

Product Data Sheet 3M[™] Damping Foil 2552 consists of a room temperature pressure sensitive **Product Description** viscoelastic polymer on a dead soft aluminum foil and is designed for application to vibrating panels and support members. The combination of viscoelastic polymer and an aluminum foil backing (a constrained layer damper, or CLD) has proved to be a unique construction with exceptional ability to control resonant vibrations in the temperature range of 32° to 140°F (0° to 60°C), with survivability from -25° to 175°F (-32° to 80°C). The high-energy dissipative polymer used in 3M damping foil 2552 can afford **Typical Damping** excellent control of resonance-induced vibrations. When applied to a vibrating **Properties** structure, the polymer used in 3M damping foil 2552 converts vibration to negligible heat. Vibration amplitudes and structure-borne noise can be consequentially reduced. The performance of most damping devices is highly dependent on the interaction between the device and the system to which it is applied. A constrained layer control system is no different than a typical damping device and its ability to provide the desired performance is affected by parameters other than temperature and frequency. Namely the geometry, stiffness and the structure to which the control system is applied will affect the performance. The loss factor of a material is a dynamic property that can define damping performance: The following data are the results of 3M damping foil 2552 being tested per ASTM E756-83. A sample was applied to a 8.0 inch by 0.5 inch by 0.06 inch steel beam. The beam was tested over a temperature range of -40° to 140°F, in increments of 10°F. Beam modes 2 through 7 were monitored for system damping measurements. **3MTM Damping Foil 2552** 0.060000 SYSTEM LOSS FACTOR 0.050000 MODE 2 0.040000 MODE 3 MODE 4 0.030000 MODE 5 MODE 6 0.020000 MODE 7 0.010000 0.060000 100 150 -50 50 **TEMPERATURE** °F

3M™ Damping Foil

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Typical Damping Properties (continued) Test Method: The following data were obtained by doing a frequency sweep from 1 to 100 radians/sec (0.16 to 16 Hz) at 5 different temperatures: -20° , 10° , 0° , 10° , and 22° C. A 3 point bend geometry was used on the Rheometics RSA II. Time – temperature superposition was used to create the master curve for a reference temperature of 22° C.



Data Interpolation:

To determine the damping properties at ambient temperature 72°F (22°C), proceed as follows:

- 1) Locate the desired frequency on the bottom HORIZONTAL scale.
- 2) Follow the chosen frequency up to the point of intersection with the plotted data.
- 3) From this intersect, go left to the vertical scale.
- 4) Read the COMPOSITE LOSS FACTOR for the chosen frequency.

Note: Please note that the data has been determined by combining $3M^{TM}$ Damping Foil 2552 with a panel of 0.018" thick stainless steel with a hardness of T-22 and is presented as a reference to the damping that can be achieved when combined with a material of this description and tested at ambient temperature of 72°F (22°C).

Solvent and Fuel	When properly laminated between two impervious materials, the polymer will
Resistance	resist intermittent exposure to mild acids and alkalies, most oils, grease, gasoline,
	kerosene, JP-4 fuel, hydraulic fluids, and other typical aromatic and aliphatic
	hydrocarbon and ketone solvents.

Note: Continuous submersion in chemical solutions like solvents or fuels is not recommended.

3M[™]Damping Foil 2552

Product Construction and Typical Physical Properties	Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.			
		AS	TM Test Method	
	Aluminum Backing:	10.0 mils (0.25 mm)		
	Acrylic Viscoelastic Polymer:	5.0 mils (0.13 mm)		
	Easy-release Liner:	58# poly-coated paper		
	Total Product Thickness:	15.0 mils (0.38 mm)		
	Total Product Weight:	0.17 lbs./sq. ft.		
	Adhesion to Steel:	65 oz./in. width (72 N/100 mm)	D-3330	
	Tensile Strength:	126 lbs./in. width (2205 N/100 mm)	D-3759	
	Elongation at Break:	12%	D-3759	
	Temperature Use Range:	-25°to 175年 (-32°to 80℃) Peak damping from 32°to 140年 (0°to 60℃)		
	Minimum and Maximum Widths:	2 in. minimum, 23.5 in. maximum		
	Available Formats:	 Roll Lengths: Standard length 36 yds. 2" to 4": up to 180 yds. Wider widths available to 180 yds. Dispensers available for purchase through 3M 		
		 Sheets and Die-Cut parts: 3M can introduce you to fabricators with a background of handling this product and the capability to provide sheet goods and die cut dampers to customer specifications. Custom Dispensers: Designed for manual or automatic operation, this custom dispenser removes protective liner from 3M™ Damping Foil 2552 before cutting to a predetermined length. Built to hold and dispense 6" core with a roll size up to 2" wide by 108 yds. Engineered for table top usage, this custom dispenser measures 31"L x 22"H x 10"W and weighs only 45 pounds. 		
Characteristics	• Excellent aging qualities of the polymer.			
	• Wide temperature range for damping. Usable from -25° to 175°F (-32° to 80°C), with peak damping from 32° to 140°F (0° 60°C).			
	• Liner on product offers the user die-cut capability.			
	• PSA for ease of applicati	on.		
Application Ideas	• Industrial applications.			
	• Electronic equipment and appliances.			
	• Reduce resonant noise, vibration and fatigue in metal, plastic panels and support structures.			
	• Almost anywhere plastic damaging vibration.	or metal contact with materials can result	in potentially	

$\mathbf{3M}^{\text{\tiny TM}} \textbf{D} \textbf{amping Foil}$

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