

Plus-50™ II Premium Engine Oil



Service Ratings

API service categories: CK-4, CJ-4, CI-4 PLUS, CI-4, CH-4, SN, SM, SL
 ACEA (Europe) oil sequences: E9, E7
 JASO (Japan) oil standards: DH-2

Major diesel engine manufacturers' requirements:

John Deere.....	JDQ-78X
Mack.....	EOS-4.5, EO-O Premium Plus 07
Cummins.....	CES 20081, 77, 76 (15W-40), 75
Caterpillar.....	ECF-3, ECF-2, ECF-1-a, T0-2
Mercedes Benz.....	228.31
Detroit Diesel.....	93K218 (15W-40), 93K214 (15W-40)
Volvo.....	VDS-4.5, VDS-4, VDS-3, VDS-2
Renault.....	RLD, RXD, RD
Man.....	M3275
MTU.....	Type 2.1

Part Number/Size

UNITED STATES			
Description	Part	Size	Qty.
Plus-50 II, 0W-40, Synthetic	TY26665	1 qt. (946 mL)	12
	TY26664	1 gal. (3.78 L)	6
	TY26667	5 gal. (18.9 L)	1
	TY26666	55 gal. (208 L)	1
	TY27354	275-gal. (1040 L) tote	1
	Plus-50 II, 15W-40	TY26674	1 qt. (946 ml)
TY26673		1 gal. (3.78 L)	6
TY26675		2 1/2 gal. (9.46 L)	2
TY26679		5 gal. (18.9 L)	1
TY26677		30 gal. (113 L)	1
TY26678		55 gal. (208 L)	1
TY26676		220 gal. (832 L)	1
Plus-50 II, 10W-30	TY26669	1 qt. (946 ml)	12
	TY26668	1 gal. (3.78 L)	6
	TY26671	5 gal. (18.9 L)	1
	TY26670	55 gal. (208 L)	1

Applications

- For use in heavy-duty off-road applications, on-road trucks, marine engines, natural gas engines, pickups, and automobiles.
- Backwards compatible for use in all legacy diesel engine applications where Plus-50 may have been applied.
- For use in John Deere Tier 4 engines and all diesel engines requiring API CK-4 oil.

Features/Benefits

- Exceeds API CK-4 performance level for diesel engines.
- Exceeds API SN performance level for gasoline engines.
- Formulated specifically to inhibit oxidation, deposits, corrosion, and wear with superior soot control.
- Reduces maintenance costs and downtime.
- Provides maximum sludge and varnish control.
- Excellent low-temperature fluidity reduces engine wear in cold weather.
- Drain intervals may be extended up to 500 hours when used with John Deere filters in John Deere engines. (Review Operator Manual or consult with dealer for details.)
- Low ash technology to support Diesel Particulate Filter (DPF) service life.

Physical Properties

Test Parameters	15W-40	10W-30
Viscosity @ 40°C.....	128.0 cSt.....	86.6 cSt
Viscosity @ 100°C.....	15.6 cSt.....	12.1 cSt
Viscosity index.....	127	133
HTHS viscosity @ 150°C.....	4.3 cP.....	3.6 cP
Pour point.....	-36°C.....	-40°C
Flash point.....	225°C.....	223°C
Total Base Number (TBN) mg KOH/g.....	10.5.....	10.5
Sulfated ash level.....	1.0 mass %.....	1.0 mass %

CANADA			
Description	Part	Size	Qty.
Plus-50 II, 0W-40, Synthetic	TY26665	1 qt. (946 mL)	12
	TY26664	3.78 L (1 gal.)	6
	TY26667	18.9 L (5 gal.)	1
	TY26666	208 L (55 gal.)	1
	TY27354	1040 L (275 gal.)	1
	Plus-50 II, 15W-40	TY26674	946 ml (1 qt.)
TY26658		3.78 L (1 gal.)	4
TY26675		9.46 L (2 1/2 gal.)	2
TY26679		18.9 L (5 gal.)	1
TY26644		125 L (33 gal.)	1
TY26656		205 L (54.1 gal.)	1
TY26654		1200 L (317 gal.)	1
Plus-50 II, 10W-30	TY26643	3.78 L (1 gal.)	4
	TY26671	18.9 L (5 gal.)	1
	TY26650	205 L (54.1 gal.)	1

Plus-50™ II

Plus-50 II exceeds the requirements of the American Petroleum Institute (API) Service Category CK-4 for use in high-speed four-stroke diesel engines and is backward compatible to meet previous API engine oil classifications.

Plus-50 II premium engine oil has been designed to provide advanced lubricant performance in modern low emission engines, and to meet the requirements of heavy-duty off-road applications, as well as lighter-duty applications including on-road vehicles.

Plus-50 II is recommended for four-stroke naturally aspirated, turbocharged and supercharged diesel engines with Diesel Particulate Filters (DPF), Diesel Oxidation Catalysts (DOC), and Exhaust Gas Recirculation (EGR). Examples of applications include: heavy-duty off-road equipment, vehicles with John Deere Tier 4 engines, vehicles requiring CK-4 oil, on-road trucks, marine engines, natural gas engines, pickups, and automobiles. Plus-50 II is also recommended for use in all legacy diesel engine applications where Plus-50 has been in use.

As part of the early development of Plus-50 II, John Deere engineers implemented the JDQ-78X off-road engine dyno test, which incorporates the latest in engine emission technology and fuel options. The JDQ-78X test assures that Plus-50 II will protect our heavy-duty off-road diesel engines and our reputation.

