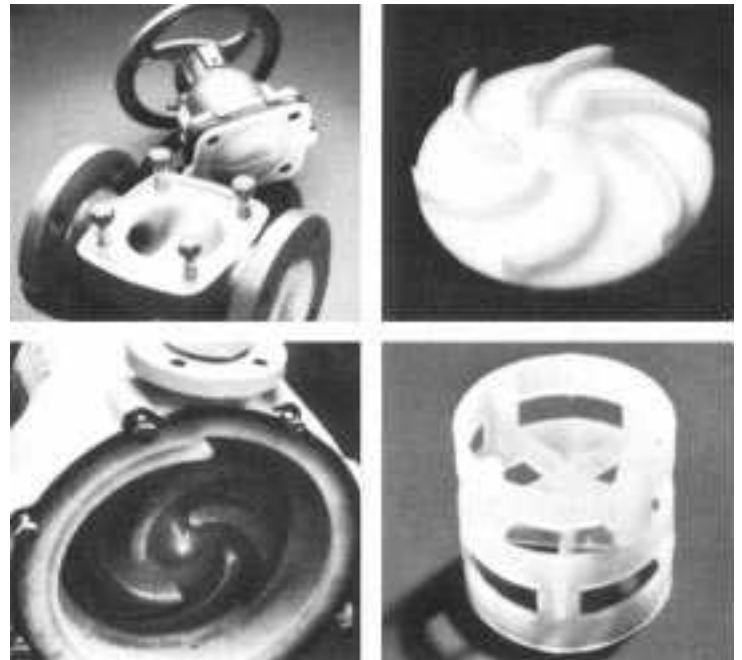




Tefzel[®]
fluoropolymer resin

Chemical Use Temperature Guide



Tefzel® ... Tough for Abrasive Service

Tefzel® fluoropolymer resin is a proven performer in the chemical and petrochemical processing industries. It has gained notable recognition for its unique properties and design versatility which are helping to solve some of the industry's toughest materials problems in process equipment and components.

Like DuPont's family of *Teflon*® fluoropolymer resins, *Tefzel*® provides excellent resistance to attack by chemicals and solvents which can cause rapid deterioration of other plastics and all but the most costly metal alloys.

Tefzel® is inert to strong mineral acids, inorganic bases, halogens and metal salt solutions. Even carboxylic acids, anhydrides, aromatic and aliphatic hydrocarbons, alcohols, aldehydes, ketones, ethers, esters, chlorocarbons and classic polymer solvents have little effect on *Tefzel*®. Very strong oxidizing acids near their boiling points, such as nitric at high concentration, will however affect *Tefzel*® in varying degrees. So will strong organic bases such as amines and sulfonic acids.

In addition to its chemical resistance, *Tefzel*® has excellent mechanical strength, stiffness and abrasion resistance. This may be an important consideration for process applications where abrasive slurries often accelerate wear and degradation of alternative materials. *Tefzel*® can also be reinforced with glass fibers to increase the flexural modulus to 950,000 psi/6,550 MPa.

Tefzel® has a broad continuous use temperature range from -150° to 300°F (-100° to 150°C). Specific temperature ratings vary with equipment design, thus it is important to consult with component manufacturers for in-use service recommendations.

Chemical Resistance Guide

Table 1 lists over 450 chemicals whose corrosive characteristics create problems which can often be solved by specifying *Tefzel*® fluoropolymer. The maximum use temperature for each chemical service listed is suggested *as a guide only*.

Not all chemicals listed have been tested in a DuPont laboratory. This guide is based on selective laboratory tests of representative chemicals; field applications and experience; and engineering judgments as to the suitability of *Tefzel*® in these chemical environments.

Table 1 lists chemicals and the "upper suggested use temperatures" for organic and inorganic chemicals and plating solutions. The temperature ratings, especially for inorganic chemicals, apply to aqueous and nonaqueous systems. It is recommended that tests be conducted under actual or simulated use conditions wherever possible to determine suitability of *Tefzel*® or any other material for a specific application. It is also suggested that the equipment fabricator be consulted for in-use service recommendations.

Representative Compatibility Data

The data presented in **Table 2** show the effects of various representative chemicals on the properties of *Tefzel*® as tested in DuPont laboratories.

TABLE 1
Chemical Compatibility Data on Tefzel®
(Based on Tests of Representative Materials and Engineering Judgment)

