

Texin® 255

Thermoplastic Polyurethane Elastomer (Polyester)

Covestro - PUR

Message:

Texin 255 resin is a polyester-based thermoplastic polyurethane with a Shore hardness of approximately 55D. It can be processed by injection molding;extrusion processes are not recommended.

General Information			
Features	Impact resistance, good		
	Good flexibility		
	Good wear resistance		
	Fuel resistance		
	Oil resistance		
	Good toughness		
	Compliance of Food Exposure		
Uses	Wheels		
	Gear		
	Washer		
	Seals		
Agency Ratings	FDA 21 CFR 177.1680		
	FDA 21 CFR 177.2600		
Appearance	Natural color		
Processing Method	Injection molding		
Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.21	g/cm³	ASTM D792, ISO 1183
Molding Shrinkage			
Flow: 2.54mm	0.80	%	ASTM D955
Transverse flow: 2.54mm	0.80	%	ASTM D955
Vertical flow direction: 2.54mm	0.80	%	ISO 2577
Flow direction: 2.54mm	0.80	%	ISO 2577
Hardness	Nominal Value	Unit	Test Method
Durometer Hardness (Shore D)	55		ASTM D2240, ISO 868
Mechanical	Nominal Value	Unit	Test Method
Flexural Modulus			ASTM D790, ISO 178
-30°C	1210	MPa	ASTM D790, ISO 178
23°C	68.9	MPa	ASTM D790, ISO 178
70°C	51.7	MPa	ASTM D790, ISO 178

Shear Strength	38.5	MPa	ASTM D732
Taber Abrasion Resistance			
1000 Cycles, 1000g, H-18 wheel	50.0	mg	ISO 4649
1000 Cycles, 1000g, H-18 wheel	50.0	mg	ASTM D1044
Elastomers	Nominal Value	Unit	Test Method
Tensile Stress			
50% strain	12.4	MPa	ISO 37, ASTM D412
100% strain	15.9	MPa	ASTM D412, ISO 37
300% strain	32.4	MPa	ASTM D412, ISO 37
Tensile Strength (Yield)	63.4	MPa	ASTM D412, ISO 37
Tensile Elongation (Break)	500	%	ASTM D412, ISO 37
Tear Strength			
-- ¹	158	kN/m	ASTM D624
--	160	kN/m	ISO 34-1
Compression Set			ASTM D395B, ISO 815
23°C, 22 hr ²	15	%	ASTM D395B, ISO 815
23°C, 22 hr	20	%	ASTM D395B, ISO 815
70°C, 22 hr ³	35	%	ASTM D395B, ISO 815
70°C, 22 hr	65	%	ASTM D395B, ISO 815
100°C, 22 hr ⁴	50	%	ASTM D395B, ISO 815
100°C, 22 hr	75	%	ASTM D395B, ISO 815
Bayshore Resilience	40	%	ASTM D2632
Impact	Nominal Value	Unit	Test Method
Instrumented Dart Impact ⁵			ASTM D3763
-30°C, 2.54 mm, Total Energy	50.0	J	ASTM D3763
23°C, 2.54 mm, Total Energy	57.8	J	ASTM D3763
Aging	Nominal Value	Unit	Test Method
Change in Tensile Strength in Air			
100°C, 70 hr	3.0	%	ASTM D573, ISO 216
100% strain, 100°C, 70 hr	11	%	ASTM D573
300% strain, 100°C, 70 hr	1.0	%	ASTM D573
100°C, 168 hr	8.0	%	ASTM D573, ISO 216
100% strain, 100°C, 168 hr	4.0	%	ASTM D573
300% strain, 100°C, 168 hr	-5.0	%	ASTM D573
100°C, 336 hr	14	%	ASTM D573, ISO 216
100% strain, 100°C, 336 hr	13	%	ASTM D573
300% strain, 100°C, 336 hr	-1.0	%	ASTM D573
100°C, 504 hr	14	%	ASTM D573, ISO 216
100% strain, 100°C, 504 hr	14	%	ASTM D573
300% strain, 100°C, 504 hr	1.0	%	ASTM D573
125°C, 70 hr	-20	%	ASTM D573, ISO 216
100% strain, 125°C, 70 hr	7.0	%	ASTM D573

