



Kalrez[®] perfluoroelastomer
parts

From DuPont Performance Elastomers

Semiconductor Product Chemical Compatibility Guide

Because all wafer processing environments pose specific challenges, Kalrez[®] offers specific solutions. *Tables 1, 2, 3 and 4* provide compatibility information for those products suggested for service in plasma, gas deposition, thermal and wet environments. This information should be used in combination with the Semiconductor Applications and Product Selector Guide and other product data to select the most appropriate product for your application. This information is also available on our web site at www.dupontelastomers.com/crg. If you need assistance in the selection process, do not hesitate to call your Authorized Kalrez[®] Distributor or DuPont Performance Elastomers at (800) 323-9806. (Refer to the last page of this bulletin for contact numbers outside of the United States and Canada).

Compatibility Rating Legend

Rating Symbol	Rating Explanation
●	Best
◐	Suitable
◑	Suitable for Some Applications
○	Not Recommended

**Table 1
Plasma Product
Compatibility Ratings**

Plasma Environment	Chemical Formula	Kalrez® Sahara™ 8085	Kalrez® 8002
Ammonium Fluoride	NH ₄ F	●	●
Argon	Ar	●	●
Boron Trichloride	BCl ₃	●	●
Boron Trifluoride	BF ₃	●	●
Carbon Tetrachloride	CCl ₄	●	●
Chlorine	Cl ₂	●	●
Dichlorodifluoromethane (F-12)	CCl ₂ F ₂	◐	◐
Difluoroethane (F-152a)	CH ₃ CHF ₂	◐	◐
Fluoroform (F-23)	CHF ₃	●	●
Helium	He	●	●
Hexafluoroethane (F-116)	C ₂ F ₆	●	●
Hydrogen	H ₂	●	●
Hydrogen Bromide	HBr	●	●
Hydrogen Chloride	HCl	●	●
Nitrogen Trifluoride	NF ₃	●	●
Oxygen	O ₂	●	◐
Perfluoropropane	C ₃ F ₈	◐	◐
Silicon Tetrachloride	SiCl ₄	●	●
Silicon Tetrafluoride	SiF ₄	◐	◐
Sulfur Hexafluoride	SF ₆	◐	◐
Tetrafluoromethane (F-14)	CF ₄	●	●
Trichloromethane	CHCl ₃	●	●
Tungsten Hexafluoride	WF ₆	●	●

**Table 2
Thermal Product
Compatibility Ratings**

Thermal Environment	Chemical Formula	Kalrez® Sahara™ 7075UP	Kalrez® Sahara™ 8475
Ammonia	NH ₃	●	●
Dichlorosilane	SiH ₂ Cl ₂	●	●
Hydrogen Chloride	HCl	●	●
Nitrogen	N ₂	●	●
Oxygen	O ₂	◐	●

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Table 3
Gas Deposition Product
Compatibility Ratings

Gas Environment	Chemical Formula	Kalrez® Sahara™ 8085	Kalrez® 8002
Ammonia	NH ₃	●	●
Ammonium Fluoride	NH ₄ F	●	●
Ammonium Persulfate	(NH ₄) ₂ S ₂ O ₈	●	●
Antimony Trioxide	Sb ₂ O ₃	●	●
Argon	Ar	●	●
Arsenic Trioxide	As ₂ O ₃	●	●
Arsine	AsH ₃	●	●
Boron Tribromide	BBr ₃	●	●
Boron Trichloride	BCl ₃	●	●
Boron Trifluoride	BF ₃	●	●
Boron Trioxide	B ₂ O ₃	●	●
Bromine (Anhydrous)	Br	●	●
Bromine Pentafluoride	BrF ₅	◐	◐
Bromine Trifluoride	BrF ₃	◐	◐
Bromotrifluoroethylene	C ₂ BrF ₃	●	●
Carbon Dioxide	CO ₂	●	●
Carbon Tetrachloride	CCl ₄	●	●
Chlorine	Cl ₂	●	●
Chlorine Trifluoride	ClF ₃	◑	◐
Diborane	B ₂ H ₆	●	●
Dichlorosilane	SiH ₂ Cl ₂	●	●
Dimethylamine (DMA)	(CH ₃) ₂ NH ₂	●	●
Dimethyl Ether	C ₂ H ₆ O	●	●
Disilane	Si ₂ H ₆	●	●
Ethylene	C ₂ H ₄	●	●
F-12 (Dichlorodifluoromethane)	CF ₂ Cl ₂	◐	◐
F-13 (Chlorotrifluoromethane)	CF ₃ Cl	◐	◐
F-13B1 (Bromotrifluoromethane)	CF ₃ Br	◐	◐
F-14 (Tetrafluoromethane)	CF ₄	●	●
F-21 (Dichlorofluoromethane)	CHCl ₂ F	●	●
F-22 (Chlorofluoromethane)	CHF ₂ Cl	◐	◐
F-23 (Fluoroform)	CHF ₃	●	●
F-114 (Dichlorotetrafluoroethane)	C ₂ Cl ₂ F ₄	◐	◐
F-115 (Chloropentafluoroethane)	C ₂ F ₅ Cl	◐	◐
F-116 (Hexafluoroethane)	C ₂ F ₆	●	●
F-124 (Chlorotetrafluoroethane)	CF ₃ CHCl	◐	◐
F-125 (Pentafluoroethane)	C ₂ HF ₅	◐	◐
F-134a (Tetrafluoroethane)	CF ₃ CH ₂ F	◐	◐
F-142b (Difluorochloroethane)	CF ₂ ClCH ₃	◐	◐
F-152a (Difluoroethane)	CH ₃ CHF ₂	◐	◐
Fluorine	F ₂	◐	◐
Germane	GeH ₄	●	●
Helium	He	●	●

