylamine	20	I	I	1.9	1
Dimethylamine, 40%	50	I	I	0.4	1
Dioctyl Phthalate	50	I	I	0.2	1
1,4-Dioxane	50	I	I	4.7	1
Dipropylene glycol methyl ether *	50	I	I	0.2	1
Ethanol	100	I	I	0.8	1

LEGEND

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E-CTFE chemical resistance data according to ASTM D543 after 30 days of continuous exposure

		Change in Properties			
Chemical Name	**Test Temp. °C**	**Tensile Strength**	**Elongation at Break**	**Weight Gain %**	**Color**
Ethyl Acetate	50	I	I	3.4	1
Ethyl Formate	20	I	I	2.9	1
Ethylene Glycol	100	I	I	0.4	1
Ethylenediamine	20	I	I	0.3	2
Ferric Chloride, 55%	100	I	I	-0.1	1
2- Ethoxyethanol, 99% *	50	I	I	0.4	1
Fluoroboric Acid, 10%	100	I	I	0.1	1
Formaldehyde, 37%	80	I	I	0.6	1
Formic Acid, 85%	80	I	I	0.4	1
Furfural	50	I	I	1.5	2
n-Hexane **	30	I	I	0.3	1
Hydrochloric acid, 37%	100	I	I	0.7	3
Hydrofluoric acid, 49%	100	I	I	0.2	2
Hydrogen Peroxide, 60%	30	I	I	0.3	1
4-Hydroxybenzene sulfonic acid *	70	I	I	0.1	2
Isophorone *	50	I	I	0.5	1
Isopropyl Alcohol **	80	I	I	1.5	1
Lithium Hydroxide, 11.8%	100	I	I	0.0	1

LEGEND

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E-CTFE Chemical Resistance List – Table 2 (continued)

E-CTFE chemical resistance data according to ASTM D543 after 30 days of continuous exposure

		Change in Properties			
Chemical Name	**Test Temp. °C**	**Tensile Strength**	**Elongation at Break**	**Weight Gain %**	**Color**
Methane Sulfuric Acid, 50%	66	I	I	0.0	1
Methanol	50	I	I	0.4	1
Methyl Cellosolve	100	I	I	1.7	1
Methyl Ethyl Ketone	20	I	I	2.4	1
Methyl Formate	20	I	I	2.6	1
Methyl Isobutyl Ketone	20	I	I	0.4	1
Methyl Isobutyl Ketone	50	I	I	3.6	1
Methyl Methacrylate	20	I	I	2.3	1
1-Methyl-2-Pyrrolidinone	20	I	I	0.3	1
N-Methylpyrrolidinone	20	I	I	1.5	1
Methylene Chloride	20	I	I	3.9	1
Nitric Acid, 10%	121	I	I	0.4	1
Nitric Acid, 50%	50	I	I	0.1	1
Nitric Acid, 90%	71	I	I	2.3	2
Nonyl Phenol *	50	I	I	0.1	1
2-Octanol	50	I	I	0.2	1
Pentyl Acetate	20	I	I	0.5	1
Pentyl Acetate	50	I	I	3.9	1
Phenol	50	I	I	0.1	1

LEGEND

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E-CTFE chemical resistance data according to ASTM D543 after 30 days of continuous exposure

		Change in Properties			
Chemical Name	**Test Temp. °C**	**Tensile Strength**	**Elongation at Break**	**Weight Gain %**	**Color**
Phosphoric Acid, 85%	140	I	I	-0.1	2
Phosphorous Oxychloride	20	I	I	2.7	1
Potassium Carbonate, 53.2%	140	I	I	-0.1	2
Potassium Hydroxide, 50%	121	I	I	-0.1	2
Propanol *	50	I	I	0.2	1
Propyl Acetate	20	I	I	1.7	1
Propyl Acetate	50	I	I	3.6	1
Sodium Carbonate, 33.7%	100	I	I	0.0	1
Sodium Chlorite, 45.9%	100	I	I	0.1	1
Sodium Hydrosulfide, 50%	140	I	I	0.0	2
Sodium Hydroxide, 50%	132	I	I	-0.2	2
Sodium Hypochlorite, 12.5-15.5%	45	I	I	0.1	1
Sodium Hypochlorite, 5%	121	I	I	0.1	1
Sulfuric Acid, 98%	121	I	I	0.7	3
Tetrachloroethylene	20	I	I	2.0	1
Tetramethyl Ammonium Hydroxide	100	I	I	0.6	2
p-Toluenesulfonic Acid (sol. sat.) *	70	I	I	0.0	1

