



ESC
ENGINEERED SEALS & COMPONENTS, LLC.

ESC FAMILY OF WEAR COMPOUNDS





NOTES

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



Product Information

ESC's standard materials used in Wear Ring manufacturing. These are the most common materials used. Please contact ESC for specialty grades to meet your specific needs.

ESC-Ion™ NYLON Wear Ring Materials

Property	Test Method	Units	COMPOUND NUMBER				
			PA940-B 40% GF 6 NYLON / PROPRIETARY LUBRICANT	PA940 40% GF 6 NYLON	PA940-15 40% GF 6 NYLON / PTFE	PA940-CB 40% GF 6 NYLON / PROPRIETARY LUBRICANT	PA933-BK 33% GF 6/6 NYLON / PROPRIETARY LUBRICANT
			Value	Value	Value	Value	Value
Tensile Strength	ASTM D638	Mpa (psi)	184 (26,700)	169 (24,500)	138 (20,000)	169 (24,500)	186 (27,000)
Tensile Elongation	ASTM D638	%	2.5	2.5	3	2.5	3
Tensile Modulus	ASTM D638	Mpa (psi)	13,000 (1,980,000)	13,10 (1,900,000)	12,756 (1,850,000)	10,135 (1,470,000)	11,032 (1,600,000)
Flexural Strength	ASTM D790	Mpa (psi)	280 (40,600)	262 (38,000)	234 (34,000)	263 (38,142)	276 (40,000)
Flexural Modulus	ASTM D790	Mpa (psi)	11,721 (1,700,000)	11,031 (1,600,000)	12,066 (1,750,000)	10,273 (1,490,000)	810,800 (1,200,000)
Shear Strength	ASTM D2344	Mpa (psi)					
Compressive Strength	ASTM D695	Mpa (psi)	193 (28,000)	165 (24,000)	138 (20,000)	165 (24,000)	227 (33,000)
Parallel to laminate	ASTM D695	Mpa (psi)					
Normal to laminate	ASTM D695	Mpa (psi)					
Hardness, Rockwell	ASTM D785	R	R120	R120	R120	R120	R120
Specific Gravity	ASTM D792		1.49	1.46	1.60	1.44	1.40
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	1.0	1.0	1.0	1.0	0.9
Coefficient of Friction (Dynamic)		40 psi, 50 fpm	0.27	0.30	0.25	0.23	0.27
Deflection Temperature C (F)							
@264 psi (1.8 Mpa)	ASTM D648	°C (°F)	204 (400)	204 (400)	204 (400)	204 (400)	260 (500)
@66 psi (0.45Mpa)	ASTM D648	°C (°F)	210 (410)	210 (410)	210 (410)	210 (410)	252 (486)
Coefficient of Linear Thermal Expansion	ASTM D696	m/m/C (in/in/F)	.000027 (.000015)	.000027 (.000015)	.000027 (.000015)	.000027 (.000015)	.000026 (.000012)
Tg-Glass Transition		C° (F°)	60 (140)	60 (140)	60 (140)	60 (140)	60 (140)
Service Range		Degrees F	-65F to +275F	-65F to +275F	-65F to +275F	-65F to +275F	-65F to +275F
Operating Speed- MAX.		m / sec. (feet / sec)	4.6 (15.0)	4.6 (15.0)	4.6 (15.0)	4.6 (15.0)	4.6 (15.0)
Color			Black	Black	Black	"CB" Blue	Black

* Estimated By the Laboratory.

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Product Information

ESC's standard materials used in Wear Rings manufacturing. These are the most common materials used. Please contact ESC for specialty grades to meet your specific needs.

ESC-Ion™ "Zero Swell" / Low Friction Wear Ring Materials

Property	Test Method	Units	COMPOUND NUMBER				
			HTN-40	HTN-30C	V-100	POM-95	POM-10C
			40% Glass Filled	30% Carbon Filled with PROPRIETARY LUBRICANT	COMPOSITE POLYESTER/ POLYESTER	Acetal	Carbon Filled POM
			Value	Value	Value	Value	Value
Tensile Strength	ASTM D638	Mpa (psi)	207 (30,000)	283 (41,000)	76 (11,000)	55 (8,000)	106 (15,500)
Tensile Elongation	ASTM D638	%	2.0	1.4	NA	>10	3-4
Tensile Modulus	ASTM D638	Mpa (psi)	14,135 (2,050,000)	24,821 (3,600,000)	76 (11,000)	241 (35,000)	8,618 (1,250,000)
Flexural Strength	ASTM D790	Mpa (psi)	307 (44,500)	440 (63,870)	NA	90 (13,000)	155 (22,500)
Flexural Modulus	ASTM D790	Mpa (psi)	13,100 (1,900,000)	21,373 (3,100,000)	3,309 (480,000)	2,448 (355,000)	(1,070,000)
Compressive Strength	ASTM D695	Mpa (psi)	207 (30,000*)	241* (35,000*)		36 (5200)	104* (15,000*)
Normal to laminate		Mpa (psi)			345 (50,000)		
Parallel to laminate		Mpa (psi)			100 (14,500)		
Notched 1/8"	ASTM D256	J/m (ft-lb/in)	91 (1.7)	78 (1.60)	NA	80 (1.5)	(1.2)
Unnotched 1/8"	ASTM D256	J/m (ft-lb/in)	641 (12.0)	705 (14.45)	NA	1,495 (28.0)	(10)
Hardness, Rockwell	ASTM D785	R	R125	R125	R135	R80	R110
Specific Gravity	ASTM D792		1.52	1.40	NA	1.41	1.42
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	0.23	.20	<0.1	.12	.12
Coefficient of Friction (Dynamic)	40 psi, 50 fpm		0.32	.18	.17-.12	.21	.20
Heat Deflection Temperature @264 psi (1.8 Mpa)	ASTM D648	°C (°F)	277 (530)	282 (540)	NA	96 (205)	135 (275)
@66 psi (0.45Mpa)	ASTM D648	°C (°F)			NA	154 (309)	
Coefficient of Linear Thermal Expansion Flow	ASTM D696	m/m/C (in/in/F)	.000022 (.000012)	.000022 (.000012)	NA	(.000060)	(.000051)
Tg-Glass Transition		C° (F°)	123 (253)	123 (253)	121 (250)	-50 (-58)	-50 (-58)
Service Range		Degrees F	-65F to +300F	-65F to +300F	-65F to +200F	-40F to +212F	-40F to +225F
Operating Speed- MAX.		m / sec. (feet / sec)	4.6 (15.0)	4.6 (15.0)	4.69 (16.0)	4.6 (15.0)	4.6 (15.0)
Color			Black	Black	Red or or Pearl	Black or White	Royal BLUE

