

Product Information



Duolec® Vari-Purpose Gear Lubricant

(1601-1610, 1302, 1304)

High-Performance Oil Maintains Effective Lubrication in High-Temperature, High-Load Applications

Duolec Vari-Purpose Gear Lubricant is a high-performance industrial and automotive gear oil with ISO grades ranging from ISO VG 46 to 1500. Designed for use in any industrial gear or bearing application that requires a thermally stable, extreme pressure lubricant, it maintains performance even after filtration. It also meets the requirements for many hypoid and planetary gears in heavy-duty mobile equipment, as well as differentials in over-the-road vehicles.

Duolec Vari-Purpose Gear Lubricant contains Duolec, LE's dual-acting additive that provides both wear-reducing and EP protection, and is fortified with a shear stable tackifier to provide adhesion to metal during use.

Beneficial Qualities

Maintains Performance in Extreme Conditions

- Possesses high film strength
- Remains stable despite high temps
- Resists oxidation and sludge formation
- Provides wear-reducing and EP protection



Adheres to Metal

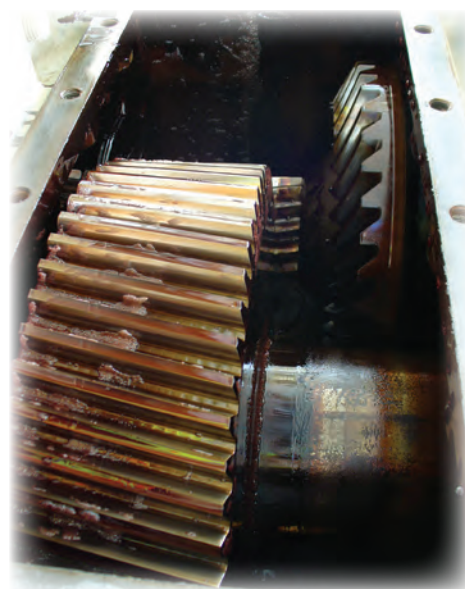
- Contains shear-stable tackifier that allows oil to adhere to metal components
- Remains tacky during high shear use

Resists Moisture

- Separates readily from water, continuing to provide effective lubrication
 - ◆ Ordinary gear oils will emulsify and foam, causing increased friction and poor lubrication

Filterable

- Contains nonsilicone anti-foamants that resist removal during filtration
- Contains no solids that can be removed during filtration
- Remains within viscosity grade after filtration



Proprietary Additive

LE's proprietary additives are used exclusively in LE lubricants. Duolec® Vari-Purpose Gear Lubricant contains Duolec.

Duolec® dual-acting additive imparts synergistic properties to lubricants, providing both wear-reducing and extreme pressure protection. The result of revolutionary technology designed specifically for use in LE gear lubricants, Duolec increases oil film strength and is temperature-activated to provide a protective layer that smooths metal surfaces and minimizes the effects of any contact, thereby reducing friction and preventing surface wear.



Asset Reliability Solutions™

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Technical Data

Duolec® Vari-Purpose Gear Lubricant

	1601	1602/1302*	1603	1604/1304*	1605	1606	1607	1608	1609	1610
Color	Purple	Purple/Amber	Purple	Purple/Amber	Purple	Purple	Purple	Purple	Purple	Purple
ISO VG / SAE Grade	46 / 75W	68 / 80	100 / 85	150 / 90	220 / 110	320 / 140	460 / 190	680 / 250	1000 / 250	1500 / 250
AGMA Grade	1 EP	2 EP	3 EP	4 EP	5 EP	6 EP	7 EP	8 EP	8A EP	9 EP
Relative Density ASTM D1298	0.872	0.876	0.884	0.885	0.890	0.887	0.889	0.890	0.898	0.898
Viscosity @ 100°C, cSt, ASTM D445	7.1	9.7	12.3	16.4	21.2	27.9	37.0	47.5	62.1	81.3
Viscosity @ 40°C, cSt, ASTM D445	45.0	71.9	104	156	229	333	480	708	1,015	1,423
Viscosity Index ASTM D2270	117	114	110	111	110	113	118	116	120	126
Viscosity-Brookfield @ -40°C, cP, ASTM D2983	150,000	--	--	--	--	--	--	--	--	--
Flash Point °C (°F), (COC), ASTM D92	210 (410)	210 (410)	210 (410)	210 (410)	210 (410)	210 (410)	213 (415)	216 (420)	213 (415)	215 (419)
Pour Point °C (°F), ASTM D97	-33 (-27)	-27 (-17)	-24 (-11)	-24 (-11)	-24 (-11)	-21 (-6)	-21 (-6)	-15 (5)	-15 (5)	-18 (0)
Rust Test 4 hrs @ 60°C, Sea H ₂ O, ASTM D665B	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Copper Corrosion 3 hrs @ 121°C, ASTM D130	1b	1b	1b	1b	1b	1b	1b	1b	1b	1b
Timken OK Load lbs (kgs), ASTM D2782	75 (34)	75 (34)	75 (34)	75 (34)	75 (34)	75 (34)	75 (34)	75 (34)	75 (34)	75 (34)
Four-Ball EP Weld Point kgf, ASTM D2783	400	400	400	400	400	400	400	400	400	400
Four-Ball EP Load Wear Index kgf, ASTM D2783	77	77	77	77	77	77	77	77	77	77
Four-Ball Wear @ 75°C, 1200 rpm, 40 kgf, 60 minutes, mm wear, ASTM D4172	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Foaming Characteristics @ 24°C/93.5°C/24°C, 3 sequences, ml of foam/time to break, ASTM D892	0/0,0/0,0/0	0/0,0/0,0/0	0/0,0/0,0/0	0/0,0/0,0/0	0/0,0/0,0/0	0/0,0/0,0/0	0/0,0/0,0/0	0/0,0/0,0/0	0/0,0/0,0/0	0/0,0/0,0/0
FZG Scuffing Load Capacity Fail Stage, ASTM D5182	14+	14+	14+	14+	14+	14+	14+	14+	14+	14+

Performance Requirements Met or Exceeded

- AGMA 9005 E02
- API GL-5
- Chinese IGO L-CKD
- Cincinnati Machine
- DIN 51517 Part 3
- David Brown
- MIL-L-2105E
- Muller Weingarten DT 55-005/1
- US Steel 224
- USDA H2

Typical Applications

- Enclosed gearboxes
- Bowl mills / pulverizers
- Homogenizers
- Hypoid and planetary gears in heavy-duty mobile equipment
- Differentials

* 1302 & 1304 are undyed. All other ISO grades can be made available as undyed versions, contingent on a 10-drum minimum order.



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