



REG. U.S. PAT. & TM. OFF.

Kalrez[®]
PERFLUOROELASTOMER PARTS

**Chemical Resistance
and
Fluid Compatibility**

CHEMICAL RESISTANCE AND FLUID COMPATIBILITY

KALREZ® perfluoroelastomer parts combine the elastomeric properties of VITON® fluoroelastomer with the chemical resistance of TEFLON® fluorocarbon resins. Due to its unique properties, KALREZ perfluoroelastomer parts should be considered for service in all applications and environments where dependable long-term service is desired, as well as in hot and/or aggressive environments which are beyond the serviceability of common elastomers.

This guide is intended to provide assistance in determining the suitability of six commercially available elastomers-nitrile (NBR), ethylene propylene (EPDM), silicone (SI), fluorosilicone (FSI), vinylidene fluoride based fluoroelastomer (FKM) and KALREZ perfluoroelastomer-for service in over 1,600 chemicals and fluids. The criteria used for these ratings included volume swell resistance based on laboratory immersion testing, laboratory aging tests, actual field experience and informed judgments based on experience in similar chemical groups.

The ratings for the five common elastomers are based on published literature and are offered for general comparative purposes only-we cannot guarantee their accuracy nor assume responsibility for their use. The ratings for these five elastomers may be overly optimistic for elevated temperature and/or high concentration applications since many are based on ambient temperature testing. Suitability of these elastomers for service at elevated temperatures rapidly diminishes since higher temperatures increase the effects of chemicals on both the base polymer as well as the crosslink systems. Serviceability is further limited by the upper service temperature limit of each polymer, nominally 107°C/225°F, 149°C/300°F, 204°C/400°F, 190°C/375°F, and 204°C/400°F for NBR, EPDM, SI, FSI and FKM respectively-note that these limits are based on air oxidative stability; limits for specific chemicals are often much lower. Additionally, these elastomers are commercially available in different grades of polymer and can vary in compound ingredients-different grades and compounds within a polymer class can have significantly different performance characteristics.

As an example, consider a specific case involving an FKM whose upper service temperature limit is nominally 204°C/400°F. Many sources will show an "A" rating for FKM suitability in toluene service, a common chemical. However, immersion testing of commonly available FKM o-rings at a slightly elevated temperature of 50°C/122°F for 168 hours shows a volume swell exceeding 24% and significant loss of physical properties-surely warranting a "C" rating. Similar tests with KALREZ perfluoroelastomer parts, however, show that the "A" rating is maintained beyond 100°C/212°F.

CHEMICAL RESISTANCE TABLES

Since **KALREZ** has outstanding chemical resistance, it withstands nearly all classes of chemicals—because of the combination of the high thermal stability and excellent chemical resistance, the **KALREZ perfluoroelastomer parts rating may be conservative**, as actual field experience and the example has demonstrated.

In comparing the chemical and fluid resistance of KALREZ perfluoroelastomers to that of TEFLON fluorocarbon resin, certain differences should be kept in mind:

- 1) KALREZ is an amorphous low modulus rubber whereas TEFLON is a crystalline high modulus plastic. In fluid environments where high permeation occurs, KALREZ will probably swell to a greater extent than TEFLON even though the polymer is not chemically attacked. Environments in which this is most noticeable are fully halogenated solvents and FREON®. Serviceability of KALREZ in these environments will be dependent upon the specifics of the application.
- 2) As with all elastomers, it is necessary to compound KALREZ perfluoroelastomers with fillers and curatives to gain desired mechanical properties for functionality. In a limited number of environments, even though the polymer is stable, the fillers and curative systems may interact with the chemicals. However, since the level of fillers in KALREZ perfluoroelastomers is much lower than in most other elastomers, such filler interactions are generally negligible with KALREZ parts. Where such interactions can occur, such as in highly oxidative environments, service performance is dependent on the conditions of the application and may be affected by choice of compound.

Since each and every application is unique, it is recommended that users of KALREZ perfluoroelastomer parts always conduct their own evaluations to determine the suitability of KALREZ for their application. Because of laboratory constraints and differences in field applications, the results shown in this guide may be based on conditions which may not necessarily reflect actual operating environments for a specific application. Additionally, many elastomeric materials may show excellent chemical resistance to pure reagents in relatively short-term laboratory tests. However, they may fail in actual service because of chemical attack by additives and/or impurities. KALREZ perfluoroelastomer parts, with their near universal chemical resistance, provide an extra degree of safety against these unknown corrosive influences.

A Case History booklet is available from your Authorized KALREZ Distributor detailing proven performance of KALREZ parts in over 100 specific chemical applications. Information on test performance in a limited number of specific chemicals is also available through your Authorized Distributor.

RATING SYSTEM

- A Elastomer shows little or no effect (generally less than 10% swell) after exposure to the chemical; slight swelling or loss of properties may occur under severe conditions but this should not affect performance.
- B Elastomer may be affected by the chemical after exposure, as evidenced by slight visible swelling and/or loss of physical properties; in B-rated cases, KALREZ parts will often perform satisfactorily long after other elastomers have failed.
- C Elastomer is affected by the chemical after exposure, as evidenced by moderate to severe swelling and/or loss of physical properties; limited functionality is possible but must be determined by testing.
- U Elastomer is not suitable for service in the chemical.

Where no rating is shown, insufficient information is available to make a judgment.

An asterisk (*) next to a KALREZ perfluoroelastomer rating indicates that differences may exist between KALREZ compounds in certain applications which could affect relative performance—consult your Authorized Distributor or Du Pont for compound selection. For such environments, other elastomers generally have very limited serviceability.

CAUTION

KALREZ perfluoroelastomer parts, like all fluorinated products, should not be exposed to molten or gaseous alkali metals, such as sodium and potassium, because a highly exothermic reaction may occur.

At elevated temperatures above 100°C/212°F, service life may be significantly reduced in fluids containing high concentrations of some diamines, nitric acid and basic phenols. KALREZ parts should always be tested for suitability.

*KALREZ DuPont registered trademark for its perfluoroelastomer parts
*VITON, TEFLON, FREON DuPont registered trademarks

Generally, KALREZ parts ratings are applicable up to 100°C/212°F—however, in many chemicals, KALREZ parts will be functional at higher service temperatures. Testing is always recommended for each proposed use of KALREZ since actual application conditions may vary. Please note rating comments on page 3 for compound selection in fluids with asterisk (*) notation.

Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM	Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM
Abietic Acid	A						Aluminum Oxalate	A					
Acetaldehyde	A *	U	A	B	U	U	Aluminum Phosphate	A	A	A	A		A
Acetamide	A	A	A	B	A	B	Aluminum Potassium Sulfate	A					
Acetanilide	A						Aluminum Salts	A					
Acetic Acid, Glacial	A	C	A	B	U	C	Aluminum Sodium Sulfate	A					
Acetic Acid, 30%	A	B	A	A	B	B	Aluminum Sulfate	A	A	A	A	A	A
Acetic Anhydride	A	C	B	C	U	U	Alums	A					
Acetoacetic Acid	A						Amines	A *					
Acetone	A	U	A	C	U	U	Aminoanthraquinone	A					
Acetone Cyanohydrin	A						Aminoazobenzene	A					
Acetonitrile	A		A				Aminobenzoic Acid	A					
Acetophenetidine	A						Aminobenzene						
Acetophenone	A	U	A	U	U	U	Sulfonic Acid	A					
Acetotoluidide	A						Aminoethyl-ethanolamine	A *					
Acetylacetone	A						Amino Phenol	A *					
Acetyl Bromide	A						Aminopyridine	A					
Acetyl Chloride	A *	U	U	C	A	A	Aminosalicic Acid	A					
Acetylene	A	A	A	B		A	Ammonia, Anhydrous	A *	B	A	C	U	U
Acetylene Tetrabromide	A						Ammonia Gas (cold)	A	A	A	A	U	U
Acetylene Tetrachloride	A						Ammonia Gas (hot)	A *	U	B	A	U	U
Acetylsalicilic Acid	A						Ammonium Acetate	A					
Acids, Organic	A						Ammonium Arsenate	A					
Acids, Non-Organic	A						Ammonium Benzoate	A					
Aconitic Acid	A						Ammonium Bicarbonate	A					
Acridine	A						Ammonium Bifluoride	A *					
Acrolein	A						Ammonium Bisulfite	A					
Acrylic Acid	A						Ammonium Bromide	A					
Acrylonitrile	A *	U	U	U	U	C	Ammonium Carbamate	A					
Adipic Acid	A	A	A	—	A		Ammonium Carbonate	A	U	—			—
Aliphatic Dicarboxylic Acid	A						Ammonium Chloride (Sal Ammoniac)	A	A	A			A
Alkanes (Paraffin Hydrocarbons)	A						Ammonium Citrate	A					
Alkanesulphonic Acid	A						Ammonium Dichromate	A					
Alkenes (Olefin Hydrocarbons)	A						Ammonium Diposphate	A					
Alkyl Acetone	A						Ammonium Fluoride	A *					
Alkyl Alcohol	A						Ammonium Fluosilicate	A					
Alkyl Amine	A						Ammonium Formate	A					
Alkyl Aryl Sulphonates	A						Ammonium Hydrogen Fluoride	A *					
Alkyl Arylsulphonics	A						Ammonium Hydroxide (conc.)	A *	U	A	A	B	B
Alkyl Benzene	A						Ammonium Iodide	A					
Alkyl Chloride	A						Ammonium Lactate	A					
Alkyl naphthalene Sulfonic Acid	A						Ammonium Metaphosphate	A					
Alkyl Sulfide	A						Ammonium Molybdate	A					
Allylidene Diacetate	A *						Ammonium Nitrate	A	A	A	—		
Alpha Picoline	A						Ammonium Nitrite	A	A	A	B		
Aluminum Acetate	A	B	A	U	U	U	Ammonium Oxalate	A					
Aluminum Bromide	A						Ammonium Perchlorate	A					
Aluminum Chlorate	A						Ammonium Perchloride	A					
Aluminum Chloride	A	A	A	B	A	A							
Aluminum Ethylate	A												
Aluminum Fluoride	A	A	A	B	A	A							
Aluminum Fluosilicate	A												
Aluminum Formate	A												
Aluminum Hydroxide	A												
Aluminum Linoleate	A												
Aluminum Nitrate	A	A	A	B	—	A							

NBR, EPDM, SI,FSI and FKM ratings are generally for room temperature service. Application of these ratings to other conditions may be restricted as noted on page 2: testing under actual conditions is always recommended.