LEGEND

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E-CTFE Chemical Resistance List – Table 2 (continued)

E-CTFE chemical resistance data according to ASTM D543 after 30 days of continuous exposure

		Change in Properties			
Chemical Name	**Test Temp. °C**	**Tensile Strength**	**Elongation at Break**	**Weight Gain %**	**Color**
Toluene	20	I	I	0.7	1
Tributyl Phosphate *	50	I	I	0.1	1
Trichlorobenzene	50	I	I	4.0	1
1,1,1-Trichloroethylene	20	I	I	0.3	1
Triethylamine *	50	I	I	0.9	2
Tricresyl Phosphate	100	I	I	0.3	1
Triethyl Phosphate	50	I	I	0.2	1
Triethylene Tetramine	50	I	I	0.0	2
Vinyl Acetate	50	I	I	3.1	1
Xylene	20	I	I	0.5	1
Xylene	50	I	I	3.4	1

LEGEND

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Source: www.solvaysolexis.com

Table 3
Chemical compatibility – taking DuPont Teflon® ETFE as an example (based on tests of representative materials and engineering judgment)

The data is based on long-term experience and the results from the development department and is not binding.

	Chemical	Maximum Use Temperature °F	°C
A	Acetaldehyde	200	95
	Acetamide	250	120
	Acetic Acid (50%)	250	120
	Acetic Acid (Glacial)	230	110
	Acetic Anhydride	300	150
	Acetone	150	65
	Acetone (50% H_2O)	150	65
	Acetonitrile	150	65
	Acetophenone	300	150
	Acetylchloride	150	65
	Acetylene	250	120
	Acetylene Tetrabromide	300	150
	Acetylene Tetrachloride	300	150
	Acrylonitrile	150	65
	Adipic Acid	275	135
	Air	300	150
	Allyl Alcohol	212	100
	Allyl Chloride	212	100
	Aluminum Ammonium Sulfate	300	150
	Aluminum Chloride	300	150
	Aluminum Fluoride	300	150
	Aluminum Hydroxide	300	150
	Aluminum Nitrate	300	150
	Aluminum Oxychloride	300	150
	Aluminum Potassium Sulfate	300	150
	Amino Acids (H_2O)	212	100
	Ammonia (Anhydrous)	300	150
	Ammonia (Aqueous 30%)	230	110
	Ammonium Bifluoride	300	150
	Ammonium Bromide (50%)	275	135
	Ammonium Carbonate	300	150
	Ammonium Chloride	300	150
	Ammonium Dichromate	275	135
	Ammonium Fluoride	300	150
	Ammonium Hydroxide	300	150
	Ammonium Nitrate (Conc.)	230	110
	Ammonium Perchlorate	275	135
	Ammonium Persulfate	150	65
	Ammonium Phosphate	300	150
	Ammonium Sulfate	300	150
	Ammonium Sulfide	300	150
	Ammonium Thiocyanate	300	150
	Amyl Acetate	250	120
	Amyl Alcohol	300	150
	Amyl Chloride	300	150
	Aniline	230	110
	Aniline Hydrochloride (10%)	150	65
	Anthraquinone	275	135
	Anthraquinone-Sulfonic Acid	275	135
	Antimony Trichloride	212	100
	Aqua Regia	212	100
	Arsenic Acid	300	150
B	Barium Carbonate	300	150
	Barium Chloride	300	150
	Barium Hydroxide	300	150
	Barium Sulfate	300	150
	Barium Sulfide	300	150
	Battery Acid	250	120
	Benzaldehyde	212	100
	Benzene	212	100
	Benzene Sulfonic Acid	212	100
	Benzoic Acid	275	135
	Benzoyl Chloride	150	65
	Benzyl Alcohol	300	150
	Benzyl Chloride	300	150
	Bismuth Carbonate	300	150
	Black Liquor	300	150
	Bleach (12.5% Cl_2)	212	100
	Borax	300	150
	Boric Acid	300	150
	Brine	300	150
	Bromic Acid	250	120
	Bromine (Dry)	150	65
	Bromine Water (10%)	230	110
	mono-Bromobenzene	212	100
	Bromoform	212	100
	m-Bromotoluene	212	100
	Butadiene	250	120
	Butane	300	150
	Butanediol	275	135
	Butyl Acetate	230	110
	Butyl Acrylate	230	110
	n-Butyl Alcohol	300	150
	sec-Butyl Alcohol	300	150
	tert-Butyl Alcohol	300	150
	n-Butylamine	120	50
	sec-Butylamine	120	50
	tert-Butylamine	120	50
	di-n-Butyl Amine	230	110
	tri-n-Butyl Amine	230	110
	Butylene	300	150
	Butyl Bromide	300	150
	Butyl Chloride	300	150
	n-Butyl Mercaptan	300	150
	Butyl Phenol	230	110
	Butyl Phthalate	150	65
	Butyraldehyde	212	100
	Butyric Acid	250	120
C	Calcium Bisulfate	300	150
	Calcium Bisulfide	300	150
	Calcium Carbonate	300	150
	Calcium Chlorate	300	150
	Calcium Chloride	300	150
	Calcium Hydroxide	300	150
	Calcium Hypochlorite	300	150
	Calcium Nitrate	300	150
	Calcium Oxide	275	135
	Calcium Sulfate	300	150
	Calcium Sulfide	250	120
	Caprylic Acid	212	100

