DuPont™ Kalrez® 0090 perfluoroelastomer parts

Provides Outstanding Resistance to Rapid Gas Decompression

Technical Information — Rev. 3, September 2012

Product Description

DuPont[™] Kalrez[®] 0090 perfluoroelastomer parts deliver durable, reliable sealing solutions for applications requiring excellent rapid gas decompression (RGD) properties as well as high hardness and high modulus properties. Some application areas include downhole equipment such as drilling and completion tools as well as industrial equipment including pumps and valves. Kalrez[®] 0090 has been certified by two independent labs (see Table 2) to meet rigorous requirements for resistance to RGD.

In addition to demonstrated RGD resistance, DuPont[™] Kalrez[®] 0090 seals have other chemical and temperature properties that provide superior performance.

- Chemical resistance: Kalrez[®] parts withstand attack by more than 1800 chemical substances. Kalrez[®] 0090 can be resistant to sour multi-phase fluids containing H₂S as shown by the external NORSOK M-710 Rev 2 Sour Fluid ageing resistance certification provided by MERL (UK).
- Broad temperature capability: Kalrez[®] 0090 retains high levels of resilience up to temperatures as high as 250 °C (482 °F) and down to –21 °C (–5.8 °F). Under pressurized sealing conditions, Kalrez[®] 0900 has demonstrated low temperature performance down to –40 °C (–40 °F) in customer laboratory tests*.

^{*} MERL presentation—Matoux 24 Oct 2012.

Table 1. Typical Physical Properties ¹	
Color	Black
Hardness ² , Durometer Shore A	95
50% Modulus ³ , MPa (psi)	14.18 (2057)
Tensile Strength at Break ³ , %	19.49 (2827)
Elongation at Break ³ , %	80
Compression Set—O-rings ⁴ , 70 hr at 200 °C (392 °F), %	33
Compression Set—Pellets ⁴ , 70 hr at 200 °C (392 °F), %	19
Compression Set in Nitrogen ⁴ —O-ring, 336 hr at 250 °C, %	35
Upper Service Temperature ⁵ , °C (°F)	250 (482)
Lower Service Temperature ⁶ , °C (°F)	-21 (-5.8)
Tg ⁶ , °C (°F)	-1 (30.2)
Tr10 ⁷ , °C (°F)	-7.4 (18.68)
Volume Swell ⁸ , % change	
Steam, 225 °C (437 °F), 672 hr	<5
Ethylenediamine, 90 °C (194 °F), 672 hr	<5
H ₂ S/CO ₂ (65%/35%), 220 °C (428 °F), 672 hr	<5

¹ Not to be used for specification purposes

⁸ ASTM D471 (AS568 K214 O-ring test specimens)



² ASTM D2240 (pellet test specimens)

³ ASTM D412, (AS568 K214 O-ring test specimens)

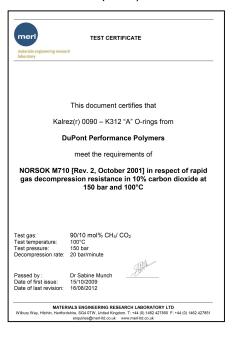
⁴ ASTM D395B

⁵ DuPont proprietary test method (anaerobic conditions)

⁶ DuPont proprietary test method

⁷ ASTM D1329 (slab test specimens)

NORSOK M-710 (Rev. 2) Certificate



TOTAL GS EP PVV 142 (Rev. 5) Qualification



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Caution: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, discuss with your DuPont customer service representative and read Medical Caution Statement H-50103-3.

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(03/09) Reference No. KZE-A10821-00-C0912



Greater China

^{*}Initial pressure maintained for at least 72 h prior to testing