

# Materials

**Hallite Sealing Products are available from MARYLAND METRICS**

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# Materials

Hallite Seals' materials, including thermo plastic elastomers, unique bearing compounds, nitrile rubbers and rubber-fabric, provide a range of characteristics to complement and enhance seal designs, providing products for numerous applications.



Material name	Material group	Designation
Nitrile - medium	Synthetic rubber	NBR
Nitrile - high	Synthetic rubber	NBR
Nitrile - low	Synthetic rubber	NBR
Nitrile - medium	Synthetic rubber	NBR
Nitrile - medium	Synthetic rubber	NBR
Nitrile - medium	Synthetic rubber	NBR
Nitrile - medium	Synthetic rubber	NBR
Nitrile - low	Synthetic rubber	NBR
Nitrile - medium	Synthetic rubber	NBR
Hallprene - rubber / fabric	Composite	Cotton/ NBR
Fluoroelastomer rubber / fabric	Composite	Cotton/ FKM
Fluoroelastomer	Synthetic rubber	FKM
Hythane 181	TPE	EU
Hallite 361	TPE	AU
Polyurethane	TPE	AU
Polyurethane	TPE	EU
Polyurethane	TPE	EU
Polyurethane	TPE	EU
Standard polyester elastomer	TPE	
Hydrolysis stabilised polyester elastomer	TPE	
Hydrolysis stabilised polyester elastomer	TPE	
Hydrolysis stabilised polyester elastomer	TPE	
Lubricated polyester elastomer	TPE	
Acetal	Eng. plastic	POM
PTFE glass filled	Eng. plastic	PTFE
PTFE glass / MoS2 filled	Eng. plastic	PTFE
PTFE Bronze filled	Eng. plastic	PTFE
PTFE Bronze filled	Eng. plastic	PTFE
Hallite 506 polyester / polyester	Composite	
Nylon 12	Eng. plastic	PA
Nylon 6 / MoS2	Eng. plastic	PA
Glass filled Nylon	Eng. plastic	PA

Temperature range		Hardness	Colour	Rod	Piston	Wiper	Bearing		Products	Compound reference
°C	°F									
-30 +120	-22 +250	90 IRHD	Black	H		H			11, 12, 13, 14, Vee rings, 33	9000141
-10 +140	-14 +284	80 IRHD	Black	P	P	P			Special material option	9000041
-45 +100	-45 +212	80 IRHD	Black			H			Special material option	9000471
-30 +120	-22 +250	78 IRHD	Black		H			M(1)	50, 53, 65, 68, 77, 730, 735, 753 Sealing elements	9001411
-30 +120	-22 +250	75 IRHD	Black	H	H				15	9000801
-30 +120	-22 +250	73 IRHD	Black	H	H				18	9000271
-30 +120	-22 +250	70 IRHD	Black	H	H				16, 54, 754, 755, 770	9000771
-45 +100	-45 +212	70 IRHD	Black	H	H				Special material option 15, 18, 56, 58	9000211
-30 +120	-22 +250	65 IRHD	Black		H				56, 58	9000111
-30 +120	-22 +250		Black	H	H				11, 13, 14, 15, 18, 21, 51, 52, 56, 58	9400251
-20 +150	-4 +302		Black	H	H				Special material option for standard rubber and rubber /fabric products. [Additional tooling may be required]	9400431
-20 +200	-4 +392	75 IRHD	Black	HP	HP	HP			Special material option for standard rubber and rubber /fabric products. [Additional tooling may be required]	9020051
-45 +110	-50 +230	93 IRHD	Blue	HP	HP	HP		M	80, 601, 605, 606, 607, 609, 610, 616, 620, 621, 652, 653, 656, 657, 658, 659, 834, 839, 842, 846	9220181
-30 +110	-22 +230	93 IRHD	Orange	H	H	H			764, 775	9220361
-40 +100	-40 +212	94 IRHD	Dark blue			H			860, 862	9220321
-45 +110	-50 +230	93 IRHD	Dark blue			H			520, 831	9220251
-45 +110	-50 +250	93 IRHD	Black	H	H				511, 512, 513	9220221
-40 +100	-40 +212	55D	Green			H		M	Special material option 842	9220371
-40 +120	-40 +250	55D	Red		H	H			38, 754, 755	9270061
-40 +140	-40 +284	55D	Grey	H	H			M	716, 730, 740, 750	9270111
-40 +140	-40 +284	72D	Red		H				754, 755, 770	9270051
-30 +100	-22 +212	40D	Light grey					M(1)	155	9270201
-40 +120	-40 +250	55D	Cream		HP				770	9270261
-45 +120	-50 +250	R115	Orange	H	H		HP	M	AE rings 621, Vee pack headers, Bearing rings 53, 58, 65, 68, 77	9230011
-50 +200	-58 +392	60D	White	HP	HP				16, 54	PTFE02
-50 +200	-58 +392	62D	Grey	H	H		H		416, 454, 735	CDI702
-50 +200	-58 +392	65D	Bronze	H	H				416, 454, 735	CDI741
-50 +200	-58 +392	72D	Bronze				H		87	9200031
-40 +120	-40 +250		Red				HP	M	506, 507	
-40 +120	-40 +250	72D	Brown		H				Support rings 50, 53, 68	9260041
-40 +120	-40 +250	R115	Black		H				AE rings 735	CDI707
-40 +120	-40 +250	R124	Black				H		533	Dynamic 533

