

AMERICAN HITECH PETROLEUM & CHEMICALS, INC.

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RUSSIA

TAIWAN

JORDAN

POMANIA

VIETNAM

TURKEY

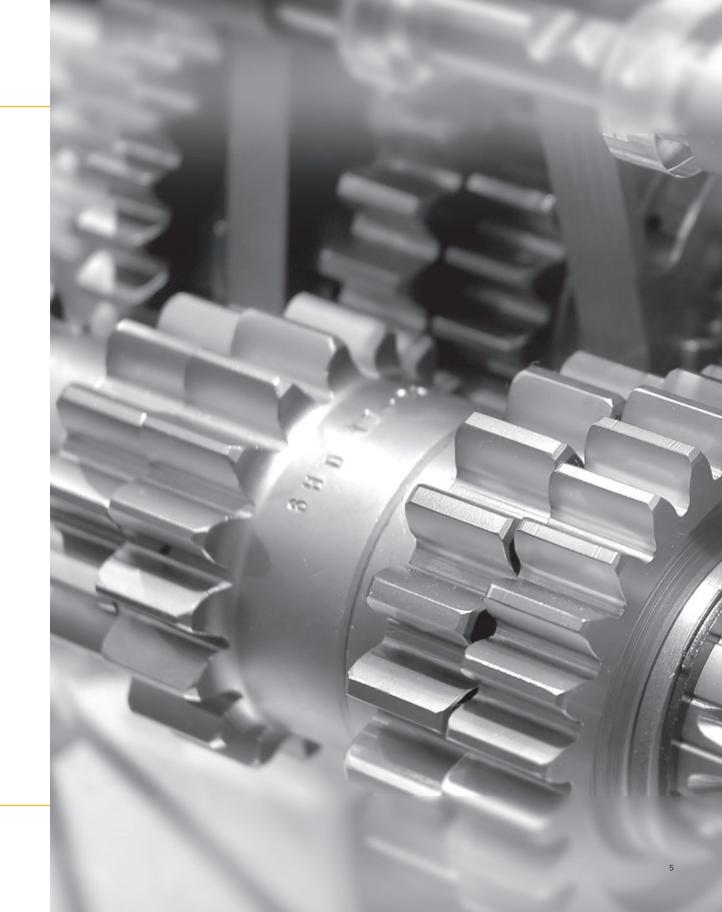
IRAQ

S.KOREA

REPUBLIC OF CONGO

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## **LIQUID OF INNOVATION**

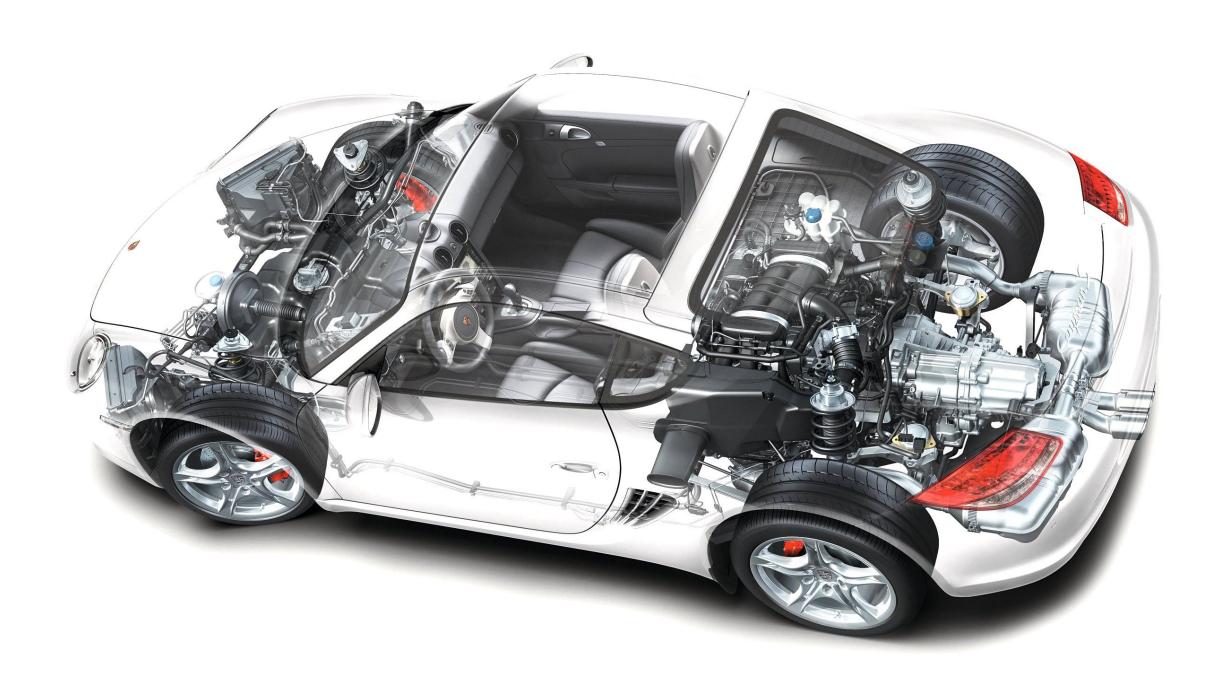
American Hi-Tech Petroleum & Chemicals, Inc., dba Amtecol Inc, manufactures automotive lubricants, industrial lubricants, food grade lubricants, marine lubricants, construction/mining and off highway equipment lubricants, agricultural lubricants, greases, and viscosity index improvers for over a decade. Today, Amtecol operates an exclusive laboratory in Northern California to develop and test high-performance Amtecol lubricants exceeding specifications to deliver quality products and services. Amtecol's automotive lubricants and technical services are supplied by our distribution network to customers in fast-growing markets across North America, Europe, Asia Pacific, Middle East, Africa, and Latin America.