Chemical	ALREZ	NBR	EPDM	SI	FSI	FKM
Ammonium Persulfate	A	U	A	-		
Ammonium Phosphate	A	A	A	A		
Ammonium Phosphate (di-basic)	A					
Ammonium Phosphate (mono-basic)	A					
Ammonium Phosphate (W-basic)	A					
Ammonium Phosphite	A					
Ammonium Picrate	A					
Ammonium Polysulfide	A					
Ammonium Salicylate	A					
Ammonium Salts	A					
Ammonium Sulfamate	A					
Ammonium Sulfate	A	A	A	-		U
Ammonium Sulphate Nitrate	A *					
Ammonium Sulfide	A					
Ammonium Sulfite	A					
Ammonium Thiocyanate	A					
Ammonium Thioglycollate	A					
Ammonium Thiosulfate	A					
Ammonium Tungstate	A					
Ammonium Valerate	A					
Amyl Acetate	A	U	C	U	U	U
Amyl Alcohol	A	B	A	U	A	B
Amyl Borate	A	A	U	-		A
Amyl Butyrate	A					
Amyl Chloride	A					
Amyl Chloro-naphthaiene	A	U	U	U	B	A
Amyl Cinnamic Aldehyde	A					
Amyl Laurate	A					
Amyl Mercaptan	A					
Amyl Naphthalene	A	U	U	U	A	A
Amyl Nitrate	A					
Amyl Nitrite	A					
Amyl Phenol	A *					
Amyl Propionate	A					
ANDEROL' L-774	A					
Aniline	A	U	A	U	C	C
Aniline Dyes	A	U	A	C	B	B
Aniline Hydrochloride	A	B	B	U	B	B
Aniline Hydrochlorine	A					
Aniline Sulfate	A					
Aniline Sulfite	A					
Animal Fats	A	A	B	B	A	A
Animal Oils	A					
Anisole	A					
Anisoyl Chloride	A					
ANSUL's Ether	A	C	C	U	C	U
Anthracene	A					
Anthranilic Acid	A *					

Chemical	ALREZ	NBR	EPDM	SI	FSI	FKM
Anthraquinone	A					
Anti-Freeze Solutions	A					
Antimony Chloride	A					
Antimony Pentachloride	A					
Antimony Pentafluoride	B					
Antimony Sulfate	A					
Antimony Tribromide	A					
Antimony Trichloride	A					
Antimony Trifluoride	B					
Antimony Trioxide	A					
Aqua Regia	A	U	C	U	C	B
Arachidic Acid	A					
Argon Gas	A					
AROCHLOR ² , 1248	A	C	C	B	B	A
AROCHLOR ² , 1254	A	U	C	C	B	A
AROCHLOR ² , 1260	A	A	A	B	A	A
Aromatic Fuels	A					
Arsenic Acid	A	A	A	A	A	A
Arsenic Oxide	A					
Arsenic Trichloride	A	A	C			-
Arsenic Trioxide	A					
Arsenic Trisulfide	A					
Arsenites	A					
Arsine	A					
Aryl Orthosilicate	A					
Ascorbic Acid	A					
Askarel	A	B	U	U	B	A
Aspartic Acid	A					
Asphalt	A	B	U	U	B	A
ASTM ³ Oil. No. 1	A					
ASTM ³ Oil. No. 2	A					
ASTM ³ Oil. No. 3	A					
ASTM ³ Oil, No. 4	A					
ASTM ³ Ref. Fuel A	A					
ASTM ³ Ref. Fuel B	A					
ASTM ³ Ref. Fuel C	A					
Automatic Transmission Fluids	A					
Automotive Brake Fluids	A					
AUREX' 1256	A					
Azobenzene	A					
Barium Carbonate	A					
Barium Chlorate	A					
Barium Chloride (aq)	A	A	A	A	A	A
Barium Cyanide	A					
Barium Hydroxide	A	A	A	A	A	A
Barium Iodide	A					
Barium Nitrate	A					
Barium Oxide	A					
Barium Peroxide	A					
Barium Polysulfide	A					
Barium Salts	A					
Barium Sulfate (aq)	A	A	A	A	A	A
Barium Sulfide (aq)	A	A	A	A	A	A
Beet Sugar Liquors	A	A	A	A	A	A
Benzaldehyde	A	U	A	B	C	U

Generally, KALREZ parts ratings are applicable up to 100°C/212°F—however, in many chemicals, KALREZ parts will be functional at higher service temperatures. Testing is always recommended for each proposed use of KALREZ since actual application conditions may vary. Please note rating comments on page 3 for compound selection in fluids with asterisk (*) notation.

Chemical	KALREP	NBR	EPDM	SI	FSI	FKM	Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM
Benzaldehyde-disulfonic Acid	A *						Bromic Acid	A					
Benzamide	A						Bromine Anhydrous	A	U	U	U	B	A
Benzanthrone	A						Bromine Pentafluoride	B *					
Benzene	A	U	U	U	C	A	Bromine Trifluoride	B *	U	U	U	U	U
Benzene Hexachloride	A						Bromine Water	A *	U	B	U	B	A
Benzene Sulfonic Acid	A	U	C	U	B	A	Bromobenzene	A	U	U	U	A	A
Benzidine	A						Bromobenzene Cyanide	A					
Benzidine 3 Sulfonic Acid	A *						Bromochloro-trifluoroethane (Halothane)	A					
Benzil	A						Bromoform	A					
Benzilic Acid	A						Bromomethane (Methyl Bromide)	A					
Benzine (Ligroin)	A	A	U	U	A	A	Bromotrifluoromethane (FREON® 13B1) ⁶	B					
Benzocatechol	A						Brucine Sulfate	A					
Benzoic Acid	A *	C	C	C	B	A	Bunker "C" (Fuel Oil)	A	A	U	C	B	A
Benzoin	A						Butadiene	A	U	U	U	B	A
Benzonitrile	A						Butane	A	A	C	U	U	A
Benzophenone	A						Butanedial	A					
Benzoquinone	A						Butyl Acetate	A	U	C	U	U	U
Benzotrichloride	A						Butyl Acetyl Ricinoleate	A	C	A	—	B	A
Benzotrifluoride	A						Butyl Acrylate	A	U	U	—	U	U
Benzoyl Chloride	A	U	U	—	B	A	Butyl Alcohol	A	A	B	B	B	A
Benzoyl Peroxide	A *						Butyl Amine	A *	C	B	U	U	U
Benzoylsulfonic Acid	A						Butyl Benzoate	A	U	B	—	A	A
Benzyl Acetate	A						Butylbenzoic Acid	A					
Benzyl Alcohol	A	U	A	B	B	A	Butyl Benzolate	A					
Benzyl Amine	A *						Butyl Butyrate	A					
Benzyl Benzoate	A	U	B	—	A	A	Butyl Carbitol	A	U	A	U	U	U
Benzyl Bromide	A						Butyl CELLOSOLVE ⁵	A	C	A	—	U	U
Benzyl Butyl Phthalate	A						Butyl CELLOSOLVE ⁵ Acetate	A					
Benzyl Chloride	A	U	U	U	B	A	Butyl Chloride	A					
Benzyl Phenol	A						Butylene	A	B	U	U	B	A
Benzyl Salicylate	A						Butyl Ether	A					
Beryllium Chloride	A						Butyl Glycolate	A					
Beryllium Fluoride	A						Butyl Lactate	A					
Beryllium Oxide	A						Butyl Laurate	A					
Beryllium Sulfate	A						Butyl Mercaptan	A					
Bismuth Carbonate	A						Butyl Methacrylate	A					
Bismuth Nitrate	A						Butyl Oleate	A	U	B	—	B	A
Bismuth Oxychloride	A						Butyl Oxalate	A					
Bittern	A						Butyl Phenols	A *					
Blast Furnace Gas	A	U	U	1	B	A	Butyl Stearate	A	B	C	—	B	A
Bleach Solutions	A *	U	A	3	B	A	Butyraldehyde	A *	U	B	J	U	U
Borax Solution (Sodium Borate)	A	B	A	3	B	A	Butyric Acid	A *					
Bordeaux Mixture	A	B	A	3	B	A	Butyric Anhydride	A *					
Boric Acid	A	A	A	1	A	A	Butyrolactone	A					
Boric Oxide	A						Butyryl Chloride	A					
Borneol	A						Cadmium Chloride	A					
Bornyl Acetate	A						Cadmium Cyanide	A					
Bornyl Chloride	A						Cadmium Nitrate	A					
Bornyl Formate	A						Cadmium Oxide	A					
Boron Hydride	A						Cadmium Sulfate	A					
Boron Phosphate	A						Cadmium Sulfide	A					
Boron Tribromide	A						Calcium Acetate	B	A	U	J	U	A
Boron Trichloride	B						Calcium Arsenate	A					
Boron Trifluoride	B												
Boron Trioxide	A												
Brine	A	A	A	1	A	A							

NBR, EPDM, SI, FSI and FKM ratings are generally for room temperature service. Application of these ratings to other conditions may be restricted as noted on page 2: testing under actual conditions is always recommended.

Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM	Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM
Calcium Benzoate	A						Carbon Dioxide	A	A	B	B	A	A
Calcium Bicarbonate	A						Carbon Disulfide	A					
Calcium Bisulfide	A						Carbon Fluorides	A					
Calcium Bisulfite	A	U	U	A	A	A	Carbonic Acid	A	B	A	A	A	A
Calcium Bromide	A						Carbon Monoxide	A	A	A	A	B	A
Calcium Carbide	A						Carbon Tetrabromide	A					
Calcium Carbonate	A						Carbon Tetrachloride	A*	C	U	U	C	A
Calcium Chlorate	A						Casein	A					
Calcium Chloride	A	A	A	A	A	A	Castor Oil	A	A	B	A	A	A
Calcium Chromate	A						Caustic Lime	A					
Calcium Cyanamide	A						Caustic Potash	A					
Calcium Cyanide	A						Caustic Soda (Sodium Hydroxide)	A					
Calcium Fluoride	A						CELLOSOLVE ⁵	A	U	B	U	U	C
Calcium Gluconate	A						CELLOSOLVE Acetate	A	U	B	U	U	U
Calcium Hydride	A						Cellulose Acetate	A					
Calcium Hydrosulfide	A						Cellulose Acetate Butyrate	A					
Calcium Hydroxide	A	A	A	A	A	A	Cellulose Ether	A					
Calcium Hypochlorite	A	B	A	B	B	A	Cellulose Nitrate	A					
Calcium Hypo-phosphite	A						Cellulose Tripropionate	A					
Calcium Lactate	A						CELLULUBE'						
Calcium Naphthenate	A						(Phosphate Esters)	A	U	A	A	C	A
Calcium Nitrate	A	A	A	B	A	A	Cerous Chloride	A					
Calcium Oxalate	A						Cerous Fluoride	A					
Calcium Oxide	A						Cerous Nitrate	A					
Calcium Permanganate	A						Cerium Sulfate	A					
Calcium Peroxide	A						Cetane (Hexadecane)	A					
Calcium Phenol-sulphonate	A						Cetyl Alcohol	A					
Calcium Phosphate	A						Chaulmoogric Acid	A					
Calcium Phosphate Acid	A						China Wood Oil (Tung Oil)	A	A	C	U	B	A
Calcium Propionate	A						Chloral	A					
Calcium Pyridine Sulfonate	A						Chloramine	A					
Calcium Salts	A						Chloranthraquinone	A					
Calcium Stearate	A						Chlordane	A					
Calcium Sulfamate	A						Chloric Acid	A					
Calcium Sulfate	A						Chlorinated Solvents	A					
Calcium Sulfide	A	A	A	B	A	A	Chlorine (Dry)	A	U	U	J	A	A
Calcium Sulfite	A						Chlorine (Wet)	B*	U	C	J	B	B
Calcium Thiocyanate	A						Chlorine Dioxide	A*	U	C	—	B	A
Calcium Tungstate	A						Chlorine Trifluoride	B*	U	U	J	C	U
Caliche	A						Chloroacetaldehyde	B					
Camphene	A						Chloroacetic Acid	A*	U	A	—	U	U
Camphor	A						Chloroacetone	A	U	A	J	U	U
Camphoric Acid	A						Chloroacetyl Chloride	A					
Cane Sugar Liquors	A	A	A	A	A	A	Chloroamino Benzoic Acid	A					
Capric Acid	A						Chloroaniline	A					
Caproic Acid	A						Chlorobenzaldehyde	A*					
Caproic Aldehyde	A						Chlorobenzene	A	U	U	J	B	A
Caprolactam	A						Chlorobenzene Trifluoride	A					
Capronaldehyde	A*						Chlorobenzene Chloride	A					
Carbamate	A	C	B	—	A	A	Chlorobenzotri-fluoride	A					
Carbazole	A						Chlorobenzochloride	A					
CARBITOL ⁴	A	B	B	3	B	B	Chlorobutane (Butyl Chloride)	A					
Carbolic Acid (Phenol)	A*	U	B	J	A	A	Chlorobromomethane	A	U	B	U	B	A
Carbon Bisulfide	A	C	U	J	A	A							

Generally, KALREZ parts ratings are applicable up to 100°C/212°F—however, in many chemicals, KALREZ parts will be functional at higher service temperatures. Testing is always recommended for each proposed use of KALREZ since actual application conditions may vary. Please note rating comments on page 3 for compound selection in fluids with asterisk (*) notation.

Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM	Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM
Chlorobromopropane	A						Cobaltous Naphthenate	A					
Chlorobutadiene (Chloroprene)	A	U	U	U	B	A	Cobaltous Sulfate	A					
Chlorodifluoromethane (FREON®22)	B						Coconut Oil	A	A	C	A	A	A
Chlorododecane	A	U	U	U	A	A	Cod Liver Oil	A	A	A	B	A	A
Chloroethane	A						Codien	A					
Chloroethane Sulfonic Acid	A						Coke Oven Gas	A	U	U	B	B	A
Chloroethylbenzene	A						Copper Acetate	A	B	A	U	U	U
Chloroform	A	U	U	U	U	A	Copper Ammonium Acetate	A					
Chlorohydrin	A						Copper Carbonate	A					
0-Chloronaphthalene	A	U	U	U	B	A	Copper Chloride	A	A	A	A	A	A
Chloronitrobenzene	A						Copper Cyanide	A	A	A	A	A	A
1-Chloro-1-Nitro Ethane	A	U	U	U	U	U	Copper Gluconate	A					
Chloro Oxyfluorides	B *						Copper Naphthenate	A					
Chlorophenol	A *						Copper Nitrate	A					
Chloropicrin	A						Copper Oxide	A					
Chloropentafluoroethane (FREON®115)	B *						Copper Salts	A					
Chloroprene	A						Copper Sulfate	A	A	A	A	A	A
Chlorosilanes	A						Corn Oil	A	A	C	A	A	A
Chlorosulfonic Acid	A	U	U	U	U	U	Cottonseed Oil	A	A	B	A	A	A
Chlorotoluene	A	U	U	U	B	A	Creosote (Coal Tar)	A	A	U	U	A	A
Chlorotoluene Sulfonic Acid	A						Cresol (Methyl Phenol)	A *	U	U	U	B	A
Chlorotoluidine	A						Cresylic Acid	A *	U	U	U	B	A
Chlorotrifluoroethylene (CTFE)	B *						Crotonaldehyde	A					
Chlorotrifluoromethane (FREON®B)	B						Crotonic Acid	A					
Chloro Xylenols	A						Crude Oil	A					
Chloroxylols	A						Cumaldehyde	A					
Cholesterol	A						Cumene (Isopropylbenzene)	A	U	U	U	B	A
Chrome Alum	A						Cumene Hydroperoxide	A					
Chrome Plating Solutions	A	U	B	B	B	A	Cutting Oils	A					
Chromic Acid	A	U	C	C	C	A	Cyanamide	A					
Chromic Chloride	A						Cyanides	A					
Chromic Fluorides	A						Cyanoacetic Acid	A *					
Chromic Hydroxide	A						Cyanogen Gas	A					
Chromic Nitrates	A						Cyanogen Chloride	A					
Chromic Oxide	A						Cyanohydrin	A					
Chromic Phosphate	A						Cyanuric Chloride	A					
Chromic Sulfate	A						Cyclohexane	A	A	U	U	B	A
Chromium Potassium Sulfate (Alum)	A						Cyclohexanol	A	C	C	U	A	A
Chromyl Chlorides	A						Cyclohexanone	U	U	B	U	U	
Cinnamic Acid	A						Cyclohexene	A					
Cinnamic Alcohol	A						Cyclohexylamine	A					
Cinnamic Aldehyde	A						Cyclohexylamine Carbonate	A					
Citric Acid	A	A	A	A	A	A	Cyclohexylamine Laurate	A					
CLOROX ¹⁶	A	B	B	B	B	A	Cyclopentadiene	A					
Coal Tar	A	A	U	U	A	A	Cyclopentane	A					
Cobaltous Acetate	A						Cyclopolyolefins	A					
Cobaltous Bromide	A						P-Cymene (Isopropyl toluene)	A	U	U	U	B	A
Cobaltous Chloride	A	A	A	B	A	A	DDT (Dichlorodiphenyl trichloroethane)	A					
Cobaltous Linoleate	A						DECALIN ⁶	A	U	U	U	A	A
							Decane	A	A	U	B	A	A
							Deionized Water	A *					
							Denatured Alcohol	A	A	A	A	A	A

NBR, EPDM, SI, FSI and FKM ratings are generally for room temperature service. Application of these ratings to other conditions may be restricted as noted on page 2; testing under actual conditions is always recommended.

