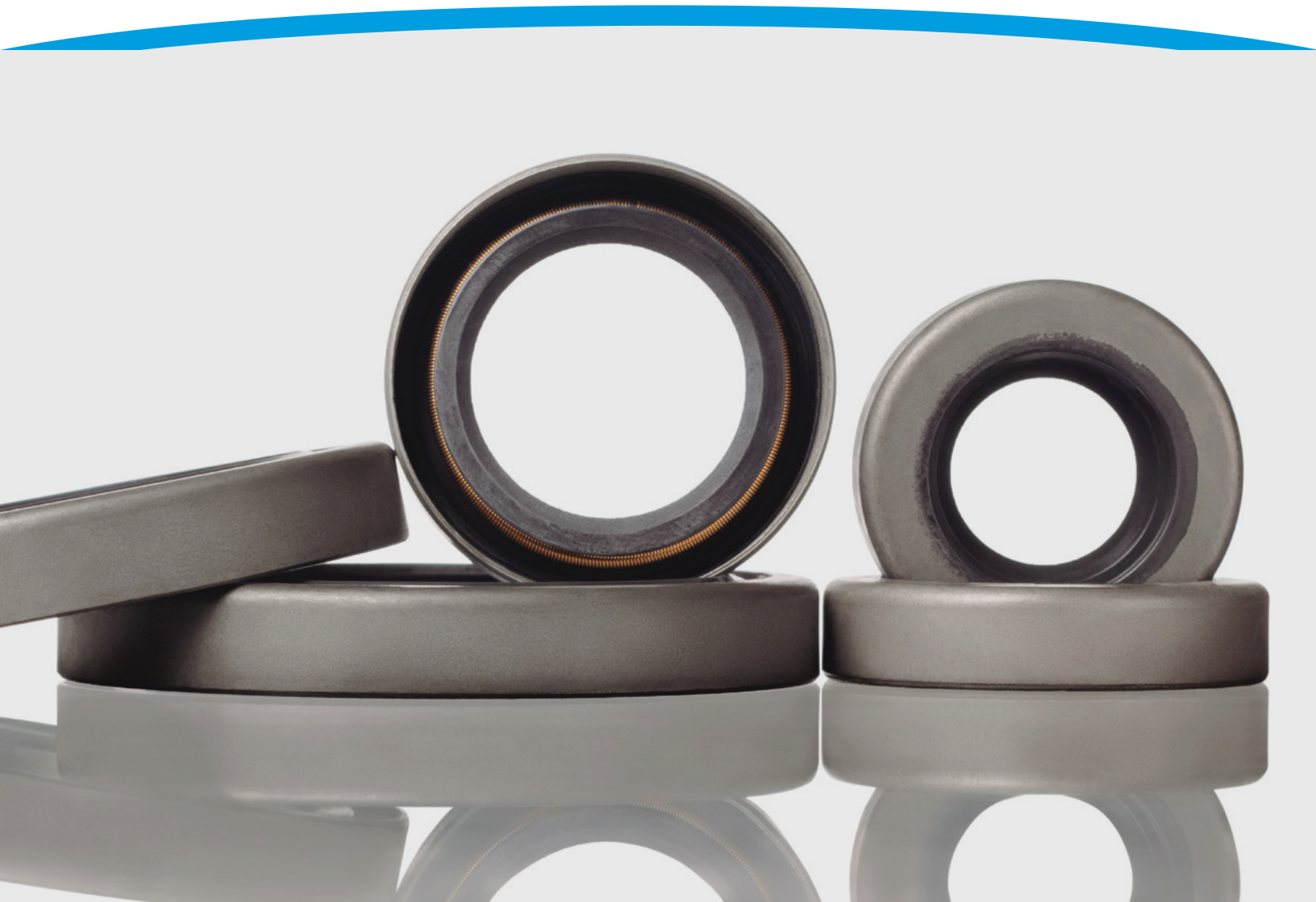


Innovative Estane® and Pearlthane TPU™
Solutions for seals and gaskets



A history of Innovation

The Lubrizol Corporation, a Berkshire Hathaway company, is an innovative specialty chemical company that produces and supplies technologies to customers in the global transportation, industrial and consumer electronics markets. With over 60 years of experience, Lubrizol is a global leader in engineered polymer technologies and focuses on unique solutions with continuous product innovation to meet the requirements of demanding applications such as seals and gaskets, cables, belting, tubes, adhesives, films and diverse moulded parts. Lubrizol's broad engineered polymer portfolio represents multiple product groups [both aliphatic and aromatic, polycaprolactone (PCL) copolyester, polyester, polycarbonate, polyether and copolymer-based] working together to form a single, convenient and reliable source for polymer solutions to today's toughest application challenges.



