

Texin® 990

Thermoplastic Polyurethane Elastomer (Polyether)

Covestro - PUR

Message:

Texin 990 resin is a polyether-based thermoplastic polyurethane with a Shore hardness of approximately 90A. It can be processed by injection molding, extrusion, or blow molding.

General Information			
Features	Food Contact Acceptable		
	Good Abrasion Resistance		
	Good Flexibility		
	Good Impact Resistance		
	Good Toughness		
	High ESCR (Stress Crack Resist.)		
	Hydrolysis Resistant		
	Salt Water/Spray Resistant		
Uses	Cable Jacketing		
	Film		
	Footwear		
	Gaskets		
	Hose		
	Profiles		
	Seals		
	Tubing		
Agency Ratings	Wheels		
	FDA 21 CFR 177.1680		
	FDA 21 CFR 177.2600		
Appearance	NSF 61		
	Natural Color		
Processing Method	Blow Molding		
	Extrusion		
	Injection Molding		
Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.13	g/cm ³	ASTM D792, ISO 1183
Molding Shrinkage			ASTM D955, ISO 2577
Flow : 2.54 mm	0.80	%	

Across Flow : 2.54 mm	0.80	%	
Hardness	Nominal Value	Unit	Test Method
Durometer Hardness (Shore A)	90		ASTM D2240, ISO 868
Mechanical	Nominal Value	Unit	Test Method
Flexural Modulus (23°C)	41.4	MPa	ASTM D790, ISO 178
Taber Abrasion Resistance			
1000 Cycles, 1000 g, H-18 Wheel	25.0	mg	ISO 4649
1000 Cycles, 1000 g, H-18 Wheel	25.0	mg	ASTM D1044
Elastomers	Nominal Value	Unit	Test Method
Tensile Stress			
50% Strain	6.90	MPa	ISO 37, ASTM D412
100% Strain	7.65	MPa	ASTM D412, ISO 37
300% Strain	14.5	MPa	ASTM D412, ISO 37
Tensile Strength (Yield)	41.4	MPa	ASTM D412, ISO 37
Tensile Elongation (Break)	520	%	ASTM D412, ISO 37
Tear Strength			
-- ¹	96.3	kN/m	ASTM D624
--	96	kN/m	ISO 34-1
Compression Set			ASTM D395B, ISO 815
23°C, 22 hr ²	13	%	
23°C, 22 hr	20	%	
70°C, 22 hr ³	35	%	
70°C, 22 hr	75	%	
Bayshore Resilience	40	%	ASTM D2632
Aging	Nominal Value	Unit	Test Method
Change in Tensile Strength in Air			
100°C, 70 hr	16	%	ASTM D573, ISO 216
100% Strain, 100°C, 70 hr	5.0	%	ASTM D573
300% Strain, 100°C, 70 hr	3.0	%	ASTM D573
100°C, 168 hr	24	%	ASTM D573, ISO 216
100% Strain, 100°C, 168 hr	6.0	%	ASTM D573
300% Strain, 100°C, 168 hr	1.0	%	ASTM D573
100°C, 336 hr	27	%	ASTM D573, ISO 216
100% Strain, 100°C, 336 hr	7.0	%	ASTM D573
300% Strain, 100°C, 336 hr	-9.0	%	ASTM D573
100°C, 504 hr	-9.0	%	ASTM D573, ISO 216
100% Strain, 100°C, 504 hr	-3.0	%	ASTM D573
300% Strain, 100°C, 504 hr	-24	%	ASTM D573
100% Strain 100°C, 70 hr	5.0	%	ISO 216
300% Strain 100°C, 70 hr	3.0	%	ISO 216
100% Strain 100°C, 168 hr	6.0	%	ISO 216
300% Strain 100°C, 168 hr	1.0	%	ISO 216

