



## Duolec® Vari-Purpose Gear Lubricant (1601-1609)

### High-Performance Oils Maintain Effective Lubrication in High-Temperature, High-Load Applications

Duolec Vari-Purpose Gear Lubricants are a high-performance line of industrial and automotive gear oils ranging from ISO VG 46 to 1000. They were designed for use in any industrial gear or bearing application that requires a thermally stable, extreme pressure lubricant, and they maintain their performance even after filtration. They also meet the requirements for many hypoid and planetary gears in heavy-duty mobile equipment, as well as differentials in over-the-road vehicles.

They contain Duolec, LE's dual-acting additive that provides both wear-reducing and EP protection. Duolec Vari-Purpose Gear Lubricants also are 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

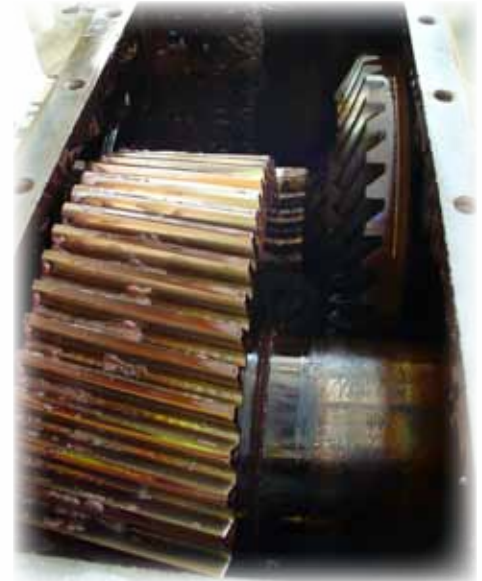
- Contains shear-stable tackifier that allows oil to adhere to metal components
- Remains tacky during high shear use

##### 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 Additives

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.



## Duolec® Vari-Purpose Gear Lubricant

	<b>1601</b>	<b>1602</b>	<b>1603</b>	<b>1604</b>	<b>1605</b>	<b>1606</b>	<b>1607</b>	<b>1608</b>	<b>1609</b>
<b>Color</b>	Purple	Purple	Purple	Purple	Purple	Purple	Purple	Purple	Purple
<b>ISO VG / SAE Grade</b>	46 / 75W	68 / 80	100 / 85	150 / 90	220 / 110	320 / 140	460 / 190	680 / 250	1000 / 250
<b>AGMA Grade</b>	1 EP	2 EP	3 EP	4 EP	5 EP	6 EP	7 EP	8 EP	8A EP
<b>Relative Density</b> ASTM D1298	0.880	0.882	0.884	0.885	0.890	0.887	0.889	0.890	0.898
<b>Viscosity @ 100°C, cSt,</b> ASTM D445	6.98	9.44	12.31	16.42	21.20	27.90	37.00	47.50	62.10
<b>Viscosity @ 40°C, cSt,</b> ASTM D445	44.15	70.75	104.0	156.0	229.0	332.5	480.0	707.5	1015.0
<b>Viscosity Index</b> ASTM D2270	116	111	110	111	110	113	118	116	120
<b>Flash Point °C (°F),</b> (COC), ASTM D92	210 (410)	210 (410)	210 (410)	210 (410)	210 (410)	210 (410)	213 (415)	216 (420)	213 (415)
<b>Pour Point °C (°F),</b> ASTM D97	-33 (-27)	-27 (-17)	-24 (-11)	-24 (-11)	-24 (-11)	-21 (-6)	-21 (-6)	-15 (5)	-15 (5)
<b>Rust Test 4 hrs @ 60°C,</b> Sea H <sub>2</sub> O, ASTM D665B	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
<b>Copper Corrosion 3 hrs</b> @ 121°C, ASTM D130	1b	1b	1b	1b	1b	1b	1b	1b	1b
<b>Timken OK Load lbs (kgs),</b> ASTM D2782	75 (34)	75 (34)	75 (34)	75 (34)	75 (34)	75 (34)	75 (34)	75 (34)	75 (34)
<b>Four-Ball EP Weld Point</b> kgf, ASTM D2783	400	400	400	400	400	400	400	400	400
<b>Four-Ball EP Load Wear</b> Index kgf, ASTM D2783	77.2	77.2	77.2	77.2	77.2	77.2	77.2	77.2	77.2
<b>Four-Ball Wear @ 75°C,</b> 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
<b>Foaming Characteristics</b> @ 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
<b>FZG Fail Stage</b>	14+	14+	14+	14+	14+	14+	14+	14+	14+

### Performance Requirements Met or Exceeded

- AGMA 250.04
- AGMA 9005 E02
- API GL-5
- Bucyrus International, Inc.
- David Brown Type E
- DIN 51517 Part 3
- ISO 12925 Type CKD
- MIL-L-2105E
- US Steel 224
- USDA H2

### Typical Applications

- Enclosed gearboxes
- Gearboxes at water and wastewater treatment facilities
- Bowl mills / pulverizers
- Homogenizers
- Hypoid and planetary gears in heavy-duty mobile equipment
- Differentials



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