SORBOTHANE STRIPS

Sorbothane strips offer a quick and effective method for isolating a wide variety of equipment. Choose the correct thickness, durometer and number of strips required for the load. Sorbothane strips can easily be cut to size and are ideal for medium to heavy loads

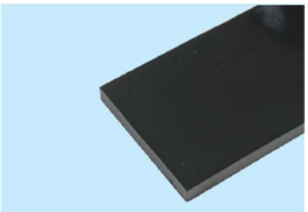
Design Guide

More is not better: Using a large, lightly loaded sheet will have a high spring rate and will not deflect enough to provide good isolation. Over compression will lead to short service life. The proper compression range is 3-20%.

Geometry matters: Small circular pieces and rings “bulge better than squares and rectangles. “Bulgeability” allows for better isolation. Use many small discs rather than a few large rectangles for best performance.

Thickness matters: The thicker the sheet, the lower the natural frequency. You need a sheet at least one-inch thick to get your natural frequency down to 10Hz. The target natural frequency for a 900rpm motor is 10Hz.

Do not bolt through the Sorbothane sheet: The bolt will carry the vibration to the base. Use the natural tackiness of Sorbothane, or apply adhesives to glue the Sorbothane to metal plates.



Part Number	Dimensions (mm)	Thickness tolerance	Duro (Shore 00)
0236212-50-10	51x914x3	± 0.38	50
0236212-70-10	51x914x3	± 0.38	70
0236225-50-10	51x914x6	± 0.51	50
0236225-70-10	51x914x6	± 0.51	70
0236237-30-10	51x914x9.5	± 0.64	30
0236237-50-10	51x914x9.5	± 0.64	50
0236237-70-10	51x914x9.5	± 0.64	70
0236250-30-10	51x914x13	± 0.76	30
0236250-50-10	51x914x13	± 0.76	50
0236250-70-10	51x914x13	± 0.76	70

Gelmec UK
1-2 Steam Mill Lane, Great Yarmouth, Norfolk, NR31 0HP
Telephone: +44(0) 1493 668622
Email: sales@gelmec.co.uk **Website:** www.gelmec.co.uk

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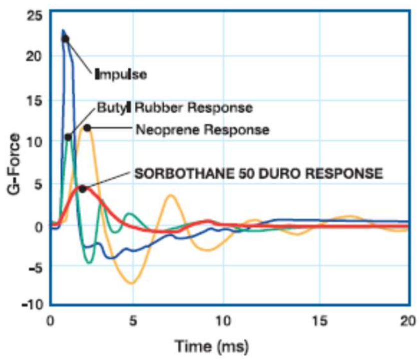
Sorbothane turns mechanical energy into heat. As the material is deformed, molecular friction generates heat. This “lost energy” is called hysteresis. Energy is translated perpendicularly away from the axis of incidence and its effect is pushed nearly 90ºC out of phase from the original disturbance. This phase shift, known as “Tan Delta”, is a measure of Sorbothane’s damping effectiveness. The higher the value of Tan Delta, the greater the amount of damping that occurs.

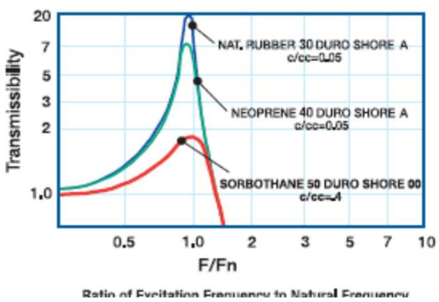
Controlling Shock



Time Delay Effect of Impulse (Shock) Response of Selected Materials

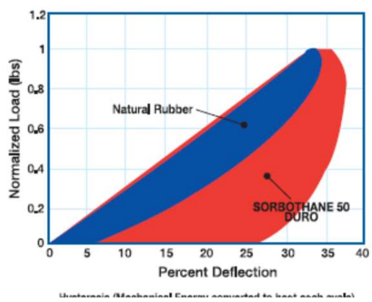
High damping in a polymer reduces the impulse peak of a shock wave over a longer time frame. Sorbothane reduces the impact force up to 80% and brings the mass slowly to rest. Gradual deceleration affords better protection of delicate equipment. Sorbothane exhibits very low rebound when compared to other materials.

Controlling Vibration



Low transmissibility (amplification) at resonance shows Sorbothane’s damping superiority over other elastomers. Low transmissibility means less damage to sensitive components. Isolation at large frequency ratios also demonstrates Sorbothane’s capacity to isolate vibration.

Impact Absorption



The graph shows the high hysteresis necessary for efficient impact absorption. By comparing the area under the curves, it is clear that Sorbothane removes more of the impact energy to the system. High energy return causes high rebound and increases the potential for damage.

Sorbothane can decelerate parts and can reduce peak forces during sudden stops in minimal sway space. Impact absorption up to 80% is achievable at proper dynamic deflections.