### **PHILOSOPHY**

Amtecol believes in developing lubricants which enhance the performance of engines. As a company, we continuously invest in new technology to ensure our products meet and exceed the needs of our customers'.



# **AUTOMOTIVE LUBRICANTS**

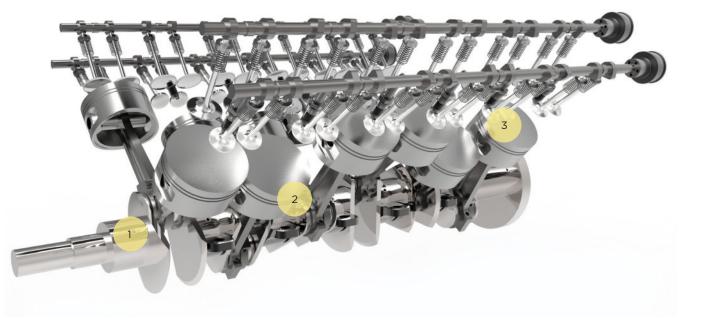


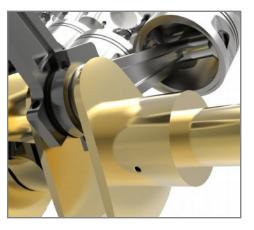




# SUPER LIFE® 9000N

The industry is moving forward to synthetic...





1.
Oil flows through the holes drilled inside the crankshaft and lubricates the main bearing.



2. Oil flows through the oil ring to lubricate the piston and parts from the inside, which forms a thin film around the cylinder wall.

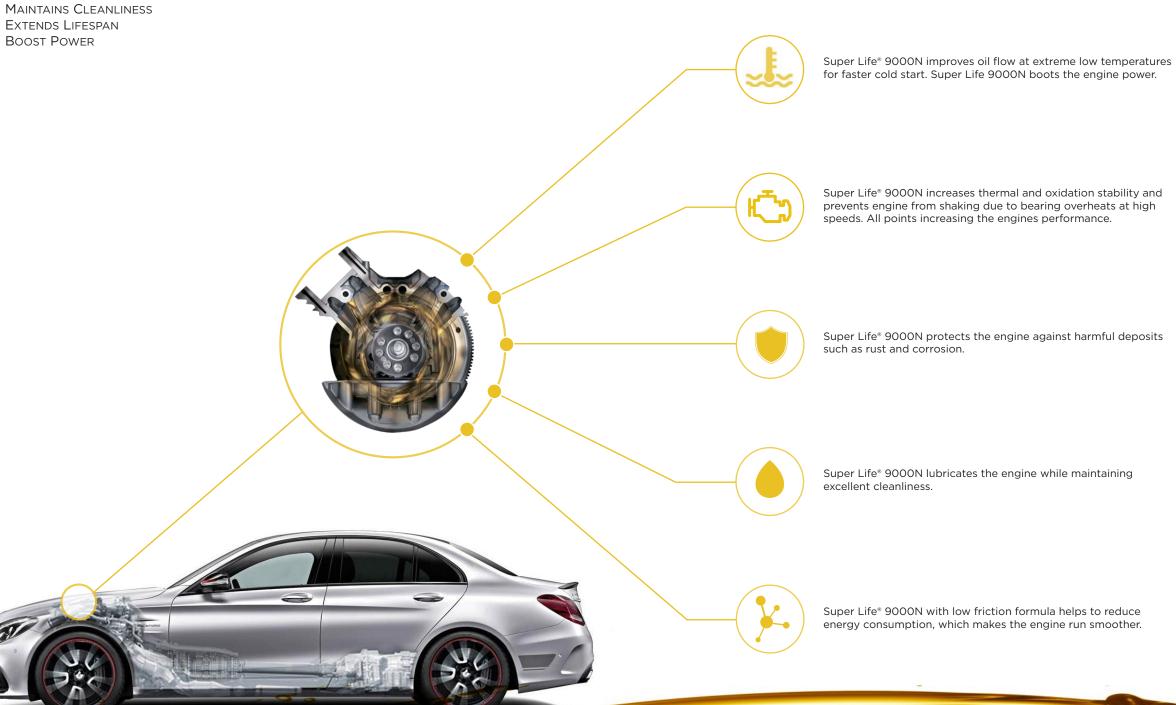


It lubricates the camshaft, valves and valve springs.