Chemical	KALRE:	NBR	EPDM	SI	FSI	FKM	Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM
Detergent Solutions	A	A	A	A	A	a	Diesel Oil	A	A	U	U	A	A
Developing Fluids	A	A	B	A	A	A	Diethanolamine (DEA)	A					
Dextrin	A						Diethylamine	A *	B	B	B	U	U
Dextro Lactic Acid	A						Diethylaniline	A					
Dextrose	A						Diethylbenzene	A	U	U	U	C	A
Diacetone	A	U	A	U	U	U	Diethyl Carbonate	A					
Diacetone Alcohol	A	U	A	E	U	U	Diethyl Ether	A	U	U	U	C	U
Dialkyl Sulfates	A						Diethyl Phthalate	A					
Diallyl Ether	A						Diethyl Sebecate	A	B	B	B	B	B
Diallyl Phthalate	A						Diethyl Sulfate	A					
Diamylamine	A						Diethylene Glycol	A	A	A	B	A	A
Diazinon	A						Diethylenetriamine	A					
Dibenzyl (sym-Diphenylethane)	A						Difluorodibromomethane	A					
Dibenzyl Ether	A	U	B	-		U	Difluorodichloromethane (FREON [®] 12)	B *					
Dibenzyl Sebecate	A	U	B	C	C	B	Difluoroethane	A					
Diborane	A						Difluoromonochloroethane	A					
Dibromoethane	A						Diglycol Chloroformate	A					
Dibromoethylbenzene	A	U	U	U	B	B	Diglycolic Acid	A					
Dibutyl Amine	A	U	C	C	U	U	Dihydroxydiphenylsulfone	A					
Dibutyl CELLOSOLVE [®] Adipate	A						Diisobutylcarbinol	A					
Dibutyl Ether	A	U	C	J	C	C	Diisobutylene	A	B	U	U	C	A
Dibutyl Methyleneedithio Glycolate	A						Diisobutyl Ketone	A					
Dibutyl Phthalate	A	U	B	B	C	C	Diisopropylbenzene	A	U	U	-	B	A
Dibutyl Sebecate	A	U	B	B	B	B	Diisopropylidene Acetone	A	U	C	U	U	U
Dibutyl Thioglycolate	A						Diisopropyl Ketone	A	U	A	U	U	U
Dibutyl Thiourea	A						Dimethyl Acetamide	A					
Dichloroaniline	A						Dimethylamine (DMA)	A *					
0-Dichlorobenzene	A	U	U	U	B	A	Dimethyl Aniline (Xylidine)	A	C	B	U	U	U
Dichlorobutane	A						Dimethyl Disulfide (DMS)	A					
Dichlorobutene	A						Dimethyl Ether (Methyl Ether) (Monomethyl Ether)	A	A	U	A	A	A
Dichloroacetic Acid	A						Dimethyl Formaldehyde	A *					
Dichlorodifluoromethane (FREON [®] 12)	B *						Dimethyl Formamide (DMF)	A *	B	B		U	U
Dichlorodiphenyl-Dichloroethane (DDD)	A						Dimethyl Hydrazine	A					
Dichloroethane	A						Dimethyl Phthalate	A	U	B	-	B	B
Dichloroethylene	A						Dimethyl Phenyl Carbinol	A					
Dichlorofluoromethane (FREON [®] 21)	A						Dimethyl Phenyl Methanol	A					
Dichloroisopropyl Ether	A	U	C	U	C	C	Dimethyl Sulfoxide (DMSO)	A					
Dichlorohydrin	A						Dimethyl Teraphthalate (DMT)	A					
Dichloromethane	A						Dinitrogen Tetroxide	A *					
Dichlorophenol	A						Dinitrochlorobenzene	A					
Dichlorophenoxyacetic Acid	A						Dinitrotoluene (DNT)	A	U	U	U	J	U
Dichloropropane	A						Diocetyl Phthalate	A	C	B	C	B	B
Dichloropropene	A						Diocetyl Sebecate	A	U	B	C	C	B
Dichlorosilane	A						Diocetylamine	A					
Dichlorotetrafluoroethane (FREON [®] 114)	B						Dioxane	A	U	B	U	C	U
Dicyclohexylamine	A	C	U		U	U							
Dicyclohexylammonium Nitrate	A												
Dieldrin	A												

Generally, KALREZ parts ratings are applicable up to 100°C/212°F—however, in many chemicals, KALREZ parts will be functional at higher service temperatures. Testings always recommended for each proposed use of KALREZ since actual application conditions may vary Please note rating comments on page 3 for compound selection in fluids with asterisk (*) notation.

Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM	Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM
Dioxolane	A	U	B	U	U	U	Ethyl Pyridine	A					
Dipentene	A	B	U	U	C	A	Ethyl Silicate	A	A	A	—	A	A
Diphenyl (Biphenyl/ Phenylbenzene)	A	U	U	U	B	A	Ethyl Stearate	A					
Diphenylamine (DPA)	A						Ethylsulfuric Acid	A					
Diphenylene Oxide	A						Ethyl Valerate	A					
Diphenyl Oxide (Diphenyl Ether)	A	U	U	C	B	A	Fatty Acids	A	B	C	C		A
Diphenylpropane	A						Ferric Acetate	A					
Di-Tert-Butyl Peroxide	A						Ferric Ammonium Sulfate	A					
Dodecylbenzene	A						Ferric Chloride (aq)	A	A	A	B	A	A
DOWANOL [®] P Mix	A						Ferric Ferrocyanide	A					
DOWTHERM [®] Fluids	A	U	U	C	B	A	Ferric Hydroxide	A					
Dry Cleaning Fluids	A	C	U	U	B	A	Ferric Nitrate (aq)	A	A	A	C	A	A
Epichlorohydrin	A	U	B	U	U	U	Ferric Sulfate (aq)	A	A	A	B	A	A
Erucic Acid	A						Ferrous Ammonium Citrate	A					
Ethane	A	A	U	U	B	A	Ferrous Ammonium Sulfate	A					
Ethanol	A						Ferrous Carbonate	A					
Ethanolamine	A	B	B	B	U	U	Ferrous Chloride	A					
Ethers	A						Ferrous Iodide	A					
Ethyl Acetate	A	U	B	B	U	U	Ferrous Sulfate	A					
Ethyl Acetoacetate	A	U	B	B	U	U	Ferrous Tartrate	A					
Ethyl Acrylate	A	U	B	B	U	U	Ferrous Oxide	A	A	U	A	A	A
Ethyl Alcohol	A	A	A	A	A	C	Fish Oil	A					
Ethyl Aluminum Dichloride	A						Fluorinated Cyclic Ethers	A *		A	—	—	
Ethylamine	A *						Fluorine (Liquid)	B *	U	U	U		B
Ethyl Benzene	A	U	U	U	A	A	Fluorobenzene	A	U	U	U	B	A
Ethyl Benzoate	A	U	A	U	A	A	Fluoroboric Acid (Fluoboric Acid)	A *	A	A	—	—	
Ethyl Bromide	A						Fluorocarbon Oils FLUOROLUBE [®]	B	A	A	A	B	B
Ethyl Butyrate	A *						Fluorophosphoric Acid	A					
Ethyl CELLOSOLVE [®]	A	U	U	U	U	U	Fluorosilicic Acid	A	A	B	U	U	A
Ethyl Cellulose	A	B	B	C	U	U	Fluorosulfonic Acid	A					
Ethyl Chloride	A	A	C	U	A	A	Formaldehyde	A *	C	A	B	U	U
Ethyl Chlorocarbonate	A	U	B	U	B	A	Formamide	A *					
Ethyl Chloroformate	A	U	B	U	U	U	Formic Acid	A	B	A	B	C	C
Ethylcyclopentane	A						FREON [®] 11	B *	B	U	U	B	B
Ethylene	A	A	B	—	A	A	FREON [®] 12	B *	A	B	U	C	B
Ethylene Chloride	A	U	C	U	C	B	FREON [®] 13	B *	A	A	U	U	B
Ethylene Chlorohydrin	A	U	B	C	B	A	FREON [®] 14	B *					
Ethylene Cyanohydrin	A						FREON [®] 21	A *	U	U	U		U
Ethylenediamine	A *	A	A	A	U	U	FREON [®] 22	A *	U	A	U	U	U
Ethylene Dibromide	A						FREON [®] 23	A *					
Ethylene Dichloride	A	U	C	U	C	A	FREON [®] 31	A *	U	A	—	—	U
Ethylene Glycol	A	A	A	4	A	A	FREON [®] 32	A *	A	A	—	—	U
Ethylene Hydrochloride	A						FREON [®] 112	A *	B	U	J		A
Ethylene Oxide	A *	U	C	J	U	U	FREON [®] 113	B *	A	C	J		B
Ethylene Trichloride	A	U	C	J	C	A	FREON [®] 114	B *	A	A	J	U	B
Ethyleneimine	A						FREON [®] 115	B *	A	A	—	—	B
Ethyl Ether	A	C	C	J	C	U	FREON [®] 116	B *					
Ethyl Formate	A *	U	B	—	A	A	FREON [®] 142b	B *	A	B	—	—	U
Ethyl Hexanol	A						FREON [®] 152a	B *	A	A	—	—	U
Ethyl Lactate	A						FREON [®] 218	A *	A	A	—	—	A
Ethyl Mercaptan	A	U	C	C	—	B	FREON [®] C316	A *	A	A	—	—	A
Ethylmorpholine	A						FREON [®] C318	B *	A	A	—	—	B
Ethyl Nitrite	A						FREON [®] 13B1	B *	A	A	J		B
Ethyl Oxalate	A	U	A	J	B	A	FREON [®] 114B2	B *	B	U	J		B
Ethyl Pentachloro- benzene	A	U	U	U	B	A	FREON [®] 502	B *	B	A	—	—	B

NBR, EPDM, SI, FSI and FKM ratings are generally for room temperature service. Application of these ratings to other conditions may be restricted as noted on page 2: testing under actual conditions is always recommended.

Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM	Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM
FREON [®] TF	B*	A	U	U		B	Hexamethylene (Cyclohexane)	A					
FREON [®] T-WD602	A*	B	B	U		A	Hexamethylene- diamine	A*					
FREON [®] TMC	A*	B	C	C		A	Hexamethylene Diammonium Adipate	A					
FREON [®] T-P35	A*	A	A	A		A	Hexamethylene- tetramine	A					
FREON [®] TA	B*	A	B	C		C	Hexane	A	A	U	U	A	A
FREON [®] TC	A*	A	B	U		A	N-Hexene-1	A	B	U	U	A	A
FREON [®] MF	B*	A	U	U		B	Hexone (Methyl Isobutyl Ketone)	A					
FREON [®] BF	A*	B	U	U		A	Hexyl Acetate	A					
Fuel Oils	A	A	U	U	A	A	Hexyl Alcohol	A	A	C	B	B	A
Fumaric Acid	A	A	B	B	A	A	Hexylene Glycol	A					
Fuming Sulfuric Acid	A						Hexylresorcinol	A					
Furan, Furfuran	A	U	C	—			Hydrazine	A*	B	A	C	U	U
Furfural (Furfuraldehyde)	A*	U	B	U		U	Hydrazine Dihydrochloride	A					
Furfuryl Alcohol	A						Hydrazine Hydrate	A*					
Furoic Acid	A						Hydraulic Oils (Petroleum Base)	A	A	U	C	A	A
FYRQUEL ⁷	A	U	A	A	C	A	Hydraulic Oils (Synthetic Base)	A					
Gallic Acid	A	B	B	—	A	A	Hydriodic Acid	A					
Gasoline	A	B	U	U	A	A	Hydroabietyl Alcohol	A					
Gelatin	A	A	A	A	A	A	Hydrobromic Acid	A	U	A	U	C	A
Glauber's Salt	A	U	B	—	A	A	Hydrobromic Acid 40%	B	U	A	U	C	A
Gluconic Acid	A						Hydrocarbons	A					
Glucose	A	A	A	A	A	A	Hydrochloric Acid (cold) 37%	A	C	A	C	B	A
Glue	A	A	A	A	A	A	Hydrochloric Acid (hot) 37%	A	U	C	U	C	B
Glutamic Acid	A						Hydrochloric Acid (conc.)	A					
Glycerin (Glycerol)	A	A	A	A	A	A	Hydrocyanic Acid	A	B	A	C	B	A
Glycerol Dichlorhydrin	A						Hydrofluoric Acid (conc.) Cold	A	U	C	J	U	A
Glycerol Monochlorhydrin	A						Hydrofluoric Acid (conc.) Hot	A*	U	U	J	U	C
Glycerol Triacetate	A						Hydrofluoric Acid, Anhydrous	A	U	C	J	U	U
Glycerophosphoric Acid	A						Hydrofluosilicic Acid	A	A	B	J	U	A
Glyceryl Phosphate	A						Hydrogen Bromide (Anhydrous)	A					
Glycidol	A						Hydrogen Chloride (Anhydrous)	A					
Glycolic Acid	A						Hydrogen Cyanide	A					
Glycol Monoether	A						Hydrogen Fluoride (Anhydrous)	A*					
Glycols	A	A	A	A	A	A	Hydrogen Gas	A	A	A		C	A
Glyoxylic Acid	A						Hydrogen Iodide (Anhydrous)	A					
Green Sulfate Liquor	A	B	A	A	B	A	Hydrogen Peroxide (90%)	A	U	B	3	B	B
Halothane	A						Hydrogen Selenide	A					
HALOWAX ¹⁰ Oil	A*	U	U	J	A	A	Hydrogen Sulfide (Wet) Cold	A	U	A		C	U
Heavy Water	A						Hydrogen Sulfide (Wet) Hot	A	U	A		C	U
Helium	A						Hydroquinone	C	B		3	B	A
Heptachlor	A												
Heptachlorobutene	A												
Heptaldehyde (Heptanal)	A												
Heptane	A												
Heptanoic Acid	A												
Hexachloroacetone	A												
Hexachlorobutadiene	A												
Hexachlorobutene	A												
Hexachloroethane	A*												
Hexaethyl Tetraphosphate	A												
Hexafluoroethane (FREON [®] 116)	B*												
Hexafluoroxylene	A												
N-Hexaldehyde	A	U	A	B	U	U							
Hexamethyldisilazane	A												

Generally, KALREZ parts ratings are applicable up to 100°C/212°F—however, in many chemicals, KALREZ parts will be functional at higher service temperatures. Testino is always recommended for each proposed use of KALREZ since actual application conditions may vary. Please note rating comments on page 3 for compound selection in fluids with asterisk (*) notation.

Chemical	KALREZ	UBR	EPDM	SI	FSI	FKM	Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM
Hydroxyacetic Acid	A						Lead Linoleate	A					
Hydrooxycitronellal	A						Lead Naphthenate	A					
Hydrene	A						Lead Nitrate	A	A	A	B	A	
Hypochlorous Acid	A *	U	B			A	Lead Oxide	A					
Indole	A						Lead Sulfamate	A	B	A	B	A	A
Insulin	A						Ligroin (Benzene/ Nitrobenzene)	A	A	U	U	A	A
Iodic Acid	A						Lime Bleach	A	A	A	B	A	A
Iodine	A						Lime Sulfur	A	U	A	A	A	A
Iodine Pentafluoride	B *	U	U	U	U	U	LINDOL ⁷ (Hydraulic Fluids)	A	U	A	C	C	B
Iodoform	B *		U				Linoleic Acid	A	B	U	B		B
Isoamyl Acetate	A						Linseed Oil	A	A	C	A	A	A
Isoamyl Butyrate	A						Liquefied Petroleum Gas (LPG)	A	A	U	C	C	A
Isoamyl Valerate	A						Lithium Bromide (Brine)	A					
Isoboreol	A						Lithium Carbonate	A					
Isobutane	A						Lithium Chloride	A					
Isobutyl Acetate	A						Lithium Citrate	A					
Isobutyl Alcohol	A	B	A	A	B	A	Lithium Hydroxide	A					
Isobutyl Chloride	A						Lithium Hypochlorite	A					
Isobutylene	A						Lithium Nitrate	A					
Isobutyl Methyl Ketone	A						Lithium Nitrite	A					
Isobutyl Phosphate	A						Lithium Perchlorate	A *					
Isobutyric Acid	A						Lithium Salicylate	A					
Iso Crotyl Chloride	A						Lithopone	A					
Isodecanol	A						Lubricating Oils (Petroleum Base)	A	A	U	U	A	A
Iso Dodecane	A						Lubricating Oils (Synthetic Base)	A					
Isoeugenol	A						Lye	A	B	A	B	A	B
Isooctane	A	A	U	U	A	A	Magnesium Chloride	A	A	A	A	A	A
Isopentane	A						Magnesium Hydroxide	A	B	A			A
Isophorone	A	U	C	U	U	U	Magnesium Salts	A					
Isopropyl Acetate	A	U	B	U	U	U	Magnesium Sulfate	A	A	A	A	A	A
Isopropylacetone	A						Magnesium Sulfite	A					
Isopropyl Alcohol (Isopropanol)	A	B	A	A	B	A	Magnesium Trisilicate	A					
Isopropylamine	A						Malathion	A					
Isopropyl Chloride	A	U	U	U	B	A	Maleic Acid	A	U	B			A
Isopropyl Ether	A	B	U	U	C	U	Maleic Anhydride	A	U	B			U
Isovaleric Acid	A *						Maleic Hydrazide						
Jet A Fuel	A *						Malic Acid	A	A	B	B	A	A
JP 3 Fuel	A *						Mandelic Acid	A *					
JP 4 Fuel	A *						Manganese Acetate	A					
JP 5 Fuel	A *						Manganese Carbonate	A					
JP 6 Fuel	A *						Manganous Chloride	A					
Kerosene	A	A	U	U	A	A	Manganese Dioxide	A					
Lacquers	A	U	U	U	U	U	Manganese Gluconate	A					
Lacquer Solvents	A	U	U	U	U	U	Manganese						
Lactic Acid (Cold)	A	A	A	A	A	A	Hypophosphite	A					
Lactic Acid (Hot)	A	U	U	B	B	A	Manganese Linoleate	A					
Lard (Animal Fats)	A	A	B	B	A	A	Manganese						
Lauric Acid	A						Naphthenate	A					
Lavender Oil	A	B	U	U	B	A	Manganous Phosphate	A					
Lead (Molten)	A						Manganous Sulfate						
Lead Acetate	A	B	A	U	U	U	(aq)	A					
Lead Arsenate	A						Mannitol	A					
Lead Azide	A						MDI (methylene di-p- phenylene isocyanate)	A					
Lead Bromide	A												
Lead Carbonate	A												
Lead Chloride	A												
Lead Chromate	A												
Lead Dioxide	A												

NBR, EPDM, SI, FSI and FKM ratings are generally for room temperature service. Application of these ratings to other conditions may be restricted as noted on page 2: testing under actual conditions is always recommend&i.

Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM
Mercaptan	A					
Mercaptobenzo-thiazole (MBT)	A					
Mercuric Acetate	A					
Mercuric Cyanide	A					
Mercuric Iodide	A					
Mercuric Nitrate	A					
Mercuric Sulfate	A					
Mercuric Sulfite	A					
Mercurous Nitrate	A					
Mercury	A	A	A			A
Mercury Chloride	A	A	A			A
Mercury Fulminate	A					
Mercury Salts	A					
Mesityl Oxide	A	U	B	U	U	U
Metacresol	A					
Metaldehyde	A					
Methacrylic Acid	A	U	B	U	U	U
Metanitronaniline	A					
Metatoluidine	A					
Methallyl Chloride	A					
Methane	A	A	U	U	B	B
Methoxychlor	A					
Methyl Abietate	A					
Methyl Acetate	A	U	A	U	U	U
Methyl Acetoacetate	A *					
Methyl Acetophenone	A					
Methyl Acrylate	A	U	B	U	U	U
Methylacrylic Acid	A	U	B	U	U	U
Methylal	A *					
Methyl Alcohol (Methanol)	A	A	A	A	A	U
Methylamine	A					
Methylamiy Acetate	A					
Methyl Amylketone	A					
Methyl Anthranilate	A					
Methyl Benzoate	A					
Methylene Bromide	A	B	U	—	A	A
Methyl Butyl Ketone	A	U	A	C	U	U
Methyl Butyrate						
CELLOSOLVE ⁵	A					
Methyl Butyrate Chloride	A					
Methyl Carbonate	A					
Methyl CELLOSOLVE ⁵	A	C	B	U	U	U
Methyl Cellulose	A					
Methyl Chloride	A	U	C	U	B	B
Methyl Chloroacetate	A					
Methyl Chloroformate	A					
Methyl Chlorosilanes	A					
Methyl Cyanide (Acetonitrile)	A					
Methyl Cyclohexanone	A					
Methyl Cyclopentane	A	U	U	U	B	B
Methyl Dichloride	A					
Methylene Bromide	A					
Methylene Chloride	A	U	C	U	B	B
Methylene Iodide	A					
Methyl Ether (Dimethyl Ether/ Monomethyl Ether)	A	A	U	A	A	A

Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM
Methyl Ethyl Ketone (MEK)	A	U	A	U	U	U
Methyl Ethyl Ketone Peroxide	A					
Methyl Ethyl Oleate	A					
Methyl Formate	A *	U	B	—	—	—
Methylglycerol	A					
Methyl Hexyl Ketone (2-Octanone)	A					
Methyl Iodide	A					
Methylisobutyl Carbinol	A					
Methyl Isobutyl Ketone (MIBK)	A	U	B	U	U	U
Methyl Isocyanate	A					
Methyl Isopropyl Ketone	A					
Methyl Isovalerate	A					
Methyl Lactate	A					
Methyl Methacrylate	A	U	C	U	U	U
Methyl Oleate	A	U	B	—	B	B
Methyl Pentadiene	A					
Methyl Phenylacetate	A					
Methylpyrrolidine	A *					
Methylpyrrolidone	A					
Methyl Salicylate	A	U	B	—	—	—
Methylsulfuric Acid	A					
Methyl Tertiary Butyl Ether (MTBE)C	A					
Methyl Valerate	A					
Mineral Oil	A	A	C	B	A	A
MIL-L-23699 Lubricants	A					
MIL-L-7808 Lubricants	A					
Mixed Acids	A					
MOBIL 254 ¹¹ Lubricant	A					
MOBILJET II ¹¹ Lubricant	A					
Molybdenum Oxide	A					
Molybdenum Trioxide	A					
Molybdc Acid	A					
Monobromobenzene	A					
Monobromotoluene	A					
Mono Butyl Paracresol	A *					
Monochloroacetic Acid	A					
Monochlorobenzene	A	U	U	U	B	A
Monochlorobutene	A					
Monochlorohydrin	A					
Monoethanol Amine	A *	U	A	B	U	U
Monoethylamine	A *					
Monoisopropylamine	A *					
Monomethylamine (MMA)	A *					
Monomethyl Aniline	A	U	B	—	—	B
Monomethyl Ether (Methyl Ether)	A	A	U	A	A	A
(Dimethyl Ether)	A					
Mononitrotoluene	A					

Generally, **KALREZ** parts ratings are applicable up to **100°C/212°F**—however, in many chemicals, **KALREZ** parts will be functional at higher service temperatures. Testing is always recommended for each proposed use of **KALREZ** since actual application conditions may vary. Please note rating comments on page 3 for compound selection in fluids with asterisk (*) notation.

Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM	Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM
Mono vinyl Acetylene	A	A	B	B		A	Nitrosylsulphuric Acid	A *					
Morpholine	A						Nitrothiophene	A					
Motor Oils	A						Nitrotoluene	A					
Mustard Gas	A		A	A			Nitrous Acid	A					
Myristic Acid	A						Nitrous Oxide	A *					
Naphtha	A	B	U	U	B	A	Nonane	A					
Naphthalene	A	U	U	U	A	A	Octachlorotoluene	A *	U	U	U	B	A
Naphthalene Chloride	A						Octadecane	A	A	U	U	A	A
Naphthalene Sulfonic Acid	A						N-Octane	A	B	U	U	B	A
Naphthalenic Acid	A	B	U	U	A	A	Octyl Acetate	A					
Naphthalonic Acid	A						Octyl Alcohol	A	B	C	B	B	A
Naphthenic Acid	A						Octyl Chloride	A					
Naphthylamine	A						Octyl Phthalate	A					
Natural Gas	A	A	U	A	C	A	Olefins	A					
Neatsfoot Oil	A	A	B	B	A	A	Oleic Acid	A	C	U	U		B
Neon	A						Oleum (Fuming Sulfuric Acid)	A	B	U	U	B	A
Neville Acid	A	U	B	U	B	A	Oleyl Alcohol	A					
Nickel Acetate (aq)	A	B	A	U	U	U	Olive Oil	A	A	B	C	A	A
Nickel Ammonium Sulfate	A						Ortho Chloroaniline	A					
Nickel Chloride (aq)	A	A	A	A	A	A	Ortho Chlorophenol	A					
Nickel Cyanide	A						Ortho Cresol	A					
Nickel Nitrate	A						O-Dichlorobenzene	A	U	U	U	B	A
Nickel Salts	A						Ortho Nitrotoluene	A					
Nickel Sulfate (aq)	A	A	A	A	A	A	ORTHOPHOS ¹⁷ Acid	A					
Nicotinamide (Niacinamide)	A						Oxalic Acid	A	B	A	B	A	A
Nicotinamide Hydrochloride	A						Oxygen (Cold)	A *	B	A	A	A	A
Nicotine	A						Oxygen (Hot)	A *	U	C	B	U	B
Nicotine Sulfate	A						Ozone	A *	U	A	A	B	A
Niter Cake	A	A	A	A	A	A	Paint Thinner	A	U	U	U	B	B
Nitric Acid (50-100%)	A *	U	U	U	C	C	Palmitic Acid	A	A	B	U	A	A
Nitric Acid(0-50%)	A *	U	B	B	B	A	Para-Aminobenzoic Acid	A					
Nitric Acid, Inhibited Red Fuming	A *	U	U	U	U	U	Para-Aminosalicylic Acid	A					
Nitric Acid, White Fuming	A *						Para-Bromobenzyl-phenyl Ether	A					
Nitroaniline	A						Para-Chlorophenol	A					
Nitrobenzene	A	U	A	U	U	B	Paracymene	A					
Nitrobenzoic Acid	A						Para-Dichlorobenzene	A					
Nitrocellulose	A						Paraffins	A					
Nitrochlorobenzene	A						Para-Formaldehyde	A					
Nitrochloroform	A						Paraldehyde	A					
Nitrodiethylaniline	A						Para-Nitrobenzoic Acid	A					
Nitrodiphenyl Ether	A						Para-Nitroaniline	A					
Nitroethane	A	U	B	U	U	U	Para-Nitrophenol	A					
Nitrofluorobenzene	A						Parathion	A					
Nitrogen	A	A	A	A	A	A	Para-Toluene Sulfonic Acid	A					
Nitrogen Oxides	A						Peanut Oil	A	A	C	A	A	A
Nitrogen Peroxide	A *						Pectin (Liquor)	A					
Nitrogen Tetroxide	B *	U	C	U	U	U	Pelagonic Acid	A					
Nitrogen Trifluoride	B *						Penicillin (Liquid)	A					
Nitroglycerine	A						Pentachloroethane	A					
Nitroglycerol	A						Pentachlorophenol	A					
Nitroisopropylbenzene	A						Pentaerythritol	A					
Nitromethane	A	U	B	U	U	U	Pentaerythritol Tetranitrate	A					
Nitrophenol	A						Pentane	A					
Nitropropane	A						PENTOXONE ¹³	A					
Nitrosyl Chloride	A						Pentyl Pentanoate	A					

NBR, EPDM, SI, FSI and FKM ratings are generally for room temperature service. Application of these ratings to other conditions may be restricted as noted on page 2: testing under actual conditions is always recommended.

Chemical	ƘALREZ	NBR	EPDM	SI	FSI	ƦKM
Peracetic Acid	B *					
Perchloric Acid	A *	U	B	U	A	A
Perchloroethylene	A *	B	U	U	B	A
Perfluorotriethylamine	B *					
Permanganic Acid	A *					
Persulfuric Acid (Caro's Acid)	A					
Petrolatum	A					
Petrolatum Ether	A					
Petroleum. Crude	A *					
Petroleum-Below 250°F	A	A	U	B	B	A
Petroleum-Above 250°F	A	U	U	U	U	B
Phenol (Carbolic Acid)	A	U	B	U	A	A
Phenolsulfonic Acid	A *					
Phenolic Sulfonate	A					
Phenylacetamide	A					
Phenylbenzene (Biphenyl/Diphenyl)	A	U	U	U	B	A
Phenyl Acetate	A					
Phenylacetic Acid	A					
Phenylene Diamine	A *					
Phenylethyl Alcohol	A					
Phenyl Ethyl Ether (Phenetole)	A	U	U	U	U	U
Phenylethyl Molonic Ester	A					
Phenylglycerine	A					
Phenyl Hydrazine	A *	U	B	—	A	
Phenylhydrazine Hydrochloride	A					
Phenylmercuric Acetate	A					
Phorone (Drisopropylidene Acetone)	A	U	C	U	U	U
Phosgene	A					
Phosphine	A					
Phosphoric Acid. 20%	A	B	A	B	B	A
Phosphoric Acid. 45%	A	U	A	C	B	A
Phosphorus (Molten)	A					
Phosphorus Oxychloride	A					
Phosphorus Trichloride	A	U	A	—	A	A
Phthalic Acid	A					
Phthalic Anhydride	A					
Pickling Solution	A	U	C	U	U	B
Picric Acid	A	B	B	U	B	A
Pinene	A	B	U	U	B	A
Pine Oil	A	U	U	U	A	A
Pine Tar	A					
Piperazine	A *					
Piperidine	A	U	U	U	U	U
Plating Solution- Chrome	A		A	U		A
Plating Solution- Others	A	A	A	U		A
Polyethylene Glycol	A					
Polyglycerol	A					
Polyglycol	A					

Chemical	ƘALREZ	NBR	EPDM	SI	FSI	ƦKM
Polyvinyl Acetate Emulsion	A	—	A	—	—	—
Potassium (Molten)	U					
Potassium Acetate	A	B	A	U	U	U
Potassium Acid Sulfate	A					
Potassium Alum	A					
Potassium Aluminum Sulfate	A					
Potassium Antimonate	A					
Potassium Bicarbonate	A					
Potassium Bichromate	A					
Potassium Bifluoride	A					
Potassium Bisulfate	A					
Potassium Bisulfite	A					
Potassium Bitartrate	A					
Potassium Bromide	A					
Potassium Carbonate	A					
Potassium Chlorate	A					
Potassium Chloride	A	A	A	A	A	A
Potassium Chromates	A					
Potassium Citrate	A					
Potassium Cuprocyanide	A	A	A	A	A	A
Potassium Cyanate	A	A	A	A	A	A
Potassium Cyanide	A	A	A	A	A	A
Potassium Dichromate	A	A	A	A	A	A
Potassium Diphosphate	A					
Potassium Ferricyanide	A					
Potassium Fluoride	A					
Potassium Clucocyanate	A					
Potassium Hydroxide	A	B	A	C	C	U
Potassium Hypochlorite	A					
Potassium Iodate	A					
Potassium Iodide	A					
Potassium Metabisulfate	A					
Potassium Metasilicate	A					
Potassium Monochromate	A					
Potassium Nitrate	A	A	A	A	A	A
Potassium Nitrite	A					
Potassium Oxalate	A					
Potassium Perchlorate	A					
Potassium Perfluoro Acetate	A					
Potassium Permanganate	A					
Potassium Peroxide	A					
Potassium Persulfate	A					
Potassium Phosphate (Acid)	A					
Potassium Phosphate (Alkaline)	A					

Generally, KALREZ parts ratings are applicable up to 100°C/212°F—however, in many chemicals, KALREZ parts will be functional at higher service temperatures. Testina is always recommended for each orooosed use of KALREZ since actual application conditions may vary. Please note rating comments on page 3 for compound selection in fluids with asterisk (*) notation.

Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM	Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM
Potassium Phosphate (Di/Tri Basic)	A						Quinine Bisulphate	A					
Potassium Pyrosulfate	A						Quinine Hydrochloride	A					
Potassium Salts	A						Quinine Sulfate	A					
Potassium Silicate	A						Quinidine	A					
Potassium Sodium Tartrate	A						Quinine Tartrate	A					
Potassium Stannate	A						Quinizarin	A					
Potassium Stearate	A						Quinoline	A					
Potassium Sulfate	A	A	A	A	A	A	Quinone	A					
Potassium Sulfide	A						Raffinate	A					
Potassium Sulfite	A						Rapeseed Oil	A	B	A	U	A	A
Potassium Tartrate	A						Red Oil (MIL-H-5606)	A	A	U	U	A	A
Potassium Thiocyanate	A						Resorcinol	A					
Potassium Thiosulfate	A						Rhodium	A					
Potassium Triphosphate	A						Riboflavin	A					
PRESTONE ⁵ Anti-Freeze	A						Ricinoleic Acid	A					
Producer Gas	A	A	U	B	B	A	RJ-1 (MIL-F-25558 B)	A	A	U	U	A	A
Propane	A	A	U	U	B	A	RP-1 (MIL-H-25576 C)	A	A	U	U	A	A
Propionaldehyde	A						Rosin	A					
Propionic Acid	A						Saccharin Solution	A					
Propionitrile	A						Sal Ammoniac	A	A	A	B	A	A
Propyl Acetate	A	U	B	U	U	U	Salicylic Acid	A	B	A		A	A
Propyl Acetone (Methyl Butyl Ketone)	A	U	A	C	U	U	Salt Water	A	A	A	A	A	A
Propyl Alcohol	A	A	A	4	A	A	Sebacic Acid	A					
Propylamine	A *						Secondary Butyl Alcohol	A					
Propylbenzene	A						Selenic Acid	A					
Propylene	A	U	U	U	B	A	Selenous Acid	A					
Propylene Chlorohydrin	A						Shellac	A					
Propylene Chloride	A						Silane	A					
Propylene Dichloride	A						Silicate Esters	A	B	U	U	A	A
Propylene Glycol	A						Silicon Fluoride	A					
Propylene Oxide	A *	U	B	U	U	U	Silicone Greases	A	A	A	C	A	A
Propyl Nitrate	A	U	B	U	U	U	Silicone Oils	A	A	A	C	A	A
Propyl Propionate	A						Silicone Tetrachloride (Dry)	B *					
PYDRAUL ² , 1 OE. 29 ELT	A	U	A	U	U	A	Silicone Tetrachloride (Wet)	B *					
PYDRAUL ² , 30E. 50E. 65E. 90E	U	A	A	A	A	A	Silicone Tetrafluoride	B *					
PYDRAUL ² , 115E	A	U	A	U	C	A	Silver Bromide	A					
PYDRAUL ² , 230E. 312C. 540c	A	U	U	U	U	A	Silver Chloride	A					
PYRANOL ¹² , Transformer Oil	A	A	U	U	A	A	Silver Cyanide	A					
Pyridine	A	U	B	U	U	U	Silver Nitrate	A	B	A	A	A	A
Pyridine Sulfate	A						Silver Sulfate	A					
Pyridine Sulfonic Acid	A						SKYDROL ² 500	A	U	A	C	C	U
Pyrogallol (Pyrogallic Acid)	A *						SKYDROL ² 7000	A	U	A	C	C	B
Pyroligneous Acid	A	U	B	-	U	U	Soap Solutions	A	A	A	A	A	A
Pyrosulfuric Acid	A						Soda Ash	A	A	A	A	A	A
Pyrosulfuryl Chloride	B *						Sodium (molten)	U					
Pyrrrole	A	U	C	B	C	U	Sodium Acetate	A	B	A	U	U	U
Pyruvic Acid	A						Sodium Acid Fluoride	A					
Quinine	A						Sodium Acid Sulfate	A					
							Sodium Acid Bisulfate	A					
							Sodium Aluminate	A					
							Sodium Aluminate Sulfate	A					
							Sodium Anthraquinone Disulfate	A					
							Sodium Antimonate	A					
							Sodium Arsenate	A					

NBR, EPDM, SI, FSI and FKM ratings are generally for room temperature service. Application of these ratings to other conditions may be restricted as noted on page 2: testing under actual conditions is always recommended.

Chemical	ALREZ	UBR	EPDM	SI	FSI	FKM
Sodium Arsenite	A					
Sodium Benzoate	A					
Sodium Bicarbonate	A	A	A	A	A	A
Sodium Bichromate	A					
Sodium Bifluoride	A					
Sodium Bisulfate	A					
Sodium Bisulfide	A					
Sodium Bisulfite	A	A	A	A	A	A
Sodium Bitartrate	A					
Sodium Borate	A	A	A	A	A	A
Sodium Bromate	A					
Sodium Bromide	A					
Sodium Carbonate (Soda Ash)	A					
Sodium Chlorate	A					
Sodium Chloride	A	A	A	A	A	A
Sodium Chlorite	A					
Sodium Chloroacetate	A					
Sodium Chromate	A					
Sodium Citrate	A					
Sodium Cyanamide	A					
Sodium Cyanate	A					
Sodium Cyanide	A	A	A	A	A	A
Sodium Diacetate	A					
Sodium Diphenyl Sulfonate	A					
Sodium Diphosphate	A					
Sodium Disilicate	A					
Sodium Ethylate	A					
Sodium Ferricyanide	A					
Sodium Ferrocyanide	A					
Sodium Fluoride	A					
Sodium Fluosilicate	A					
Sodium Glutamate	A					
Sodium Hydride	A					
Sodium Hydrogen Sulfate	A					
Sodium Hydrosulfide	A					
Sodium Hydrosulfite	A					
Sodium Hydroxide	A	B	A	B	B	B
Sodium Hypochlorite	A	B	B	B	B	A
Sodium Hypophosphate	A					
Sodium Hypophosphite	A					
Sodium Hyposulfite	A					
Sodium Iodide	A					
Sodium Lactate	A					
Sodium Meta-phosphate	A	A	A	—	A	A
Sodium Metasilicate	A					
Sodium Methylate	A					
Sodium Mono-phosphate	A					
Sodium Nitrate	A	B	A	U	—	—
Sodium Oleate	A					
Sodium Orthosilicate	A					
Sodium Oxalate	A					
Sodium Perborate	A	B	A	B	A	A
Sodium Percarbonate	A					

Chemical	ALREZ	UBR	EPDM	SI	FSI	FKM
Sodium Perchlorate	A					
Sodium Peroxide	A	B	A	J	A	A
Sodium Persulfate	A					
Sodium Phenolate	A					
Sodium Phenoxide	A					
Sodium Phosphate	A	A	A	J		A
Sodium Plumbite	A					
Sodium Pyrophosphate	A					
Sodium Resinate	A					
Sodium Salicylate	A					
Sodium Salts	A					
Sodium Sesquisilicate	A					
Sodium Silicate	A	A	A	—		
Sodium Silicofluoride	A					
Sodium Stannate	A					
Sodium Sulfate	A	A	A	A	A	A
Sodium Sulfide	A					
Sodium Sulfite	A					
Sodium Sulfo cyanide	A					
Sodium Tartrate	A					
Sodium Tetraborate	A					
Sodium Tetrakisphosphate	A					
Sodium Tetrasulfide	A					
Sodium Thioarsenate	A					
Sodium Thiocyanate	A					
Sodium Thiosulfate	A	B	A	A	A	A
Sodium Trichloroacetate	A					
Sodium Triphosphate	A					
SOLVLESSO ¹⁴ 100, 150	A					
Sorbitol	A					
Sour Crude Oil	A *					
Sour Natural Gas	A *					
Soybean Oil	A	A	C	A	A	A
Stannic Ammonium Chloride	A					
Stannic Chloride (aq)	A	A	A	B	A	A
Stannic Tetrachloride	A					
Stannous Bisulfate	A					
Stannous Bromide	A					
Stannous Chloride (aq)	A	A	A	B	A	A
Stannous Fluoride	A					
Stannous Sulfate	A					
STAUFFER ⁷ 7700	A					
Steam Under 149°C/300°F	A *	U	A	C	U	U
Steam Over 149°C/300°F	A *	U	C	U	U	U
Stearic Acid	A	B	B	U	U	—
Stoddard Solvent	A	A	U	U	A	A
Strontium Acetate	A					
Strontium Carbonate	A					
Strontium Chloride	A					
Strontium Hydroxide	A					
Strontium Nitrate (aq)	A					
Styrene	A *	U	U	U	C	B
Succinic Acid	A					
Sucrose Solution	A	A	A	A	A	A

Generally KALREZ parts ratings are applicable up to 100°C/212°F—however, in many chemicals, KALREZ parts will be functional at higher service temperatures. Testing is always recommended for each proposed use of KALREZ since actual application conditions may vary. Please note rating comments on page 3 for compound selection in fluids with asterisk (*) notation.