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Table 3 (continued)
Gas Deposition Product
Compatibility Ratings

Gas Environment	Chemical Formula	Kalrez® Sahara™ 8085	Kalrez® 8002
Hydrogen	H ₂	●	●
Hydrogen Bromide	HBr	●	●
Hydrogen Chloride	HCl	●	●
Hydrogen Fluoride	HF	●	●
Hydrogen Iodide	HI	●	●
Hydrogen Selenide	H ₂ Se	●	●
Hydrogen Sulfide	H ₂ S	●	●
Iodine Pentafluoride	IF ₅	●	●
Isobutane	C ₄ H ₁₀	●	●
Methane	CH ₄	●	●
Methanethiol	CH ₃ SH	●	●
Methyl Bromide	CH ₃ Br	●	●
Methyl Chloride	CH ₃ Cl	●	●
Monomethylamine	CH ₃ N	●	●
Nitrogen	N ₂	●	●
Nitrogen Trifluoride	NF ₃	●	●
Nitrous Oxide	N ₂ O	●	●
Oxygen	O ₂	●	◐
Ozone	O ₃	●	●
Perfluoropropane	C ₃ F ₈	●	●
Phosgene	COCl ₂	●	●
Phospine	PH ₃	●	●
Potassium Hydroxide	KOH	●	●
Silane	SiH ₄	●	●
Silicon Tetrachloride	SiCl ₄	●	●
Silicon Tetrafluoride	SiF ₄	◐	◐
Sodium Hydroxide	NaOH	●	●
Sulfur Hexafluoride	SF ₆	◐	◐
Sulfur Tetrafluoride	SF ₄	◐	◐
TEOS	(C ₂ H ₅) ₄ SiO ₄	●	●
Titanium Tetrachloride	TiCl ₄	●	●
Trichloroethane	C ₂ H ₃ Cl ₃	●	●
Trichloromethane	CHCl ₃	●	●
Trimethylamine	(CH ₃) ₃ N	●	●
Trimethyl Borate	(CH ₃ O) ₃ B	●	●
Trimethyl Phosphite	(CH ₃ O) ₃ P	●	●
Tungsten Hexafluoride	WF ₆	●	●
Vinyl Chloride	C ₂ H ₃ Cl	●	●
Vinyl Fluoride	C ₂ H ₃ F	●	●
Xenon	Xe	●	●

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Table 4
Wet Process Product
Compatibility Ratings

