Smart Lubrication™
for vehicle powertrain systems
Design for increasing propulsion efficiency

Meet your critical lubrication requirements for advanced powertrain design with MOLYKOTE® brand specialty lubricants from DuPont. With our in-depth expertise, a heritage of innovation, problem-solving collaboration, and reliable global supply and technical support, these high-performance Smart Lubrication™ solutions are precisely formulated and application-matched to help you achieve:

- **Energy efficiency** with reduced friction losses and increased wear control
- **Comfort and design** with enhanced smoothness and reduced noise and vibration
- **Safety** with added component reliability, less wear and more corrosion resistance
- **Sustainability** with increased process efficiency and durable component service life

Design for increasing propulsion efficiency with a choice of MOLYKOTE® brand Smart Lubrication™ solutions:

- **Greases** with special additives to resist water washout, evaporation or oxidation
- **Silicone compounds** for light-load lubricating and sealing in extreme temperatures
- **Anti-seize pastes** with high levels of lubricating solids for heavy loads and slow speeds
- **Anti-friction coatings** for clean dry-film lubrication to control friction, wear and noise
- **Solids and powders** for plastics lubrication and specialized friction-control additives
- **Oils and dispersions** with performance additives in synthetic or mineral blends

Innovate with smart science

Proven, effective MOLYKOTE® brand Smart Lubrication™ solutions can help you meet vehicle powertrain systems design goals for propulsion efficiency innovation:

**Reduce engine and driveline friction, wear and NVH**
- Piston skirts and rings
- Camshafts, tappets
- Dual-mass flywheels (DMFW)
- Transmission actuators
- Constant-velocity joints (CVJs)
- Ball joints, universal joints

**Provide lifetime lubrication for difficult-to-access components**
- Alternator and fan clutch bearings
- Starter motor gears, over-running clutches
- Actuators

**Insulate and protect against moisture**
- Glow plug controllers
- Ignition switches, spark plug boots

**Reduce squeaks, rattles, unwanted noise and vibrations**
- HVAC switches, vents
- Small motors and gears
- Compressors

**Ensure proper assembly, nondestructive disassembly**
- Assembly fasteners, bolts, screws
- Metal intake/exhaust gaskets
### Smart Lubrication™ selection guide: Powertrain applications

