

SOLUTION DATA SHEET

Superior Fluid Power Transmission Seals with Tough, Chemical-Resistant Pearlthane™ Solutions



Markets	Seals
Polymer	Pearlthane™ D11HxxS thermoplastic polyurethane (TPU)
Key Benefits	<ul style="list-style-type: none"> • Very good abrasion and hydrolysis resistance • Cold temperature flexibility • High heat resistance • Broader application temperature

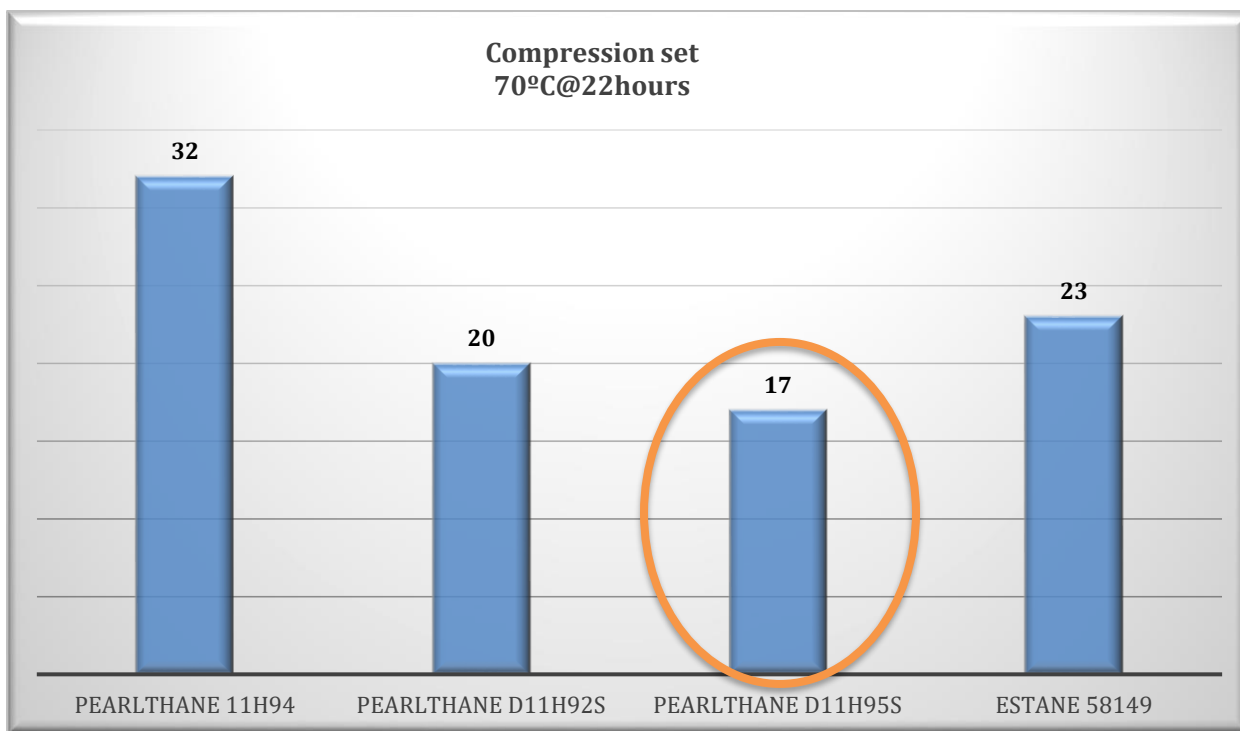
Besides being a cost-effective solution, TPUs are tough, abrasion/wear resistant, and able to take shock loads better than most elastomers, making them the ideal polymer for seals. To meet the rigorous standards related to the durability and life expectancy of seals, the materials must be high-performing.

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Lubrizol Advanced Materials have been formulating innovative specialty technologies for this specific end application for several decades.

Lubrizol engineered polymers exhibit outstanding resistance to tear and very good mechanical properties, as well as good resistance to weathering, gas or oil. With some of the lowest compression set values in their materials class, Pearlthane™ 11H TPU resins are ideal for use in fluid transmission seals and o-rings. The specialty Pearlthane D11H92S and D11H95S grades are built on “H” technology currently applied in high-pressure hydraulic seals and pneumatic seals and recommended for injection-moulded parts with an extremely short cycle time.

