

# CHEMRAZ<sup>®</sup> 564/566 LT

Low Temperature Material Delivers Exceptional Performance in Extreme Environments

## PERFLUOROELASTOMER SEALS EXPAND POTENTIAL IN SUBZERO CONDITIONS

As the temperatures and pressures in exploration and completion environments become more extreme, the stress placed on the tools that enable these applications dramatically increase. From fluid-filled wireline tools and motors stored and utilized in arctic temperatures to drilling equipment operated in the near freezing conditions of deepwater drilling, the oilfield industry requires a sealing solution that can withstand these increasingly harsh situations. Greene, Tweed's Chemraz<sup>®</sup> 564 LT (80 durometer) and Chemraz 566 LT (90 durometer) deliver exceptional performance in severe low temperatures – maintaining excellent sealing integrity at high pressures and in temperatures as low as -40°F (-40°C).

Chemraz 564 LT and Chemraz 566 LT deliver the same exceptional chemical resistance as our other market-leading compounds along with a wide temperature range of -40°F to 445°F (-40°C to 230°C). These new materials also provide excellent compression set and thermal shock resistance, allowing these seals to be utilized in a wide variety of industry applications. In addition, the materials allow for greater flexibility in tooling due to a comparable shrink rate with our other high-performance sealing solutions.

## FEATURES & BENEFITS

- Exceptional performance in extreme low temperatures to enable increasingly harsh environmental applications
- Superior resistance to hostile reservoir chemistries, drilling fluid additives and production chemicals for improved sealing performance
- Excellent compression set and thermal shock resistance for expanded application capabilities



Chemraz 564 LT seals

## APPLICATIONS

**O-rings, G-T<sup>®</sup> Rings, GTLM Rings and other sealing elements used in:**

- Wireline sensors and other fluid-filled tools stored and utilized in arctic climates and subzero applications
- Subsea equipment
- Completions systems used in water injection wells
- Drilling tools used in Deepwater applications

## CHEMRAZ® 564 LT TYPICAL PROPERTIES

Physical Properties	ASTM Method	Typical Value
Color		Black
Specific Gravity	D297	2.0
Hardness, Shore A, button	D2240	80
Hardness, Shore M	D2240	83
<b>Mechanical</b>		
Compression Set @ 25% Deflection, % of original deflection	D1414	
– 70 Hrs. @ 400°F (205°C), in Air		15%
– 70 Hrs. @ 450°F (230°C), in Air		32%
Elongation, %	D1414	210
Fluid Aging, Methanol, 168 hr at room temperature, % Swell	D471	2.0
Modulus @ 50% Elongation, psi (MPa)	D1414	390 (3)
Modulus @ 100% Elongation, psi (MPa)	D1414	800 (5.5)
Tear Strength, lb/in (kN/m)	D624, Die C	100 (18)
Tensile Strength @ Break, psi (MPa)	D1414	1,850 (13)
<b>Thermal</b>		
Coefficient of Linear Thermal Expansion, 10 <sup>-5</sup> , in/in-°F (mm/mm-°C)	E831	18 (33)
O-ring Leak Test (200 psi N <sub>2</sub> ), ave of 3 tests (1)	GT method	-48°F (-44°C)
Service Temperature Range, °F (°C)		-40°F to 445°F (-40°C to 230°C)
Tg	D3418	-26°F (-32°C)
TR-10/50	D1329	-26°F (-32°C)

## Notes:

- O-ring Leak test (not an ASTM standard) uses three -214 O-ring compressed 19% and pressurized with 200 psi N<sub>2</sub> pressure. The reported value is average temperature at which the 3 seals reach a leak rate of 2 sccm when the seals are cooled from room temperature at a rate of 0.3°C/minute.
- Unless otherwise noted, all tests performed on AS 568- 214 O-Rings.

## CHEMRAZ® 566 LT TYPICAL PROPERTIES

Physical Properties	ASTM Method	Typical Value
Color		Black
Specific Gravity	D297	2.0
Hardness, Shore A, button	D2240	90
Hardness, Shore M	D2240	85
<b>Mechanical</b>		
Compression Set @ 25% Deflection, % of original deflection	D1414	
– 70 Hrs. @ 400°F (205°C), in Air		21%
– 70 Hrs. @ 450°F (230°C), in Air		33%
Elongation, %	D1414	150
Fluid Aging, Methanol, 168 hr at room temperature, % Swell	D471	2.0
Modulus @ 50% Elongation, psi (MPa)	D1414	550 (4)
Modulus @ 100% Elongation, psi (MPa)	D1414	1,180 (8)
Tear Strength, lb/in (kN/m)	D624, Die C	110 (19)
Tensile Strength @ Break, psi (MPa)	D1414	2,050 (14)
<b>Thermal</b>		
Coefficient of Linear Thermal Expansion, 10 <sup>-5</sup> , in/in-°F (mm/mm-°C)	E831	15 (27)
O-ring Leak Test (200 psi N <sub>2</sub> ), ave of 3 tests (1)	GT method	48°F (-45°C)
Service Temperature Range, °F (°C)		-40°F to 445°F (-40°C to 230°C)
Tg	D3418	-23°F (-30°C)
TR-10/50	D1329	-22°F (-30°C)

## Notes:

- O-ring Leak test (not an ASTM standard) uses three -214 O-ring compressed 19% and pressurized with 200 psi N<sub>2</sub> pressure. The reported value is average temperature at which the 3 seals reach a leak rate of 2 sccm when the seals are cooled from room temperature at a rate of 0.3°C/minute.
- Unless otherwise noted, all tests performed on AS 568- 214 O-Rings.



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