Material name	Material group	Designation	Temperature range		Hardness	Colour	Rod	Piston	Wiper	Bearing	Products	Compound reference
			°C	°F								
Nitrile – medium	Synthetic rubber	NBR	-30 +120	-22 +250	90 IRHD	Black	H		H		11, 12, 13, 14, Vee rings, 33	9000141
Nitrile – high	Synthetic rubber	NBR	-10 +140	-14 +284	80 IRHD	Black	P	P	P		Special material option	9000041
Nitrile – low	Synthetic rubber	NBR	-45 +100	-45 +212	80 IRHD	Black	H				Special material option	9000471
Nitrile – medium	Synthetic rubber	NBR	-30 +120	-22 +250	80 IRHD	Black		H			M(1) 50, 53, 65, 68, 77, 730, 735, 753 Sealing elements	9001411
Nitrile – medium	Synthetic rubber	NBR	-30 +120	-22 +250	75 IRHD	Black	H	H			15	9000801
Nitrile – medium	Synthetic rubber	NBR	-30 +120	-22 +250	73 IRHD	Black	H	H			18	9000271
Nitrile – medium	Synthetic rubber	NBR	-30 +120	-22 +250	70 IRHD	Black	H	H			16, 54, 754, 755, 770	9000771
Nitrile – low	Synthetic rubber	NBR	-45 +100	-45 +212	70 IRHD	Black	H	H			Special material option 15, 18, 56, 58	9000211
Nitrile – medium	Synthetic rubber	NBR	-30 +120	-22 +250	70 IRHD	Black	H				56, 58	9000111
Hallprene – rubber / fabric	Composite	Cotton/ NBR	-30 +120	-22 +250		Black	H	H			11, 13, 14, 15, 18, 21, 51, 52, 56, 58	9400251
Fluoroelastomer rubber / fabric	Composite	Cotton/ FKM	-20 +150	-4 +302		Black	H	H			Special material option for standard rubber and rubber /fabric products. [Additional tooling may be required]	9400431
Fluoroelastomer	Synthetic rubber	FKM	-20 +200	-4 +392	75 IRHD	Black	HP	HP	HP		Special material option for standard rubber and rubber /fabric products. [Additional tooling may be required]	9020051
Hythane® 181	TPE	EU	-45 +110	-50 +230	93 IRHD	Blue	HP	HP	HP	M	80, 601, 605, 606, 607, 609, 610, 616, 620, 621, 652, 653, 656, 657, 658, 659, 834, 839, 842, 846	9220181
Hallite® 361	TPE	AU	-30 +110	-22 +230	96 IRHD	Orange	H	H	H		764, 775	9220361
Polyurethane	TPE	AU	-40 +100	-40 +212	94 IRHD	Dark blue			H		860, 862	9220321
Polyurethane	TPE	EU	-45 +110	-50 +230	93 IRHD	Dark blue			H		520, 831	9220251
Polyurethane	TPE	EU	-45 +110	-50 +230	93 IRHD	Black	H	H			511, 512, 513	9220221
Polyurethane	TPE	EU	-40 +100	-40 +212	55D	Green			H	M	Special material option 842	9220371
Standard polyester elastomer	TPE		-40 +120	-40 +250	55D	Red		H	H		38, 754, 755	9270061
Hydrolysis stabilised polyester elastomer	TPE		-40 +140	-40 +284	55D	Grey	H	H		M	716, 730, 740, 750	9270111
Hydrolysis stabilised polyester elastomer	TPE		-40 +140	-40 +284	72D	Dark Red		H			754, 755, 770	9270051
Hydrolysis stabilised polyester elastomer	TPE		-30 +100	-22 +212	40D	Light grey				M(1)	155	9270201
Lubricated polyester elastomer	TPE		-40 +120	-40 +250	55D	Cream		HP			770	9270261
Acetal	Eng. plastic	POM	-45 +120	-50 +250	R115	Orange	H	H		HP	M AE rings 621, Vee pack headers, Bearing rings 53, 58, 65, 68, 77	9230011
PTFE glass filled	Eng. plastic	PTFE	-50 +200	-58 +392	60D	White	HP	HP			16, 54	PTFE02
PTFE glass / MoS <sub>2</sub> filled	Eng. plastic	PTFE	-50 +200	-58 +392	62D	Grey	H	H	H		416, 454, 735	CDI702
PTFE Bronze filled	Eng. plastic	PTFE	-50 +200	-58 +392	65D	Bronze	H	H			416, 454, 735	CDI741
PTFE Bronze filled	Eng. plastic	PTFE	-50 +200	-58 +392	72D	Bronze				H	87	9200031
Hallite® 506 polyester /polyester	Composite		-40 +120	-40 +250		Red				HP	M 506, 507	
Nylon 12	Eng. plastic	PA	-40 +120	-40 +250	72D	Brown		H			Support rings 50, 53, 68	9260041
Nylon 6 / MoS <sub>2</sub>	Eng. plastic	PA	-40 +120	-40 +250	R115	Black		H			AE rings 735	CDI707
Glass filled Nylon	Eng. plastic	PA	-40 +120	-40 +250	R124	Black				H	533	Dynamic 533