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Product Information

ESC-Ion™ Compound PA101-N

Nylon 6/6, Heat Stabilized, Internally Lubricated

Property	Test Method	Units	PA101-N Value
Tensile Strength	ASTM D638	PSI	12,000
Tensile Elongation	ASTM D638	%	>10
Tensile Modulus	ASTM D638	PSI	400,000
Flexural Strength	ASTM D790	PSI	15,000
Flexural Modulus	ASTM D790	PSI	400,000
Compressive Strength	ASTM D695	PSI	9,500*
Impact Strength			
Notched 1/8"	ASTM D256	ft-lbs/in.	17.7
Unnotched 1/8"	ASTM D256	ft-lbs/in.	No Break
Hardness, Rockwell	ASTM D785	R	120
Specific Gravity	ASTM D792		1.14
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	1.20
Coefficient of Friction (Dynamic)			0.28
Coefficient of Friction (Static)			
Deflection Temperature			
@264 psi (1.8 Mpa)	ASTM D648	°F	175
@66 psi (0.45Mpa)	ASTM D648	°F	410
Coefficient of Linear Thermal Expansion	ASTM D696	in/in/F	0.000072
Shelf Life			10 years
Service Temperature Range		Degrees F	-40F to + 230F
Color			OFF WHITE

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Product Information

ESC-Ion™ Compound PA101-BK **Nylon 6/6, Heat Stabilized, Internally Lubricated**

Property	Test Method	Units	PA101-BK Value
Tensile Strength	ASTM D638	PSI	12,000
Tensile Elongation	ASTM D638	%	>10
Tensile Modulus	ASTM D638	PSI	400,000
Flexural Strength	ASTM D790	PSI	15,000
Flexural Modulus	ASTM D790	PSI	400,000
Compressive Strength	ASTM D695	PSI	9,500*
Impact Strength			
Notched 1/8"	ASTM D256	ft-lbs/in.	17.7
Unnotched 1/8"	ASTM D256	ft-lbs/in.	No Break
Hardness, Rockwell	ASTM D785	R	120
Specific Gravity	ASTM D792		1.14
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	1.20
Coefficient of Friction (Dynamic)			0.28
Coefficient of Friction (Static)			
Deflection Temperature			
@264 psi (1.8 Mpa)	ASTM D648	°F	175
@66 psi (0.45Mpa)	ASTM D648	°F	410
Coefficient of Linear Thermal Expansion	ASTM D696	in/in/F	0.000072
Shelf Life			10 years
Service Temperature Range		Degrees F	-40F to + 230F
Color			BLACK

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Product Information

ESC-Ion™ Compound PA101-BLU **Nylon 6/6, Heat Stabilized, Internally Lubricated**

Property	Test Method	Units	PA101-BLU Value
Tensile Strength	ASTM D638	PSI	12,000
Tensile Elongation	ASTM D638	%	>10
Tensile Modulus	ASTM D638	PSI	400,000
Flexural Strength	ASTM D790	PSI	15,000
Flexural Modulus	ASTM D790	PSI	400,000
Compressive Strength	ASTM D695	PSI	9,500*
Impact Strength			
Notched 1/8"	ASTM D256	ft-lbs/in.	17.7
Unnotched 1/8"	ASTM D256	ft-lbs/in.	No Break
Hardness, Rockwell	ASTM D785	R	120
Specific Gravity	ASTM D792		1.14
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	1.20
Coefficient of Friction (Dynamic)			0.28
Coefficient of Friction (Static)			
Deflection Temperature			
@264 psi (1.8 Mpa)	ASTM D648	°F	175
@66 psi (0.45Mpa)	ASTM D648	°F	410
Coefficient of Linear Thermal Expansion	ASTM D696	in/in/F	0.000072
Shelf Life			10 years
Service Temperature Range		Degrees F	-40F to + 230F
Color			BLUE

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Product Information

ESC-Ion™ Compound PA940

Nylon 6 Glass Fiber Reinforced (40%), Heat Stabilized

Property	Test Method	Units	PA940 Value
Tensile Strength	ASTM D638	PSI	24,500
Tensile Elongation	ASTM D638	%	2.5
Tensile Modulus	ASTM D638	PSI	1,900,000
Flexural Strength	ASTM D790	PSI	38,000
Flexural Modulus	ASTM D790	PSI	1,600,000
Compressive Strength	ASTM D695	PSI	24,000
Impact Strength			
Notched 1/8"	ASTM D256	J/m (ft-lb/in)	133 (2.5)
Unnotched 1/8"	ASTM D256	J/m (ft-lb/in)	1270 (24)
Hardness, Rockwell	ASTM D785	R	120
Specific Gravity	ASTM D792		1.46
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	1
Coefficient of Friction (Dynamic)			0.30
Coefficient of Friction (Static)			
Deflection Temperature			
@264 psi (1.8 Mpa)	ASTM D648	C (F)	204 (400)
@66 psi (0.45Mpa)	ASTM D648	C (F)	210 (410)
Coefficient of Linear Thermal Expansion	ASTM D696	in/in/F	0.000015
Shelf Life			10 years
Service Temperature Range		Degrees F	-40F to + 275F
Color			BLACK