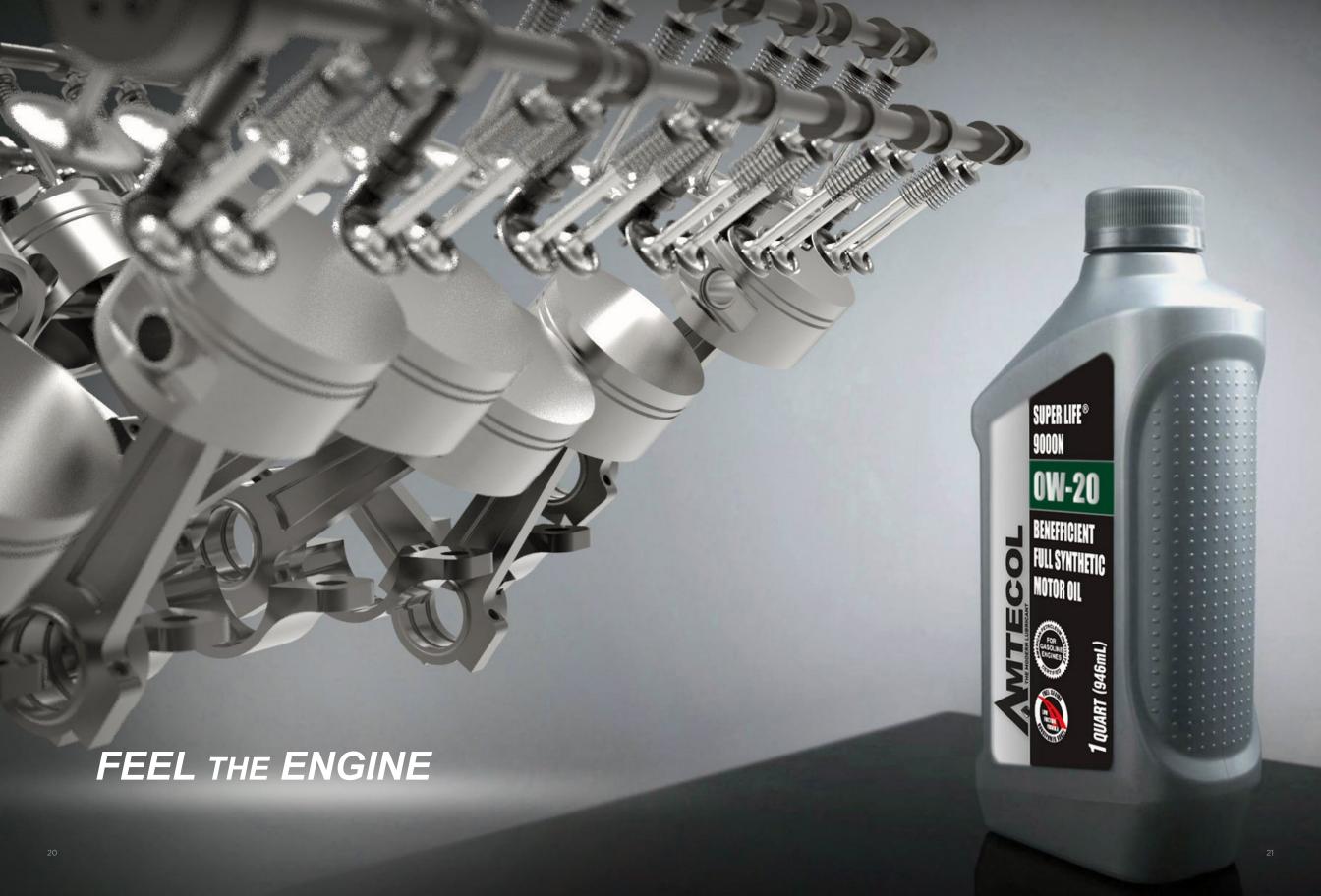


# SUPER LIFE® 9000N

REDUCES ENERGY CONSUMPTION INCREASES PERFORMANCE









# SUPER LIFE® XLD 12000

PREMIUM HEAVY DUTY DIESEL ENGINE OIL API CJ-4/SM



### PACKAGE AVAILABLE

- •4x4 QT
- •5 GALLONS
- •55 GALLON

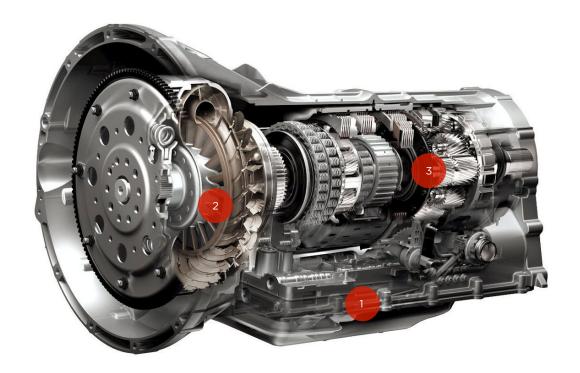


AUTOMATIC TRANSMISSION FLUID (ATF)



# DURALIFE® HD ATF

**AUTOMATIC TRANSMISSION FLUID** 





When gears shift, the transmission fluid is pumped into various valves through the hydraulic pressure.



