

CHEMICAL RESISTANCE

Because Kalrez® has outstanding chemical resistance, it withstands nearly all classes of chemicals. With this combination of high thermal stability and excellent chemical resistance, the Kalrez® perfluoroelastomer parts rating may be conservative, as actual field experience and the example above have demonstrated.

In comparing the chemical and fluid resistance of Kalrez® perfluoroelastomers to that of Teflon® fluoropolymer resins, certain differences should be kept in mind:

- 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, Freon®, and Freon® alternatives. Service ability of Kalrez® in these environments will be dependent upon the specifics of the application.

- 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, because 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 compound choice.

TYPICAL PHYSICAL PROPERTIES (1)

Compounds	Standard			Specialty			
	6375	7075	4079	1050LF	1058	3018	2037
Durometer Hardness (2),							
Shore A, points +/- 5	75	75	75	82	65	91	79
100% Modulus (3)							
psi	1050	1100	1050	1800	675	2450	900
MPa	7.2	7.6	7.2	12.4	4.7	16.9	6.2
Tensile Strength at Break (3)							
psi	2200	2600	2450	2700	1300	3150	2450
MPa	15.1	17.9	16.5	18.6	9.0	21.7	16.9
Elongation at Break (3), %	160	160	150	125	180	125	200
Compression Set (4), %							
70 hours at 204 °C (400 °F)	30	12	25	35	40	35	27
Brittle Point (5),							
°C	-	-	-50	-41	-40	-37	-54
°F	-	-	-58	-42	-41	-35	-65

(1) Not to be used for specifications (2) ASTM D2240 (3) ASTM D412, 500 mm/min (20 in/min) (4) ASTM D395B pellets (5) ASTM D746

Because each 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 technical information may be based on conditions that 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® perfluoro-elastomer parts, with their near-universal chemical resistance, provide an extra degree of safety against these unknown corrosive influences. Case histories are available from Daemar 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 Kalrez® distributor.

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.