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Technical Data Sheet

3M™ Damping Foil 2552

English-US

Last Revision Date: September, 2024

Supersedes: August, 2024

Product Details

Regulatory Info/SDS

Product Description

3M™ Damping Foil 2552 consists of a room temperature pressure sensitive 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 a 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).

Product Features

• 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.
• Pressure sensitive adhesive for ease of application.
• Meets flame retardancy requirements of FAR Part 25.853(a).
• Can pass ASTM E-162 and ASTM E-662 for flammability and smoke generation.

Technical Information Note

The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Typical Physical Properties

Attribute Name	Test Method	Value
Adhesive Type		Acrylic Viscoelastic Polymer
Total Product Weight		0.17 lb/in²
Backing		Aluminum
Backing Thickness	ASTM D3652	0.25 mm (10 mil)
Total Tape Thickness	ASTM D3652	0.38 mm (15 mil)
Liner		58# poly-coated paper

Typical Performance Characteristics

Attribute Name	Test Method	Temperature	Value
180° Peel Adhesion	ASTM D3330	23 °C (73 °F)	7.2 N/cm (65 oz/in) [1]
Elongation at Break	ASTM D3759		12 %
Tensile Strength	ASTM D3759		220.7 N/cm (126 lb/in)
Long Term Temperature Resistance			80 °C (175 °F) [2]
Minimum Long Term Temperature Resistance			-32 °C (-25 °F) [2]

[1] 304 mm/min (12 in/min)
[2] Long Term (day, weeks)

Typical Environmental Characteristics

Solvent Resistance

When properly laminated between two impervious materials, the polymer will resist intermittent exposure to mild acids and alkalis, 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.

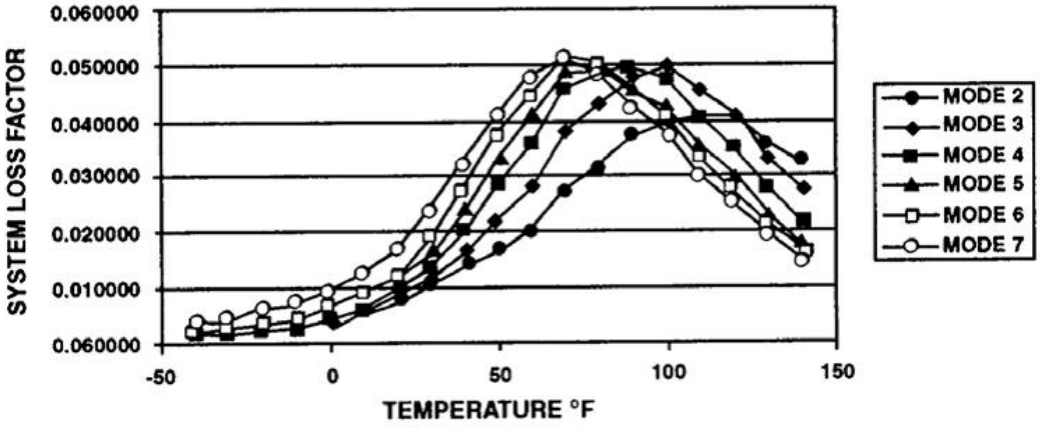
Typical Damping Properties

The high-energy dissipative polymer used in 3M damping foil 2552 can afford excellent control of resonance-induced vibrations. When applied to a vibrating 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:

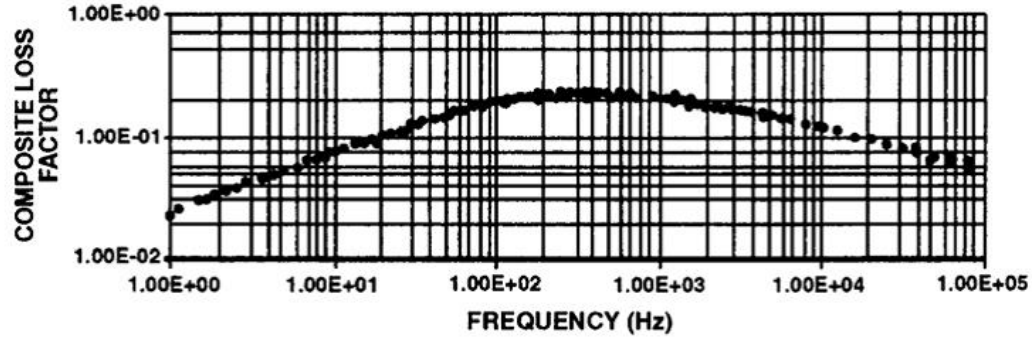
The following data are the results of 3M damping foil 2552 being tested per ASTM E756-83. A sample was applied to a 8.0 inch by 0.5 inch by 0.06 inch steel beam. The beam was tested over a temperature range of -40° to 140°F, in increments of
10°F. Beam modes 2 through 7 were monitored for system damping measurements.

3M™ Damping Foil 2552



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.

3M™ Damping Foil 2552 on 18 mil Stainless Steel
T = 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™ 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).

Handling/Application Information

Application Examples

• Industrial applications.
• Electronic equipment and appliances.
• Reduce resonant noise, vibration and fatigue in metal, plastic panels and support structures.
• Almost anywhere plastic or metal contact with materials can result in potentially damaging vibration.

Industry Specifications

FAR Part 25.853(a)
NFPA 130 test report for details (ASTM E162, ASTM E662, BSS 7239)

Storage and Shelf Life

Store under normal conditions of 16° to 27°C (60° to 80°F) and 40 to 60% relative humidity in the original packaging, out of direct sunlight. For best performance, use this product within 24 months from date of manufacture.

Available Sizes

Attribute Name	Value
Maximum Available Width	23.5 in
Minimum Available Width	2 in

Available Sizes - Detailed

Roll Lengths:
Standard length 36 yd
• 2" to 4": up to 180 yd
• Wider widths available to 180 yd
• 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 yd Engineered for table top usage, this custom dispenser measures 31"L x 22"H x 10"W and weighs only 45 pounds.

Automotive Disclaimer

Select Automotive Applications:
This product is an industrial product and has not been designed or tested for use in certain automotive applications, such as automotive electric powertrain battery or high voltage applications, which may require the product to be manufactured in a IATF certified facility, meet a Ppk of 1.33 for all properties, undergo an automotive production part approval process (PPAP), or fully adhere to automotive design or quality system requirements (e.g., IATF 16949 or VDA 6.3). Customer assumes all responsibility and risk if customer chooses to use this product in these applications.

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ISO Statement

This product was manufactured under a 3M quality system registered to ISO 9001 standards.

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