3S launches the XRG, an innovative newly developed gasket that offers greater sealing properties when compared to other semi-metallic gaskets. The XRG performs consistently by providing high compression and recovery at varying gasket stresses and temperatures.

14227 Interdrive East Houston, Texas 77032 * Tel: 832-406-7358 * 3Sgaskets.com
What Makes the XRG Unique?

PROPERTIES

The compression, recovery and leakage properties are achieved from. Fig.1.1

- Profile offset
- Precisely machined flats (length of flats) in-between the raised sections
- Tested and qualified angles on the raised sections of XRG
- The accurately machined gasket core design

RECOVERY TESTING XRG

Fig 1.2 Details the thickness change of XRG and a Spiral Wound Gasket (SWG). The gasket stress is increased and reduced at three different temperatures.

Fig.1.2

XRG vs SWG - Thickness Change at Varying Gasket Stresses & Temperatures

The compression and recovery is constant at three temperatures for XRG and remains stable as the stress increases. The XRG has the ability to compress and recover at high loads.

Test Results

- XRG demonstrates uniform recovery throughout the gasket stress range
- The consistent resilience of XRG remains even at the different temperatures
- Conversely, the SWG simply compresses to the guide ring, and then fails to recover after compression
**XRG**

**Performance Relating to Leakage**

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**Fig 1.3**

*Leakage vs Gasket Stress (EN13555)*

*Ambient Temperature - Internal Pressure 40 Bar (580 psi)*

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![Graph](image)

Fig. 1.3 Illustrates the leakage rates at increasing gasket stresses in accordance with EN13555.
- XRG has lower leakage rates versus SWG at all gasket stress levels
- As gasket stress is reduced, a higher-level of recovery is again demonstrated as the XRG displays no significant leakage

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**Fig 1.4**

*Leakage Rates @ 17453 psi Gasket Stress*

---

**Table 1**

<table>
<thead>
<tr>
<th>L [mg/(s*m)]</th>
<th>XRG (Ambient)</th>
<th>SWG (Ambient)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1015</td>
<td>2901</td>
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<tr>
<td>0.1</td>
<td>1740</td>
<td>4206</td>
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<tr>
<td>0.01</td>
<td>2466</td>
<td>7687</td>
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<tr>
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<td>3771</td>
<td>12328</td>
</tr>
<tr>
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<td>12183</td>
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</tbody>
</table>

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**Fig 1.5**

Qmin/L (psi) is the amount of gasket stress needed to achieve a certain leakage rate in assembly. For example, to achieve a leakage rate of 0.001 in assembly XRG requires a gasket stress of 2466 psi, whereas; SWG requires 7687 psi -- more than 3 times higher, making XRG a superior gasket solution

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All test results for XRG, in accordance with EN13555 leakage and compression, are available upon request. Leakage rates at different temperatures and internal pressures were also tested. All data shown for SWG obtained from available public domains.
# XRG Constants & Summary

## Constants

### ROTT Data

<table>
<thead>
<tr>
<th>Material</th>
<th>Gb</th>
<th>a</th>
<th>Gs</th>
<th>$S_{100}$</th>
<th>$S_{1000}$</th>
<th>$S_{10000}$</th>
<th>$T_p_{min}$</th>
<th>$T_p_{max}$</th>
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<tbody>
<tr>
<td>XRG</td>
<td>392</td>
<td>0.317</td>
<td>0.604</td>
<td>1686</td>
<td>3498</td>
<td>7258</td>
<td>1383</td>
<td>77799</td>
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</tbody>
</table>

### M & y Values

<table>
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<tr>
<th>Material</th>
<th>m</th>
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<tbody>
<tr>
<td>XRG</td>
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## XRG Summary

- Extremely low leakage rates as shown in EN13555 & ROTT testing
- Low modulus of elasticity values at different temperatures
- High compression and recovery values at varying temperatures across a wide gasket stress range
- Seals under minimal gasket stress due to its unique design
- Performs consistently at diverse temperatures

## Manufacturing Details

### Maximum Temperature (Filler)

- **3S Inhibited Graphite**: 850°F (454°C)
- **Super Inhibited Graphite**: 975°F (524°C)
- **PTFE**: 500°F (260°C)
- **Mica**: 1800°F (982°C)
- **HTG**: 1500°F (815°C)
- **Ceramic**: 2000°F (1093°C)

### Maximum Temperature (Alloys)

- **304 / 304L SS**: 1400°F (760°C)
- **316 SS**: 1400°F (760°C)
- **316L SS**: 1400°F (760°C)
- **321 SS**: 1500°F (815°C)
- **347 SS**: 1500°F (815°C)
- **Monel**: 1500°F (815°C)
- **Inconel 600**: 2000°F (1093°C)
- **Carbon Steel**: 900°F (482°C)

## ROtt Data Comparison

<table>
<thead>
<tr>
<th>Material</th>
<th>Gb</th>
<th>a</th>
<th>Gs</th>
<th>$S_{100}$</th>
<th>$S_{1000}$</th>
<th>$S_{10000}$</th>
<th>$T_p_{min}$</th>
<th>$T_p_{max}$</th>
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<tr>
<td>XRG</td>
<td>392</td>
<td>0.317</td>
<td>0.604</td>
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</table>

All 3S Gaskets have full material traceability through the MTR # etched on the guide ring and inner ring if applicable, the MTR can be retrieved at 3sgaskets.com

For more information contact: technical@3sgaskets.com