Chemical	Maximum Use Temperature		Chemical	Maximum Use Temperature	
	°F	°C		°F	°C
A Acetaldehyde	200	95	Barium Sulfate	300	150
Acetamide	250	120	Barium Sulfide	300	150
Acetic Acid (50%)	250	120	Battery Acid	250	120
Acetic Acid (Glacial)	230	110	Benzaldehyde	212	100
Acetic Anhydride	300	150	Benzene	212	100
Acetone	150	65	Benzene Sulfonic Acid	212	100
Acetone (50% H ₂ O)	150	65	Benzoic Acid	275	135
Acetonitrile	150	65	Benzoyl Chloride	150	65
Acetophenone	300	150	Benzyl Alcohol	300	150
Acetylchloride	150	65	Benzyl Chloride	300	150
Acetylene	250	120	Bismuth Carbonate	300	150
Acetylene Tetrabromide	300	150	Black Liquor	300	150
Acetylene Tetrachloride	300	150	Bleach (12.5% Cl ₂)	212	100
Acrylonitrile	150	65	Borax	300	150
Adipic Acid	275	135	Boric Acid	300	150
Air	300	150	Brine	300	150
Allyl Alcohol	212	100	Bromic Acid	250	120
Allyl Chloride	212	100	Bromine (Dry)	150	65
Aluminum Ammonium Sulfate	300	150	Bromine Water (10%)	230	110
Aluminum Chloride	300	150	mono-Bromobenzene	212	100
Aluminum Fluoride	300	150	Bromoform	212	100
Aluminum Hydroxide	300	150	m-Bromotoluene	212	100
Aluminum Nitrate	300	150	Butadiene	250	120
Aluminum Oxychloride	300	150	Butane	300	150
Aluminum Potassium Sulfate	300	150	Butanediol	275	135
Amino Acids (H ₂ O)	212	100	Butyl Acetate	230	110
Ammonia (Anhydrous)	300	150	Butyl Acrylate	230	110
Ammonia (Aqueous 30%)	230	110	n-Butyl Alcohol	300	150
Ammonium Bifluoride	300	150	sec-Butyl Alcohol	300	150
Ammonium Bromide (50%)	275	135	tert-Butyl Alcohol	300	150
Ammonium Carbonate	300	150	n-Butylamine	120	50
Ammonium Chloride	300	150	sec-Butylamine	120	50
Ammonium Dichromate	275	135	tert-Butylamine	120	50
Ammonium Fluoride	300	150	di-n-Butyl Amine	230	110
Ammonium Hydroxide	300	150	tri-n-Butyl Amine	230	110
Ammonium Nitrate (Conc.)	230	110	Butylene	300	150
Ammonium Perchlorate	275	135	Butyl Bromide	300	150
Ammonium Persulfate	150	65	Butyl Chloride	300	150
Ammonium Phosphate	300	150	n-Butyl Mercaptan	300	150
Ammonium Sulfate	300	150	Butyl Phenol	230	110
Ammonium Sulfide	300	150	Butyl Phthalate	150	65
Ammonium Thiocyanate	300	150	Butyraldehyde	212	100
Amyl Acetate	250	120	Butyric Acid	250	120
Amyl Alcohol	300	150	C Calcium Bisulfate	300	150
Amyl Chloride	300	150	Calcium Bisulfide	300	150
Aniline	230	110	Calcium Carbonate	300	150
Aniline Hydrochloride (10%)	150	65	Calcium Chlorate	300	150
Anthraquinone	275	135	Calcium Chloride	300	150
Anthraquinone-Sulfonic Acid	275	135	Calcium Hydroxide	300	150
Antimony Trichloride	212	100	Calcium Hypochlorite	300	150
Aqua Regia	212	100	Calcium Nitrate	300	150
Arsenic Acid	300	150	Calcium Oxide	275	135
B Barium Carbonate	300	150	Calcium Sulfate	300	150
Barium Chloride	300	150	Calcium Sulfide	250	120
Barium Hydroxide	300	150	Caprylic Acid	212	100

(continued)

TABLE 1 (continued)
Chemical Compatibility Data on Tefzel®
(Based on Tests of Representative Materials and Engineering Judgment)

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

TABLE 1 (continued)
Chemical Compatibility Data on Tefzel®
(Based on Tests of Representative Materials and Engineering Judgment)

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

(continued)

TABLE 1 (continued)
Chemical Compatibility Data on Tefzel®
(Based on Tests of Representative Materials and Engineering Judgment)

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

TABLE 1 (continued)
Chemical Compatibility Data on Tefzel®
(Based on Tests of Representative Materials and Engineering Judgment)

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

Representative Compatibility Data

These test results confirm the chemical resistant properties of *Tefzel*[®].

The test results shown in **Table 2** represent the tensile strength, elongation and weight changes after exposures at indicated temperatures.

TABLE 2
Actual Laboratory Tests on
Chemical Compatibility of *Tefzel*[®] with Representative Chemicals

Chemical	Boiling Point		Test Temperature		Days	Retained Properties—%		
	°F	°C	°F	°C		Tensile Strength	Elong.	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

TABLE 2 (continued)
Actual Laboratory Tests on
Chemical Compatibility of Tefzel® with Representative Chemicals

Chemical	Boiling Point		Test Temperature		Days	Retained Properties—%		
	°F	°C	°F	°C		Tensile Strength	Elong.	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.

TABLE 2 (continued)
Actual Laboratory Tests on
Chemical Compatibility of Tefzel® with Representative Chemicals

Chemical	Boiling Point		Test Temperature		Days	Retained Properties—%		
	°F	°C	°F	°C		Tensile Strength	Elong.	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 $\leq 15\%$ is considered insignificant. Samples were 10–15 mil microtensile bars. TS/E and wt. gain determined within 24 hours after removal from exposure media.

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