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Product Information

ESC-Ion™ Compound PA940-B

Nylon 6 Glass Fiber Reinforced (40%), Heat Stabilized, Internally Lubricated

Property	Test Method	Units	PA940-B Value
Tensile Strength	ASTM D638	PSI	26,700
Tensile Elongation	ASTM D638	%	2.5
Tensile Modulus	ASTM D638	PSI	1,980,000
Flexural Strength	ASTM D790	PSI	40,600
Flexural Modulus	ASTM D790	PSI	1,700,000
Compressive Strength	ASTM D695	PSI	28,000
Impact Strength			
Notched 1/8"	ASTM D256	J/m (ft-lb/in)	
Unnotched 1/8"	ASTM D256	J/m (ft-lb/in)	
Hardness, Rockwell	ASTM D785	R	120
Specific Gravity	ASTM D792		1.49
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	1.00
Coefficient of Friction (Dynamic)			0.34
Coefficient of Friction (Static)			0.28
Deflection Temperature			
@264 psi (1.8 Mpa)	ASTM D648	C (F)	204 (400)
@66 psi (0.45Mpa)	ASTM D648	C (F)	210 (410)
Coefficient of Linear Thermal Expansion	ASTM D696	in/in/F	0.000015
Shelf Life			10 years
Service Temperature Range		Degrees F	-40F to + 275F
Color			BLACK

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Product Information

ESC-Ion™ Compound PA940-15

Nylon 6 Glass Fiber Reinforced (40%), Heat Stabilized, Internally Lubricated

Property	Test Method	Units	PA940-15 Value
Tensile Strength	ASTM D638	PSI	21,500
Tensile Elongation	ASTM D638	%	2.0-3.0
Tensile Modulus	ASTM D638	PSI	1,850,000
Flexural Strength	ASTM D790	PSI	36,000
Flexural Modulus	ASTM D790	PSI	1,750,000
Compressive Strength	ASTM D695	PSI	20,000*
Impact Strength			
Notched 1/8"	ASTM D256	ft-lb/in	2.63
Unnotched 1/8"	ASTM D256	ft-lb/in	19.54
Hardness, Rockwell	ASTM D785	R	120
Specific Gravity	ASTM D792		1.6
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	1.00
Coefficient of Friction (Dynamic)			0.25
Coefficient of Friction (Static)			
Deflection Temperature			
@264 psi (1.8 Mpa)	ASTM D648	°F	400
@66 psi (0.45Mpa)	ASTM D648	°F	410
Coefficient of Linear Thermal Expansion	ASTM D696	in/in/F	0.000015
Shelf Life			10 years
Service Temperature Range		Degrees F	-40F to + 275F
Color			BLACK

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Product Information

ESC-Ion™ Compound PA940-CB

Nylon 6 Glass Fiber Reinforced (40%), Heat Stabilized, Internally Lubricated

Property	Test Method	Units	PA9440-CB Value
Tensile Strength	ASTM D638	PSI	24,500
Tensile Elongation	ASTM D638	%	2.5
Tensile Modulus	ASTM D638	PSI	1,470,000
Flexural Strength	ASTM D790	PSI	38,142
Flexural Modulus	ASTM D790	PSI	1,490,000
Compressive Strength	ASTM D695	PSI	24,000
Impact Strength			
Notched 1/8"	ASTM D256	ft-lb/in	2.63
Unnotched 1/8"	ASTM D256	ft-lb/in	19.54
Hardness, Rockwell	ASTM D785	R	120
Specific Gravity	ASTM D792		1.44
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	1.00
Coefficient of Friction (Dynamic)			0.23
Coefficient of Friction (Static)			
Deflection Temperature			
@264 psi (1.8 Mpa)	ASTM D648	C (F)	204 (400)
@66 psi (0.45Mpa)	ASTM D648	C (F)	210 (410)
Coefficient of Linear Thermal Expansion	ASTM D696	in/in/F	0.000015
Shelf Life			10 years
Service Temperature Range		Degrees F	-40F to + 275F
Color			BLUE

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Product Information

ESC-Ion™ Compound PA933-BK

Nylon 6/6 Glass Fiber Reinforced (33%), Heat Stabilized, Internally Lubricated

Property	Test Method	Units	PA933-BK Value
Tensile Strength	ASTM D638	PSI	28,000
Tensile Elongation	ASTM D638	%	3.5
Tensile Modulus	ASTM D638	PSI	1,600,000
Flexural Strength	ASTM D790	PSI	40,000
Flexural Modulus	ASTM D790	PSI	1,400,000
Compressive Strength	ASTM D695	PSI	27,000
Impact Strength			
Notched 1/8"	ASTM D256	ft-lbs/in.	11
Unnotched 1/8"	ASTM D256	ft-lbs/in.	0
Hardness, Rockwell	ASTM D785	R	120
Specific Gravity	ASTM D792		1.40
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	0.90
Coefficient of Friction (Dynamic)			0.31
Coefficient of Friction (Static)			0.25
Deflection Temperature			
@264 psi (1.8 Mpa)	ASTM D648	°F	473
@66 psi (0.45Mpa)	ASTM D648	°F	500
Coefficient of Linear Thermal Expansion	ASTM D696	in/in/F	0.000012
Shelf Life			10 years
Service Temperature Range		Degrees F	-40F to + 275F
Color			BLACK

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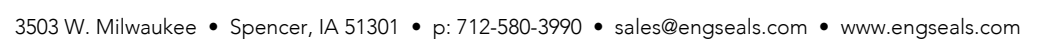
ESC
ENGINEERED SEALS & COMPONENTS, LLC.