300% strain, 125°C, 70 hr	-23	%	ASTM D573
125°C, 168 hr	-11	%	ASTM D573, ISO 216
100% strain, 125°C, 168 hr	-2.0	%	ASTM D573
300% strain, 125°C, 168 hr	-15	%	ASTM D573
125°C, 336 hr	-23	%	ASTM D573, ISO 216
100% strain, 125°C, 336 hr	8.0	%	ASTM D573
300% strain, 125°C, 336 hr	-27	%	ASTM D573
125°C, 504 hr	-27	%	ASTM D573, ISO 216
100% strain, 125°C, 504 hr	4.0	%	ASTM D573
300% strain, 125°C, 504 hr	-30	%	ASTM D573
100% strain 100°C, 70 hr	11	%	ISO 216
300% strain 100°C, 70 hr	1.0	%	ISO 216
100% strain 100°C, 168 hr	4.0	%	ISO 216
300% strain 100°C, 168 hr	-5.0	%	ISO 216
100% strain 100°C, 336 hr	13	%	ISO 216
300% strain 100°C, 336 hr	-1.0	%	ISO 216
100% strain 100 c, 504 hr	14	%	ISO 216
300% strain 100 c, 504 hr	1.0	%	ISO 216
100% strain 125°C, 70 hr	7.0	%	ISO 216
300% strain 125°C, 70 hr	-23	%	ISO 216
100% strain 125°C, 168 hr	-2.0	%	ISO 216
300% strain 125°C, 168 hr	-15	%	ISO 216
100% strain 125°C, 336 hr	8.0	%	ISO 216
300% strain 125°C, 336 hr	-27	%	ISO 216
100% strain 125 c, 504 hr	4.0	%	ISO 216
300% strain 125 c, 504 hr	-30	%	ISO 216
Change in Ultimate Elongation in Air			ASTM D573, ISO 216
100°C, 70 hr	-3.0	%	ASTM D573, ISO 216
100°C, 168 hr	7.0	%	ASTM D573, ISO 216
100°C, 336 hr	14	%	ASTM D573, ISO 216
100°C, 504 hr	15	%	ASTM D573, ISO 216
125°C, 70 hr	28	%	ASTM D573, ISO 216
125°C, 168 hr	24	%	ASTM D573, ISO 216
125°C, 336 hr	35	%	ASTM D573, ISO 216
125°C, 504 hr	30	%	ASTM D573, ISO 216
Change in Durometer Hardness in Air			ASTM D573, ISO 216
Support d, 100°C, 70 hr	-2.0		ASTM D573, ISO 216
Support d, 100°C, 168 hr	-1.0		ASTM D573, ISO 216
Support d, 100 c, 336 hr	0.0		ASTM D573, ISO 216
Support d, 100 c, 504 hr	0.0		ASTM D573, ISO 216
Support d, 125°C, 70 hr	1.0		ASTM D573, ISO 216
Support d, 125°C, 168 hr	0.0		ASTM D573, ISO 216

Support d, 125 c, 336 hr	-5.0		ASTM D573, ISO 216
Support d, 125 c, 504 hr	-4.0		ASTM D573, ISO 216
Change in Tensile Strength			
23°C, 70 hr, Class C Standard Fuel	1.0	%	ASTM D471
100% strain, 23°C, 70 hr, Class C standard fuel	-19	%	ASTM D471
300% strain, 23°C, 70 hr, Class C standard fuel	-22	%	ASTM D471
23°C, 70 hr, in reference fuel A	6.0	%	ASTM D471
100% strain, 23°C, 70 hr, in reference fuel A	2.0	%	ASTM D471
300% strain, 23°C, 70 hr, in reference fuel A	5.0	%	ASTM D471
23°C, 168 hr, Class C Standard Fuel	-4.0	%	ASTM D471
100% strain, 23°C, 168 hr, Class C standard fuel	-27	%	ASTM D471
300% strain, 23°C, 168 hr, Class C standard fuel	-34	%	ASTM D471
23°C, 168 hr, in reference fuel A	-3.0	%	ASTM D471
100% strain, 23°C, 168 hr, in reference fuel a	-2.0	%	ASTM D471
300% strain, 23°C, 168 hr, in reference fuel a	-11	%	ASTM D471
23°C, 336 hr, Class C Standard Fuel	-10	%	ASTM D471
100% strain, 23°C, 336 hr, Class C standard fuel	-32	%	ASTM D471
300% strain, 23°C, 336 hr, Class C standard fuel	-35	%	ASTM D471
23°C, 336 hr, in reference fuel A	6.0	%	ASTM D471
100% strain, 23°C, 336 hr, in reference fuel A	3.0	%	ASTM D471
300% strain, 23°C, 336 hr, in reference fuel A	-1.0	%	ASTM D471
23°C, 504 hr, Class C Standard Fuel	-11	%	ASTM D471
100% strain, 23°C, 504 hr, Class C standard fuel	-27	%	ASTM D471
300% strain, 23°C, 504 hr, Class C standard fuel	-28	%	ASTM D471
23°C, 504 hr, in reference fuel A	-1.0	%	ASTM D471
100% strain, 23°C, 504 hr, in reference fuel A	5.0	%	ASTM D471
300% strain, 23°C, 504 hr, in reference fuel A	3.0	%	ASTM D471
100°C, 70 hr, in ASTM #1 oil	18	%	ASTM D471, ISO 175
100% strain, 100°C, 70 hr, in ASTM #1 oil	12	%	ASTM D471, ISO 175
300% strain, 100°C, 70 hr, in ASTM #1 oil	7.0	%	ASTM D471, ISO 175
100°C, 70 hr, in ASTM #3 oil	19	%	ASTM D471, ISO 175