Source: www.dupont.com. Rudolf Gutbrod GmbH has been a DuPont licensee in Germany since 1967 (continued)

Table 3 (continued)

Chemical compatibility – taking DuPont Teflon® ETFE as an example (based on tests of representative materials and engineering judgment)

The data is based on long-term experience and the results from the development department and is not binding.

Chemical	Maximum Use Temperature °F	°C
Carbon Dioxide (Dry)	300	150
Carbon Dioxide (Wet)	300	150
Carbon Disulfide	150	65
Carbon Monoxide	300	150
Carbon Tetrachloride	150	65
Carbonic Acid	300	150
Castor Oil	300	150
Caustic Potash (10 and 50%)	212	100
Caustic Soda (10 and 50%)	212	100
Cellosolve®	300	150
Chloral Hydrate	212	100
Chlorinated Brine	250	120
Chlorinated Phenol	212	100
Chlorine (Dry)	212	100
Chlorine (Wet)	250	120
Chlorine Dioxide	250	120
Chloroacetic Acid (50% H_2O)	230	110
Chlorobenzene	212	100
Chlorobenzyl Chloride	150	65
Chloroform	212	100
Chlorohydrin (Liquid)	150	65
Chlorosulphonic Acid	75	25
Chromic Acid (50%)	150	65
Chromic Chloride	212	100
Chromyl Chloride	212	100
Clorox Bleach Solution (5-1/2% Cl_2)	212	100
Coal Gas	212	100
Copper Chloride	300	150
Copper Cyanide	300	150
Copper Fluoride	300	150
Copper Nitrate	300	150
Copper Sulfate	300	150
Cresol	275	135
Cresylic Acid	275	135
Crotonaldehyde	212	100
Crude Oil	300	150
Cyclohexane	300	150
Cyclohexanol	250	120
Cyclohexanone	300	150
D DDT	212	100
Decalin	250	120
Decane	300	150
Dextrin	300	150
Diacetone Alcohol	212	100
1,2-Dibromopropane	200	95
Dibutyl Phthalate	150	65
Dichloroacetic Acid	150	65
o-Dichlorobenzene	150	65
Dichloroethylene	150	65
Dichloropropionic Acid	150	65
Diesel Fuels	300	150
Diethyl Benzene	275	135
Diethyl Cellosolve	300	150
Diethyl Ether	212	100
Diethylamine	230	110
Diethylene Triamine	212	100
Diglycolic Acid	212	100
Diisobutyl Ketone	230	110
Diisobutylene	275	135
Dimethyl Formamide	250	120
Dimethyl Phthalate	212	100
Dimethyl Sulfate	150	65
Dimethyl Sulfoxide	212	100
Dimethylamine	120	50
Dimethylaniline	275	135
Dioctyl Phthalate	150	65
p-Dioxane	150	65
Diphenyl Ether	175	80
Divinyl Benzene	175	80
E Epichlorhydrin	150	65
Ethyl Acetate	150	65
Ethyl Acrylate	212	100
Ethyl Alcohol	300	150
Ethyl Chloride	300	150
Ethyl Chloroacetate	212	100
Ethyl Cyanoacetate	212	100
Ethylacetoacetate	150	65
Ethylamine	100	40
Ethylene Bromide	300	150
Ethylene Chloride	300	150
Ethylene Chlorohydrin	150	65
Ethylene Diamine	120	50
Ethylene Glycol	300	150
Ethylene Oxide	230	110
F Fatty Acids	300	150
Ferric Chloride (50% in H_2O)	300	150
Ferric Hydroxide	300	150
Ferric Nitrate	300	150
Ferric Sulfate	300	150
Ferrous Chloride	300	150
Ferrous Hydroxide	300	150
Ferrous Nitrate	300	150
Ferrous Sulfate	300	150
Fluorine (Gaseous)	100	40
Fluoroboric Acid	275	135
Fluosilicic Acid	275	135
Formaldehyde (37% in H_2O)	230	110
Formic Acid	275	135
FREON® 11	230	110
FREON® 12	230	110
FREON® 22	230	110
Fuel Oil	300	150
Fumaric Acid	200	95
Furane	150	65
Furfural	212	100
G Gallic Acid	212	100
Gas—Manufactured	300	150
Gas—Natural	300	150
Gasoline—Leaded	300	150
Gasoline—Sour	300	150
Gasoline—Unleaded	300	150