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Material Properties

Property	Durometer (Shore 00) 30	50	70	Units	Notes
Tensile Strength at Break	26	107	191	psi	ASTM D 412-06a
Elongation at Break	334	765	388	%	ASTM D 412-06a
Tensile Strength at 100% Strain	6	13	58	psi	ASTM D 412-06a
Tensile Strength at 200% Strain	12	24	113	psi	ASTM D 412-06a
Tensile Strength at 300% Strain	21	40	156	psi	ASTM D 412-06a
Compressive Stress at 10% Strain	0.9	2.7	11.8	psi	ASTM D 575-91, Method A
Compressive Stress at 20% Strain	2.1	6.4	30.0	psi	ASTM D 575-91, Method A
Compression Set	10	3	2	%	ASTM D 395
Tear Strength	12	28	27	lb/in	ASTM D 624-00, Die C
Bulk Modulus	4.5	5.0	4.3	gPascal	
Density	83	84	85	lb/ft³	ASTME D 792-13
Specific Gravity	1.330	1.36	1.36		ASTME D 792-13
Optimum Performance Temp. Range	-20° to +140°	-20° to +150°	-20° to +160°	°F	
Glass Transition	-20	-25	-17	°C	
Flash Ignition Flammability	570°	570°	570°		
Self-Ignition Flammability	750°	750°	750°		
Tested Flammability rating with retardant	V2	V2	V2		UL 94-V-0
Resilience Test Rebound Height	4	11	25	%	ASTM D 2632-92
Dielectric Strength	213	250	252	V/ml	ASTM D 149-13 Method A
Dynamic Young's Modulus at 5 Hertz	36, 41, 48	77, 89, 106	186, 209, 240	psi	Dynamic Young's Modulus
Dynamic Young's Modulus at 15 Hertz	57, 64, 75	113, 129, 154	186, 258, 295	psi	Dynamic Young's Modulus
Dynamic Young's Modulus at 30 Hertz	76, 86, 100	145, 165, 195	266, 299, 342	psi	Dynamic Young's Modulus
Dynamic Young's Modulus at 50 Hertz	95, 105, 119	175, 199, 231	298, 334, 382	psi	Dynamic Young's Modulus
Tangent Delta at 5 Hz Excitation	0.72	0.57	0.28		
Tangent Delta at 15 Hz Excitation	0.78	0.62	0.33		
Tangent Delta at 30 Hz Excitation	0.80	0.64	0.36		
Tangent Delta at 50 Hz Excitation	0.80	0.65	0.37		
Bacterial Resistance	No Growth	No Growth	No Growth		ASTM G 22
Fungal Resistance	No Growth	No Growth	No Growth		ASTM G 21-09
Heat Aging	Stable	Stable	Stable		72 hours @ 158ºF
Ultraviolet					Can be compounded
Acoustic Properties, Transmission Loss	Greater than 40	Greater than 40	Greater than 40	Decibel/cm	
Chemical Resistance to Distilled Water	51.6	42.1	23.8	% wt change	ASTM D 543 7-day immersion
Chemical Resistance to City Water	50.7	41.8	23.7	% wt change	ASTM D 543 7-day immersion
Chemical Resistance to Hydraulic Fluid	-4.8	-3.9	-4.2	% wt change	ASTM D 543 7-day immersion
Chemical Resistance to Kerosene	-8.4	-4.9	-6.1	% wt change	ASTM D 543 7-day immersion
Chemical Resistance to Diesel	-4.7	-1.4	23.7	% wt change	ASTM D 543 7-day immersion
Chemical Resistance to 50% Ethanol	98.5	58.4	51.9	% wt change	ASTM D 543 7-day immersion
Chemical Resistance to Soap Solution	100.4	59.4	33.0	% wt change	ASTM D 543 7-day immersion
Chemical Resistance to Gasoline	37.9	40.6	41.7	% wt change	ASTM D 543 7-day immersion
Chemical Resistance to Turpentine	14.5	16.3	13.4	% wt change	ASTM D 543 7-day immersion
Chemical Resistance to Motor Oil 15W40	-4.4	-3.9	-4.1	% wt change	ASTM D 543 7-day immersion
Chemical Resistance to Hexane	-5.1	-7.4	-2.8	% wt change	ASTM D 543 7-day immersion
Chemical Resistance to IRM 903	-4.3	2.9	-3.7	% wt change	ASTM D 543 7-day immersion
Chemical Resistance to 1N Acetic Acid	Complete degradation	Complete degradation	Complete degradation	% wt change	ASTM D 543 7-day immersion
Chemical Resistance to Ethylene Glycol	-1.1	0.4	0.4	% wt change	ASTM D 543 7-day immersion
Chemical Resistance to 1N NaOH	11.9	7.2	7.2	% wt change	ASTM D 543 7-day immersion

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