

THE NEXT GENERATION IN SUPERIOR GASKET COMPRESSION & RECOVERY



PATENT PENDING

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.

What Makes the **XRG** Unique?

PROPERTIES

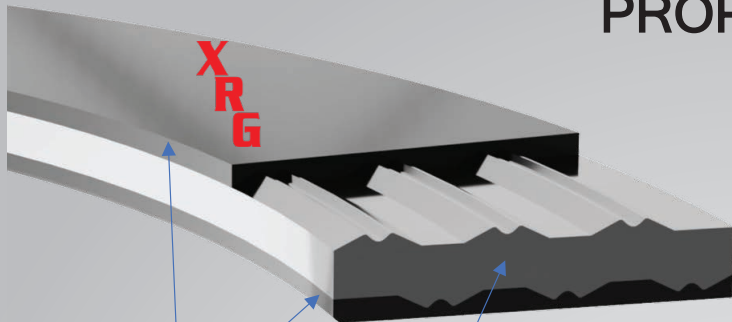


Fig. 1.1

The compression, recovery and leakage properties are achieved from. Fig1.1

- 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

Soft Sealing Layers

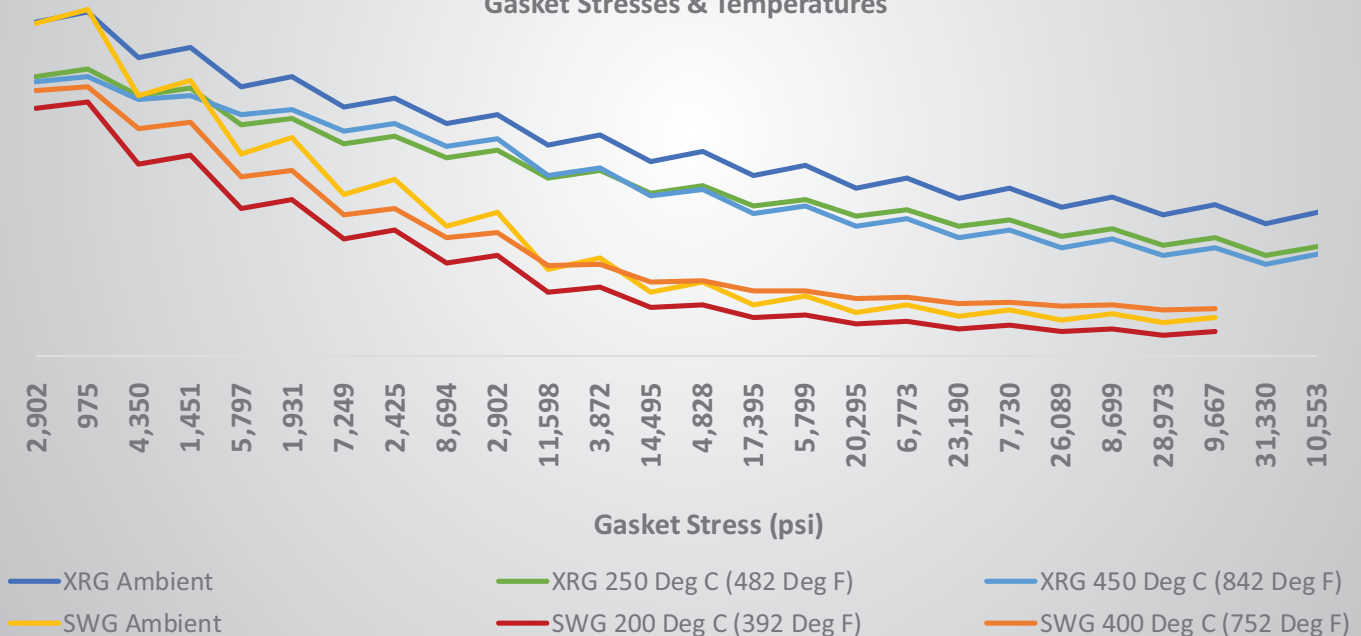
XRG Specially Designed Profile

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

Performance Relating to Leakage

Fig 1.3

Leakage vs Gasket Stress (EN13555)
Ambient Temperature - Internal Pressure 40 Bar (580 psi)