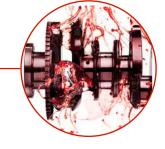
2. The transmission fluid will flow to the torque converter and other parts.



5.
The transmission fluid constantly lubricates and cools the working systems inside a transmission. As gears shift, engage and disengage the transmission will require constant lubrication.

# DURALIFE® HD ATF

EXTENDS TRANSMISSION'S LIFESPAN SMOOTHER SHIFTING REDUCES COST



Synthetic ATF has the ability to sustain its viscosity, high resistance to oxidation in broad temperature range due to different driving behaviors and other factors. Using synthetic ATF consistently will help the vehicle shift smoother.



Synthetic based lubricants last longer than mineral based lubricants. Synthetic based lubricants protect gears, bearings and shafts from constant movements under extreme temperature conditions.



The most extraordinary function of synthetic is cleaning the transmission while the engine is running. Synthetic ATF will remove corrosion and rust deposits in the transmission.



ANTIFREEZE & COOLANT



MIEGOL

WARNING : SWALL Gallon (3.79 L) (Read wa

WARNING : HARMFUL OR FATAL IF SWALLOWED OR INHALED (Read warnings on back label)





PRODUCT NAME	SAE GRADES	API/ACEA/ILSAC SERVICE CLASSIFICATION	PRODUCT NAME	SAE GRADES	API/ACEA/ILSAC SERVICE CLASSIFICATION
SUPER LIFE® 9000N Benefficient Full Synthetic Motor Oils	OW-20, OW-30, OW-40, OW-50, 5W-20, 5W-30, 5W-40, 5W-50, 10W-30, 10W-40, 15W-50	API SN /SM /CF ILSAC GF-5	SUPER LIFE® 7500M Supreme Motor Oils	30, 40, 50 ,5W-20, 5W-30, 10W-30, 10W-40, 20W-50	API SM /SL ILSAC GF-4
SUPER LIFE® 9000N EURO Benefficient Full Synthetic Motor Oils	OW-20 A1/B1, OW-30 A5/B5, OW-30 A3/B4, OW-40 A3/B4, 5W-30 C1, 5W-30 C2, 5W-30 C3, 5W-30 C4, 5W-40, 5W-50, 10W-50, 15W-60	ACEA A1/B1, A3/B4, A5/B5, C1/C2/C3/C4 API SN /SM /CF ILSAC GF-5	SUPER LIFE® 7500M EURO Supreme Motor Oils	5W-20 A5/B5, 5W-30 A5/B5, 5W-30 A3/B4, 5W-30 C3, 5W-30 C4, 5W-40 A3/B4, 10W-30 A3/ B3, 10W-40 A3/B4, 10W50 A3/B3, 15w40 A3/B4, 20w50 A3/B4	ACEA A1/B1, A3/B4, A5/B5, C1/C2/C3/C4 API SM /CF ILSAC GF-4
SUPER LIFE® 8000N  Benefficient Synthetic Blend  Motor Oils	5W-20,5W-30, 10W-30, 10W-40, 20W-50	API SN /SM ILSAC GF-5	SUPER LIFE® 7000M Supreme High Mileage Motor Oils	5W-30, 10W-30, 10W-40, 20W-50	API SM /SL
SUPER LIFE® 8000N EURO Benefficient Synthetic Blend Motor Oils	5W-20 A5/B5, 5W-30 A5/B5, 5W-30 A3/B4, 5W-30 C3, 5W-30 C4, 5W-40 A3/B4, 10W-30 A3/ B3, 10W-40 A3/B4, 10W50 A3/B3, 15w40 A3/B4, 20w50 A3/B4	ACEA A1/B1, A3/B4, A5/B5, C1/C2/C3/C4 API SN /SM /CF ILSAC GF-5	SUPER LIFE® 9000 Full Synthetic Motor Oils	5W-20,5W-30, 5W-40, 10W-30, 10W-40	API SL /SJ /CF ILSAC GF-3
SUPER LIFE® 7500N Benefficient Motor Oils	5W-20,5W-30, 10W-30, 10W-40, 15W-50, 20W-50, 25W-50	API SN /SM ILSAC GF-5	SUPER LIFE® 8000 Synthetic Blend Motor Oils	5W-20, 5W-30, 10W-30, 10W-40, 15W-40, 20W-50	API SL/ SJ /CF ILSAC GF-3
SUPER LIFE® 7500N EURO Benefficient Motor Oils	5W-20 A5/B5, 5W-30 A5/B5, 5W-30 A3/B4, 5W-30 C3, 5W-30 C4, 5W-40 A3/B4, 10W-30 A3/ B3, 10W-40 A3/B4, 10W50 A3/B3, 15w40 A3/B4, 20w50 A3/B4	ACEA A1/B1, A3/B4, A5/B5, C1/C2/C3/C4 API SN /SM /CF ILSAC GF-5	SUPER LIFE® 7500 Motor Oils	30, 40, 50, 5W-20, 5W-30, 10W-30, 10W-40, 20W-50	API SL /SJ /CF ILSAC GF-3
SUPER LIFE® 7000N Benefficient High Mileage Motor Oils	5W-30, 10W-30, 10W-40, 20W-50	API SN/SM	SUPER LIFE * 7000 High Mileage Motor Oils	10W-30, 10W-40, 20W-50	API SL/SJ
SUPER LIFE® 9000M Premium Full Synthetic Motor Oils	0W-20, 0W-30, 0W-40, 5W-20, 5W-30, 5W-40, 5W-50, 10W-30, 10W-40, 15W-50	API SM /CF ILSAC GF-4	SUPER LIFE® 6000 Motor Oils	30, 40, 50, 10W-30, 10W-40, 15W-40, 20W-50	API SJ /SH /CF
SUPER LIFE® 9000M EURO Premium Full Synthetic Motor Oils	0W-20 A5/B5, 0W-30 A5/B5, 0W-30 A3/B4, 0W-40 A3/B4, 5W-40, 5W-50, 10W-50, 10W-60	ACEA A1/B1, A3/B4, A5/B5, C1/C2/C3/C4 API SM /CF ILSAC GF-4	SUPER LIFE * 4500 Motor Oils	30, 40, 50, 10W-30, 10W-40, 15W-40, 20W-50	API SG /SF /CD
SUPER LIFE® 8000M Synthetic Blend Motor Oils For Extreme Power	5W-20, 5W-30, 10W-30, 10W-40, 15W-40, 20W-50	API SM /SL/ CF ILSAC GF-4	SUPER LIFE® 2500 Motor Oils	40, 50, 10W-40, 15W-40, 20W-50	API SF /SE /CC
SUPER LIFE® 8000M EURO Synthetic Blend Motor Oils For Extreme Power	5W-20 A5/B5, 5W-30 A5/B5, 5W-30 A3/B4, 5W-30 C3, 5W-30 C4, 5W-40 A3/B4, 10W-30 A3/ B3, 10W-40 A3/B4, 10w50 A3/B3, 15w40 A3/B4, 20w50 A3/B4	ACEA A1/B1, A3/B4, A5/B5, C1/C2/C3/C4 API SM /CF ILSAC GF-4	SUPER LIFE® 1500 Motor Oils	40, 50, 10W-40, 15W-40, 20W-50	API SC /CC