ESC Moisture Resistant Wear Compounds





NOTES

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Product Information

ESC-Ion™ Compound HTN-30

"High Temp. Nylon" Glass Fiber Reinforced, Heat Stabilized, Internally Lubricated

Property	Test Method	Units	HTN-30 Value
Tensile Strength	ASTM D638	PSI	29,000
Tensile Elongation	ASTM D638	%	1 to 2
Tensile Modulus	ASTM D638	PSI	1,900,000
Flexural Strength	ASTM D790	PSI	21,000
Flexural Modulus	ASTM D790	PSI	1,850,000
Compressive Strength	ASTM D695	PSI	28,000*
Impact Strength			
Notched 1/8"	ASTM D256	ft-lbs/in.	16.00
Unnotched 1/8"	ASTM D256	ft-lbs/in.	12
Hardness, Rockwell	ASTM D785	R	125
Specific Gravity	ASTM D792		1.70
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	0.20
Coefficient of Friction (Dynamic)			0.32
Coefficient of Friction (Static)			
Deflection Temperature			
@264 psi (1.8 Mpa)	ASTM D648	°F	500
@66 psi (0.45Mpa)	ASTM D648	°F	
Coefficient of Linear Thermal Expansion	ASTM D696	in/in/F	0.000012
Shelf Life			10 years
Service Temperature Range		Degrees F	-40F to + 300F
Color			BLACK

* Estimated by the Laboratory

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Product Information

ESC-Ion™ Compound HTN-40

"High Temp. Nylon" Glass Fiber Reinforced, Heat Stabilized, Internally Lubricated

Property	Test Method	Units	HTN-40 Value
Tensile Strength	ASTM D638	PSI	30,000
Tensile Elongation	ASTM D638	%	2
Tensile Modulus	ASTM D638	PSI	1,800,000
Flexural Strength	ASTM D790	PSI	44,500
Flexural Modulus	ASTM D790	PSI	2,000,000
Compressive Strength	ASTM D695	PSI	30,000*
Impact Strength			
Notched 1/8"	ASTM D256	ft-lbs/in.	1.70
Unnotched 1/8"	ASTM D256	ft-lbs/in.	12
Hardness, Rockwell	ASTM D785	R	125
Specific Gravity	ASTM D792		1.52
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	0.20
Coefficient of Friction (Dynamic)			0.32
Coefficient of Friction (Static)			
Deflection Temperature			
@264 psi (1.8 Mpa)	ASTM D648	°F	540
@66 psi (0.45Mpa)	ASTM D648	°F	
Coefficient of Linear Thermal Expansion	ASTM D696	in/in/F	0.000012
Shelf Life			10 years
Service Temperature Range		Degrees F	-40F to + 300F
Color			BLACK

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Product Information

ESC-Ion™ Compound HTN20-C

"High Temp. Nylon" Carbon Fiber Reinforced, Heat Stabilized, Internally Lubricated

Property	Test Method	Units	HTN20-C Value
Tensile Strength	ASTM D638	PSI	35,000
Tensile Elongation	ASTM D638	%	1.0-2.0
Tensile Modulus	ASTM D638	PSI	2,700,000
Flexural Strength	ASTM D790	PSI	50,000
Flexural Modulus	ASTM D790	PSI	3,100,000
Compressive Strength	ASTM D695	PSI	32,000*
Impact Strength			
Notched 1/8"	ASTM D256	ft-lbs/in.	1.00
Unnotched 1/8"	ASTM D256	ft-lbs/in.	10
Hardness, Rockwell	ASTM D785	R	125
Specific Gravity	ASTM D792		1.28
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	0.20
Coefficient of Friction (Dynamic)			0.18
Coefficient of Friction (Static)			
Deflection Temperature			
@264 psi (1.8 Mpa)	ASTM D648	°F	530
@66 psi (0.45Mpa)	ASTM D648	°F	
Coefficient of Linear			
Thermal Expansion	ASTM D696	in/in/F	0.000012
Shelf Life			10 years
Service Temperature Range		Degrees F	-40F to + 300F
Color			BLACK

* Estimated by the Laboratory

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Product Information

ESC-Ion™ Compound HTN30-C

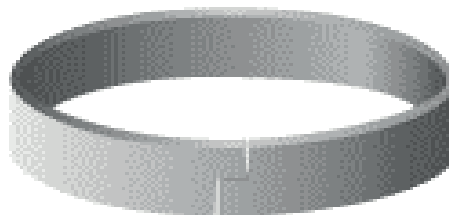
"High Temp. Nylon" Carbon Fiber Reinforced, Heat Stabilized, Internally Lubricated

Property	Test Method	Units	HTN30-C Value
Tensile Strength	ASTM D638	PSI	41,000
Tensile Elongation	ASTM D638	%	1.4
Tensile Modulus	ASTM D638	PSI	3,600,000
Flexural Strength	ASTM D790	PSI	63,780
Flexural Modulus	ASTM D790	PSI	3,100,000
Compressive Strength	ASTM D695	PSI	35000*
Impact Strength			
Notched 1/8"	ASTM D256	ft-lbs/in.	1.60
Unnotched 1/8"	ASTM D256	ft-lbs/in.	14.45
Hardness, Rockwell	ASTM D785	R	125
Specific Gravity	ASTM D792		1.33
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	0.20
Coefficient of Friction (Dynamic)			0.18
Coefficient of Friction (Static)			
Deflection Temperature			
@264 psi (1.8 Mpa)	ASTM D648	°F	540
@66 psi (0.45Mpa)	ASTM D648	°F	
Coefficient of Linear Thermal Expansion	ASTM D696	in/in/F	0.000012
Shelf Life			10 years
Service Temperature Range		Degrees F	-40F to + 300F
Color			BLACK