100% Strain 100°C, 336 hr	7.0	%	ISO 216
300% Strain 100°C, 336 hr	-9.0	%	ISO 216
100% Strain 100°C, 504 hr	-3.0	%	ISO 216
300% Strain 100°C, 504 hr	-24	%	ISO 216
Change in Ultimate Elongation in Air			ASTM D573, ISO 216
100°C, 70 hr	16	%	
100°C, 168 hr	20	%	
100°C, 336 hr	36	%	
100°C, 504 hr	68	%	
Change in Durometer Hardness in Air			ASTM D573, ISO 216
Shore D, 100°C, 70 hr	2.0		
Shore D, 100°C, 168 hr	1.0		
Shore D, 100°C, 336 hr	0.0		
Shore D, 100°C, 504 hr	0.0		
Change in Tensile Strength			ASTM D471, ISO 175
23°C, 70 hr, in Reference Fuel A (Isooctane)	12	%	
100% Strain, 23°C, 70 hr, in Reference Fuel A (Isooctane)	-5.0	%	
300% Strain, 23°C, 70 hr, in Reference Fuel A (Isooctane)	-6.0	%	
23°C, 70 hr, in Reference Fuel C	-28	%	
100% Strain, 23°C, 70 hr, in Reference Fuel C	-23	%	
300% Strain, 23°C, 70 hr, in Reference Fuel C	-22	%	
23°C, 168 hr, in Reference Fuel A (Isooctane)	12	%	
100% Strain, 23°C, 168 hr, in Reference Fuel A (Isooctane)	-1.0	%	
300% Strain, 23°C, 168 hr, in Reference Fuel A (Isooctane)	-6.0	%	
23°C, 168 hr, in Reference Fuel C	-25	%	
100% Strain, 23°C, 168 hr, in Reference Fuel C	-20	%	
300% Strain, 23°C, 168 hr, in Reference Fuel C	-19	%	
23°C, 336 hr, in Reference Fuel A (Isooctane)	7.0	%	
100% Strain, 23°C, 336 hr, in Reference Fuel A (Isooctane)	-4.0	%	
300% Strain, 23°C, 336 hr, in Reference Fuel A (Isooctane)	-10	%	
23°C, 336 hr, in Reference Fuel C	-27	%	
100% Strain, 23°C, 336 hr, in Reference Fuel C	-19	%	

300% Strain, 23°C, 336 hr, in Reference Fuel C	-19	%
23°C, 504 hr, in Reference Fuel A (Isooctane)	19	%
100% Strain, 23°C, 504 hr, in Reference Fuel A (Isooctane)	-1.0	%
300% Strain, 23°C, 504 hr, in Reference Fuel A (Isooctane)	-3.0	%
23°C, 504 hr, in Reference Fuel C	-28	%
100% Strain, 23°C, 504 hr, in Reference Fuel C	-16	%
300% Strain, 23°C, 504 hr, in Reference Fuel C	-18	%
100°C, 70 hr, in ASTM #1 Oil	15	%
100% Strain, 100°C, 70 hr, in ASTM #1 Oil	2.0	%
300% Strain, 100°C, 70 hr, in ASTM #1 Oil	-1.0	%
100°C, 70 hr, in ASTM #3 Oil	22	%
100% Strain, 100°C, 70 hr, in ASTM #3 Oil	2.0	%
300% Strain, 100°C, 70 hr, in ASTM #3 Oil	5.0	%
100°C, 168 hr, in ASTM #1 Oil	-10	%
100% Strain, 100°C, 168 hr, in ASTM #1 Oil	4.0	%
300% Strain, 100°C, 168 hr, in ASTM #1 Oil	14	%
100°C, 168 hr, in ASTM #3 Oil	15	%
100% Strain, 100°C, 168 hr, in ASTM #3 Oil	3.0	%
300% Strain, 100°C, 168 hr, in ASTM #3 Oil	5.0	%
100°C, 336 hr, in ASTM #1 Oil	-4.0	%
100% Strain, 100°C, 336 hr, in ASTM #1 Oil	8.0	%
300% Strain, 100°C, 336 hr, in ASTM #1 Oil	1.0	%
100°C, 336 hr, in ASTM #3 Oil	53	%
100% Strain, 100°C, 336 hr, in ASTM #3 Oil	3.0	%
300% Strain, 100°C, 336 hr, in ASTM #3 Oil	3.0	%
100°C, 504 hr, in ASTM #1 Oil	-12	%
100% Strain, 100°C, 504 hr, in ASTM #1 Oil	6.0	%
300% Strain, 100°C, 504 hr, in ASTM #1 Oil	3.0	%
100°C, 504 hr, in ASTM #3 Oil	-2.0	%

