



Valve Lubrication and Sealing for Oil and Gas Applications

Reliable, leak-free operation is key for safety, loss prevention and environmental care

Proven, effective problem-solvers

Application: Gate valves are commonly used to block or restrict the flow of raw or processed materials to other stages. These valves can be controlled manually or automatically.



Problem: A mineral oil-based grease, exposed to harsh pipeline materials, hardened and caused difficult valve operation as well as material leakage past the valve seat and seals.

Solution: *Molykote*[®] 111 Compound from Dow Corning maintains reliable lubrication in extreme heat, cold and severe-duty service to ensure smooth valve operation and long-term sealing integrity.



Challenges in valve reliability

Many types of valves – including ball, gate, butterfly and wedge – are used in the oil and gas industry as control valves, requiring accurate and repeatable response. In production, transportation and processing, these valves must deliver reliable performance – often in severe service environments, handling harsh materials under pressure, exposed to extreme heat or cold, and even when not cycled for many years.

Valve problems caused by inadequate lubrication and sealing, abrasive contaminants, or severe-duty service can typically include:

- **Galling and scoring**
- **Seal, seat or packing failure**
- **Corrosion and internal and external leakages of valves**
- **Sticking and seizing, leading to imperfect response to control signals**



Proper lubrication of valve components can reduce wear; improve durability and dependability; and help deliver pipeline content safely, efficiently and responsibly. Such lubrication also can help preserve valve seal, seat and packing materials to ensure leak-free operation.

Molykote[®] brand *Smart Lubrication*[™] solutions

Molykote[®] specialty lubricants from Dow Corning are proven *Smart Lubrication*[™] solutions for many types of valves. High-performance problem-solvers include:

- **Anti-seize pastes:** Solid lubricants in carrier oil maintain effective lubrication even if the oil is squeezed out under load or evaporates. The coefficient of friction (CoF) is consistent over multiple assembly/disassembly operations.
- **Anti-friction coatings:** Paintlike materials provide a clean and dry lubricating film only a few microns thick that can provide desired friction and wear control, unaffected by dusty, dirty working environments. Consistent CoF can be maintained during several assembly and disassembly processes.
- **Lubricating greases:** Semi-solid lubricants with special additives are durable under heavy loads, in extreme heat and cold, and at various speeds.
- **Silicone compounds:** Heavy-consistency, thermally and chemically stable materials serve as valve lubricants and non-curing sealants.

See ***Oil and Gas Valve Lubrication and Sealing Solutions*** (next page).

Oil and Gas Valve Lubrication and Sealing Solutions

Valve Components	Lubricant Application	Molykote® brand Smart Lubrication™ Solutions	Features/Advantages
Packing and seals	Packing or stuffing surface	Molykote® 111 Compound	<ul style="list-style-type: none"> • Silicone with inert thickener • Compatible with many elastomers • Lubricant and non-curing sealant • Wide service temperature range
		Molykote® 3452 Chemical Resistant Valve Lubricant	<ul style="list-style-type: none"> • Fluorosilicone with PTFE solids • Resists corrosive chemicals • Withstands extreme heat • Good for high loads, slow speeds
		Molykote® 55 O-Ring Grease	<ul style="list-style-type: none"> • Silicone with lithium soap thickener • Slightly swells O-rings for tight seal • Resists heat, oxidation • Not recommended for silicone seals
	Bearing seal and seal groove to hold seal	Molykote® Cu-7439 Plus High Temperature Copper Paste	<ul style="list-style-type: none"> • Copper solid lubricants in oil • Excellent adhesion to metals • Resists extreme heat, high loads and pressures, corrosive conditions
	Seal sliding surfaces, seal ring	Molykote® D 321 R Dry Film Lubricant and Spray	<ul style="list-style-type: none"> • Solid lubricants in solvent-resin • Air dries to bonded lubricant film • Unaffected by dirt, contaminants • Excellent adhesion to metals
Shaft and stem	Shaft	Molykote® U-n Lubricant Paste	<ul style="list-style-type: none"> • Solid lubricants in PAG oil • Good compatibility with rubber • Anti-friction coating lubricates in extreme heat under heavy loads
		Molykote® 106 Anti-Friction Coating	<ul style="list-style-type: none"> • Solid lubricants in solvent-resin • High load-carrying capacity • Heat curing to bonded film
	Stem	Molykote® 3402C LF Anti-Friction Coating	<ul style="list-style-type: none"> • Solid lubricants in organic solvent-binder • Resists high pressures and wear • Protects against corrosion • Air curing to dry lubricating film
		Molykote® G-n Metal Assembly Paste and Spray	<ul style="list-style-type: none"> • Solid lubricants in mineral oil • Aids press fitting, running-in • Helps prevent galling, cold welding • Protects against wear, corrosion
Ball	Ball surface	Molykote® G Paste	<ul style="list-style-type: none"> • Solid lubricants in mineral oil • Prevents seizure, scoring • Suppresses stick-slip, corrosion • High pressure-absorption capacity
Bearings	Bearing wear surfaces	Molykote® 33 Extreme Low Temperature Bearing Grease, Light	<ul style="list-style-type: none"> • Silicone oil with lithium soap thickener • Low torque for extreme-cold startups • Wide service temperature range • Resists oxidation, moisture, corrosive atmospheres
Threaded connections	Studs, bolts, yoke nut, screws	Molykote® anti-friction coatings	<ul style="list-style-type: none"> • Solid lubricants, solvent-resin system • Applied to clean, dry assembly parts • Air- and heat-curing options • Long-term, dry-film lubrication
		Molykote® anti-seize pastes	<ul style="list-style-type: none"> • Solid lubricants, synthetic/mineral oil • Can be field-applied; aerosol options • Resist water washout, corrosion • Aid non-destructive assembly, disassembly
Body seat	Body seat	Molykote® D 321 R Dry Film Lubricant and Spray	<ul style="list-style-type: none"> • Solid lubricants in solvent-resin • Air dries to bonded lubricant film • Unaffected by dirt, contaminants



Learn More: Contact Us

To learn more about Molykote® brand Smart Lubrication™ solutions for valves in oil and gas applications, contact your Dow Corning Technical Representative, visit dowcorning.com/oilgas or send an email to industrial@dowcorning.com.

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