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<th>APPLICATION</th>
<th>DESIGN NEED</th>
<th>POTENTIAL SOLUTION(S)</th>
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<tr>
<td>Alternator, fan clutch bearings</td>
<td>Provide lifetime lubrication with reduced friction, wear and noise</td>
<td>MOLYKOTE® FS-841 Grease</td>
<td>Low-consistency fluorosilicone grease for solvent-resistant, high-speed lubrication</td>
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<tr>
<td>Electric motor bearings</td>
<td>Reduced friction, noise and wear</td>
<td>MOLYKOTE® BG-20 Synthetic Bearing Grease</td>
<td>Synthetic grease with extreme-pressure and anti-wear additives for metal-metal lubrication</td>
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<td>Dual-mass flywheels (DMFW)</td>
<td>Reduced friction with vibration damping</td>
<td>MOLYKOTE® G-3000 Grease</td>
<td>Synthetic grease with high shear resistance and good temperature stability reduces vibration and noise</td>
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<td>Pistons and rings</td>
<td>Reduced friction for improved energy efficiency</td>
<td>MOLYKOTE® D-10-GBL Anti-Friction Coating</td>
<td>High-viscosity, heat-cured coating for engine components</td>
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<td></td>
<td></td>
<td>MOLYKOTE® D-7409 Anti-Friction Coating</td>
<td>Heat-cured MoS₂-based AFC for superior wear resistance</td>
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<td></td>
<td></td>
<td>MOLYKOTE® D-88-GBL Anti-Friction Coating</td>
<td>Heat-cured coating for aluminum pistons and cylinder liners</td>
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<tr>
<td>Camshafts, tappets, engine components</td>
<td>Reduced friction, wear and noise</td>
<td>MOLYKOTE® D-7409 Anti-Friction Coating</td>
<td>Heat-cured MoS₂-based AFC for superior wear resistance</td>
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<tr>
<td>Intake/exhaust gaskets</td>
<td>Reduced noise and gasket disassembly damage</td>
<td>MOLYKOTE® D-7620 Anti-Friction Coating</td>
<td>Heat-cured MoS₂-based AFC designed for roll-coating flat metal components</td>
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<td></td>
<td></td>
<td>MOLYKOTE® D-321 R Anti-Friction Coating</td>
<td>Air-drying bonded lubricant with excellent heat-aging resistance under heavy loads</td>
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<tr>
<td>Starter motor gears, spline shaft, clutch</td>
<td>Reduced friction, wear and noise</td>
<td>MOLYKOTE® G-1021 Grease</td>
<td>Synthetic-oil-based grease for extremely low startup and running frictional resistance</td>
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<tr>
<td></td>
<td></td>
<td>MOLYKOTE® 3400A Anti-Friction Coating</td>
<td>Heat-cured dry-film lubricant with excellent adhesion, corrosion protection and low friction</td>
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<td>MOLYKOTE® 33L Extreme Low Temperature Grease</td>
<td>Silicone-based grease with excellent low-temperature resistance</td>
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<td>EGR valve</td>
<td>Improved fuel, oil and solvent resistance</td>
<td>MOLYKOTE® HP-870 Grease</td>
<td>Solvent-resistant, fluorinated grease with good high-temperature stability and aging</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MOLYKOTE® D-321 R Anti-Friction Coating</td>
<td>Air-drying bonded lubricant with excellent heat-aging resistance under heavy loads</td>
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<tr>
<td>Spark plug boots, ignition switches</td>
<td>Improved water resistance</td>
<td>MOLYKOTE® G-5008 Dielectric Grease</td>
<td>Silicone grease designed for rubber and ceramic pairings</td>
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<td>Glow plug controllers</td>
<td>Improved water and corrosion resistance</td>
<td>MOLYKOTE® 4 Electrical Insulating Compound</td>
<td>Greaselike silicone with good dielectric strength, water repellency, oxidation resistance</td>
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<tr>
<td>Electronic transmission actuator</td>
<td>Reduced friction and corrosion</td>
<td>MOLYKOTE® BR-2 Plus High Performance Grease</td>
<td>Mineral-oil-based grease with solid lubricants and extreme-pressure additives</td>
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<td>CV joints, universal joints</td>
<td>Reduced friction and wear</td>
<td>MOLYKOTE® G-4700 Extreme Pressure Synthetic Grease</td>
<td>NLGI GC-LB-certified extreme-pressure grease for heavy loads and vibrations</td>
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<tr>
<td>Engine bolts, fasteners</td>
<td>Improved assembly with proper tightening torque</td>
<td>MOLYKOTE® D-321 R Anti-Friction Coating</td>
<td>Air-drying bonded lubricant with excellent heat-aging resistance under heavy loads</td>
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<td>MOLYKOTE® G-n Metal Assembly Paste</td>
<td>Mineral-oil-based paste with solid lubricants for very low coefficient of friction</td>
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**NOTE:** These are proven, effective MOLYKOTE® brand Smart Lubrication™ solutions for vehicle powertrain systems design. Contact your MOLYKOTE® representative for product options to meet specialized requirements.
Sustainable design solutions

Enhance your design sustainability with MOLYKOTE® brand Smart Lubrication™ solutions from DuPont. To meet key powertrain design needs, these advanced specialty lubrication technologies can be custom-formulated for specified performance characteristics, regulatory standards and process requirements. Raw materials include base oils such as silicone, mineral or polyalphaolefin (PAO); solid lubricants such as molybdenum disulfide (MoS₂) and polytetrafluoroethylene (PTFE); thickeners such as lithium; and various performance additives to inhibit rust, resist wear or withstand extreme pressure.

• MOLYKOTE® brand anti-friction coatings (AFCs) provide bonded lubrication for pistons and rings to help increase fuel efficiency and reduce emissions.
• MOLYKOTE® brand lubricants help reduce friction, wear and corrosion on dual-mass flywheels, constant-velocity joints and starter motor gears and over-running clutches.

Smart Lubrication™ solutions for other vehicle systems

In addition to the MOLYKOTE® brand Smart Lubrication™ solutions for vehicle powertrain design featured in this selection guide, DuPont also offers proven, effective lubricants for these vehicle systems:

• Chassis and brakes
• Electrical
• Exterior
• Interior

MOLYKOTE®

Learn more: Contact us

To learn more about MOLYKOTE® brand specialty lubricants and proven, effective Smart Lubrication™ solutions to drive propulsion efficiency innovation in vehicle powertrain systems design, contact your MOLYKOTE® Technical Representative or visit molykote.com.