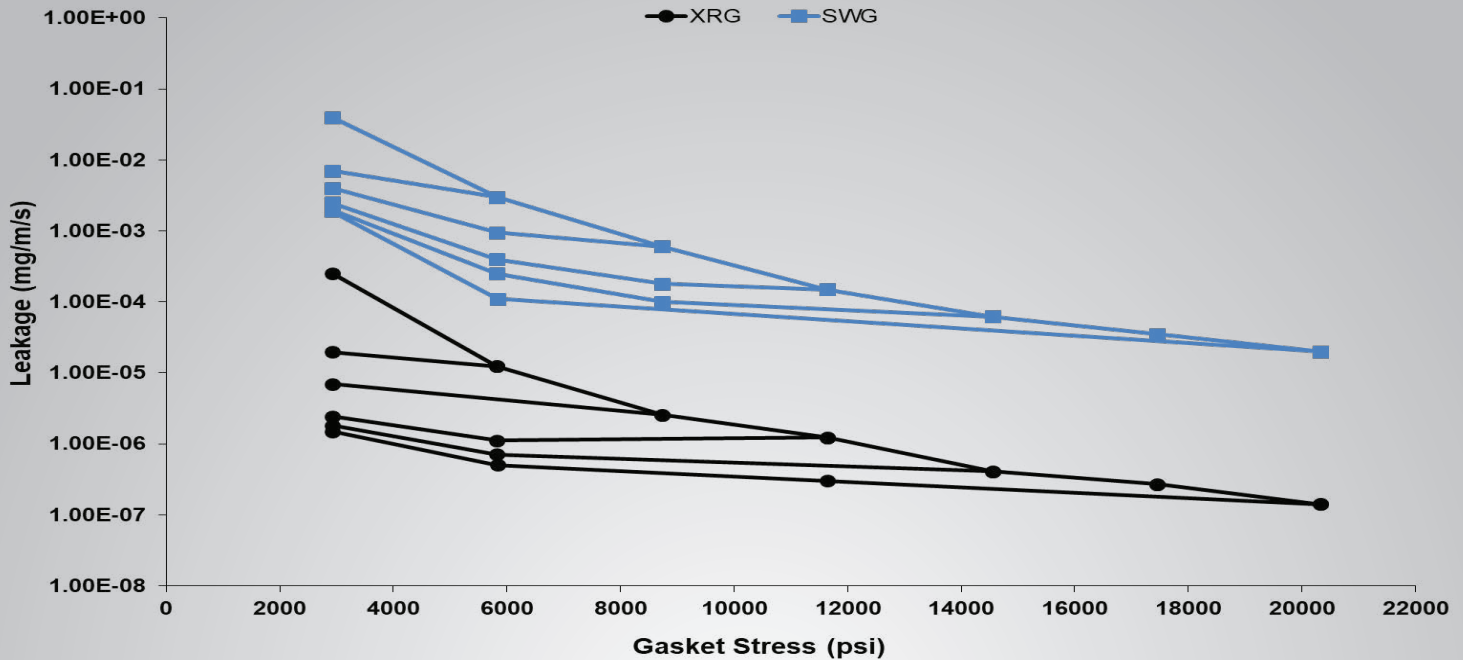


Fig. 1.3 Illustrates the leakage rates at increasing gasket stresses in according with EN13555.

- 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

Fig 1.4

Leakage Rates @ 17453 psi Gasket Stress

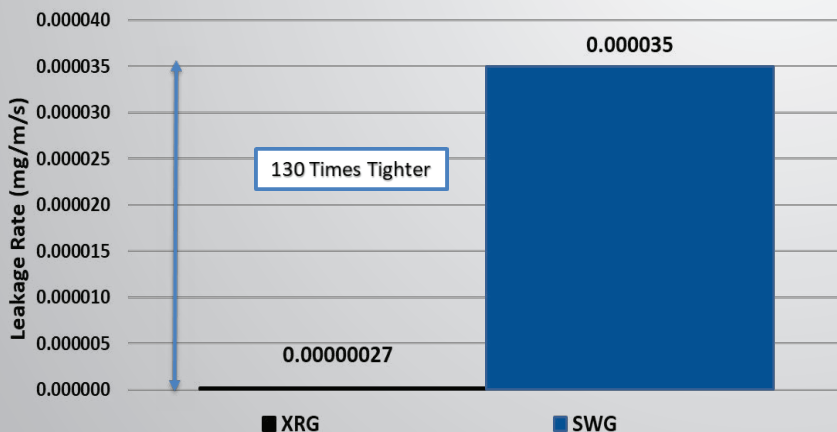


Table 1

Fig 1.5

L [mg/(s*m)]	Qmin/L (psi)	
	XRG (Ambient)	SWG (Ambient)
1		2901
0.1	1015	2901
0.01	1740	4206
0.001	2466	7687
0.0001	3771	12328
0.00001	6237	
0.000001	12183	

Fig 1.4 Highlights that XRG seals many times tighter when compared to SWG at a gasket stress of 17,453 psi.

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

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.

CONSTANTS

ROTT Data

XRG		
Gb	392	psi
a	0.317	
Gs	0.604	psi
S100	1686	psi
S1000	3498	psi
S10000	7258	psi
Tpmin	1383	
Tpmax	77799	

m & y Values

XRG		
m	2.0	
y	2500	psi

Materials

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)

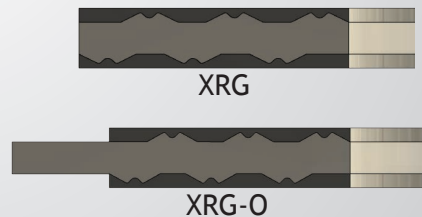
XRG SUMMARY

- 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

XRG Thickness	XRG Diameter	XRG Width
Standard 3/32"	Minimum 2" OD	Minimum 3/8"
Other 1/8"	Maximum 140" OD	Maximum 2"

Facing thickness as standard = 0.020" (0.5mm) each side. This is not included in the above "XRG Thickness"



ROTT DATA COMPARISON

	Gb	a	Gs	S100	S1000	S10000	Tpmin	Tpmax	m	y
XRG	392	0.317	0.604	1686	3498	7258	1383	77799	2	2500
CMG	315	0.36	1855	1653	3787				2.5	6400
Kammprofile	387	0.334	14	1802	3888			55000	2	2500
SWG	365	0.413	5.52	2445	6328	16378	213	17362	3	10000

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