

# Chemraz 505 vs Kalrez 6375 — FFKM Chemical Compatibility

Perfluoroelastomer O-ring rating (A = excellent, B = good, C = marginal, D = not recommended)

Perfluoroelastomer (FFKM) O-rings sit at the top of the chemical-compatibility ladder — the fluorinated C-C-F backbone resists solvents, acids and hot oxidisers that swell or attack FKM (Viton) and NBR. Two grades cover most industrial and petrochemical applications: Greene, Tweed Chemraz 505 (the mixed-service general-purpose FFKM, black, 75 IRHD, USP Class VI, continuous 230 °C) and DuPont Kalrez 6375 (the amine + steam mixed-service FFKM, black, 75 IRHD, continuous 275 °C). The chart lists the media a marine, refinery or semi-conductor buyer is most often selecting against, with a single-letter compatibility rating and a note where the two grades diverge.

Media	Chemraz 505	Kalrez 6375	Note
Aromatic hydrocarbons (toluene, xylene)	A	A	Both FFKMs excellent to 260 °C.
Aliphatic hydrocarbons (hexane, gasoline)	A	A	Both retain shape and modulus long term.
Crude oil / condensate	A	A	Standard spec for wellhead + downstream refining.
Ethylene oxide (EO)	A	B	Chemraz 505 has FDA + USP Class VI clearance. K6375 rated but qualifies less strongly.
Amines (aniline, MEA, DEA)	A	B	Chemraz 505 preferred for pure amines; Kalrez 6375 shows swelling in DEA above 150 °C.
Concentrated sulphuric acid (98 %)	A	A	Both FFKMs the standard elastomer for hot conc. H <sub>2</sub> SO <sub>4</sub> .
Nitric acid 70 %	B	C	Chemraz 505 outperforms Kalrez 6375 in hot conc. HNO <sub>3</sub> ; both attacked above 90 °C.
Hydrofluoric acid (aq)	A	A	Standard FFKM service. Steel packing must match — HF etches most fillers.
Steam (high-pressure, 200+ °C)	B	A	Kalrez 6375 preferred (lower steam swell); Chemraz 505 rated up to -230 °C wet.
Ethylene glycol / hot water	A	A	Standard cooling / process service.
Ozone / oxidising gases	A	A	FFKM baseline resistance.
Ammonia (anhydrous)	A	B	Chemraz 505 preferred; Kalrez 6375 swells > 5 % in hot anhydrous NH <sub>3</sub> .
Fluorinated solvents (Freon, HFE)	A	A	Chemraz 505 and Kalrez 6375 both compatible with common HFEs.
Semi-conductor cleans (SC1, SC2)	A	B	Chemraz 505 qualified against SC1 hot ammonium-hydroxide/peroxide bath. Kalrez 8085.
Hot chlorine / wet chlorine gas	A	B	Chemraz 505 preferred for wet Cl <sub>2</sub> process; Kalrez 6375 attacked in wet Cl <sub>2</sub> above 100 °C.
Sea water	A	A	Standard offshore + subsea service.
NORSOK M-710 sour service	A	A	Both grades hold API 6A + M-710 qualification when supplied by the OEM.
Hot air (oxidative) 260 °C	A	A	Continuous 260 °C service; short excursions to 316 °C.

## Selecting between Chemraz and Kalrez

For general mixed-service refinery and offshore duty the two grades are functionally interchangeable — pick the one already qualified for the site. Chemraz 505 is preferred where the seal sees amines, ethylene oxide, wet chlorine or a semi-conductor clean (SC1 / SC2), and where a USP Class VI clearance is needed (pharma, food-contact). Kalrez 6375 is preferred where wet steam above 200 °C is the primary challenge, and where the seal is spec'd by DuPont OEM assemblies. Both grades come in the same standard O-ring sizes to AS568 A and to metric BS 1806 / ISO 3601 — the profile does not change with the compound.

## When neither Chemraz 505 nor Kalrez 6375 is right

For hot amines above 200 °C step up to Kalrez 4079. For semi-conductor plasma etch step up to Chemraz E38 or Kalrez 8085. For hot oxidising acids above 260 °C step up to Chemraz 615 or Kalrez 7075. For pharma steam-in-place, both Chemraz 505 and Kalrez 6221 are qualified. cBallast quotes the full Chemraz range (505, 526, 555, 583, 605, 615, E38) and the full Kalrez range (0090, 4079, 6221, 6375, 7075, 8085) plus common competitor FFKM grades from Trelleborg Isolast, Parker FF200 and Elringklinger Klipsan.

Reference compiled by cBallast from Greene, Tweed Chemraz technical bulletins, DuPont Kalrez compound guide and Trelleborg Isolast chemical-compatibility manual. Ratings are for a static O-ring at ambient concentration; dynamic sealing, hot concentrated media and unusual pressure profiles can shift a B to C or C to D. Verify against the FFKM maker's current technical bulletin before final selection. Chemraz is a registered trademark of Greene, Tweed and Co.; Kalrez is a registered trademark of DuPont (now DuPont Water & Protection); all trademarks are the property of their respective owners.

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