Wet Chemical Environment	Chemical Formula	Kalrez® 6375UP ⁵	Kalrez® 4079UP ⁵	Kalrez® 1050UP ⁵
Acetic Acid, 30%	CH ₃ COOH	●	●	○
Acetic Acid, Glacial	CH ₃ COOH	●	●	○
Acetone	CH ₃ COCH ₃	●	●	●
ACT® 690C ¹		●	◐	◐
ACT® 935		●	◐	◐
ACT® 970		●	◐	◐
ACT® AS-65		●	◐	◐
ACT® BNE-8000		●	◐	●
ACT® CMI		●	◐	◐
ACT® NE-14		●	●	◐
ACT® XT-1100		●	●	◐
ALEG™ 310 ¹		●	◐	◐
Ammonium Fluoride	NH ₄ F	●	◐	◐
Ammonium Hydroxide (conc.)	NH ₄ OH	●	◐	◐
Aqua Regia	HNO ₃ :HCl (1:3)	●	◐	◐
Boron Tribromide	BBr ₃	●	●	●
Buffered Oxide Etchants (BOE)		●	●	◐
Butyl (n-) Acetate	CH ₃ COOCH ₂ CH ₂ CH ₂ CH ₂	●	●	●
Cellosolve	CH ₃ COOCH ₂ CH ₂ OC ₂ H ₅	●	●	●
Chromic Acid	CrO ₃ :(H ₂ CrO ₄)	●	●	◐
Citric Acid	HOOCCH ₂ C(OH) (COOH) CH ₂ COOH:H ₂ O	●	●	●
CIK™-888 ²	Proprietary	●	○	◐
Copper Sulfate Solution	CuSO ₄ :H ₂ O	●	●	●
Cyclohexane	C ₆ H ₁₂	●	●	●
Deionized Water (UPDI)	H ₂ O	●	●	◐
Dichlorofluoroethane (F141b)	CFCl ₂ CH ₃	●	●	◐
Dichlorotrifluoroethane (F123)	CF ₃ CHCl ₂	◐	◐	◐
EKC265™ ³		●	◐	◐
EKC830™		●	◐	◐
EKC4000 PCT™		●	◐	●
Ethanolamine	HOCH ₂ CH ₂ NH ₂	●	◐	◐
Ethoxyethyl Acetate (EGMEEA)	CH ₃ COOCH ₂ CH ₂ OC ₂ H ₅	●	●	●
Ethyl Acetate	CH ₃ COOC ₂ H ₅	●	●	●
Ethyl Lactate	CH ₃ CH ₂ OCOOC ₂ H ₅	●	●	●
EZ Strip™ 500 ¹		●	◐	◐
Hexamethyldisilazane (HMDS)	(CH ₃) ₃ SiNHSi(CH ₃) ₃	●	●	●
Hydrochloric Acid	HCl	●	●	●
Hydrofluoric Acid	HF	●	●	◐
Hydrogen Peroxide	H ₂ O ₂	●	●	●
Isopropyl Alcohol (IPA)	(CH ₃) ₂ CH ₂ O	●	●	●
Methanol	CH ₃ OH	●	●	●
Methoxyethanol (DGMMA)	CH ₃ OCHCH ₂ OCH ₂ CH ₂ OH	●	●	●
Methyl (n-) Pyrrolidone (2-) (nMP)	CH ₃ NCH ₂ CH ₂ CH ₂ CO	●	●	●

● Best ◐ Suitable ◑ Suitable for Some Applications ○ Not Recommended

Table 4 (continued)
Wet Process Product
Compatibility Ratings

Wet Chemical Environment	Chemical Formula	Kalrez® 6375UP ⁵	Kalrez® 4079UP ⁵	Kalrez® 1050UP ⁵
Methyl Ethyl Ketone (MEK)	CH ₃ COCH ₂ CH ₃	●	●	●
Methyl Isobutyl Ketone (MIBK)	(CH ₃) ₂ CHCH ₂ COCH ₃	●	●	●
Monoethanolamine (MEA)	HOCH ₂ CH ₂ NH ₂	●	○	●
Nitric Acid	HNO ₃	●	●	⊗
Ozonated Deionized Water	O ₃ :H ₂ O	●	●	⊗
Phosphoric Acid	H ₃ PO ₄	●	●	●
Phosphorous Oxychloride	POCl ₃	●	●	●
Piranha	H ₂ SO ₄ :H ₂ O ₂	●	●	●
PRS-1000 ^{TM2}		●	●	⊗
PRS-3000 TM		●	●	⊗
Potassium Hydroxide	KOH	●	●	●
REZI ^{TM282}		●	●	⊗
SC-1 (Standard Clean-1)	NH ₄ OH:H ₂ O ₂ :UPDI	●	●	●
SC-2 (Standard Clean-2)	HCl:H ₂ O ₂ :UPDI	●	●	●
Sodium Hydroxide	NaOH	●	●	●
Stoddard Solvent	N/A	●	●	●
Sulfuric Acid	H ₂ SO ₄	●	●	●
Tetramethyl Ammonium Hydroxide	(CH ₃) ₄ NOH	●	●	●
Tetramethylcyclotetrasiloxane (TMCTS)	(HSi(CH ₃)O) ₄	●	●	●
TOK 105 Stripper ⁴		●	○	⊗
TOK 106 Stripper		●	○	⊗
Toluene	C ₆ H ₅ CH ₃	●	●	●
Trichloroethylene	CHCl:CCl ₂	●	●	●
Trichlorofluoromethane (F-11)	CCl ₃ F	●	●	●
Trichlorophenylsilane	Cl ₃ SiC ₆ H ₅	●	●	●
Trichlorosilane	SiHCl ₃	●	●	●
Trichlorotrifluoroethane	CCl ₂ FCClF ₂	●	●	○
Trimethyl Borate (TMB)	(CH ₃ O) ₃ B	●	●	●
Trimethyl Phosphite (TMP)	(CH ₃ O) ₃ PO	●	●	●
Xylene	C ₆ H ₄ (CH ₃) ₂	●	●	●

● Best ● Suitable ⊗ Suitable for Some Applications ○ Not Recommended

¹ Ashland, Inc.

² J.T. Baker (A Division of Mallinckrodt Baker, Inc.)

³ EKC Technology/DuPont

⁴ Tokyo Kosyo Co. Ltd.

⁵ Kalrez® 6375UP, 4079UP and 1050UP are also available without Ultrapure Post-Cleaning and Packaging. However, extractables performance may be affected if residual hydrocarbon contamination and/or particulate matter is not cleaned/removed from the seal surface.

NOTES

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