Source: www.dupont.com. Rudolf Gutbrod GmbH has been a DuPont licensee in Germany since 1967

(continued)

Table 3
Chemical compatibility – taking DuPont Teflon® ETFE as an example (based on tests of representative materials and engineering judgment)

The data is based on long-term experience and the results from the development department and is not binding.

Chemical	Maximum Use Temperature °F	°C
Glycerol	300	150
Glycol	275	135
Glycolic Acid	250	120
H Heptane	300	150
Hexane	300	150
Hydrazine	100	40
Hydrazine Dihydrochloride	125	50
Hydriodic Acid	300	150
Hydrobromic Acid (50%)	300	150
Hydrochloric Acid (20%)	300	150
Hydrochloric Acid (Conc.)	300	150
Hydrochloric Acid (Gas)	300	150
Hydrocyanic Acid	300	150
Hydrofluoric Acid (35%)	275	135
Hydrofluoric Acid (70%)	250	120
Hydrofluoric Acid (100%)	230	110
Hydrofluorosilicic Acid	300	150
Hydrogen	300	150
Hydrogen Cyanide	300	150
Hydrogen Peroxide (30%)	250	120
Hydrogen Peroxide (90%)	150	65
Hydrogen Phosphide	150	65
Hydrogen Sulfide (Dry)	300	150
Hydrogen Sulfide (Wet)	300	150
Hydroquinone	250	120
Hypochlorous Acid	300	150
I Inert Gases	300	150
Iodine (Dry)	230	110
Iodine (Wet)	230	110
Iodoform	230	110
Isobutyl Alcohol	275	135
Isopropylamine	120	50
J Jet Fuel—JP4	230	110
Jet Fuel—JP5	230	110
L Lactic Acid	250	120
Lard Oil	300	150
Lauric Acid	250	120
Lauryl Chloride	275	135
Lauryl Sulfate	250	120
Lead Acetate	300	150
Linoleic Acid	275	135
Linseed Oil	300	150
Lithium Bromide (Saturated)	250	120
Lithium Hydroxide	300	150
Lubricating Oil	300	150
M Magnesium Carbonate	300	150
Magnesium Chloride	300	150
Magnesium Hydroxide	300	150
Magnesium Nitrate	300	150
Magnesium Sulfate	300	150
Maleic Acid	275	135
Maleic Anhydride	200	95
Malic Acid	275	135
Mercuric Chloride	275	135
Mercuric Cyanide	275	135
Mercuric Nitrate	275	135
Mercury	275	135
Methacrylic Acid	200	95
Methane	250	120
Methane Sulfonic Acid (50%)	230	110
Methyl Alcohol	300	150
n-Methylaniline	250	120
Methyl Benzoate	250	120
Methyl Bromide	300	150
Methyl Cellosolve®	300	150
Methyl Chloride	200	95
Methyl Chloroform	150	65
Methyl Chloromethyl Ether	175	80
Methyl Cyanoacetate	175	80
Methyl Ethyl Ketone	230	110
Methyl Isobutyl Ketone	230	110
Methyl Methacrylate	175	80
Methyl Salicylate	200	95
Methyl Sulfuric Acid	212	100
Methyl Trichlorosilane	200	95
Methylene Bromide	212	100
Methylene Chloride	212	100
Methylene Iodide	212	100
Mineral Oil	300	150
Monochlorobenzene	230	110
Monoethanolamine	150	65
Morpholine	150	65
N Naphtha	300	150
Naphthalene	300	150
Nickel Chloride	300	150
Nickel Nitrate	300	150
Nickel Sulfate	300	150
Nicotine	212	100
Nicotinic Acid	250	120
Nitric Acid (50%)	221	105
Nitric Acid (Conc. 70%)	248	120
Nitric Acid—Sulfuric Acid (50/50)	212	100
Nitrobenzene	300	150
Nitrogen Dioxide	212	100
Nitrogen Gas	300	150
Nitromethane	212	100
Nitrous Acid	212	100
O Octane	300	150
Octene	300	150
Oleic Acid	275	135
Oleum	120	50
Oxalic Acid	230	110
Oxygen	300	150
Ozone (<1% in Air)	212	100
P Palmitic Acid	275	135
Perchlorethylene	275	135
Perchloric Acid (10%)	230	110
Perchloric Acid (72%)	150	65
Petrolatum	300	150

