

Lubrizonl

Moisture Vapor Transmission Rate (MVTR)

TPUs for Wound Care and Transdermal Applications



Lubrizonl LifeSciences

Links Science to Life™

Lubrizol LifeSciences

At Lubrizol LifeSciences, we apply our technical expertise and diverse portfolio of specialty thermoplastic polyurethane products (TPUs) to develop innovative treatments for advanced wound care. Our biocompatible polymers protect wounds from microbes and exhibit superior exudate absorption and moisture vapor transmission rate (MVTR) properties to support an optimal healing environment.

As a total solutions provider, Lubrizol LifeSciences is your preferred development partner for wound care solutions. Our TPUs can be tailored for a variety of applications. The Tecophilic™ and Pellethane® TPUs, for example, are widely used for films, tapes and backings. Carbopol® polymers are ideal ingredients for hydrogel wound dressings.

Lubrizol's innovative wound dressing materials have an ability to absorb wound exudate. In conjunction with proper adhesives our wound care films are durable and adhere comfortably to the patient's skin, and can be easily removed without damaging healthy tissue.

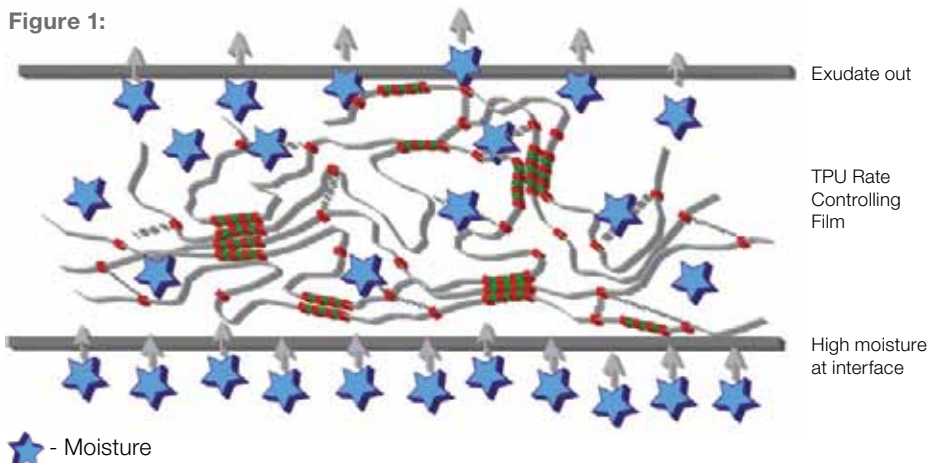
When it comes to breathability and moisture balance, Lubrizol LifeSciences is the industry leader in MVTR. Films based on our TPUs exhibit significantly greater MVTR than many commercially available products. Wounds that are too dry or wet may not heal properly. To overcome this challenge, Lubrizol can customize TPUs with a broad range of MVTR and O₂ transmission rates. Through the use of multi-layers our film technologies can modulate MVTR according to wound exudate production, which can improve both quality and effectiveness of care by maintaining appropriate levels of oxygen breathability and moisture.



MVTR Products for Dermal Films

For demanding applications like medical devices, where product quality is of the utmost importance, Lubrizol's highly specialized materials can meet your development needs. Lubrizol's advanced polymer technology finds applications in both high-density polymeric devices, or lower density applications, such as wound care films and biodegradable sutures.

Figure 1:



TPUs are ideal for multilayer wound care and transdermal products. Lubrizol's innovative polymers have unique MVTR properties to allow the skin to breathe properly. Our TPU films demonstrate superior oxygen transmission and exudate absorption. They are easy to use, adhere comfortably to skin, and ultimately improve quality of care for patients and practitioners.

MVTR and O₂ Permeability

Product	Mocon Results (g/m ² 24hr) [†] 0.001" thickness	Mocon Results (g/m ² 24hr) [†] 0.003" thickness	Upright Cup Results (g/m ² 24hr) ^{††} 0.001" thickness	O ₂ Permeability Coefficient ^{†††} (Barr) 0.001" thickness
Pellethane® 2363-80AE	1400	520	400	2.9
Pellethane® 2363-90AE	800	380	220	1.5
Pellethane® 5863-80A	5000	2520	900	0.9
Pellethane® 5863-82A	1700	650	430	3.5
Pellethane® 5863-82AE	1700	650	430	3.5
Pellethane® 5863-85A	1300	520	290	3.2
Pellethane® 5863-87A	1000	500	270	2.7
Pellethane® 5863-90A	2800	1300	725	0.4
Pellethane® 5855-92A	700	250	170	0.4
Tecophilic™ HP-60D-10	1100	460	240	1.2
Tecophilic™ HP-60D-20	1600	700	400	1.4
Tecophilic™ HP-60D-35	1900	850	450	1.1
Tecophilic™ HP-60D-60	3000	1600	760	1.0
Tecophilic™ HP-93A-100	7400	3200	910	2.2
Tecophilic™ HP-100A-60	3900	2200	830	1.3
Tecophilic™ TG-500	6000	4100	760	0.3
Tecophilic™ SP-80A-150	24800	5800	1350	3.0
Tecoflex™ EG-80A	2000	950	430	9.2
Tecoflex™ EG-85A	2700	980	475	6.9
Tecoflex™ EG-93A	950	400	230	2.5

[†]Mocon results obtained using Mocon Permatran-W® 101K per INDA WSP 70.4 (previously ASTM D6701) at 38°C, 90% RH.

^{††}Upright/Inverted Cup results obtained per ASTM E96 water method at 23°C, 50% RH. All samples studied using 0.001 inch thick films.

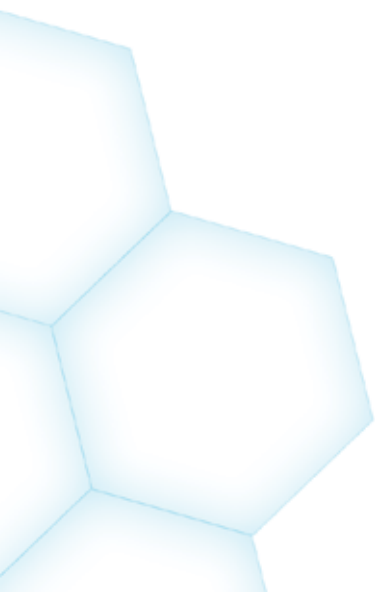
^{†††}Oxygen permeability studied using non-hydrated films at 0.001 inch thickness. Testing performed on Mocon OX-TRAN® 2/21 per ASTM D3985 at 23°C, 0% RH.

Product	Hardness	Ultimate Elongation % Dry/Wet*	H ₂ O Absorption**
TG-500	60D DRY	100/200	500%
TG-2000	60D DRY	100/WEAK GEL	900%

*Ult. Elongation (%): ASTM D412, **H₂O Absorption: Lubrizol Method

Lubrizol LifeSciences - Linking science to advanced wound care through durability, biocompatibility, and unique barrier properties to protect wounds, absorb exudate, and effectively balance moisture vapor transmission rates (MVTR).





Lubrizon LifeSciences



Lubrizon Advanced Materials, Inc.
Global Headquarters | 9911 Brecksville Road | Cleveland, OH 44141-3201 USA

For more information, visit Lubrizon.com/LifeSciences or call us at 216-447-5000 / 888-234-2436 (toll-free)

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