Max. continuous working temperatures °C and temperature ranges for materials, within fluid power fluids

Material	Continuous material service temperature range °C	Intermittent material service temperature range °C	Service Fluids									Service Fluids											
			Fluids based on mineral oils				Greases		Fuels			Fire-resistant hydraulic fluids					Environmentally acceptable fluids				Other service fluids		
			Motor oils	Hypoid gear oils	Automatic transmission fluid	ISO 6743-4 Hydraulic oils (HL, HM, HV)	Mineral oil based greases	Silicon based greases	Diesel fuel	Fuel for gasoline/petrol engines - normal	Fuel for gasoline/petrol engines - super	ISO 6743-4 HFA-Fluids (5/99 waterbased)	ISO 6743-4 HFB-Fluids (60/40 invert emulsion)	ISO 6743-4 HFC-Fluids (water glycol)	ISO 6743-4 HFD-Fluids (phosphate ester ALKYL (Aerol))	ISO 6743-4 HFD-Fluids (phosphate ester ARYL (Ind.))	ISO 6743-4 HETG fluids (Vegetable oil based)	ISO 6743-4 HEES fluids (Synthetic ester based)	ISO 6743-4 HEPG fluids (Synthetic glycol based)	ISO 6743-4 HEPR fluids (Synthetic hydrocarbons)	Water	Air	Brake fluids
			+150 -40	+150 -40	+160 -50	+100 -30	+100 -30	+250 -50				+60 +5	+60 +5	+60 -30	+100 -50	+150 -0	+60 -10	+100 -40	+100 -50	+150 -50	+60 (1) -5	+200 +2	+130 -50
<b>Maximum continuous service temperature in fluids °C</b>												<b>Maximum continuous service temperature in fluids °C</b>											
NBR 70 IRHD NBR 90 IRHD Nitrile (medium)	+100 -30	+120 -30	100	90	100	100	100	100	*	*	*	60	60	60	NS	NS	60	60	60	100	80	100	NS
FKM 75 IRHD FKM 90 IRHD Fluoro-elastomer	+200 -20	+250 -20	150	150	160	100	100	200	150	150	150	60	60	NS	NS	150	60	100	80	150	100	200	NS
EPDM 70 IRHD EPDM 80 IRHD	+120 -50	+150 -50	NS	NS	NS	NS	NS	120	NS	NS	NS	NS	NS	60	80	80	NS	NS	NS	NS	120	120	120
VMQ 70 IRHD Silicone	+200 -55	+250 -55	*	*	*	*	100	*	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	*	100	200	80
HNBR 75 IRHD Hydrogenated nitrile	+130 -30	+150 -30	130	110	130	100	100	130	*	*	*	60	60	60	NS	NS	60	60	80	130	130	130	NS
IIR Butyl	+120 -40	+140 -40	NS	NS	NS	NS	NS	120	NS	NS	NS	NS	NS	60	100	120	NS	NS	NS	NS	120	120	80
FFKM Perfluoro-elastomer	+300 +200 -40 -20		150	150	160	100	100	200	150	150	150	60	60	60	100	150	60	100	100	150	150	200	130
