Product Data Sheet
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PolyOil™ Riser Sealing Mandrel and Cased Wear Joint

There is a known risk that during final completion running and workover operations, rig diversion systems will not form around the umbilical or auxiliary lines running on the outside of the landing string. In some cases an annular kick from the riser may result in catastrophic results. Of particular risk are deep water applications where kick detection and subsequent deployment of the lower rig blow out preventers (BOPs) may be too late, with large expanding pockets of gas kicks emerging from above the diverter directly to the drill floor, and personnel in the close vicinity.

To mitigate this risk PolyOil™ has developed a safe efficient and cost effective solution to address the issue. The Riser Sealing Mandrel incorporates seals and an interlocking modular system to help resist pressure whilst protecting the umbilical lines from impingement damage around the drill floor and wear bushing area as the drilling rig moves due to weather conditions.

These systems are also available as a non-sealing version (Cased Wear Joint) which, although non-sealing, shares the same design features as the Riser Sealing Mandrel and offers the same protection to the umbilicals.

- Non metallic contact – Cr alloy compatible
- Less friction than any metal
- Wear-resistant material
- Up to 7 times lighter than conventional types
- Light-weight, so easy to handle at rig site
- Resistant to shock loading

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Riser Sealing Mandrel and Cased Wear Joint

Both the Riser Sealing Mandrel and the Cased Wear Joint protect umbilical lines and increase safety on drilling rigs during completion and workover operations. The modular stacking systems allows rapid deployment with ease of handling and tailored use. Both systems can be adapted to incorporate client specific needs where applicable.

The Riser Sealing Mandrel and the Cased Wear Joint are used in the following applications:

- Completion running
- Workovers
- Drill stem test (DST)
- Deep water

Materials and design

PolyOil uses a range of high impact, wear-resistant materials which by their unique processing methods make them the toughest available. The natural properties of the polymers make them low weight, safe, and easy to handle, while their resiliency makes them kinder on all other equipment.

Our Polymer products are tried, tested, and recognized worldwide.

Material	Tensile strength MPa	Hardness (Shore D)	Charpy impact strength (23 Deg °C - kJ/m^2)	Charpy impact strength (40 Deg °C - kJ/m^2)	Melt point (Deg °C)	Co-efficient of Friction (1) (Deg °C)
SP	**81.2**	**81**	**12.9**	**5.9**	**220**(2)	**0.06-0.15**
SRM 15	54	77	20	14	214	0.10-0.20
SRM 40	26	59	~	~	214	0.10-0.20
LSG	18	69	16	-	214	0.05-0.15
~ Indicates no result, as this material does not break under the Charpy Impact Test.						

(1) *Co-efficient of friction results are dependent on many factors, for example, friction speed, temperature, lubricants, and specific material properties. Results are based on previous field work.*

(2) *Long term service temperature is 90 °C. Short term service temperature can be up to 150 °C depending on the application, e.g. open sea/in riser, brine composition, exposure time.*

Elasticity and water absorption

	SP average values	LSG average value	SRM 15			SRM 40		
			Dry as made	Conditioned	Immersed	Dry as made	Conditioned	Immersed
Modulus of Elasticity MPa	8.1	**442**	2100	900	444	1045	466	268
Water absorption %	3.2	-	14	2.5	14.1	214	1.7	12.6
Data is based on plaques with a thickness of 3.24 mm. Thicker parts tend to be stiffer, so the absorption rate will also be slower.								
Dielectric constant (dry): DIN 53483 at 10^6 Hz = 60 approx, DIN 53483 at 10^6 Hz = 5.3 approx.								
Dielectric strength (dry): DIN 53481 = 115 Kv/mm approx.								
Poisson Ratio: 0.35; Sound Speed: 2380 m/s								

Recycling statement

PolyOil products contain polymer, metal and rubber materials that should each be recycled according to the appropriate local governing legislation. Polymer materials can be granulated down to pellets and reused in new products or applications. The rubber and metal components and parts should be recycled according to industry standard practices.

Availability

The PolyOil design team can develop a solution to your specific issues. For more information, contact the sales group at Emerson.

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For more information: **Emerson.com/global**

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