GASOLINE ENGINE OILS

DIESEL ENGINE OILS

NATURAL GAS ENGINE OILS

PRODUCT NAME	SAE GRADES	API SERVICE CLASSIFICATION	PRODUCT NAME	SAE GRADES	API SERVICE CLASSIFICATION
SUPER LIFE® XLD 12000 FS PAO/0W-40 Premium Full Synthetic Heavy Duty Diesel Engine Oil	OW-40	API CJ-4 /SN	SUPER LIFE® D 3000 Heavy Duty Diesel Engine Oils	30, 40, 50, 70, 10W, 15W-40, 20W-50	API CF ,CD /SF
SUPER LIFE® XLD 12000 FS Premium Full Synthetic Heavy Duty Diesel Engine Oils	5W-40, 10W-40	API CJ-4 /SM, CI-4 Plus/SL, CI-4/SL, CH4,CG-4, CF-4,CF-2, CF/SJ	SUPER LIFE® D 2000 HD Engine Oils	40, 50, 70	API CC/ SC
SUPER LIFE® XLD 12000 SB Premium Synthetic Blend Heavy Duty Diesel Engine Oils	10W-30, 10W-40, 15W-40, 20W-50	API CJ-4 /SM, CI-4 Plus/SL, CI-4/SL, CH4,CG-4, CF-4,CF-2, CF/SJ			
SUPER LIFE® XLD 12000 Premium Heavy Duty Diesel Engine Oils	10W-30, 10W-40, 15W-40, 20W-50	API CJ-4 /SM, CI-4 Plus/SL, CI-4/SL, CH4,CG-4, CF-4,CF-2, CF/SJ	SUPER LIFE® H 16000 Main-Line Low Ash Gas Engine Oil	40	
SUPER LIFE® D 10000 Full Synthetic Heavy Duty Diesel Engine Oils	5W-40, 10W-40	API CI-4 /SL, CH4,CG-4, CF-4,CF-2, CF/SJ	SUPER LIFE® H 15000 Premium Mobile Natural Gas Engine Oils	15W-40, 20W-50	
SUPER LIFE® D 9500 Synthetic Blend Heavy Duty Diesel Engine Oils	10W-30, 10W-40, 15W-40, 25W-60	API CI-4 /SL, CH4,CG-4, CF-4,CF-2, CF/SJ	SUPER LIFE® H 15000 FS Premium Full Synthetic Mobile Natural Gas Engine Oil	5W-40	
SUPER LIFE® D 9000 Heavy Duty Diesel Engine Oils	10W-30, 10W-40, 15W-40, 25W-60	API CI-4 /SL, CH4,CG-4, CF-4,CF-2, CF/SJ	PRODUCT NAME	PERFORMANCE L	EVEL
SUPER LIFE® D 7500 Heavy Duty Diesel Engine Oils	30, 40, 50, 10W-30, 15W-40	API CH4,CG-4, CF-4,CF-2, CF/SJ	DURALIFE® Full Synthetic Muti-vehicle Automatic Transmission Fluid Dexron VI	Dexron® VI/Dexron®III (H), FO HONDA DW-1, TOYOTA WS	RD Mercon* LV, Mercon* SP, MB NAG-2,
SUPER LIFE® TURBO PLUS HDDEO Turbo Plus Heavy Duty Diesel Engine Oils	30, 40, 50, 10W, 15W-40, 20W-20, 20W-50, 25W-60	API CF-4 /CF-2/ CF/ SG ACEA A2	DURALIFE® Full Synthetic Multi-vehicle Heavy Duty Automatic Transmission Fluid HD ATF		II(H), Toyota/ Lexus (TOYOTA T-III/T-IV), ra (HONDA Z-1), Shell 3403 M115 Chrysler
SUPER LIFE® D 6000 Heavy Duty Diesel Engine Oils	30, 40, 50, 15W-40, 20W-50, 25W-60	API CF-4 /CF-2 /CF /SG	DURALIFE® Full Synthetic Automatic Transmission Fluid 6 HP (6 HP Fluid)	ZF 6HP19, 6HP21, 6HP26, 6HF Transmissions, ZF Lifeguard (	28, 6HP32, 6HP34, all ZF4 &5HP-series
SUPER LIFE® D 3000 PLUS Heavy Duty Diesel Engine Oils	30, 40, 50 15W-40, 20W-50, 25W-60	API CF /SF MB 227.0 Allison C-4	DURALIFE® Full Synthetic Automatic Transmission Fluid 8 HP (8 HP Fluid)		d 8 ), ZF 8HP45, 8HP55, 8HP70, 8HP90, ZF 9X (only for Audi Q7), 6HP19A, 6HP28AF,

