



# Vibration Damping Tapes

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Technical Data

January, 2004

**Product Description** 3M™ Vibration Damping Tapes are low temperature 3M™ Viscoelastic Damping Polymers Type 830 coated on a dead soft aluminum foil constraining layer. They have pressure sensitive properties and are furnished in roll form and designed for direct, pressure sensitive application to metal and composite panels for vibration damping purposes. The combination of the low temperature 3M viscoelastic polymers type 830 and an aluminum constraining layer has proven to be an unique construction with exceptional ability to damp resonant vibrations in the temperature range of -76° to +68°F (-60° to +20°C).

Product Construction	Product	Liner	Aluminum	Damping Polymer
	3M™ Vibration Damping Tape 434	Polyethylene (Blue)	5.5 mils (0.14 mm) (Dead Soft Aluminum Foil)	2.0 mils (0.05 mm) Synthetic
	3M™ Vibration Damping Tape 435	Polyethylene (Blue)	8.0 mils (0.20 mm) (Dead Soft Aluminum Foil)	5.5 mils (0.14 mm) Synthetic
	3M™ Vibration Damping Tape 436	Polyethylene (Blue)	12.0 mils (0.30 mm) (Dead Soft Aluminum Foil)	5.5 mils (0.14 mm) Synthetic

## 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.**

		ASTM Test Method
Adhesion to Steel:	65 oz./in. width (724 gm/cm width)	D-3330
Tensile Strength:	10,500 lbs./in. <sup>2</sup> (7.24 x 10 <sup>7</sup> N/m <sup>2</sup> )	D-3759
Elongation at Break:	12%	
Total Tape Thickness:		D-3652
3M tape 434	7.5 mils (0.19 mm)	
3M tape 435	13.5 mils (0.34 mm)	
3M tape 436	17.5 mils (0.45 mm)	
Water Vapor Transmission Rate:	0.1 gm./100 in. <sup>2</sup> /24 hour/mil	D-3833
Weight:		
3M tape 434	0.090 lb./ft. <sup>2</sup> (0.44 Kg/m <sup>2</sup> )	
3M tape 435	0.138 lb./ft. <sup>2</sup> (0.675 Kg/m <sup>2</sup> )	
3M tape 436	0.194 lb./ft. <sup>2</sup> (0.949 Kg/m <sup>2</sup> )	
Flammability:	All products pass F.A.R. 25.853(a)	
Optimal Temperature Use Range:	-76° to 68°F (-60° to 20°C)	

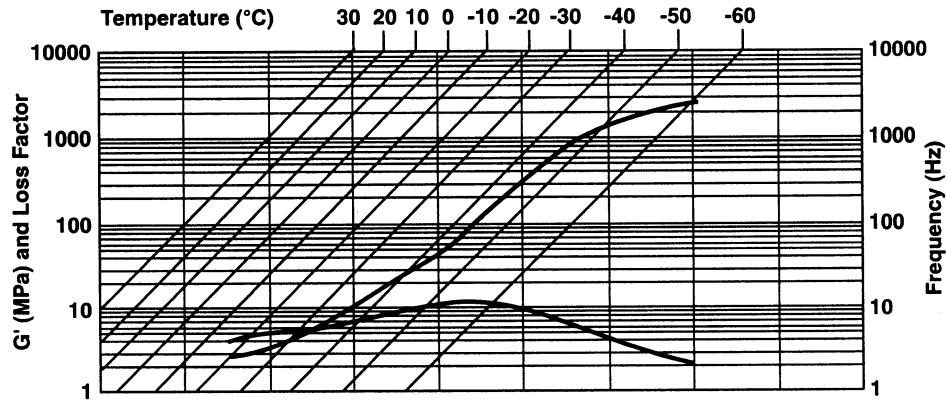
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## Typical Dynamic Damping Properties

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

Dynamic Mechanical Properties of 3M™ Viscoelastic Damping Polymer Type 830 (Without Foil)



### Note Regarding Dynamic Mechanical Properties:

The shear storage modulus ( $G'$ ) and loss factor of a viscoelastic adhesive are two parameters used to partially define the damping performance when used in the form of a constrained layer damping treatment. The above curves illustrate these data as a function of frequency and temperature in the form of a reduced temperature nomograph.

While the damping performance of a constrained layer damping treatment depends largely on the dynamic mechanical properties of the viscoelastic adhesive alone, it is also dependent on other parameters. Namely the geometry, stiffness, mass and mode shape of the combination of the damper and the structure to which it is applied will also affect the damping performance.

To determine the dynamic mechanical properties at the desired temperature and frequency proceed as follows:

1. Locate the desired frequency on the right vertical scale.
2. Follow the chosen frequency horizontally to the desired temperature isotherm.
3. From the intersect, move vertically up and/or down until crossing both the modulus and loss factor curves.
4. Read the shear storage modulus and loss factor values from the left vertical scale.

## Features

- Pressure sensitive construction for easy application.
- Excellent aging qualities of the 3M viscoelastic damping polymer type 830 provide long term performance and has excellent resistance to most hydrocarbon and/or aircraft type solvents.
- Wide temperature range for damping. Usable from  $-76^{\circ}$  to  $68^{\circ}\text{F}$  ( $-60^{\circ}$  to  $120^{\circ}\text{C}$ ) at 100 Hz plus higher temperatures at higher frequencies.
- These lined products offer the user die-cut capability.

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## Applications

- For lower temperature aerospace and industrial applications.
- Reduce unwanted resonant noise, vibration and fatigue in metal panels and support structures.
- Chutes, conveyors, bins, metal shop boxes and tables where metal contact with materials can result in unwanted vibration.

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## Storage

Store under normal conditions of 70°F (21°C) and 50% R.H. in the original carton.

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## Shelf Life

To obtain best performance, use this product within 24 months from date of manufacture.

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## For Additional Information

To request additional product information or to arrange for sales assistance, call toll free 1-800-362-3550 or visit [www.3M.com/industrialtape](http://www.3M.com/industrialtape). Address correspondence to: 3M Industrial Adhesives and Tapes Division, Building 21-1W-10, 900 Bush Avenue, St. Paul, MN 55144-1000. Our fax number is 651-778-4244. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-787-750-3000. In Mexico, phone: 52-70-04-00.

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## Product Use

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**ISO 9001**

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001 standards.



**Industrial Business  
Industrial Adhesives and Tapes Division**

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