Chemical	YALREZ	NBR	EPDM	SI	FSI	FKM	Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM
Sulfamic Acid	A						THERMINOL ² FR	A					
Sulfanilic Acid	A						Thio Acid Chloride	A					
Sulfanilic Chloride	A						Thioamyl Alcohol	A					
Sulfanilimide	A						Thiodiacetic Acid	A					
Sulfite Liquors	A	B	B	U	B	A	Thioethanol	A					
Sulfonic Acid	A						Thioglycoic Acid	A					
Sulfur	A	U	A	C	A	A	Thionyl Chloride	A	U	C			B
Sulfur Chloride	A	C	U	C	A	A	Thiophene(Thiofuran)	A					
Sulfur Dioxide (Dry)	A	U	A	B	B	A	Thiophosphoryl Chloride	A					
Sulfur Dioxide (Wet)	A	U	A	B	B	A	Thiourea	A					
Sulfur Dioxide (Liquified)	A	U	A	B	B	A	Thorium Nitrate	A					
Sulfur Hexafluoride	B*	B	B	B	B	B	Tin Ammonium Chloride	A					
Sulfuric Acid (Dilute)	A	C	B	U	C	A	Tin Chloride	A					
Sulfuric Acid (Conc.)	A	U	C	U	U	A	Tin Tetrachloride	A					
Sulfuric Acid (20% Oleum)	A	U	U	U	U	A	Titanic Acid	A					
Sulfur Monochloride	A						Titanium Dioxide	A					
Sulfurous Acid	A	B	B	U		A	Titanium Sulfate	A					
Sulfur Trioxide	A	U	B	B	B	A	Titanium Tetrachloride	B*	B	U	U	B	B
Sulfuryl Chloride	A						Toluene	A	U	U	U	B	A
Sulphonated Oils	A						Toluene Bisodium Sulfite	A					
Sulphonyl Chloride	B*						Toluene Diisocyanate (TDI)	A	U	B	U	U	U
Sulphuric Chlorohydrin (Chlorosulfonic Acid)	A						Toluenesulphonic Acid	A					
Tallow	A						Toluene Sulphonyl Chloride	A					
Tannic Acid (Tannin)	A	A	A	B		A	Toluol	A					
Tar, Bituminous	A	B	C	B	A	A	Toluidine	A					
TDI (Toluene Diisocyanate)	A	U	B	U	U	U	Tolylaldehyde	A					
Terephthalic Acid	A						Toluquinone	A					
Tartaric Acid	A	A	B	A	A	A	Transformer Oil	A	A	U	B	A	A
TELLONE [®] II	A						Transmission Fluid Type A	A	A	U	B	A	A
Terpineol	A	B	C	—	A	A	Triacetin	A	B	A	C	U	U
Terpinyl Acetate	A						Triaryl Phosphate	A	U	A		B	A
Tertiary Butyl Alcohol	A	B	B	B	B	A	Tribromomethylbenzene	A					
Tertiary Butyl Catechol	A	U	B	—	A	A	Tributoxyethyl Phosphate	A	U	A		B	A
Tertiary Butyl Mercaptan	A	U	U	U		A	Tributylamine	A*					
Tetrabromoethane	A	U	U	U	B	A	Tributyl Citrate	A					
Tetrabromomethane	A	U	U	U	B	A	Tributyl Mercaptan	A	U	U	U	C	A
Tetrabutyl Titanate	A	B	A	—	A	A	Tributyl Phosphate	A	U	B	U	U	U
Tetrachloroethylene	A	U	U	J	B	A	Trichloroacetic Acid	A*	B	B		U	C
Tetraethyl Lead	A	B	U	—	B	A	Trichloroacetyl Chloride	A					
Tetrafluoromethane (FREON 14)	B*						Trichlorobenzene	A					
Tetrahydrofuran	A	U	C	J	U	U	Trichloroethane	A	U	U	U	B	A
TETRALIN [®] (Tetrahydro-naphthalene)	A	U	U	J	A	A	Trichloroethylene	A	U	U	U	B	A
Tetramethyl Ammonium Hydroxide	A*						Trichloroethanolamine	A*					
Tetramethyl-dihydropyridine	A						Trichloro-fluoromethane (FREON [®] 11)	B*					
Tetraphos-phogluconate	A						Trichloromethane	A					
Tetraphosphoric Acid	A						Trichloronitromethane (Chloropicrin)	A					
THERMINOL ² 55	A						Trichlorophenylsilane	A					
THERMINOL ² 66	A						Trichloropropane	A					

NBR, EPDM, SI, FSI and FKM ratings are generally for room temperature service. Application of these ratings to other conditions may be restricted as noted on page 2; testing under actual conditions is always recommended.

Chemical	KALREZ:	NBR	EPDM	SI	FSI	FKM
Trichlorotrifluoroethane (FREON6 113)	B *					
Tricresyl Phosphate	A	U	U	C	B	A
Triethanolamine (TEA)	A *	B	A	—	U	U
Triethylaluminum	A	U	C	—		B
Triethylamine	A *					
Triethylborane	A	U	C	—		A
Triethyl Phosphate	A					
Triethylene Glycol	A					
Triethylenetetramine	A *					
Trifluoroacetic Acid	A *					
Trifluorochloroethylene	B *					
Trifluoromethane (FREON6 23)	A *					
Trifluorovinylchloride	A					
Triisopropylbenzylchloride	A					
Trimethylamine	A *					
Trimethylbenzene	A					
Trimethylpentane	A					
Trinitrotoluene	A	U	U	—	B	B
Trioctyl Phosphate	A	U	A	C	B	B
Triphenylphosphite	A					
Tripotassium Phosphate	A					
Trisodium Phosphate	A					
Tritium	A					
Tung Oil (China Wood Oil)	A	A	C	U	B	A
Tungsten Hexafluoride	B *					
Tungstic Acid	A					
Turbine Oils	A	B	U	U	B	A
Turpentine	A	A	U	U	B	A
UCON ⁵ Lubricants/ Fluids	A					
Undecylenic Acid	A					
Undecylic Acid	A					
Unsymmetrical Dimethyl Hydrazine (UDMH)	A *	B	A	U	U	U
Uranium Hexafluoride	B *					
Uranium Sulfate	A					
Uric Acid	A					
Valeric Acid	A					
Vanadium Oxide	A					
Vanadium Pentoxide	A					
Varnish	A	B	U	U	B	A

Chemical	KALREZ	NBR	EPDM	SI	FSI	FKM
Vegetable Oils	A	A	C	B	A	A
VERSILUBE F-50	A	A	A	C	A	A
Vinegar	A	B	A	A	C	A
Vinyl Acetate	A					
Vinyl Benzene	A					
Vinyl Benzoate	A					
Vinyl Chloride	A	U	U			A
Vinyl Fluoride	A					
Vinylidene Chloride	A					
Vinylpyridine	A					
Vitriol (White)	A					
WAGNER 21 B Brake Fluid	A	C	A	C	U	U
Water (Cold)	A	A	A	A	A	A
Water (Hot)	A *					
White Pine Oil	A	B	U	U	A	A
White Oil	A	A	U	U	A	A
Wood Alcohol (Methanol)	A					
Wood Oil	A	A	U	U	B	A
Xenon	A					
Xylene	A	U	U	U	A	A
Xylidine (Di-methyl Aniline)	A	C	B	U	U	U
Xylof	A					
Zeolites	A	A	A		A	A
Zinc Acetate	A	B	A	U	U	U
Zinc Ammonium Chloride	A					
Zinc Chloride	A	A	A	A	A	A
Zinc Chromate	A					
Zinc Cyanide	A					
Zinc Diethylthiocarbamate	A					
Zinc Dihydrogen Phosphate	A					
Zinc Fluorosilicate	A					
Zinc Hydrosulfite	A					
Zinc Naphthenate	A					
Zinc Nitrate	A					
Zinc Oxide	A					
Zinc Phenolsulfonate	A					
Zinc Phosphate	A					
Zinc Salts	A					
Zinc Silicofluoride	A					
Zinc Stearate	A					
Zinc Sulfate	A	A	A	A	A	A
Zinc Sulfide	A					
Zirconium Nitrate	A					

Trademark owners of superscripted names are:

- 1 — Tenneco Chemicals
- 2 — Monsanto
- 3 — American Society for Testing and Materials
- 4 — Calgon Corp.
- 5 — Union Carbide Corp.
- 6 — E. I. du Pont de Nemours & Co. (Inc.)
- 7 — Stauffer Chemical
- 8 — Dow Chemical
- 9 — Occidental Chemical Company

- 10 — Koppers Company
- 11 — Mobil Corp.
- 12 — General Electric
- 13 — Shell Chemical
- 14 — Exxon
- 15 — Wormald U.S., Inc.
- 16 — The Clorox Company
- 17 — Chevron Chemical Company

The information in this publication has been prepared from laboratory tests on KALREZ[®] perfluoroelastomer. These tests establish that in many environments KALREZ has properties of thermal and chemical resistance superior to those of other elastomeric materials. However, because certain applications may involve conditions not present in the laboratory, DuPont makes no warranty that any KALREZ part will perform satisfactorily in the customer's application, and it is the customer's responsibility to evaluate the suitability of any KALREZ part prior to use. Independent evaluation is particularly important where failure of a KALREZ part could cause injury or damage. Since no elastomeric part will last forever, customers using KALREZ parts in such critical applications should follow a regular program of inspection and replacement. KALREZ perfluoroelastomer parts are considered inert and no adverse effects during normal use are anticipated. Parts are shipped as non-regulated solids and have no hazard classification according to the Department of Transportation (DOT). Although there is no record of serious injury caused by fumes from heated KALREZ or its thermal decomposition products, fumes are increasingly toxic in heavy concentrations just as are the fumes or decomposition products of many common elastomers, resins, paints, and solvents, as well as naturally occurring polymeric materials such as wood, silk, wool and rubber. Parts heated above 400°C (752°F) can release fluorocarbon decomposition products and insufficient concentration could be injurious to the respiratory system. Parts should not be exposed to molten or gaseous alkali metals such as sodium because a violent reaction could occur.