	PRODUCT NAME	PERFORMANCE LEVEL	PRODUCT NAME	SAE GRADES	API SERVICE CLASSIFICATION	
	DURALIFE® Multi-purpose DM Automatic Transmission Fluid	Dexron® III/ Mercon®	DURALIFE® Synthetic Gear Oils	75W, 75W-90, 75W-140, 80W-90, 80W-140	API GL-5 /MT-1	
AUTOMATIC	DURALIFE® Automatic Transmission Fluid DX	Dexron® IID	DURALIFE® Gear 5 Extreme Pressure Gear Oils	80W-90, 85W-90, 85W-140, 90, 140	API GL-5 /MT-1	AUTON
	DURALIFE® Full Synthetic Multi-Vehicle Dual Clutch Transmission Fluid (DCT Fluid)	Audi /VW G 052 182 /TL 52 182, G 052 529 /TL 52 529 BMW 83 22 2 148 578, 83 22 2 148 579, 83 22 2 147 477, 83 22 0 440 214, BMW Drivelogic 7-speed MB 236.21/Mercedes-Benz 7 Speed Wet Dual Clutch Transmissions Lamborghini and Nissan with VW DSG Transmission	DURALIFE® Scooter Gear Oils	80W-90, 85W-140, 90, 140	API GL-5	AUTOMOTIVE GE
TRANSMISSION	DURALIFE® Full Synthetic Continuously Variable Transmission Fluid (CVT Fluid)	Audi /VW G-052-516-A2 ,G-052-180-A2/TL52 180 BMW 83 22 0 136 376, 83 22 0 429 154, EZL 799A Mercedes-Benz 236.20, CVT 28, Toyota Super CVT Fluid TC / FE	DURALIFE® Gear 4 Extreme Pressure Gear Oils	80W-90, 85W-140, 90, 140	API GL-4	GEAR OILS
N FLUIDS	DURALIFE® Full Synthetic Automatic Transmission Fluid MB 236.14	MB 236.14, MB NAGII, MB 7-speed automatic transmission series (model 722.9/W7A 700/NAG II) MB 5 -speed automatic transmission series (model 722.6/W5A 580/NAG I)	DURALIFE® Gear 1 Gear Oils	90, 140	API GL-1	
	DURALIFE®	Mercedes-Benz 7-G Tronic Plus ( NAG II+)				
	Full Synthetic Automatic Transmission Fluid MB 236.15	MB 001 989 77 03 / 001 989 78 03	PRODUCT NAME	SAE GRADES	PERFORMANCE LEVEL	
			DURALIFE® Full Synthetic Heavy Duty Transmission Fluids	30, 50, 10W, 5W-30, 10W-30	API SERVICE MT-1, MIL- L-2104, Caterpillar TO-4, Allison C-4 Eaton Transmission PS-081 & PS-164 Rev 7 Rockwell/Fuller CD50(PS-081), International TMS-6816 Mack TO-A Plus, ZF FreedonLine, ZF TE-ML 03C	TRANSMISSION DRIVE TRAIN OI
POWER STEERING	DURALIFE® Power Steering Fluid	GM 9985010 ( Part No.1050017 & 1052884) Ford ESW- M2C128-C and D , M2C195-A Chrysler MS- 5931, MS-1872 Mercedes Benz PN 00 989 8803	DURALIFE® Heavy Duty Hydraulic PowerShift Transmission/ Drive Train Oils	30, 50, 60, 10W	Allison C-4, C-3 (10W, 30) Caterpillar TO-4M, TO-4, TO-2 ZF TE-ML-03C/ TE-ML-07F. API CF-2/CF Komatsu KES 07.868.1 Powershift Transmissions, Komatsu Micro-Clutch ( all grades), Komatsu Dresser Equipment	RAIN OILS
			PRODUCT NAME	SAE GRADES	API SERVICE CLASSIFICATION	
CENTRAL HYDRAULIC	DURALIFE® Full Synthetic Central Hydraulic/ Power Steering Fluid CHF/ PSF	AUDI/VW G 002 000 A2 / G 004 000 M2 / TL 521 46 BMW 81 22 9 407 758/ 82 11 0 148 132/ 82 11 1 468 041/ 83 29 0 429 576 FORD WSS-M2C204-A, GM 9985835 MB 345.0/ Q 1 32 0001/ 001 989 24 03 10 PORSCHE 000 043 203 33, ZF TE-ML 02K/ TE-ML 09B	SUPER LIFE® 6500N-4T FS MCO Premium Full Synthetic 4-Stroke Motorcycle Oils	10W-40, 10W-50, 15W-50	API SN, JASO MA 2	FOURS
TRAL AULIC		. 3.133.12 303 343 203 35, 21 TE TIE 02IV TE TIE 03B	SUPER LIFE® 6500N-4T FS SCO Premium Full Synthetic 4-Stroke Scooter Oils	5W-40, 10W-40	API SN, JASO MB	STROKE

