

Transmission Fluid TO-4

PRODUCT DESCRIPTION

Bel-Ray® TO-4 heavy duty transmission and drive train multi-functional lubricants are specifically formulated to meet Caterpillar's TO-4 and Caterpillar TO-4M requirements. Coupled with select base oils, Bel-Ray's balanced additive technology provides maintenance managers piece of mind, standing up to the rigorous and severe operating conditions in off-highway industries including: mining, construction, quarrying, and agriculture. Bel-Ray TO-4 heavy duty transmission and drive train multi-functional lubricants contains balanced additive technology that provides the friction control, low gear wear, good elastomer compatibility and oxidation stability performances, required to meet the specifications for power shift transmissions, final drive and hydraulic systems. TO-4 supersedes and replaces Caterpillar TO-2.

PRODUCT FEATURES

- Superior gear wear control
- Shear stable viscosity modifiers keep oil in grade throughout drain life
- Excellent friction properties prevent clutch slippage
- Outstanding rust and copper corrosion protection
- Protects and conditions all seals for longer life

BENEFITS

- Reduced gear wear and extended life in transmissions, gearboxes, and final drives
- Extended service capable with used oil analysis program
- Provides maximum power transfer throughout the lube interval
- Formulated to keep metal parts clean to prevent unwanted break-down
- Compatible with new and traditional seal materials

APPLICATIONS

Approvals:

- ZF TE-ML-03C
- ZF TE-ML-07F PERFORMANCE LEV

Performance Levels:

- ZF TE-ML-03C
- ZF TE-ML-07F PERFORMANCE LEV
- CAT TO-4 and TO-4M
- Allison C4
- Komatsu KES 07.868.1 (2002)

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TECHNICAL DATA SHEET



- API MT-1
- *API CF

*Demonstrates API CF performance, providing protection in case of accidental use in diesel engines, provided the drain interval is shortened.

PRODUCT DATA

Typical Properties				
Property	Test Method	TO-4 10W	TO-4 30W	TO-4 50W
API Gravity @ 60°F	ASTM D4052	31.0	28.8	26.6
Density @ 15°C (g/mL)	ASTM D4052	0.8703	0.8822	0.8945
Viscosity @ 40°C (cSt)	ASTM D445	33.3	89.0	259.0
Viscosity @ 100°C (cSt)	ASTM D445	5.3	10.9	19.1
Viscosity Index	ASTM D2270	108	107	97
Flash Point, °C (°F)	ASTM D92	193 (397)	201 (394)	212 (414)
Pour Point, °C (°F)	ASTM D97	-45 (-49)	-36 (-33)	-27 (-17)
Zinc (Wt %)	ASTM D6481	0.107	0.107	0.107
Pounds per Gallon	ASTM D1250	7.251	7.350	7.453

HEALTH and SAFETY

Health and safety recommendations for products can be found on the Safety Data Sheet (SDS) at www.belray.com

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