UNMATCHED BENEFITS

Combining the **ESTANE®** and **Pearlthane™** TPU portfolios with other engineered polymer innovations, Lubrizol now represents a single, convenient and reliable source with multiple product groups.

Working together with the customer, Lubrizol helps solve some of today's toughest challenges within the **seals and gaskets** applications that need to withstand extreme temperatures and physical wear and tear.

In order to meet rigorous standards for maintaining their durability and life expectancy, seals and gaskets must be formulated with the highest quality materials available. Through their outstanding performance and mechanical properties, ESTANE® and Pearlthane™ TPUs meet and exceed these application requirements. With one of the lowest compression sets in their materials class, these resins are ideal for use in hydraulic seals and gaskets applications.

Using the specialty high-performance "H" technology for high pressure hydraulic seals, Pearlthane™ PCL copolyester-based TPUs, such as **Pearlthane D11H92S** and **Pearlthane D11H95S**, feature high wear resistance, outstanding low compression set values and good flow properties. These TPU grades, especially developed for manufacturing hydraulic seals, are recommended for injection-moulding applications with an extremely short cycle time.

	Hardness Shore ISO 868 A/D	Specific Gravity ISO 2781 g/cm³	Tensile Strength ISO 527 N/mm²	Abrasion loss ISO 4649 mm³	Compression set % ASTM 395B					Tg (DSC) ISO 11357-2°C
					70h@ 100°C	70h@ 70°C	70h@ 23°C	22h@ 70°C	3h@ 130°C	
PEARLTHANE™ D11H92S	92 A	1.15	46	27	39	-	13	19	23	-42
PEARLTHANE™ D11H95S	94 A	1.18	52	29	36	-	18	23	20	-37
PEARLTHANE™ 11H94	95 A	1.18	42	35	60	40	-	32	48	-39
PEARLTHANE™ 11T60D	58 D	1.19	41	24	54	44	34	42	61	-24
ESTANE® 58280 NAT 065*	75 A	1.06	29	30	48	36	22	29	44	-67
ESTANE® 58149 NAT 022	96 A	1.21	26	38	32	27	17	23	27	-39

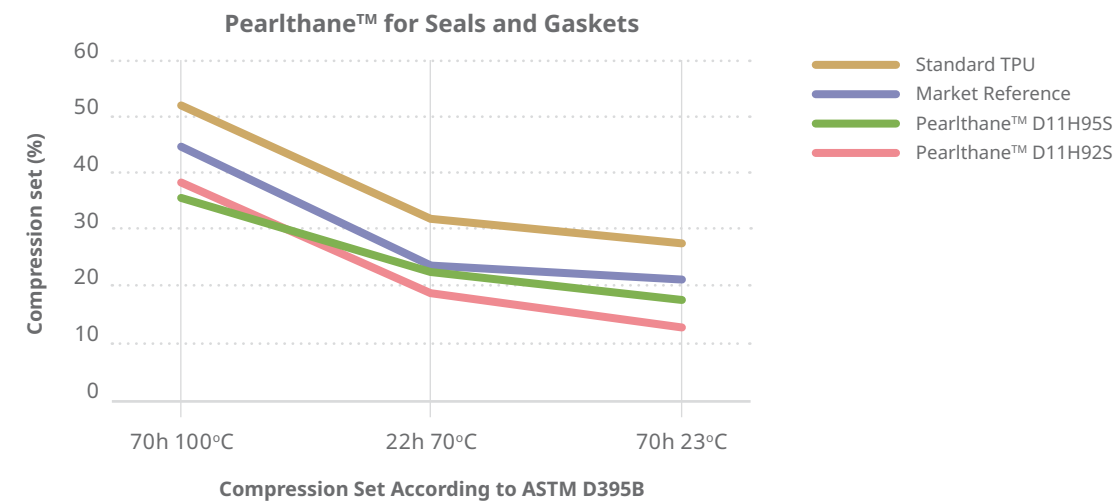
Test samples were postcured for 16 hours at 120°C
* polyether-based TPU



KEY PERFORMANCE FEATURES OF ESTANE® AND PEARLTHANE™ TPUS:

- Superior performance in environments with high pressure and temperature
- Very low compression set
- Excellent oil and hydraulic fuel resistance and abrasion resistance
- Higher productivity grades
- Resist severe shock
- Withstand momentary pressure spikes
- High performance even in contact with aggressive fluids (or other stringent conditions)

FIGURE 1: PEARLTHANE™ TPUS COMPRESSION SET VALUES



To learn more, visit www.lubrizol.com/Engineered-Polymers



LOCALLY PRESENT. GLOBALLY NETWORKED.

With local sales and technical support, R&D and manufacturing centers of excellence in each region, and a well-networked global supply chain, we offer a convenient, single source of reliable solutions for customers across the world.

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