Lubrizol engineered polymers latest developments are focused on improving high-heat performance. The superior feature of the polymer solutions for hydraulic seals is the low compression set which can be observed below. All of the Pearlthane and Estane® grades below exhibit good compression set, however, Pearlthane D11H95S stands out due to its best performance:



Graphic 1: Compression set of Lubrizol TPU grades for seals.

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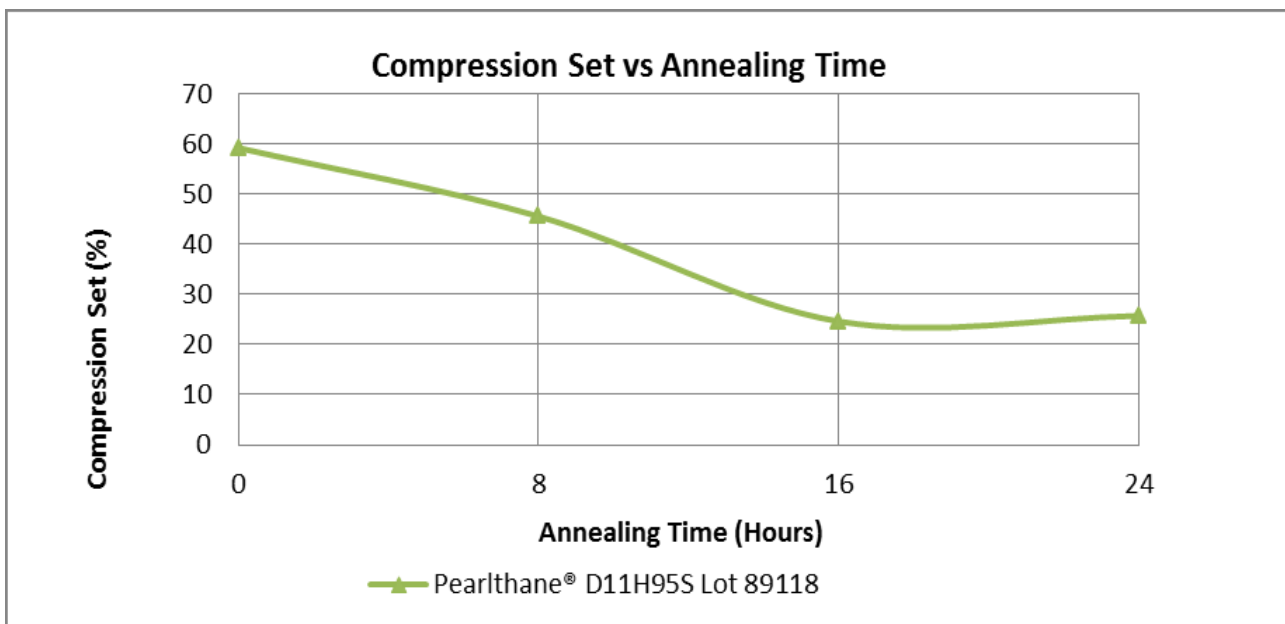
Lubrizol's innovative TPU portfolio offers expanded Pearlthane™ and Estane® advanced materials for different types of seals and gaskets:

	Product	Type of Polyol	Hardness	Special Features	Application
GOOD PERFORMANCE	Pearlthane™ 11H94	PCL*	92A	Medium compression set & abrasion resistance. Easy to process. Good hydrolysis resistance	Pneumatic Seals
BEST PERFORMANCE	Pearlthane™ D11H95S	PCL*	96A	Very low compression set. Low wear resistance. Extremely short cycle time	Hydraulic Seals
	Pearlthane™ D11H92S	PCL*	92A	Very low compression set. Low wear resistance. Extremely short cycle time	Hydraulic Seals
	Estane® 58149	PCL*	55D	Low compression set. Wear resistance	Hydraulic Seals

*Polycaprolactone copolyester TPU



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ANNEALING TIME (Post-cured treatment at 120°C)

Some annealing recommendations: These materials crystallize fast, the cycle time needs to be as short as possible. The material must remain within the barrel less than 5 seconds. The cushion should not exceed 6 mm. so as to prevent material from freezing in the nozzle. If drooling appears, it means that some material could have stuck onto the screw, we suggest cleaning the barrel with one shot and continuing with the injection moulding.

(Engel e-Victory 50 Hydraulic Power. 30 Ø Diameter (Lab. Trials).

For more information, please visit our web site: <http://www.lubrizol.com/Engineered-Polymers>

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