100% Strain, 100°C, 504 hr, in ASTM #3 Oil	2.0	%
300% Strain, 100°C, 504 hr, in ASTM #3 Oil	2.0	%
Change in Ultimate Elongation		ASTM D471, ISO 175
23°C, 70 hr, in Reference Fuel A (Isooctane)	11	%
23°C, 70 hr, in Reference Fuel C	4.0	%
23°C, 168 hr, in Reference Fuel A (Isooctane)	0.0	%
23°C, 168 hr, in Reference Fuel C	3.0	%
23°C, 336 hr, in Reference Fuel A (Isooctane)	15	%
23°C, 336 hr, in Reference Fuel C	5.0	%
23°C, 504 hr, in Reference Fuel A (Isooctane)	7.0	%
23°C, 504 hr, in Reference Fuel C	3.0	%
100°C, 70 hr, in ASTM #1 Oil	28	%
100°C, 70 hr, in ASTM #3 Oil	22	%
100°C, 168 hr, in ASTM #1 Oil	30	%
100°C, 168 hr, in ASTM #3 Oil	30	%
100°C, 336 hr, in ASTM #1 Oil	31	%
100°C, 336 hr, in ASTM #3 Oil	35	%
100°C, 504 hr, in ASTM #1 Oil	33	%
100°C, 504 hr, in ASTM #3 Oil	35	%
Change in Durometer Hardness		ASTM D471, ISO 175
Shore D, 23°C, 70 hr, in Reference Fuel A (Isooctane)	1.0	
Shore D, 23°C, 70 hr, in Reference Fuel C	-4.0	
Shore D, 23°C, 168 hr, in Reference Fuel A (Isooctane)	0.0	
Shore D, 23°C, 168 hr, in Reference Fuel C	-4.0	
Shore D, 23°C, 336 hr, in Reference Fuel A (Isooctane)	2.0	
Shore D, 23°C, 336 hr, in Reference Fuel C	-4.0	
Shore D, 23°C, 504 hr, in Reference Fuel A (Isooctane)	0.0	
Shore D, 23°C, 504 hr, in Reference Fuel C	-3.0	
Shore D, 100°C, 70 hr, in ASTM #1 Oil	-4.0	
Shore D, 100°C, 70 hr, in ASTM #3 Oil	-2.0	
Shore D, 100°C, 168 hr, in ASTM #1 Oil	-4.0	
Shore D, 100°C, 168 hr, in ASTM #3 Oil	-3.0	
Shore D, 100°C, 336 hr, in ASTM #1 Oil	-3.0	

