

3M™ Layered Viscoelastic Damping Polymer SJ-2040X

Product Description

3M™ Layered Viscoelastic Damping Polymer SJ-2040X is a high energy dissipative viscoelastic polymer which, when properly incorporated into a constrained layer damping system, can afford excellent control of resonance induced vibration. 3M polymer SJ-2040X consists of two layers of ISD 113 viscoelastic polymer material with a polyester film interleaf to afford dimensional stability during application. The adhesion characteristics of both surfaces of this material allow application to many substrates without the use of additional bonding mediums. 3M polymer SJ-2040X is available in roll form or fabricated into custom die-cut shapes. Since 3M™ Layered Viscoelastic Damping Polymer SJ-2040X is a combination of polymer layers and film, its exact dynamic performance cannot be described until a constraining layer of a given dimension is added. The dynamic performance, however, of ISD 113 viscoelastic damping polymer is well characterized and dynamic properties for this viscoelastic polymer are shown on the next page.

Key Features

- Excellent viscoelastic damping performance
- Room temperature application
- Excellent aging qualities of the viscoelastic polymer provide long term performance
- Wide temperature range for damping
- Usable from -45°C to 38°C (-50°F to 100°F) at 100 Hz

Product Construction

Kraft Paper Release Liner
ISD 113 Damping Polymer: 10.0 mil
Polyester (PET) Film Carrier: 1.5 mil
ISD 113 Damping Polymer: 10.0 mil

Material Description

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

3M™ Layered Viscoelastic Damping Polymer SJ-2040X	
Property	SJ-2040X
Viscoelastic Polymer Density	0.035 lb./in ³ (0.98 m/cm ³)
Total Tape Thickness (No Liner)	21.4 mil (0.544 mm)
ISD 113 Damping Polymer Thickness (Each Layer)	10.0 mil (0.254 mm)
PET Film Carrier Thickness	1.5 mil (0.038 mm)
Viscoelastic Weight	0.106 lb./ft ² (48.2 g/ft ²)

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Application Notes

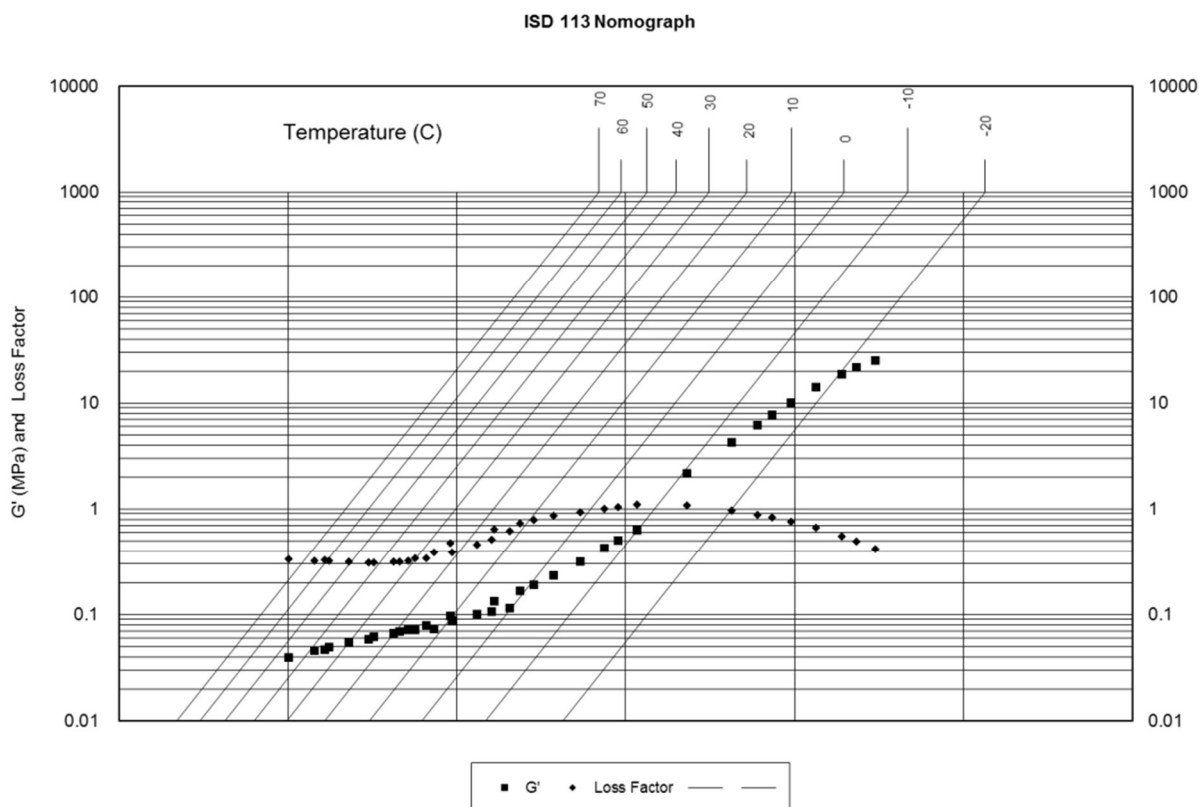
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- Application of 3M™ Layered Viscoelastic Damping Polymer SJ-2040X requires a clean, dry surface free of contamination for best adhesion and damping results.
- 3M polymer SJ-2040X may be used in applications outside their suggested damping temperature range with acceptable damping performance, as determined by the user.
- This product's long-term performance in an application is determined by the damper's end use design and the environment it will be exposed to.
- The typical damping performance temperature ranges noted above are not limits to an application's long term temperature exposure or short-term higher temperature excursions.
- The damper's construction and application to a substrate will determine the long- and short-term performance of a damper in each environment.

