DuPont™ Keldax® sound barrier resins deliver practical, affordable noise reduction

Easy to shape, easy to work with, easy to install.

Components made with DuPont™ Keldax® help today’s manufacturers reduce objectionable noise and increase consumer-perceived quality.
**AFFORDABLE, PRECISELY SHAPED SOUND BARRIERS**

DuPont™ Keldax® resins are filled ethylene polymers designed to provide economical, non-halogen sound barriers in automotive and industrial applications. In automotive passenger compartments, Keldax® can help block noises emanating from interior sources, such as seat belt retractors and small motors, or from exterior sources, such as engine, transmission, suspension, tires and the road.

**EASY TO PROCESS AND FORM**

Keldax® resins can be processed on conventional wear-resistant extrusion and injection-molding equipment. Compared with mastics and asphalt-based sound barrier materials, Keldax® can be more accurately formed (heat, vacuum, and compression molded) into complex, deep-drawn shapes that exhibit excellent strength and durability. Because of their relatively high weight-to-volume ratio, Keldax® resins can be applied in thin, space-saving gauges. Keldax® is a recyclable thermoplastic, and can be reintroduced with virgin material as feedstock for new melt processing.

**GOOD ADHESION AND EASY ASSEMBLY**

Keldax® resins combine excellent formability with the flexibility necessary for optimum sound barrier performance. Components made of Keldax® retain their shape well, for easy installation and precise fit. When heated, Keldax® adheres to a variety of substrates, including sound absorbers or decouplers, without the use of adhesives. When bonded to decouplers that have no shape-retention properties of their own, Keldax® helps these decouplers hold a proper shape.

**TAILORED RESINS AND PROPERTIES**

Keldax® resins are manufactured in accordance with ISO/TS 16949:2009 standards utilizing statistical process control techniques. The resins are supplied as pellets, available in a range of densities to suit individual applications. During manufacture, they can be further tailored to meet specific processing or end-use requirements.

Table 1: Typical physical properties* of a medium-density grade of Keldax®

<table>
<thead>
<tr>
<th>Property</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Dark gray</td>
</tr>
<tr>
<td>Density</td>
<td>1.9 g/cc</td>
</tr>
<tr>
<td>Tensile Strength, 23°C (ASTM D638)</td>
<td>2.4 MPa (350 psi)</td>
</tr>
<tr>
<td>Elongation at Break, 23°C (ASTM D638)</td>
<td>400%</td>
</tr>
<tr>
<td>Flexural Modulus, 23°C (ASTM D790)</td>
<td>45 MPa (6,500 psi)</td>
</tr>
<tr>
<td>Tear Strength (ASTM D624)</td>
<td>16 kN/m (90 lb/in)</td>
</tr>
<tr>
<td>Sound Transmission Class (STC) @ 1 lb./sq.ft. (ASTM E90-97)</td>
<td>27 – 30</td>
</tr>
</tbody>
</table>

*Compression-molded test specimens.

Note: These data are not intended as specifications.

**EFFECTIVE USE OF MASS FOR ACOUSTICAL PERFORMANCE**

**TRANSMISSION LOSS VS SHEET THICKNESS**

Sound transmission loss testing has been performed in conformance with ASTM E90 using three different sheet thicknesses (surface densities) of a medium-density grade of Keldax®. Measurements of transmission loss at selected frequencies indicate that acoustical performance (see chart, right) can be tailored using sheet thickness to achieve specific design requirements.
USE OF THIN-GAUGE, DECOUPLED DESIGNS

Because of its outstanding melt strength and product consistency, DuPont™ Keldax® resins can be drawn or molded to thin gauges. This allows engineers to control resin placement and minimize the total weight of a sound control component.

Thin gauges are particularly useful in double-walled barrier systems, which include an air space or decoupler material to isolate sound barrier walls from each other. As shown below, the transmission loss of a decoupled system can exceed the sum of the transmission loss of the individual walls.

DOUBLE-WALLED (DECOUPLED) TRANSMISSION LOSS

A double-walled sound barrier system, such as an auto carpet backed with Keldax®, along with the underlying absorber pad and sheet metal, can exceed the sum of the transmission loss of the individual walls. As illustrated (left), the slope for the sheet metal, and for the sheet metal with applied mastic, is approximately 6 dB for a doubling of the frequency (per octave). The double-walled barrier system using Keldax® has a slope of approximately 18 dB per octave.

By adjusting the amount of Keldax® used, the acoustical performance of a sound barrier system can be easily optimized to meet the requirements of the particular vehicle or application.


WHERE KELDAX® CAN WORK FOR YOU

Keldax® offers proven performance in automotive and other industries where a close-fitting, economical sound barrier is needed.

AUTOMOTIVE APPLICATIONS

Widely used as automotive carpet backing, Keldax® also can be highly effective for other vehicle sound barrier applications including:

- Dash insulators
- Carpet under-layers and mats
- Wheel well covers
- Rear seat barriers and package trays
- Trunk liners
- Door panel water shields
- Seat belt retractors
- Small motor housings
- Wherever a formed sound barrier is needed

INDUSTRIAL AND CONSTRUCTION APPLICATIONS

DuPont™ Keldax® resins can be used with a variety of flexible and rigid substrates to deliver cost-effective, nonhalogenated sound barrier layers in industrial and construction applications. Examples include noise control blankets surrounding heavy construction zones and a variety of other building and industrial enclosure components and interlayers.

FIND OUT MORE AT KELDAX.DUPONT.COM
In an automotive dashboard assembly, Keldax® resins can be molded to conform exactly to the complex contours and deepdraw styling found in today’s vehicles.

One-piece, form-fitting carpet units backed with Keldax® resins retain their shape while being flexible and easy to handle on the automotive production line.

Door panel water shields of Keldax® provide the high density necessary to reduce noise, vibration and water leakage while minimizing part thickness.

FIND OUT MORE AT KELDAx.DUPONT.COM