Source: www.dupont.com. Rudolf Gutbrod GmbH has been a DuPont licensee in Germany since 1967

(continued)

Table 3 (continued)
Chemical compatibility – taking DuPont Teflon® ETFE as an example (based on tests of representative materials and engineering judgment)

The data is based on long-term experience and the results from the development department and is not binding.

Chemical	Maximum Use Temperature °F	°C
Petroleum	300	150
Petroleum Ether	212	100
Phenol (10%)	230	110
Phenol (100%)	212	100
Phenolsulfonic Acid	212	100
Phenylhydrazine	212	100
Phenylhydrazine Hydrochloride	212	100
o-Phenylphenol	212	100
Phosgene	212	100
Phosphoric Acid (30%)	300	150
Phosphoric Acid (85%)	275	135
Phosphorus Oxychloride	221	100
Phosphorus Pentachloride	212	100
Phosphorus Pentoxide	230	110
Phosphorus Trichloride	250	120
Phthalic Acid	212	100
Phthalic Anhydride	212	100
Picric Acid	125	50
Polyvinyl Acetate	300	150
Polyvinyl Alcohol	300	150
Potassium Aluminum Chloride	300	150
Potassium Aluminum Sulfate (50%)	300	150
Potassium Bicarbonate	300	150
Potassium Borate	300	150
Potassium Bromate	300	150
Potassium Bromide	300	150
Potassium Carbonate	300	150
Potassium Chlorate	300	150
Potassium Chloride	300	150
Potassium Chromate	300	150
Potassium Cyanide	300	150
Potassium Dichromate	300	150
Potassium Ferrocyanide	300	150
Potassium Fluoride	300	150
Potassium Hydroxide (50%)	212	100
Potassium Hypochlorite	275	135
Potassium Nitrate	300	150
Potassium Perborate	275	135
Potassium Perchlorate	212	100
Potassium Permanganate	300	150
Potassium Persulfate	150	65
Potassium Sulfate	300	150
Potassium Sulfide	300	150
Propane	275	135
Propionic Acid	212	100
Propyl Alcohol	300	150
Propylene Dibromide	212	100
Propylene Dichloride	212	100
Propylene Glycol Methyl Ether	212	100
Propylene Oxide	150	65
Pyridine	150	65
Pyrogallol	150	65
S Salicylaldehyde	212	100
Salicylic Acid	250	120
Salt Brine	300	150
Sea Water	300	150
Silicon Tetrachloride	250	120
Silver Chloride	300	150
Silver Cyanide	300	150
Silver Nitrate	300	150
Sodium Acetate	300	150
Sodium Benzene-Sulfonate	300	150
Sodium Benzoate	300	150
Sodium Bicarbonate	300	150
Sodium Bisulfate	300	150
Sodium Bisulfite	300	150
Sodium Borate	212	100
Sodium Bromide	300	150
Sodium Carbonate	300	150
Sodium Chlorate	300	150
Sodium Chloride	300	150
Sodium Chromate	300	150
Sodium Cyanide	300	150
Sodium Dichromate (Alkaline)	212	100
Sodium Ferricyanide	300	150
Sodium Ferrocyanide	300	150
Sodium Fluoride	300	150
Sodium Glutamate	275	135
Sodium Hydroxide (10%)	230	110
Sodium Hydroxide (50%)	230	110
Sodium Hypochlorite	300	150
Sodium Hyposulfite	300	150
Sodium Iodide	300	150
Sodium Lignosulfonate	300	150
Sodium Metasilicate	300	150
Sodium Nitrate	300	150
Sodium Nitrite	300	150
Sodium Perborate	212	100
Sodium Perchlorate	150	65
Sodium Peroxide	300	150
Sodium Persulfate	175	80
Sodium Phosphate	300	150
Sodium Silicate	300	150
Sodium Silicofluoride	300	150
Sodium Sulfate	300	150
Sodium Sulfide	300	150
Sodium Sulfite	300	150
Sodium Thiosulfate	300	150
Sorbic Acid	275	135
Sour Crude Oil	300	150
Stannic Chloride	300	150
Stannous Chloride	300	150
Stannous Fluoride	250	120
Stearic Acid	300	150
Stoddard's Solvent	275	135
Styrene Monomer	212	100
Succinic Acid	275	135
Sulfamic Acid	212	100
Sulfur (Molten)	250	120
Sulfur Dioxide	230	110
Sulfur Trioxide (Liquid)	75	25
Sulfuric Acid (60%)	300	150