4-Stroke Scooter Oils

PRODUCT NAME	SAE GRADES	API SERVICE CLASSIFICATION	PRODUCT NAME	SAE GRADES	API SERVICE CLASSIFICATION
SUPER LIFE® 6500N-4T MCO Premium 4-Stroke Motorcycle Oils	10W-40, 20W-50	API SN, JASO MA2	SUPER LIFE® 6500-4T SCO Premium 4- Stroke Scooter Oils	10W-40, 20W-500	API SL JASO MB
SUPER LIFE® 6500N-4T SCO Premium 4 -Stroke Scooter Oils	10W-40, 20W-50	API SN, JASO MB	SUPER LIFE® 5000-4T FS Full Synthetic 4-Stroke Motorcycle Oils	10W-40, 20W-50	API SJ/SH JASO MA
SUPER LIFE® 6500M-4T FS MCO Supreme Full Synthetic 4-Stroke Motorcycle Oils	10W-40, 10W-50	API SM, JASO MA 2	SUPER LIFE® 5000-4T 4-Stroke Motorcycle Oils	10W-40, 20W-50	API SJ/SH JASO MA
SUPER LIFE® 6500M-4T SB MCO Supreme Synthetic Blend 4-Stroke Motorcycle Oils	10W-40, 10W-50	API SM, JASO MA2	SUPER LIFE® 4000-4T 4-Stroke Motorcycle Oils	10W-40, 20W-50	API SG JASO MA
SUPER LIFE® 6500M-4T MCO Supreme 4-Stroke Motorcycle Oils	10W-40, 20W-50	API SM, JASO MA2	SUPER LIFE® 2000-4T 4-Stroke Motorcycle Oils	10W-40, 20W-50	API SF
SUPER LIFE® 6500M-4T SB SCO Supreme Synthetic Blend 4-Stroke Scooter Oils	10W-40, 20W-50	API SM, JASO MB			
SUPER LIFE® 6500M-4T SCO Supreme 4-Stroke Scooter Oils	10W-40, 20W-50	API SM JASO MB	SUPER LIFE® 5500D-2T FS Supreme Full Synthetic Low Smoke 2-Stroke Motorcycle		JASO FD ISO-L-EGD TISI
SUPER LIFE® 6500-4T FS MCO Premium Full Synthetic 4-Stroke Motorcycle Oils	10W-40, 10W-50	API SL, JASO MA/MA2	SUPER LIFE® 5500D-2T Supreme Low Smoke 2-Stroke Motorcycle Oil		JASO FD ISO-L-EGD TISI
SUPER LIFE® 6500-4T SB SCO Premium Synthetic Blend 4-Stroke Scooter Oils	10W-40, 20W-50	API SL, JASO MB	SUPER LIFE® 5500-2T FS Premium Full Synthetic Low Smoke 2-Stroke Motorcycle Oil		API TC+ JASO FC ISO-L-EGC
SUPER LIFE® 6500-4T MCO Premium 4-Stroke Motorcycle Oils	10W-40, 20W-50	API SL, JASO MA2	SUPER LIFE® 5500-2T Premium Low Smoke 2-Stroke Motorcycle Oil		API TC+ JASO FC ISO-L-EGC
SUPER LIFE® 6500-4T SB SCO Premium Synthetic Blend 4-Stroke Scooter Oils	10W-40, 20W-50	API SL JASO MB	SUPER LIFE® 3000-2T Low Smoke 2-Stroke Motorcycle Oil		API TC JASO FB