* Estimated by the Laboratory

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Product Information

ESC-tal™ Standard ESC Acetal Compounds

POM Acetal-Copolymer, Heat Stabilized, Internally Lubricated

Property			POM95-BK	POM10-C-RED	POM20-C	POM-30G
Mechanical				Value	Value	Value
Tensile Strength	ASTM D638	PSI	9,800	15,500	21,500	16,000
Tensile Elongation	ASTM D638	%	9.4	30- 4	2.0 - 3.0	2.0 - 3.0
Tensile Modulus	ASTM D638	PSI	37,700	1,250,000	2,200,000	1,400,000
Flexural Strength	ASTM D790	PSI		22,500	34,000	24,000
Flexural Modulus	ASTM D790	PSI	358,000	1,070,000	1,900,000	1,200,000
Compressive Strength	ASTM D695	PSI	9,000	14,000*	21,000	15,000*
Impact Strength						
Notched 1/8"	ASTM D256	ft-lbs/in.		1.20	1.3	1.4
Unnotched 1/8"	ASTM D256	ft-lbs/in.		10	10.5	10.0
Hardness, Rockwell	ASTM D785	R			M101	M101
Specific Gravity	ASTM D792		1.40	1.42	1.46	1.62
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	0.28	0.28	0.28	0.28
Coefficient of Friction (Dynamic)			0.20	0.05		
Coefficient of Friction (Static)			0.14			
Deflection Temperature						
@264 psi (1.8 Mpa)	ASTM D648	°F	221	275	325	325
@66 psi (0.45Mpa)	ASTM D648	°F	309			
Coefficient of Linear						
Thermal Expansion	ASTM D696	in/in/F	0.000061	0.000051	0.000012	0.000012
Shelf Life			10 years	10 years	10 years	10 years
Service Temperature Range		Degrees F	-40F to + 212F	-40F to + 212F	-40F to + 212F	-40F to + 212F
Color			BLACK	RED	BLACK	BLACK

* Estimated by the Laboratory

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Product Information

ESC-tal™ POM95- BK

POM Acetal-Copolymer, Heat Stabilized, Internally Lubricated

Property			POM95-BK
Mechanical			
Tensile Strength	ASTM D638	PSI	9,800
Tensile Elongation	ASTM D638	%	9.4
Tensile Modulus	ASTM D638	PSI	37,700
Flexural Strength	ASTM D790	PSI	
Flexural Modulus	ASTM D790	PSI	358,000
Compressive Strength	ASTM D695	PSI	9,000
Impact Strength			
Notched 1/8"	ASTM D256	ft-lbs/in.	
Unnotched 1/8"	ASTM D256	ft-lbs/in.	
Hardness, Rockwell	ASTM D785	R	90
Specific Gravity	ASTM D792		1.40
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	0.28
Coefficient of Friction (Dynamic)			0.20
Coefficient of Friction (Static)			0.14
Deflection Temperature			
@264 psi (1.8 Mpa)	ASTM D648	°F	221
@66 psi (0.45Mpa)	ASTM D648	°F	309
Coefficient of Linear Thermal Expansion	ASTM D696	in/in/F	0.000061
Shelf Life			10 years
Service Temperature Range		Degrees F	-40F to + 212F
Color			BLACK

* Estimated by the Laboratory

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Product Information

ESC-tal™ POM-30G

POM Acetal-Copolymer, Heat Stabilized, Internally Lubricated, Fiber Glass Filled

Property	Test Method	Units	POM-30G Value
Tensile Strength	ASTM D638	PSI	16,000
Tensile Elongation	ASTM D638	%	2.0 - 3.0
Tensile Modulus	ASTM D638	PSI	1,400,000
Flexural Strength	ASTM D790	PSI	24,000
Flexural Modulus	ASTM D790	PSI	1,200,000
Compressive Strength	ASTM D695	PSI	15,000*
Impact Strength			
Notched 1/8"	ASTM D256	ft-lbs/in.	1.4
Unnotched 1/8"	ASTM D256	ft-lbs/in.	10.0
Hardness, Rockwell	ASTM D785	R	M101
Specific Gravity	ASTM D792		1.62
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	0.28
Coefficient of Friction (Dynamic)			
Coefficient of Friction (Static)			
Deflection Temperature			
@264 psi (1.8 Mpa)	ASTM D648	°F	325
@66 psi (0.45Mpa)	ASTM D648	°F	
Coefficient of Linear Thermal Expansion	ASTM D696	in/in/F	0.000012
Shelf Life			10 years
Service Temperature Range		Degrees F	-40F to + 212F
Color			BLACK

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Product Information

ESC-tal™ POM20-C

POM Acetal-Copolymer, Heat Stabilized, Internally Lubricated, Carbon Filled

Property	Test Method	Units	POM20-C Value
Tensile Strength	ASTM D638	PSI	21,500
Tensile Elongation	ASTM D638	%	2.0 - 3.0
Tensile Modulus	ASTM D638	PSI	2,200,000
Flexural Strength	ASTM D790	PSI	34,000
Flexural Modulus	ASTM D790	PSI	1,900,000
Compressive Strength	ASTM D695	PSI	21,000
Impact Strength			
Notched 1/8"	ASTM D256	ft-lbs/in.	1.3
Unnotched 1/8"	ASTM D256	ft-lbs/in.	10.5
Hardness, Rockwell	ASTM D785	R	M101
Specific Gravity	ASTM D792		1.46
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	0.28
Coefficient of Friction (Dynamic)			
Coefficient of Friction (Static)			
Deflection Temperature			
@264 psi (1.8 Mpa)	ASTM D648	°F	325
@66 psi (0.45Mpa)	ASTM D648	°F	
Coefficient of Linear			
Thermal Expansion	ASTM D696	in/in/F	0.000012
Shelf Life			10 years
Service Temperature Range		Degrees F	-40F to + 212F
Color			BLACK

