Enova aerogel is safe for human and ecological systems, and is created through an innovative process with little to no impact on the environment. In addition, its physical properties provide the following benefits to coatings formulators:

• Unmatched resistance to conductive heat transfer
• Extreme gloss reduction at low loadings
• Efficient rheology modification
• Uniform dispersion without the use of additives
• High capacity carrier for functional additives
• Enables high single pass film building
• Long shelf life with consistent performance

Other attributes enabled in final form include:

• Moisture and corrosion resistance
• Coating clarity
• Delayed release of actives
• Burn protection

Incorporation and Dispersion

As with traditional additives, Enova aerogel is intended for use as a post-additive in the coatings manufacturing process. Dispersion is typically carried out using standard equipment. Operating speeds and duration will vary with formulation type.

Unique combinations of Enova aerogel’s standard characteristics create opportunities to improve performance in a variety of coatings applications.

Depending on the application and performance needed, Enovar® aerogel usage levels can be adjusted for desired attributes such as insulation, gloss level, and rheology modification.
Cabot’s innovative products help customers meet a wide range of evolving needs, from environmental concerns and safety awareness to energy efficiency and matting. Technical expertise paired with industry insight enable Cabot to develop insulative coatings that address tomorrow’s needs today. When compared to traditional insulating additives, Enova aerogel far outperforms the rest.

Enova aerogel enables the lowest thermal conductivity possible in insulative coatings, delivering:

- Exceptional burn protection
- Class-leading improvements in energy efficiency
- Dramatic reductions in condensation formation
- Installation performance comparable to conventional forms, but without the CUI concerns
- Improved process stability
- Complementary performance to IR reflective and low-e coatings

Enova® aerogel’s thermal conductivity of 12mW/m-K is far superior to other additives, making it the best choice for coatings formulators. When compared to traditional insulating additives, Enova aerogel for outperforms the rest.

As part of an insulative coating formulation, Enova aerogel is proven to reduce temperatures by 60–100°C on 200°C substrates.

Enova® aerogel attributes

- **particle size**: Microns to millimeters
- **surface chemistry**: Hydrophobic
- **pore size**: 50–500
- **surface area**: 700–800 m²/g
- **particle density**: 130–150 g/m³
- **optical**: Translucent/opaque
- **thermal conductivity**: 12mW/m-K
- **contact angle**: 150°
- **oil absorption (5% by weight)**: 540–620
- **working temperature**: To maintain hydrophobicity -50° to 300°C
- **to maintain insulation**: -196° to 800°C
Insulative coatings are generating significant interest due to the increased focus on environmental and safety awareness and sensitivity to energy efficiency. Enova aerogel’s thermal conductivity of 12mW/m-K is superior to other additives, making it the best choice for coatings formulators.

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Enova® aerogel attributes

**PARTICLE SIZE**  Microns to millimeters

**SURFACE CHEMISTRY** Hydrophobic

**POROSITY** 50-65%

**SHELF LIFE AREA** 700-900g/2g

**PARTICLE DENSITY** 120-150g/m³

**OPTICAL** Translucent/opaque

**THERMAL CONDUCTIVITY** 12mW/m-K

**CONTACT ANGLE** 150°

**OIL ABSORPTION (PER 500g PARTICLES)** 540-660 g

**SPRAYING TEMPERATURE**

To maintain hydrophobicity -50° to 300°C

To maintain insulation -196° to 800°C
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Enova® aerogel attributes

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particle Size</td>
<td>Microns to millimeters</td>
<td>100-10,000</td>
</tr>
<tr>
<td>Porosity</td>
<td></td>
<td>50-65%</td>
</tr>
<tr>
<td>High Surface Area</td>
<td></td>
<td>750-9000/m2</td>
</tr>
<tr>
<td>Particle Density</td>
<td></td>
<td>330-1000 g/m3</td>
</tr>
<tr>
<td>Optical</td>
<td>Translucent/opaque</td>
<td></td>
</tr>
<tr>
<td>Thermal Conductivity</td>
<td></td>
<td>0.03 mW/mK</td>
</tr>
<tr>
<td>Contact Angle</td>
<td></td>
<td>157°</td>
</tr>
<tr>
<td>Oil Absorption (150µg/50µl particles)</td>
<td></td>
<td>540-650</td>
</tr>
<tr>
<td>EnoVA® aerogel can be used to maintain hydropobicity -50° to 300°C.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EnoVA® aerogel can be used to maintain insulation -150° to 850°C.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As part of an insulative coating formulation, Enova aerogel is proven to reduce temperatures by 60–100°C on 200°C substrates.

**Enova® AEROGEL FOR INSULATIVE COATINGS FORMULATIONS**

Insulative coatings are generating significant interest due to the increased focus on environmental and safety awareness and sensitivity to energy efficiency. Enova aerogel’s thermal conductivity of 0.03 mW/mK is superior to other additives, making it the best choice for coatings formulators.

When compared to traditional insulating additives, Enova aerogel for outperforms the rest.

Enova aerogel enables the lowest thermal conductivity possible in insulative coatings, delivering:
- Exceptional burn protection
- Class-leading improvements in energy efficiency
- Dramatic reductions in condensation formation
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- Complementary performance to IR reflective and low-e coatings

**Thermal Conductivity Comparison**

<table>
<thead>
<tr>
<th>Coating Method</th>
<th>Thermal Conductivity (mW/mK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expanded Perlite</td>
<td>0.05</td>
</tr>
<tr>
<td>Laminate</td>
<td>0.25</td>
</tr>
<tr>
<td>Enova Aerogel (current)</td>
<td>0.03</td>
</tr>
<tr>
<td>Enova Aerogel (future)</td>
<td>0.02</td>
</tr>
</tbody>
</table>

**Temperature reduction at varying coating thickness**

- Exceptional burn protection
- Class-leading improvements in energy efficiency
- Dramatic reductions in condensation formation
- Insulation performance comparable to conventional forms, but without the CUI concerns
- Improved process stability
- Complementary performance to IR reflective and low-e coatings
Enova aerogel is safe for human and ecological systems, and is created through an innovative process with little to no impact on the environment. In addition, its physical properties provide the following benefits to coatings formulators:

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Other attributes enabled in final form include:

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Depending on the application and performance needed, Enovar® aerogel usage levels can be adjusted for desired attributes such as insulation, gloss level, and rheology modification.

Cabot's Enova® brand aerogel is pure aerogel in granular form, which can be used in the same way as other materials to suit the specific needs of a wide range of systems. A dry-grown porous network of air (GDN) created in a unique manufacturing facility provides the necessary properties to suit the specific needs of a wide range of systems. A dry-grown porous network of air (GDN) created in a unique manufacturing facility provides the necessary properties to suit the specific needs of a wide range of systems. Cabot produces Enova aerogel at its state-of-the-art manufacturing facility located near Frankfurt, Germany, where it began commercial production in 2003.

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