Plus-50 II exceeds demands of the John Deere JDQ-78X high-temperature performance test. JDQ-78X is the most severe engine dyno test for high-temperature oil oxidation in the industry. The proven performance from the JDQ-78X, along with extensive field testing, allows extended drain intervals up to 500 hours when using Plus-50 II and John Deere filters for your John Deere engine. Refer to the Operator's Manual to validate the recommended change interval for your specific machine.

CK-4 oil, such as Plus-50 II, must be used with Tier 4 engines or significantly reduced DPF life will result.

JDQ-78X Test

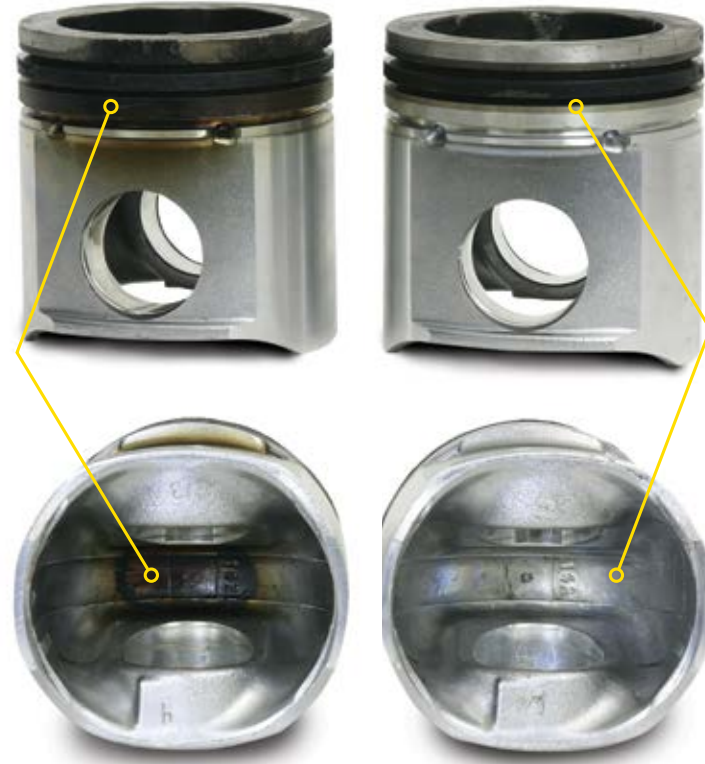
In the development of Plus-50 II, John Deere engineers test the oil under the most extreme conditions using the JDQ-78X test. The JDQ-78X test is a John Deere engine that is run for 500 hours at full load and high heat to thoroughly test the capabilities of the oil. At the end of the test we evaluate the engine parts and the oil to determine how well the oil protects the engine and how long it will last under such extreme conditions.

JDQ-78X Test Conditions

- 500 hours
- 140°C oil gallery
- 168 hp (or 125 kW)
- Tier 4 EGR rate - 15% EGR
- Biodiesel proven - fueled with B20
- No make-up oil added

Pistons from the JDQ-78X Test

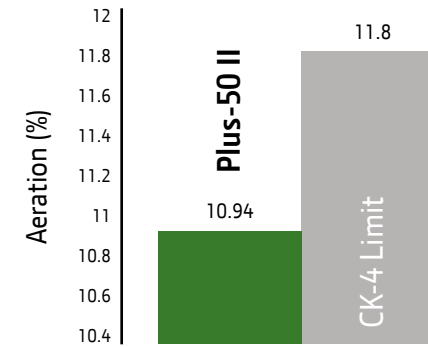
Competitive oil leaves soot and more piston deposits in the piston land and groove area and undercrown area of the piston, which can cause rings not to perform as designed. Plus-50 II is formulated for hotter off-road conditions to reduce piston deposits so the engine will perform for a long time.



Competitor Premium Oil

Plus-50 II Premium Oil

COAT (40-50 -hour avg.) (%)



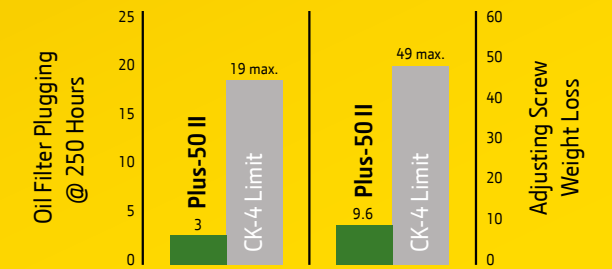
Competitive Comparison



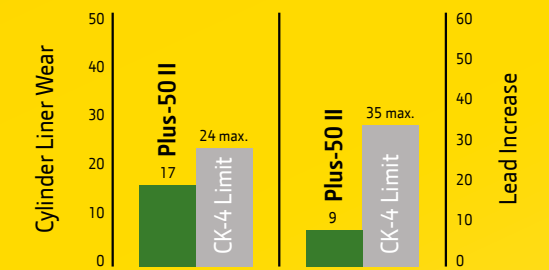
Other Engine Tests for CK-4 Minimums

In addition to our own extensive testing, we also participate with engine tests that define the minimum requirements of API CK-4 oil. These graphs demonstrate the magnitude of performance Plus-50 II has when compared to these minimum specifications.

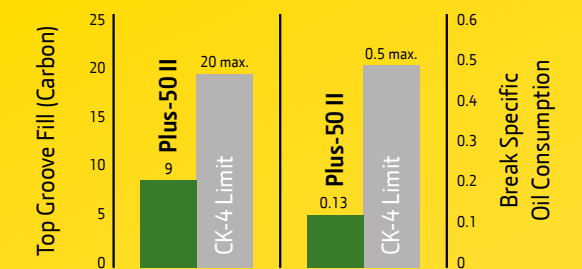
Cummins ISM



Mack T-12



Caterpillar 1N



Volvo T13