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Product Information

ESC-tal™ POM10-C-RED

POM Acetal-Copolymer, Heat Stabilized, Internally Lubricated, Carbon Filled

Property	Test Method	Units	POM10-C-RED Value
Tensile Strength	ASTM D638	PSI	15,500
Tensile Elongation	ASTM D638	%	30- 4
Tensile Modulus	ASTM D638	PSI	1,250,000
Flexural Strength	ASTM D790	PSI	22,500
Flexural Modulus	ASTM D790	PSI	1,070,000
Compressive Strength	ASTM D695	PSI	14.000*
Impact Strength			
Notched 1/8"	ASTM D256	ft-lbs/in.	1.20
Unnotched 1/8"	ASTM D256	ft-lbs/in.	10
Hardness, Rockwell	ASTM D785	R	
Specific Gravity	ASTM D792		1.42
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	0.28
Coefficient of Friction (Dynamic)			0.05
Coefficient of Friction (Static)			
Deflection Temperature			
@264 psi (1.8 Mpa)	ASTM D648	°F	275
@66 psi (0.45Mpa)	ASTM D648	°F	
Coefficient of Linear Thermal Expansion	ASTM D696	in/in/F	0.000051
Shelf Life			10 years
Service Temperature Range		Degrees F	-40F to + 212F
Color			BLACK

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Product Information

ESC-comp™ V-100, V-131A, V-333A, V-111 Laminate Composite Compounds

Property	Test Method	Units	V-131A	V-333A	V-100	V-111
			COMPOSITE MATERIAL	COMPOSITE MATERIAL	COMPOSITE MATERIAL	COMPOSITE MATERIAL
Tensile Strength	ASTM D638	MPa (psi)	75 (11,000)	75 (11,000)	(7,800-8,300)	(7,800-8,300)
Tensile Elongation	ASTM D638	%				
Tensile Modulus	ASTM D638	MPa (psi)				
Flexural Strength	ASTM D790	MPa (psi)				
Flexural Modulus	ASTM D638	Map (psi)	3,240 (470,000)	3,240 (470,000)	(480,000)	(480,000)
Shear Strength	ASTM D2344	psi	83 (12,000)	83 (12,000)	83 (12,000)	83 (12,000)
Compressive Strength	ASTM D695	MPa (psi)				
Normal to laminate	ASTM D695	psi	345 (50,000)	345 (50,000)	345 (50,000)	345 (50,000)
Parallel to laminate	ASTM D695	psi	93 (13,500)	93 (13,500)	(14,500)	(14,500)
Impact Strength		MPa (psi)				
Notched 1/8"	ASTM D256	J/m (ft-lb/in)				
Un-notched 1/8"	ASTM D256	J/m (ft-lb/in)				
Hardness, Rockwell	ASTM D785	R	M100	M100	M100	M100
Specific Gravity	ASTM D792		.047 lb./in sq.	.047 lb./in sq.	.048 lb./in sq.	.048 lb./in sq.
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	<0.1	<0.15	<0.1	<0.1
Coefficient of Friction DRY (Dynamic)			0.15-0.2	0.15-0.2	.12-.17	.12-.17
Deflection Temperature C (F)						
@264 psi (1.8 Map)	ASTM D648	C (F)				
@66 psi (0.45Mpa)	ASTM D648	C (F)				
Coefficient of Linear Thermal Expansion						
68°F to 200°F	Parallel to Laminate	in/in/F	.000035	.00002	.000035	.000035
	Normal to Laminate	in/in/F	.000018	.00004	.000018	.000018
FILLER			Polyester / Polyester Fabric / PTFE	Vinyl Ester / Nomex® / PTFE	Polyester / Polyester Fabric / Special Lub.	Polyester / Polyester Fabric / Graphite Lub.
Operating Temperatures			-40F to +200F	-40F to +400F	-40F to +200F	-40F to +200F
Color			Pearl	Pearl	Red or Aqua	Gray

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Product Information

ESC-comp™ V-100

Laminate Composite, Internally Lubricated

Property	Test Method	Units	V-100 Value
Tensile Strength	ASTM D638	PSI	7,800-8,300
Tensile Elongation	ASTM D638	%	
Tensile Modulus	ASTM D638	PSI	
Flexural Strength	ASTM D790	PSI	
Flexural Modulus	ASTM D790	PSI	480,000
Compressive Strength	ASTM D695	MPa (psi)	
Normal to laminate	ASTM D695	psi	50,000
Parallel to laminate	ASTM D695	psi	14,500
Sear Strength	ASTM D2344	PSI	12,000
Impact Strength			
Hardness, Rockwell	ASTM D785	M	100
Specific Gravity	ASTM D792	lb./in. ³	0.048
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	<0.1
Coefficient of Friction (Dynamic)			.12-.17
Coefficient of Friction (Static)			
Filler			Polyester / Polyester Fabric / Special Lub
Coefficient of Linear			
Thermal Expansion	Parallel to Laminate	(in/in/F)	.000035
68°F to 200°F	Normal to Laminate	(in/in/F)	.000018
Service Temperature Range		Degrees F	-040F to +200F
Color			Red

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Product Information

ESC-comp™ V-111

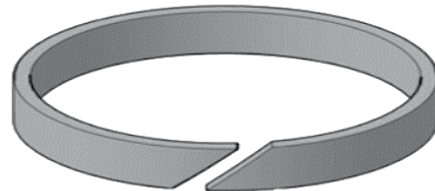
Laminate Composite, Internally Lubricated