AU Polyester PU	+100 -30	+110 -30	100	100	100	100	100	100	60	60	60	40	40	NS	NS	NS	60	60	60	100	40	40	NS
EU Polyether PU	+100 -40	+110 -45	100	100	100	100	100	100	60	60	60	60	60	40	NS	NS	60	80	60	100	60	80	NS
Polyester- Elastomer	+100 -40	+120 -40	100	100	100	100	100	100	60	60	60	60	60	NS	NS	NS	60	80	60	100	60	80	NS
PA Polyamide	+100 -40	+120 -40	100	100	100	100	100	100	100	100	100	60	60	60	100	100	60	100	100	100	60	80	80
POM Acetal	+100 -45	+120 -40	100	100	100	100	100	100	100	100	100	60	60	60	100	100	60	100	100	100	80	80	80
PPS Polyphenylene sulphide	+200 -40	+200 -40	150	150	160	100	100	200	150	150	150	60	60	60	100	150	60	100	100	150	150	200	130
PTFE Polytetra-fluoroethylene	+200 -200	+200 -200	150	150	160	100	100	200	150	150	150	60	60	60	100	150	60	100	100	150	150	200	130
Thermosetting polyester resin	+200 -200	+130 -200	100	100	100	100	100	100	100	100	100	60	60	40	100	100	60	100	100	100	80	100	NS
PEEK Polyether-etherketone	+250 -65	+300 -65	150	150	160	100	100	250	150	150	150	60	60	60	100	150	60	100	100	150	150	200	130

## Hallite Seals

Hallite produces high performance hydraulic sealing solutions for the world's fluid power industry. The company enjoys an enviable reputation for high quality and reliability within the mobile hydraulics, mining, off-highway, construction, agriculture, mechanical handling and automation markets.

Hallite products, engineered in a wide variety of advanced materials, are chosen by leading manufacturers for their exceptional performance in the most demanding, safety-critical high specification applications.

Hallite operations are located in Australia, Canada, China, France, Germany, Italy, the UK and the USA. All Hallite locations are committed to providing quality seals in the shortest possible time. Hallite combines carefully chosen and managed stocks in local markets, supported by a fast track moulding capability. Most locations can now boast a CNC machining cell, branded Hallite Service, which can provide immediate delivery for non-standard and breakdown situations.

Additionally a worldwide network of service partners completes the global presence and ensures the full range of Hallite products is readily accessible.

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member of the global group **Fenner**