Nomograph

The Loss Factor and Storage Modulus are the key measurement parameters and determine the level of potential damping capability that exists in 3M™ Layered Viscoelastic Damping Polymer SJ-2040X at a specific temperature and frequency.

The Loss Factor and Storage Modulus are found for the 3M viscoelastic damping polymers SJ-2040X by selecting the frequency desired of an application and extending a horizontal line from that frequency until the desired application temperature isotherm is intersected. Extend a vertical line from this first intersection point of the desired frequency and temperature isotherm so that it intersects the Loss Factor and Storage Modulus curves. The Loss Factor and Storage Modulus values are found on the left hand scale by extending a line horizontally from these second intersection points on the Loss Factor and Storage Modulus performance curves.



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Nomograph (continued)

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Test Method: These properties were determined isothermally at each temperature on a Polymer Laboratories Dynamic Mechanical Thermal Analyzer (DMTA). The strain amplitude used 89.47% peak to peak. Measurements were done at frequencies of 0.3, 1.0, 3.0, 10 and 30 Hz. Data at non-test frequencies and temperatures were determined from time-temperature superposition principles.

IMPORTANT: The oblique constant temperature lines are separated by non-uniform spacings. Hence, a linear extrapolation of a temperature not explicitly shown cannot be used to obtain other temperature data.

To determine the damping properties at the desired temperature and frequency from the above data graph, proceed as follows:

- 1) Locate the desired frequency on the RIGHT vertical scale.
- 2) Follow the chosen frequency line to the desired temperature isotherm.
- 3) From this intersect, go vertically up and/or down to intersect the shear (storage) modulus and loss factor curves.
- 4) From this intersect, follow horizontally to the LEFT vertical scale and read the shear (storage) modulus and loss factor values from the appropriate left vertical scale.

Storage and Shelf Life

The shelf life of 3M™ Layered Viscoelastic Damping Polymer SJ-2040X is 24 months from the date of manufacture when stored in original packaging materials and stored at 21°C (70°F) and 50% relative humidity.

Certificate of Analysis (COA)

The 3M Certificate of Analysis (COA) for this product is established when the product is manufactured and deemed commercially available from 3M. The COA contains the 3M specifications, test methods, and test results for the product's performance attributes that the product will be supplied against. Contact your local 3M representative for this product's COA.

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Regulatory: For regulatory information about this product, contact your 3M representative.

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