100% strain, 100°C, 70 hr, in ASTM #3 oil	16	%	ASTM D471, ISO 175
300% strain, 100°C, 70 hr, in ASTM #3 oil	13	%	ASTM D471, ISO 175
100°C, 168 hr, in ASTM #1 oil	-4.0	%	ASTM D471, ISO 175
100% strain, 100°C, 168 hr, in ASTM #1 oil	14	%	ASTM D471, ISO 175
300% strain, 100°C, 168 hr, in ASTM #1 oil	2.0	%	ASTM D471, ISO 175
100°C, 336 hr, in ASTM #1 oil	-20	%	ASTM D471, ISO 175
100% strain, 100°C, 336 hr, in ASTM #1 oil	14	%	ASTM D471, ISO 175
300% strain, 100°C, 336 hr, in ASTM #1 oil	-9.0	%	ASTM D471, ISO 175
100°C, 504 hr, in ASTM #1 oil	-29	%	ASTM D471, ISO 175
100% strain, 100°C, 504 hr, in ASTM #1 oil	15	%	ASTM D471, ISO 175
300% strain, 100°C, 504 hr, in ASTM #1 oil	-14	%	ASTM D471, ISO 175
100°C, 504 hr, in ASTM #3 oil	-18	%	ASTM D471, ISO 175
100% strain, 100°C, 504 hr, in ASTM #3 oil	2.0	%	ASTM D471, ISO 175
300% strain, 100°C, 504 hr, in ASTM #3 oil	-12	%	ASTM D471, ISO 175
23°C, 70 hr, in Reference Fuel C	1.0	%	ISO 175
100% strain, 23 c, 70 hr, in Reference Fuel C	-19	%	ISO 175
300% strain, 23 c, 70 hr, in Reference Fuel C	-22	%	ISO 175
23°C, 70 hr, in reference fuel A (isooctane)	6.0	%	ISO 175
100% strain, 23°C, 70 hr, in reference fuel A (isooctane)	2.0	%	ISO 175
300% strain, 23°C, 70 hr, in reference fuel A (isooctane)	5.0	%	ISO 175
23°C, 168 hr, in Reference Fuel C	-4.0	%	ISO 175
100% strain, 23 c, 168 hr, in Reference Fuel C	-27	%	ISO 175
300% strain, 23 c, 168 hr, in Reference Fuel C	-34	%	ISO 175
23°C, 168 hr, in reference fuel A (isooctane)	-3.0	%	ISO 175
100% strain, 23°C, 168 hr, in reference fuel A (isooctane)	-2.0	%	ISO 175
300% strain, 23°C, 168 hr, in reference fuel A (isooctane)	-11	%	ISO 175
23°C, 336 hr, in Reference Fuel C	-10	%	ISO 175
100% strain, 23 c, 336 hr, in Reference Fuel C	-32	%	ISO 175
300% strain, 23 c, 336 hr, in Reference Fuel C	-35	%	ISO 175