Source: www.dupont.com. Rudolf Gutbrod GmbH has been a DuPont licensee in Germany since 1967

(continued)

Table 3
Chemical compatibility – taking DuPont Teflon® ETFE as an example (based on tests of representative materials and engineering judgment)

The data is based on long-term experience and the results from the development department and is not binding.

Chemical	Maximum Use Temperature °F	°C
Sulfuric Acid (Conc.)	300	150
Sulfuric Acid (Fuming—Oleum)	120	50
Sulfurous Acid	230	110
T Tall Oil	300	150
Tannic Acid	275	135
Tartaric Acid	275	135
2,3,4,6-Tetrachlorophenol	212	100
Tetraethyl Lead	300	150
Tetrahydrofuran	212	100
Tetramethyl Ammonium Hydroxide (50%)	212	100
Thionyl Chloride	212	100
Tin Tetrachloride	230	110
Titanium Dioxide	300	150
Titanium Tetrachloride	212	100
Toluene	250	120
Tributyl Phosphate	150	65
Trichloracetic Acid	212	100
Trichloroethylene	275	135
Trichloromethane	212	100
2,4,5-Trichlorophenol	212	100
Triethylamine	230	110
Trisodium Phosphate	275	135
Turpentine	275	135
U UDMH-Hydrazine (50/50)	120	50
Urea (50% H_2O)	275	135
V Varsol	275	135
Vinyl Acetate	275	135
Vinyl Chloride (Monomer)	150	65
W Water	300	150
Water Sewage	275	135
Wax	300	150
X Xylene	250	120
Z Zinc Acetate	250	120
Zinc Chloride	300	150
Zinc Hydrosulfite (10%)	250	120
Zinc Nitrate	300	150
Zinc Sulfate	300	150
Zinc Sulfide	300	150
PLATING SOLUTIONS		
Brass	275	135
Cadmium	275	135
Chrome	275	135
Copper	275	135
Gold	275	135

Source: www.dupont.com. Rudolf Gutbrod GmbH has been a DuPont licensee in Germany since 1967

(continued)

Representative Compatibility Data

The test results shown in Table 4 represent the tensile strength, elongation and weight changes after exposures at indicated temperatures. The test results confirm the chemical resistant properties of ETFE.

Table 4
Actual laboratory tests on chemical compatibility – taking DuPont Teflon® ETFE as an example - with representative chemicals

The data is based on long-term experience and the results from the development department and is not binding.

Chemical	Boiling Point °F	Boiling Point °C	Test Temperature °F	Test Temperature °C	Days	Retained Properties—% Tensile Strength	Retained Properties—% Elong.	Retained Properties—% Weight Gain
Acid/Anhydrides								
Acetic Acid (Glacial)	244	118	244	118	7	82	80	3.4
Acetic Anhydride	282	139	282	139	7	100	100	0
Trichloroacetic Acid	384	196	212	100	7	90	70	0
Aliphatic Hydrocarbons								
Mineral Oil	—	—	356	180	7	90	60	0
Naphtha	—	—	212	100	7	100	100	0.5
Aromatic Hydrocarbons								
Benzene	176	80	176	80	7	100	100	0
Toluene	230	110	230	110	7	—	—	—
Functional Aromatics								
O-Cresol	376	191	356	180	7	100	100	0
Amines								
Aniline	365	185	248	120	7	81	99	2.7
Aniline	365	185	248	120	30	93	82	—
Aniline	365	185	356	180	7	95	90	—
N,N-Dimethylaniline	374	190	248	120	7	82	97	—
N-Methylaniline	383	195	248	120	7	85	95	—
N-Methylaniline	383	195	248	120	30	100	100	—
n-Butylamine	172	78	172	78	7	71	73	4.4
Di-n-Butylamine	318	159	248	120	7	81	96	—
Di-n-Butylamine	318	159	248	120	30	100	100	—
Di-n-Butylamine	318	159	320	160	7	55	75	—
Tri-n-Butylamine	421	216	248	120	7	81	80	—
Tri-n-Butylamine	421	216	248	120	30	100	100	—
Pyridine	240	116	240	116	7	100	100	1.5
Chlorinated Solvents								
Carbon Tetrachloride	172	78	172	78	7	90	80	4.5
Chloroform	144	62	142	61	7	85	100	4.0
Dichloroethylene	170	77	90	32	7	95	100	2.8
FREON® 113	115	46	115	46	7	100	100	0.8
Methylene Chloride	104	40	104	40	7	85	85	0
Ethers								
Tetrahydrofuran	151	66	151	66	7	86	93	3.5
Aldehyde/Ketones								
Acetone	132	56	132	56	7	80	83	4.1
Acetophenone	394	201	356	180	7	80	80	1.5
Cyclohexanone	312	156	312	156	7	90	85	0
Methyl Ethyl Ketone	176	80	176	80	7	100	100	0