Property	Test Method	Units	V-111A Value
Tensile Strength	ASTM D638	PSI	11,000
Tensile Elongation	ASTM D638	%	
Tensile Modulus	ASTM D638	PSI	
Flexural Strength	ASTM D790	PSI	
Flexural Modulus	ASTM D790	PSI	470,000
Compressive Strength	ASTM D695	MPa (psi)	
Normal to laminate	ASTM D695	psi	50,000
Parallel to laminate	ASTM D695	psi	13,500
Sear Strength	ASTM D2344	PSI	12,000
Impact Strength			
Hardness, Rockwell	ASTM D785	M	100
Specific Gravity	ASTM D792	lb./in. ³	0.048
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	<0.1
Coefficient of Friction (Dynamic)			.15-.20
Coefficient of Friction (Static)			
Filler			Polyester / Polyester Fabric / Graphite
Coefficient of Linear			
Thermal Expansion	Parallel to Laminate	(in/in/F)	.000035
68°F to 200°F	Normal to Laminate	(in/in/F)	.000018
Service Temperature Range		Degrees F	-040F to +200F
Color			Pearl

* Estimated by the Laboratory

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We highly recommend testing in your specific application, this is a guide only





Product Information

ESC-comp™ V-131A

Laminate Composite, Internally Lubricated

Property	Test Method	Units	V-131A Value
Tensile Strength	ASTM D638	PSI	11,000
Tensile Elongation	ASTM D638	%	
Tensile Modulus	ASTM D638	PSI	
Flexural Strength	ASTM D790	PSI	
Flexural Modulus	ASTM D790	PSI	470,000
Compressive Strength	ASTM D695	MPa (psi)	
Normal to laminate	ASTM D695	psi	50,000
Parallel to laminate	ASTM D695	psi	13,500
Sear Strength	ASTM D2344	PSI	12,000
Impact Strength			
Hardness, Rockwell	ASTM D785	M	100
Specific Gravity	ASTM D792	lb./in. ³	0.048
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	<0.1
Coefficient of Friction (Dynamic)			.15-.20
Coefficient of Friction (Static)			
Filler			Polyester / Polyester Fabric / PTFE
Coefficient of Linear			
Thermal Expansion	Parallel to Laminate	(in/in/F)	.000035
68°F to 200°F	Normal to Laminate	(in/in/F)	.000018
Service Temperature Range		Degrees F	-040F to +200F
Color			Pearl

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Product Information

ESC-comp™ V-333A

Laminate Composite, Internally Lubricated

Property	Test Method	Units	V-333A Value
Tensile Strength	ASTM D638	PSI	11,000
Tensile Elongation	ASTM D638	%	
Tensile Modulus	ASTM D638	PSI	470,000
Flexural Strength	ASTM D790	PSI	500,000
Flexural Modulus	ASTM D790	PSI	260,000
Compressive Strength	ASTM D695	MPa (psi)	
Normal to laminate	ASTM D695	PSI	50,000
Parallel to laminate	ASTM D695	PSI	13,500
Sear Strength	ASTN D2344	PSI	
Impact Strength			
Hardness, Rockwell	ASTM D785	M	100
Water Absorption			
Water Absorption 24 hrs. @ 73 F (23 C)	ASTM D570	%	<0.15
Coefficient of Friction (Dynamic)			.15-.20
Coefficient of Friction (Static)			
Filler			Vinyl Ester / Nomex® Fabric / PTFE
Coefficient of Linear			
Thermal Expansion	Parallel to Laminate	(in/in/F)	.00002
68°F to 200°F	Normal to Laminate	(in/in/F)	.00004
Service Temperature Range		Degrees F	-040F to +300F
Color			Pearl