Shore D, 100°C, 336 hr, in ASTM #3 Oil	-2.0		
Shore D, 100°C, 504 hr, in ASTM #1 Oil	-2.0		
Shore D, 100°C, 504 hr, in ASTM #3 Oil	-3.0		
Change in Volume			
23°C, 70 hr, in Reference Fuel A	2.0	%	ASTM D471, ISO 175
23°C, 70 hr, in Reference Fuel C	35	%	ASTM D471, ISO 175
23°C, 168 hr, in Reference Fuel A	3.0	%	ASTM D471, ISO 175
23°C, 168 hr, in Reference Fuel C	35	%	ASTM D471, ISO 175
23°C, 336 hr, in Reference Fuel A	4.0	%	ASTM D471, ISO 175
23°C, 336 hr, in Reference Fuel C	36	%	ASTM D471, ISO 175
23°C, 504 hr, in Reference Fuel A	4.0	%	ASTM D471, ISO 175
23°C, 504 hr, in Reference Fuel C	36	%	ASTM D471, ISO 175
100°C, 70 hr, in ASTM Oil #1	0.0	%	ASTM D471
100°C, 70 hr, in ASTM Oil #3	13	%	ASTM D471
100°C, 168 hr, in ASTM Oil #1	0.0	%	ASTM D471
100°C, 168 hr, in ASTM Oil #3	14	%	ASTM D471
100°C, 336 hr, in ASTM Oil #1	1.0	%	ASTM D471
100°C, 336 hr, in ASTM Oil #3	16	%	ASTM D471
100°C, 504 hr, in ASTM Oil #1	1.0	%	ASTM D471
100°C, 504 hr, in ASTM Oil #3	17	%	ASTM D471
100°C, 70 hr, in ASTM #1 Oil	0.0	%	ISO 175
100°C, 70 hr, in ASTM #3 Oil	13	%	ISO 175
100°C, 168 hr, in ASTM #1 Oil	0.0	%	ISO 175
100°C, 168 hr, in ASTM #3 Oil	14	%	ISO 175
100°C, 336 hr, in ASTM #1 Oil	1.0	%	ISO 175
100°C, 336 hr, in ASTM #3 Oil	16	%	ISO 175
100°C, 504 hr, in ASTM #1 Oil	1.0	%	ISO 175
100°C, 504 hr, in ASTM #3 Oil	17	%	ISO 175
Thermal	Nominal Value	Unit	Test Method
Brittleness Temperature	< -68.0	°C	ASTM D746, ISO 974
Glass Transition Temperature	-44.0	°C	DMA
Vicat Softening Temperature	106	°C	ISO 306/50, ASTM D1525 ⁴
Additional Information	Nominal Value	Unit	Test Method
Compressive Load			ASTM D575
10% Deflection	3.10	MPa	
15% Deflection	4.48	MPa	
2% Deflection	0.689	MPa	
20% Deflection	5.86	MPa	
25% Deflection	7.24	MPa	
5% Deflection	1.72	MPa	
50% Deflection	19.3	MPa	
Injection	Nominal Value	Unit	

Drying Temperature - Desiccant Dryer	93.0 to 104	°C
Drying Time - Desiccant Dryer	2.0	hr
Suggested Max Moisture	< 0.030	%
Suggested Shot Size	40 to 80	%
Suggested Max Regrind	20	%
Rear Temperature	185 to 199	°C
Middle Temperature	182 to 204	°C
Front Temperature	182 to 210	°C
Nozzle Temperature	188 to 213	°C
Processing (Melt) Temp	193 to 210	°C
Mold Temperature	16.0 to 43.0	°C
Injection Pressure	41.4 to 103	MPa
Injection Rate	Moderate	
Holding Pressure	27.6 to 55.2	MPa
Back Pressure	5.52	MPa
Screw Speed	40 to 80	rpm
Clamp Tonnage	4.1 to 6.9	kN/cm ²
Cushion	3.18 to 6.35	mm
Screw L/D Ratio	20.0:1.0	
Screw Compression Ratio	2.5:1.0 to 3.0:1.0	

Extrusion	Nominal Value	Unit
Drying Temperature	93.0 to 104	°C
Drying Time	2.0	hr
Cylinder Zone 1 Temp.	182 to 199	°C
Cylinder Zone 2 Temp.	193 to 210	°C
Cylinder Zone 3 Temp.	193 to 216	°C
Melt Temperature	202 to 216	°C

NOTE

1. Die C
2. Post-cured 16 hr at 230°F
3. Post-cured 16 hr at 230°F
4. Rate A (50°C/h)

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