Source: www.dupont.com. Rudolf Gutbrod GmbH has been a DuPont licensee in Germany since 1967

(continued)

Table 4 (continued)

Actual laboratory tests on chemical compatibility – taking DuPont Teflon® ETFE as an example - with representative chemicals

The data is based on long-term experience and the results from the development department and is not binding.

Chemical	Boiling Point °F	Boiling Point °C	Test Temperature °F	Test Temperature °C	Days	Retained Properties—% Tensile Strength	Retained Properties—% Elong.	Retained Properties—% Weight Gain
Esters								
n-Butyl Acetate	260	127	260	127	7	80	60	0
Ethyl Acetate	170	77	170	77	7	85	60	0
Polymer Solvents								
Dimethylformamide	309	154	194	90	7	100	100	1.5
Dimethylformamide	309	154	248	120	7	76	92	5.5
Dimethylsulfoxide	373	189	194	90	7	95	90	1.5
Other Organics								
Benzoyl Chloride	387	197	248	120	7	94	95	—
Benzoyl Chloride	387	197	248	120	30	100	100	—
Benzyl Alcohol	401	205	248	120	7	97	90	—
Decalin	374	190	248	120	7	89	95	—
Phthaloyl Chloride	529	276	248	120	30	100	100	—
Acids								
Aqua Regia	—	—	194	90	*	93	89	0.2
Chromic	257	125	257	125	7	66	25	—
Hydrobromic (Conc)	257	125	257	125	7	100	100	—
Hydrochloric (Conc)	223	106	73	23	7	100	90	0
Hydrochloric (Conc)	223	106	223	106	7	96	100	0.1
Hydrofluoric (Conc)	—	—	73	23	7	97	95	0.1
Nitric—25%	212	100	212	100	14	100	100	—
Nitric—50%	221	105	221	105	14	87	81	—
Nitric—70% (Conc)	248	120	73	23	105	100	100	0.5
Nitric—70% (Conc)	248	120	140	60	53	100	100	—
Nitric—70% (Conc)	248	120	248	120	2	72	91	—
Nitric—70% (Conc)	248	120	248	120	3	58	5	—
Nitric—70% (Conc)	248	120	248	120	7	0	0	—
Phosphoric (Conc)	—	—	212	100	7	—	—	—
Phosphoric (Conc)	—	—	248	120	7	94	93	0
Sulfuric (Conc)	—	—	212	100	7	100	100	0
Sulfuric (Conc)	—	—	248	120	7	98	95	0
Sulfuric (Conc)	—	—	302	150	*	98	90	0
Halogens								
Bromine (Anhy)	138	59	73	23	7	90	90	1.2
Bromine (Anhy)	138	59	135	57	7	99	100	—
Bromine (Anhy)	138	59	135	57	30	94	93	3.4
Chlorine (Anhy)	—	—	248	120	7	85	84	7
Bases								
Ammonium Hydroxide	—	—	150	66	7	97	97	0
Potassium Hydroxide (20%)	—	—	212	100	7	100	100	0
Sodium Hydroxide (50%)	—	—	248	120	7	94	80	0.2
Peroxides								
Hydrogen Peroxide (30%)	—	—	73	23	7	99	98	0

(continued)

*Exposed for 6 hours.

