

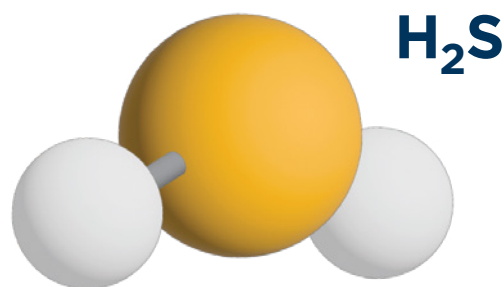


Chemraz® 678 – Proven Performance in High H₂S Sour Gas Environments

Reliable sealing in extreme sour service conditions

Hydrogen sulfide (H₂S) is commonly encountered in downhole and upstream oil & gas applications and presents a significant challenge to both metallic and non metallic components. Elevated H₂S concentrations can accelerate material degradation, compromise sealing performance, and increase the risk of rapid gas decompression (RGD).

Chemraz® 678 is engineered to deliver reliable sealing performance in harsh sour gas environments. To validate its robustness beyond standard qualification limits, Greene Tweed partnered with an independent laboratory (ALPINE) to evaluate Chemraz® 678 at **elevated H₂S concentrations well above industry test requirements.**



Testing Beyond Industry Standards

Greene Tweed routinely qualifies non metallic materials to recognized industry standards, including:

- ISO 23936-2 / NORSOK M 710
- API 6A Annex F

However, some applications exceed the H₂S concentrations defined in these standards. To address these more severe operating conditions, Chemraz® 678 was evaluated in a **33% H₂S gas mixture**, representing a significantly more aggressive sour environment than typically required.

Fluid Aging – High H₂S Exposure

Fluid aging tests were conducted by ALPINE following the methodology of ISO 23936 2-Annex A, with bespoke test conditions.

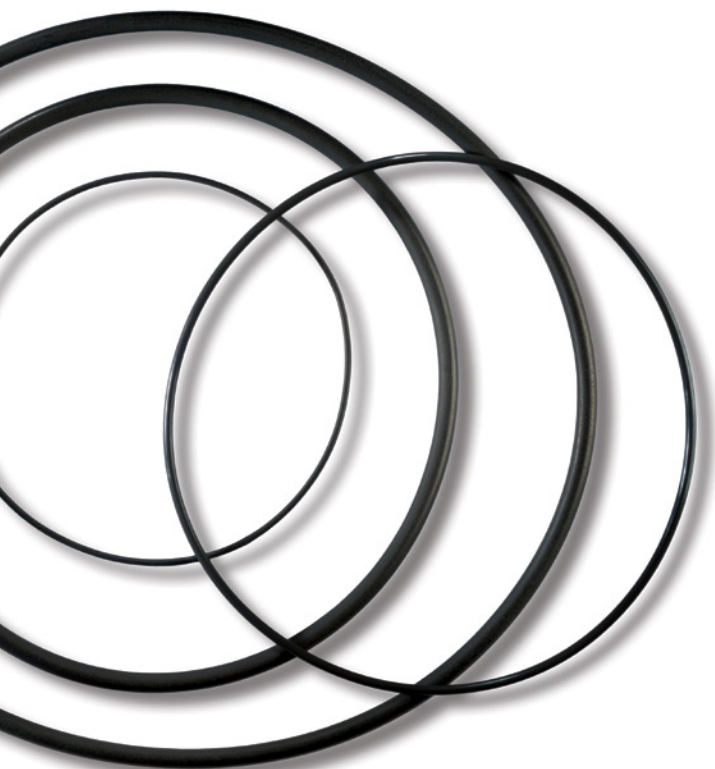
Key Test Conditions

Temperature: 163°C (325F)

Pressure: 4,500 psi

Exposure Duration: 42 days

Soak Fluid: Bespoke 33% H₂S, 10% CO₂, 57% CH₄



Note: ISO 23936-2 typically specifies 10% H₂S in the gas phase. This testing tripled the H₂S concentration to assess material limits.

Fluid Aging Results

Chemraz® 678 met **all acceptance criteria** of ISO 23936-2 / Norsok M 710, with **no failures observed** across all inspection intervals.

- Modulus at 50% strain – **Pass**
- Tensile strength at break – **Pass**
- Elongation at break – **Pass**
- Volume change – **Pass**
- Hardness (Shore A) – **Pass**

These results confirm that Chemraz® 678 maintains its mechanical and physical properties even after prolonged exposure to extreme sour gas conditions.

No cracking, blistering, dissolution, or other degradation was noted on the specimens after aging.

Proven Confidence for Severe Sour Service

The fluid aging results demonstrate that **Chemraz® 678 performs reliably in elevated H₂S environments**, even under conditions exceeding standard qualification requirements.

Key Benefits

- Validated performance at **33% H₂S**, well beyond industry norms
- Maintains mechanical integrity after prolonged sour gas exposure
- Suitable for **critical upstream and downhole sealing applications**

For more information about Greene Tweed products please call your sales representative or visit gtweed.com

Chemraz® 678 – Designed for the harshest sour gas challenges

For applications where standard testing is not enough, Chemraz® 678 delivers proven performance, reduced risk, and long term sealing reliability in extreme H₂S service.

Description	Typical
Original Properties (ASTM Standard)	
Polymer Type	FFKM
Color	Black
Service Temperature Range: -40°F to 446°F (-40°C to 230°C)	
Specific Gravity (D792) 1.95	1.95
Hardness*, Shore A, Points (D2240, Buttons)	90
Hardness, Shore M, Points (D1414)	90
Tensile Strength, psi [MPa] (D1414)	2,000 [13.8]
Elongation, % (D1414)	120
Modulus @ 50% Elongation, psi [MPa] (D1414)	805 [5.6]
Modulus @ 100% Elongation, psi [MPa] (D1414)	1,680 [11.6]
Tear Strength*, lbf/in. [kN/m] (D624, Die C, Slab)	103 [18.0]
Thermal Properties (ASTM Standard)	
Glass Transition (T _g) by DSC, °F [°C] (D3418)	-30.5 [-34.7]
Temperature of Retraction, 10% (TR ₁₀), °F [°C] (D1329)	-22 [-30]
O-ring Leak Test** (200 psi N ₂), leak temp, °F [°C] (GT method)	-44.1 [-42.3]
Coefficient of Thermal Expansion, 14°F to 446°F (-10°C to 230°C), µin/in-°F [µm/m-°C] (E831)	143 [257.4]
Fluid Aging (ASTM Standard)	
168 Hours @ Room Temperature In Methanol Volume Change, % (D471)	2
Compression Set @ 25% Deflection (ASTM Standard)	
70 Hours @ 392°F (200°C), In Air, % of Original Deflection, % (D1414)	20
70 Hours @ 450°F (232°C), In Air, % of Original Deflection, % (D1414)	31
Rapid Gas Decompression+ (ASTM Standard)	
Gas: 90/10 Methane/CO ₂ @ 212°F (100°C), Test Pressure: 150 bar (2,175 psig), Decompression Rate: 20 bar/min (290 psi/min), Cycles: 8, Rating, (ISO 23936-2)	0,0,0,0

Greene Tweed

1684 South Broad Street, Lansdale, PA 19446 USA | Phone: (+1) (215) 256-9521

gtweed.com

Statements and recommendations in this publication are based on our experience and knowledge of typical applications of this product and shall not constitute a guarantee of performance nor modify or alter our standard warranty applicable to such products.

© 2026, Greene Tweed all rights reserved. All trademarks are property of their respective owners. 10/26-GT BR-US-CRZ678-001