



Bio-Fleet™ HD Plus HP Motor Oils

Bio-Fleet HD Plus HP Motor Oils (Low Ash) are high performance biobased products that are formulated to meet or exceed the requirements of all major manufactures of naturally aspirated or turbo-charged/supercharged diesel and gasoline engines such as: API Service SN/CJ-4, and prior API Service SJ, SL, SM, SN/CD, CDII, CE, CF, CF-2, CF-4, CH-4, CI-4, CI-4 Plus, and including: ACEA E9-08, E2-96, E5-02, 7-02, 7-04, MTU 2.1, CAT ECF-1-a, ECF-1, ECF-2, ECF-3, VOLVO VDS-3, VDS-4, Cummins CES 20081, Mack EO-O Premium Plus, MACK EO-O PP-07, Detroit Diesel DDC 93K218, Daimler Chrysler MB228.3, MB228.31, Deutz DQC III-05, MAN M 3575, Renault Truck RLD-3 and power-shift transmission CAT TO-2, Allison C-3/C-4.

Bio-Fleet HD Plus Motor Oils 10W, 20, 39' 40, and 50 can be used for road or off-road equipment in heavy duty engines, hydrostatic transmissions, manual transmissions, final drives, and hydraulic systems where low-ash or **non-multi-grade-type** motor oils are recommended. **(Always consult owner's manual for proper viscosity and performance recommendations).**

Bio-Fleet HD Plus 10W30 and HD Plus 15W40 (API SN/CJ-4) meet the requirements for EPA 2007 compliant diesel engines equipped with after treatment devices such as diesel oxidation catalysts and particulate filters that require low ash and meet the prior diesel engine service requirements of API Service CI-4, CI-4 Plus, CH-4, CF-4, CF, CF-2, CE, CD-II and CD. **Bio-Fleet HD Plus Motor Oils 30, 40, and 50wts** meet API Service CF, CF-2, CE, CD-II and CD (Series III). SAE 10W and SAE 20 meet API CD. All viscosity grades meet API SM for use in four stroke gasoline engines used in passenger cars, light trucks, powerboats, motorcycles, natural gas engine, and other mobil and stationary equipment .

<u>TYPICAL PROPERTIES</u>	<u>10W</u>	<u>20</u>	<u>30</u>	<u>40</u>	<u>50</u>	<u>10W30</u>	<u>15W40</u>	<u>20W50</u>
<u>VISCOSITY</u>								
c _{ST} @ 40 ^o C	34.1	49.0	81.0	112	141.1	66.1	98	129
c _{ST} @ 100 ^o C	6.0	7.8	11.5	14.8	17.6	10.7	15	18.3
Viscosity Index	122	127	133	136	138	152	161	159
Pour Point, ^o C,	-34	-30	-27	-22	-20	-34	-30	-28
Sulfated Ash Weight %	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total Base Number (TBN) D-2896	8	10.3	10.3	10.3	10.3	10.3	10.3	10.3
<u>PERFORMANCE</u>								
API SN/CJ-4, CI-4, CI-4 Plus	---	---	---	---	---	M	M	
API CF, CF2, CE, CD, SM (CF-4**)	M	M	M	M	M	M**	M**	M
ACEA E9-08	---	---	---	---	---	M	M	
Volvo VDS-4	---	---	---	---	---	M	M	
Caterpillar ECF-3	---	---	---	---	---	M	M	
Cummins CES 20081	---	---	---	---	---	M	M	
Detroit Diesel 93K218	---	---	---	---	---	---	M	
Mack EO-M Plus	---	---	---	---	---	M	M	
Mack EO-N Premium Plus	---	---	---	---	---	---	M	
Allison C-4, C-3	M	---	M	---	---	M	M	
Caterpillar CD/TO-2	M	---	M	M	M	M	M	M
Non Multi-Grade applications	M	M	M	M	M			

M = Meet or exceed the requirements