NOTES: Change in properties -15% is considered insignificant. Samples were 10–15 mil microtensile bars. TS/E and wt. gain determined within 24 hours after removal from exposure media.

Source: www.dupont.com. Rudolf Gutbrod GmbH has been a DuPont licensee in Germany since 1967

Table 4 (continued)

Actual laboratory tests on chemical compatibility – taking DuPont Teflon® ETFE as an example - with representative chemicals

The data is based on long-term experience and the results from the development department and is not binding.

Chemical	Boiling Point °F	Boiling Point °C	Test Temperature °F	Test Temperature °C	Days	Retained Properties—% Tensile Strength	Retained Properties—% Elong.	Retained Properties—% Weight Gain
Salt-Metal Etchants								
Ferric Chloride (25%)	220	104	212	100	7	95	95	0
Zinc Chloride (25%)	220	104	212	100	7	100	100	0
Other Inorganics								
Phosphoric Oxychloride	220	104	220	104	7	100	100	—
Phosphoric Trichloride	167	75	167	75	7	100	98	—
Silicon Tetrachloride	140	60	140	60	7	100	100	—
Sulfuryl Chloride	115	68	155	68	7	86	100	8
Water	212	100	212	100	7	100	100	0
Miscellaneous								
A-20 Stripper Solution	—	—	284	140	7	90	90	—
Aerosafe	—	—	300	149	7	92	93	3.9
Skydrol	—	—	300	149	7	100	95	3.0

*Exposed for 6 hours.

NOTES: Change in properties -15% is considered insignificant. Samples were 10–15 mil microtensile bars. TS/E and wt. gain determined within 24 hours after removal from exposure media.

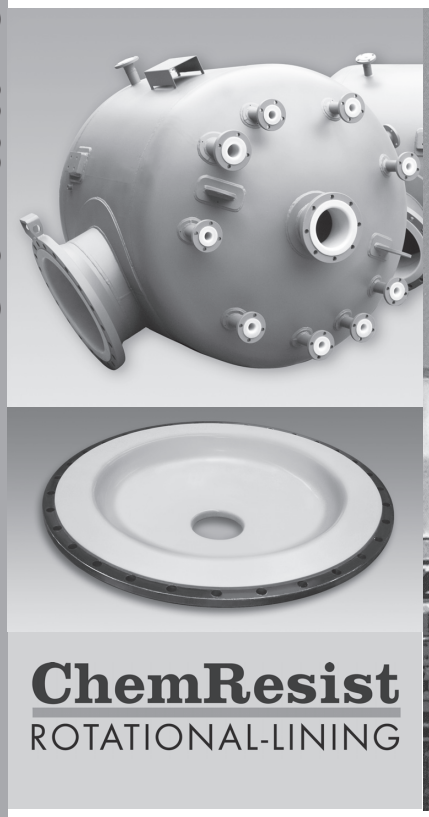
Source: www.dupont.com. Rudolf Gutbrod GmbH has been a DuPont licensee in Germany since 1967

PERFECT SOLUTION FOR SINTER LINING PROJECTS

ChemResist puts a new emphasis in this case using a process and computer-controlled lining technology according to the rotational sinter lining process. This procedure creates a seamless lining with virtually uniform coating thickness.

High-quality partially and fully fluorinated materials, such as ETFE und PFA, and the high performance polymers PE, PP and PA, are used by ChemResist. ETFE and PE are also available as electrically conducting versions. ChemResist can also supply with FDA-conform certification upon request. This also applies to electrically conductive specifications.

Partly and fully fluorinated polymers offer universal and permanent resistance to acids, alkalis, solvents and chlorides. ChemResist possesses an extremely smooth and anti-adhesive surface and thus prevents bacterial adherence or growth. In the manufacture of highly pure products (chip industry, high purity grade chemicals) ChemResist prevents impaired quality from foreign substances or dissolved metallic ions.



FLEXIBLE AND ECONOMICAL

If special parts are to be lined, ChemResist possesses distinct advantages both from an economic as well as a qualitative point of view. The process can be adapted flexibly to the circumstances or requirements (preparation of tooling is not required). Even rigid construction specifications can be solved economically with ChemResist.

Mechanical preliminary work, as well as the use of adhesives, can be avoided. Chemical resistance and high temperature resilience remain unaffected. The permanent and homogeneous lamination to the substrate means new and interesting perspectives in use under vacuum.

More detailed information are available in our ChemResist brochure and on the internet at **www.gutbrod-ptfe.de/produkte/chemresist.**

Benchmark for Surface Protection

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