Growth of Mobility is Creating Multiple Opportunities for the use of PPG Technology

Focus: support improved battery performance
- Increase driving range
- Enable safer operation of high density battery
- Reduce cost of battery production
- Support improved ESG through the supply chain
PPG captures up to ~$110/vehicle with current content.
Global Light Vehicle Production will Shift to EV

Outlook for Annual Global Vehicle Sales

Drivers & Geography

Improving Consumer Sentiment
- Better driving range
- Lower cost of ownership
- Improving charging infrastructure
- Enhanced battery safety

Policy & Legislation
- Emissions targets
- City access restrictions
- Financial incentives

OEM Investments

Regional Mix: Projected 2025 EV Production

~7 - 10 million EV’s by 2025 and 25 million 2030

Source: IHS Markit, EV-Volumes.com
PPG Products: EV Battery Pack & Cell Content

PPG Content Opportunity: 2X to 4X Current

Battery Cell Components:
1. Thermal Conductive Fillers
2. Adhesives & Sealants
3. Corrosion & Impact Protection
4. Dielectric Protection
5. Battery Fire Protection
6. Cathode Binder + Solvent
7. Anode Active Material
# PPG Products Help Solve Current Challenges

<table>
<thead>
<tr>
<th>Technology</th>
<th>Challenge</th>
<th>Customer Value</th>
<th>Sales Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong> Thermal Conductive Fillers</td>
<td>Thermal management: battery heat</td>
<td>Optimize battery performance for improved range and safety</td>
<td>Qualified 12-24 months</td>
</tr>
<tr>
<td><strong>2.</strong> Adhesives &amp; Sealants</td>
<td>Protect battery pack components from moisture and component bonding</td>
<td>Longer battery life</td>
<td>In Vehicles</td>
</tr>
<tr>
<td><strong>3.</strong> Corrosion/Impact Protection</td>
<td>Protect battery pack enclosure from corrosion and damage</td>
<td>Longer battery life</td>
<td>In Vehicles</td>
</tr>
<tr>
<td><strong>4.</strong> Dielectric Protection</td>
<td>Electrically insulate from high battery voltage</td>
<td>Longer battery life and safety</td>
<td>In Vehicles</td>
</tr>
<tr>
<td><strong>5.</strong> Battery Fire Protection</td>
<td>Mitigate the spread of potential battery fires</td>
<td>Occupant safety</td>
<td>Qualified 12-24 months</td>
</tr>
<tr>
<td><strong>6.</strong> Cathode Binder + Solvent</td>
<td>Increase battery energy density</td>
<td>Optimize battery performance for improved range</td>
<td>In Development 3-5 years</td>
</tr>
<tr>
<td><strong>7.</strong> Anode Active Material</td>
<td>Increase battery energy density</td>
<td>Optimize battery performance for improved range</td>
<td>In Development 3-5 years</td>
</tr>
</tbody>
</table>

ESG Benefit Supporting PPG Sustainability goals:  
- **Lightweighting**  
- **Energy Savings**  
- **Sustainability Improvement**