23°C, 336 hr, in reference fuel A (isooctane)	6.0	%	ISO 175
100% strain, 23°C, 336 hr, in reference fuel A (isooctane)	3.0	%	ISO 175
300% strain, 23°C, 336 hr, in reference fuel A (isooctane)	-1.0	%	ISO 175
23°C, 504 hr, in Reference Fuel C	-11	%	ISO 175
100% strain, 23 c, 504 hr, in Reference Fuel C	-27	%	ISO 175
300% strain, 23 c, 504 hr, in Reference Fuel C	-28	%	ISO 175
23°C, 504 hr, in reference fuel A (isooctane)	-1.0	%	ISO 175
100% strain, 23°C, 504 hr, in reference fuel A (isooctane)	5.0	%	ISO 175
300% strain, 23°C, 504 hr, in reference fuel A (isooctane)	3.0	%	ISO 175
Change in Ultimate Elongation			
23°C, 70 hr, Class C Standard Fuel	5.0	%	ASTM D471
23°C, 70 hr, in reference fuel A	-4.0	%	ASTM D471
23°C, 168 hr, Class C Standard Fuel	6.0	%	ASTM D471
23°C, 168 hr, in reference fuel A	9.0	%	ASTM D471
23°C, 336 hr, Class C Standard Fuel	-2.0	%	ASTM D471
23°C, 336 hr, in reference fuel A	-4.0	%	ASTM D471
23°C, 504 hr, Class C Standard Fuel	-8.0	%	ASTM D471
23°C, 504 hr, in reference fuel A	-2.0	%	ASTM D471
100°C, 70 hr, in ASTM #1 oil	8.0	%	ASTM D471, ISO 175
100°C, 70 hr, in ASTM #3 oil	6.0	%	ASTM D471, ISO 175
100°C, 168 hr, in ASTM #1 oil	12	%	ASTM D471, ISO 175
100°C, 336 hr, in ASTM #1 oil	24	%	ASTM D471, ISO 175
100°C, 504 hr, in ASTM #1 oil	16	%	ASTM D471, ISO 175
100°C, 504 hr, in ASTM #3 oil	20	%	ASTM D471, ISO 175
23°C, 70 hr, in Reference Fuel C	5.0	%	ISO 175
23°C, 70 hr, in reference fuel A (isooctane)	-4.0	%	ISO 175
23°C, 168 hr, in Reference Fuel C	6.0	%	ISO 175
23°C, 168 hr, in reference fuel A (isooctane)	9.0	%	ISO 175
23°C, 336 hr, in Reference Fuel C	-2.0	%	ISO 175
23°C, 336 hr, in reference fuel A (isooctane)	-4.0	%	ISO 175
23°C, 504 hr, in Reference Fuel C	-8.0	%	ISO 175
23°C, 504 hr, in reference fuel A (isooctane)	-2.0	%	ISO 175
Change in Durometer Hardness			

Support D, 23°C, 70 hr, in Reference Fuel C	-7.0		ASTM D471, ISO 175
Support D, 23°C, 70 hr, in reference fuel A	-4.0		ASTM D471
Support D, 23°C, 168 hr, in Reference Fuel C	-4.0		ASTM D471, ISO 175
Support D, 23°C, 168 hr, in reference fuel A	1.0		ASTM D471
Support d, 23 c, 336 hr, in Reference fuel c	-6.0		ASTM D471, ISO 175
Support D, 23°C, 336 hr, in reference fuel A	-1.0		ASTM D471
Support D, 23°C, 504 hr, in Reference Fuel C	-8.0		ASTM D471, ISO 175
Support D, 23°C, 504 hr, in reference fuel A	6.0		ASTM D471
Support D, 100°C, 70 hr, in ASTM #1 oil	2.0		ASTM D471
Support D, 100°C, 70 hr, in ASTM #3 oil	2.0		ASTM D471
Support D, 100°C, 168 hr, in ASTM #1 oil	1.0		ASTM D471
Support D, 100°C, 336 hr, in ASTM #1 oil	-2.0		ASTM D471
Support D, 100°C, 504 hr, in ASTM #1 oil	0.0		ASTM D471
Support D, 100°C, 504 hr, in ASTM #3 oil	-1.0		ASTM D471
Support D, 23°C, 70 hr, in reference fuel A (isooctane)	-4.0		ISO 175
Support D, 23°C, 168 hr, in reference fuel A (isooctane)	1.0		ISO 175
Support D, 23°C, 336 hr, in reference fuel A (isooctane)	-1.0		ISO 175
Support D, 23°C, 504 hr, in reference fuel A (isooctane)	6.0		ISO 175
Support D, 100°C, 70 hr, in ASTM #1 oil	2.0		ISO 175
Support D, 100°C, 70 hr, in ASTM #3 oil	2.0		ISO 175
Support D, 100°C, 168 hr, in ASTM #1 oil	1.0		ISO 175
Support D, 100°C, 336 hr, in ASTM #1 oil	-2.0		ISO 175
Support D, 100°C, 504 hr, in ASTM #1 oil	0.0		ISO 175
Support D, 100°C, 504 hr, in ASTM #3 oil	-1.0		ISO 175
Change in Volume			
23°C, 70 hr, Class A standard fuel	0.0	%	ASTM D471
23°C, 70 hr, Class C Standard Fuel	6.0	%	ASTM D471
23°C, 168 hr, Class A standard fuel	0.0	%	ASTM D471
23°C, 168 hr, Class C Standard Fuel	10	%	ASTM D471
23°C, 336 hr, Class A standard fuel	0.0	%	ASTM D471
23°C, 336 hr, Class C Standard Fuel	14	%	ASTM D471
23°C, 504 hr, Class A standard fuel	0.0	%	ASTM D471
23°C, 504 hr, Class C Standard Fuel	14	%	ASTM D471
100°C, 70 hr, ASTM Standard Oil (No.1)	-1.0	%	ASTM D471