* Estimated by the Laboratory

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TYPICAL COMPOUND USAGE AND TEMPERATURE GUIDE

Compound Number			Description	Temperature Range		Typical Usages
				°C	°F	
ESC-Ion™	Compound	PA940	Glass Filled Nylon 6	-54°/+135°	-65°/+275°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-Ion™	Compound	PA940-B	Glass Filled Nylon 6 / Lub	-54°/+135°	-65°/+275°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-Ion™	Compound	PA940-CB	Glass Filled Nylon 6 / Lub (Blue "CB")	-54°/+135°	-65°/+275°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-Ion™	Compound	PA940-15	Glass Filled Nylon 6 / PTFE	-54°/+135°	-65°/+275°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-Ion™	Compound	PA101-N	Nylon Unfilled 6/6	-54°/+135°	-65°/+275°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-Ion™	Compound	PA101-BK	Nylon Unfilled 6/6 Black	-54°/+135°	-65°/+275°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-Ion™	Compound	PA101-BLU	Nylon Unfilled 6/6 Blue	-54°/+135°	-65°/+275°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-Ion™	Compound	PA933-BK	Glass Filled Nylon 6/6	-54°/+135°	-65°/+275°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-Ion™	Compound	HTN20-C	Hi Temp. "No Swell" Carbon Filled	-54°/+148°	-65°/+300°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-Ion™	Compound	HTN30-C	Hi Temp. "No Swell" Carbon Filled	-54°/+148°	-65°/+300°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-Ion™	Compound	HTN-30	Hi Temp. "No Swell" Glass Filled	-54°/+148°	-65°/+300°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-Ion™	Compound	HTN-40	Hi Temp. "No Swell" Glass Filled	-54°/+148°	-65°/+300°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-tal™	Compound	POM95-BK	Acetal Unfilled	-43°/+100°	-45°/+200°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-tal™	Compound	POM-30G	Acetal Glass Filled	-43°/+100°	-45°/+200°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-tal™	Compound	POM-10C-RED	Acetal Carbon Filled	-43°/+100°	-45°/+200°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-tal™	Compound	POM-30C	Acetal Carbon Filled	-43°/+100°	-45°/+200°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-comp™	Compound	V-100	Laminate Composite	-40°/+100°	-40°/+200°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-comp™	Compound	V-111	Laminate Composite	-40°/+100°	-40°/+200°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-comp™	Compound	V-131A	Laminate Composite	-40°/+100°	-40°/+200°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
ESC-comp™	Compound	V-333A	Laminate Composite	-40°/+148°	-40°/+300°	Wear Rings, Back-ups, Piston Seals, Guide Rings, Bearings
POLY-trel™	Compound	HT40-BK	TPC-ET 40 Shore D, Black	-54°/+121°	-65°/+250°	Back-up Rings, Rod Wipers, Seals, Gaskets, Cushions
POLY-trel™	Compound	HT47-BK	TPC-ET 47 Shore D, Black	-54°/+121°	-65°/+250°	Back-up Rings, Rod Wipers, Seals, Gaskets, Cushions
POLY-trel™	Compound	HT47-N	TPC-ET 47 Shore D, Off White	-54°/+121°	-65°/+250°	Back-up Rings, Rod Wipers, Seals, Gaskets, Cushions
POLY-trel™	Compound	HT47-BLU	TPC-ET 47 Shore D, Blue	-54°/+121°	-65°/+250°	Back-up Rings, Rod Wipers, Seals, Gaskets, Cushions
POLY-trel™	Compound	HT50-OR	TPC-ET 50 Shore D, Orange	-54°/+135°	-65°/+275°	Back-up Rings, Rod Wipers, Seals, Gaskets, Cushions
POLY-trel™	Compound	HT55-OR	TPC-ET 55 Shore D, Orange	-54°/+135°	-65°/+275°	Back-up Rings, Rod Wipers, Rod Seals, Piston Seals, Gaskets
POLY-trel™	Compound	HT55-SOR	TPC-ET 55 Shore D, Orange / Fiber Glass	-54°/+135°	-65°/+275°	Back-up Rings, Rod Wipers, Rod Seals, Piston Seals, Gaskets
POLY-trel™	Compound	HT55-OR	TPC-ET 55 Shore D, Orange	-54°/+135°	-65°/+275°	Back-up Rings, Rod Wipers, Rod Seals, Piston Seals, Gaskets
POLY-trel™	Compound	HT55-BK	TPC-ET 55 Shore D, Black	-54°/+135°	-65°/+275°	Back-up Rings, Rod Wipers, Rod Seals, Piston Seals, Gaskets
POLY-trel™	Compound	HT55-BLU	TPC-ET 55 Shore D, Blue	-54°/+135°	-65°/+275°	Back-up Rings, Rod Wipers, Rod Seals, Piston Seals, Gaskets
POLY-trel™	Compound	HT55SH-OR	TPC-ET 55 Shore D, Orange- Heat Stabilized	-54°/+135°	-65°/+275°	Back-up Rings, Rod Wipers, Rod Seals, Piston Seals, Gaskets
POLY-trel™	Compound	HT55-SHS-OR	TPC-ET 55 Shore D, Orange -Hydrolytically Stabilized	-54°/+135°	-65°/+275°	Back-up Rings, Rod Wipers, Rod Seals, Piston Seals, Gaskets
POLY-trel™	Compound	HT63-N	TPC-ET 63 Shore D, Off White	-54°/+135°	-65°/+275°	Back-up Rings, Rod Wipers, Rod Seals, Piston Seals, Gaskets
POLY-trel™	Compound	HT63-OR	TPC-ET 63 Shore D, Orange	-54°/+135°	-65°/+275°	Back-up Rings, Rod Wipers, Rod Seals, Piston Seals, Gaskets
POLY-trel™	Compound	HT-63-5-OR	TPC-ET 63 Shore D, Orange / Fiber Glass	-54°/+135°	-65°/+275°	Back-up Rings, Piston Seals, Filler Rings
POLY-trel™	Compound	HT-72-N	TPC-ET 72 Shore D, Off White	-54°/+135°	-65°/+275°	Back-up Rings, Piston Seals, Filler Rings
ESC-thane™	Compound	U95K-BLU	TPU Urethane 95 Shore A, Blue	-40°/+121°	-40°/+250°	Back-up Rings, Rod Wipers, Rod Seals, Piston Seals, Gaskets
ESC-thane™	Compound	U95K-BLK	TPU Urethane 95 Shore A, Black	-40°/+121°	-40°/+250°	Back-up Rings, Rod Wipers, Rod Seals, Piston Seals, Gaskets
ESC-thane™	Compound	U94-BK	TPU Urethane 94 Shore A, Black	-40°/+110°	-40°/+230°	Back-up Rings, Rod Wipers, Rod Seals, Piston Seals, Gaskets
ESC-thane™	Compound	U94-BLU	TPU Urethane 94 Shore A, Blue	-40°/+110°	-40°/+230°	Back-up Rings, Rod Wipers, Rod Seals, Piston Seals, Gaskets
ESC-thane™	Compound	U65D-N	Urethane 65 Shore D, Milky	-40°/+110°	-40°/+230°	Back-up Rings, Rod Wipers, Rod Seals, Piston Seals, Gaskets
ESC-thane™	Compound	U95-HT	Urethane PPDI 95 Shore A	-40°/+135°	-40°/+275°	Back-up Rings, Rod Wipers, Rod Seals, Piston Seals, Gaskets
ESC-thane™	Compound	U95-LT	Urethane PPDI 95 Shore A	-54°/+121°	-65°/+250°	Back-up Rings, Rod Wipers, Rod Seals, Piston Seals, Gaskets

Complete physical specifications can be found at [www. engseals.com](http://www.engseals.com)





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