100°C, 70 hr, ASTM Standard Oil (No.3)	2.0	%	ASTM D471
100°C, 168 hr, ASTM Standard Oil (No.1)	0.0	%	ASTM D471
100°C, 336 hr, ASTM Standard Oil (No.1)	-1.0	%	ASTM D471
100°C, 504 hr, ASTM Standard Oil (No.1)	-1.0	%	ASTM D471
100°C, 504 hr, ASTM Standard Oil (No.3)	4.0	%	ASTM D471
23°C, 70 hr, in reference fuel A	0.0	%	ISO 175
23°C, 70 hr, in reference fuel C	6.0	%	ISO 175
23°C, 168 hr, in reference fuel A	0.0	%	ISO 175
23°C, 168 hr, in reference fuel C	10	%	ISO 175
23°C, 336 hr, in reference fuel A	0.0	%	ISO 175
23°C, 336 hr, in reference fuel C	14	%	ISO 175
23°C, 504 hr, in reference fuel A	0.0	%	ISO 175
23°C, 504 hr, in reference fuel C	14	%	ISO 175
100°C, 70 hr, in ASTM #1 oil	-1.0	%	ISO 175
100°C, 70 hr, in ASTM #3 oil	2.0	%	ISO 175
100°C, 168 hr, in ASTM #1 oil	0.0	%	ISO 175
100°C, 336 hr, in ASTM #1 oil	-1.0	%	ISO 175
100°C, 504 hr, in ASTM #1 oil	-1.0	%	ISO 175
100°C, 504 hr, in ASTM #3 oil	4.0	%	ISO 175
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load (0.45 MPa, Unannealed)	59.0	°C	ASTM D648, ISO 75-2/B
Brittleness Temperature	< -68.0	°C	ASTM D746, ISO 974
Glass Transition Temperature	-26.0	°C	DMA
Vicat Softening Temperature	168	°C	ISO 306/50, ASTM D1525 ⁶
CLTE - Flow	1.3E-4	cm/cm/°C	ASTM D696
Flammability	Nominal Value		Test Method
Flame Rating (1.50 mm)	HB		UL 94
Additional Information	Nominal Value	Unit	Test Method
Compressive Load			ASTM D575
10% Deflection	7.41	MPa	ASTM D575
15% Deflection	10.1	MPa	ASTM D575
2% Deflection	0.965	MPa	ASTM D575
20% Deflection	12.7	MPa	ASTM D575
25% Deflection	15.5	MPa	ASTM D575
5% Deflection	3.90	MPa	ASTM D575
50% Deflection	40.6	MPa	ASTM D575
Injection	Nominal Value	Unit	
Drying Temperature - Desiccant Dryer	93.0 - 104	°C	
Drying Time - Desiccant Dryer	2.0	hr	
Suggested Max Moisture	< 0.030	%	
Suggested Shot Size	40 - 80	%	

Suggested Max Regrind	20	%
Rear Temperature	193 - 210	°C
Middle Temperature	193 - 216	°C
Front Temperature	199 - 221	°C
Nozzle Temperature	204 - 227	°C
Processing (Melt) Temp	210	°C
Mold Temperature	15.0 - 40.0	°C
Injection Pressure	41.4 - 103	MPa
Clamp Tonnage	4.1 - 6.9	kN/cm ²
Screw L/D Ratio	20.0:1.0	
Screw Compression Ratio	2.5:1.0 - 3.0:1.0	

Injection instructions

Mold Temperature (Stationary Part): 16 to 43°F Mold Temperature (Moving Part): 60 to 100°F 1st Stage: 7000 to 13000 psi 2nd Stage: 6000 to 10000 psi
 Timers (per 0.125 in cross section):
 Boost: 5 to 15 sec
 2nd Stage: 10 to 25 sec
 Cool: 25 to 40 sec

NOTE

1. C mould
2. Post-cured 16 hr at 230°F
3. Post-cured 16 hr at 230°F
4. Post-cured 16 hr at 230°F
5. 3 in clamp
6. 速率 A (50°C/h)

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