FOUR STROKE MOTORCYCLE | SCOOTER OILS

PRODUCT NAME	SAE GRADES	API SERVICE CLASSIFICATION	PRODUCT NAME	SAE GRADES	API SERVICE CLASSIFICATION
SUPER LIFE® Full Synthetic Racing Motor Oils	0W-20, 0W-30, 0W-40, 0W-50, 5W-30, 10W-40, 10W-60, 15W-50, 20W-50, 20W-60, Nitro50, Nitro60		SUPER LIFE® 6500M-4T FS SNOW Supreme 4-Stroke Full Synthetic Snowmobile Oil	OW-40	API SM/CF JASO MA/MA2
SUPER LIFE® Racing Motor Oils	10W-30, 10W-40, 20W-50, 50, 60, 70		SUPER LIFE® 6500-4T FS SNOW Premium 4-Stroke Full Synthetic Snowmobile Oil	OW-40	API SL/CF JASO MA/MA2
SUPER LIFE® Synthetic Racing 4-Stroke Engine Oils	5W-40, 10W-40, 15W-50, 20W-50, 20W-60	API SM JASO MA2	SUPER LIFE® 5500-2T FS SNOW Premium Full Synthetic Low Smoke 2-Stroke Snowmobile Oil		API TC+ JASO FC ISO-L-EGD Piaggio Hexagon Detergency
SUPER LIFE® 2T SYN Marine TC-W3 Full Synthetic 2-Stroke Outboard Marine Motor Oil TC-W3 ®		NMMA TC-W3 API/CEC TSC-4(TD) JASO FB	SUPER LIFE® 3500-2T Premium Low Smoke 2-Stroke Engine Oil		API TC JASO FC
SUPER LIFE® 2T Marine TC-W3 Premium 2-Stroke Outboard Marine & Multipurpose Motor Oil TC-W3 ®		NMMA TC-W3 API TC JASO FB	SUPER LIFE® 2-Stroke Engine Oil		АРІ ТА, ТВ, ТС
SUPER LIFE® 2T Marine TC-W2 Two Stroke Outboard Marine Motor Oil TC-W2		NMMA TC-W2, TC-W			
SUPER LIFE® Premium 4-Stroke Outboard Marine Engine Oil		NMMA FC-W API SL JASO MA	<b>DURALIFE® 2500UTF</b> Universal Tractor Fluid	10W-30	API CF-4/CF/CE/SF GL-4 Caterpillar TO-2 Fluids John Deere JDM J20A/J20C/J20D/J21A MB 227.1/228.1/228.3 MAN 271
			<b>DURALIFE® 3000STOU</b> Super Tractor Oil Universal Lubricant	10W-30, 10W-40, 15W-30	API CF-4 /CF/CE/SF GL-4 John Deere JDM J27 Caterpillar TO-2 Fluids Case MS 1207/1209/1210/1230 DIN 51524 Part 3: HVLP
SUPER LIFE® RDEO Railroad Diesel Engine Oils	40, 20W-40				

PRODUCT NAME	PERFORMANCE LEVEL	PRODUCT NAME	NLGI GRADES
DURALIFE® Antifreeze and Coolant (Green)	ASTM D3306, Chrysler MS7170, Cummins 90T8-4 Detroit Diesel 93K217/7SE298	DURALIFE® Lithium Complex Grease LG	NLGI 1/2/3
DURALIFE® Pre-Diluted 50/50 Antifreeze and Coolant (Green)	ASTM D3306, SAE J1034, J814C <b>d</b> Mack 01GS17004	DURALIFE® EP Moly Greases 3% MoG	NLGI 1/2/3
DURALIFE® HD Extended Life Antifreeze and Coolant (Red)	ASTM D3306/D6210/D6211/D7583 MIL CID A-A52624-I-IP-II, Kenworth R 026157097, JASO M325, Mercedes, BMW, Audi, Toyota/Lexus	DURALIFE® EP Moly Greases 5% MoG	NLGI 1/2/3
DURALIFE® Super Extended Life Antifreeze and Coolant (Blue)	ASTM D3306, Freightliner 48-22880, JASO M325, John Deere JDM H24, Mercedes, BMW, Audi, Toyota/Lexus	DURALIFE® Heavy Duty EP Lithium Grease HLG	NLGI 00/0/1/2/3/4
DURALIFE® Premium Extended Life Universa Antifreeze and Coolant (Yellow)		DURALIFE®  Multi-purpose Lithium Grease  MLG	NLGI 00/0/1/2/3/4
DURALIFE®  Dex-Cool Extended Life  Antifreeze and Coolant (Orange)	ASTM D3306, Mack 01GS17004, SAE J1034 Cummins 90T8-4/3666132/CES 14603 Mercedes, BMW, Audi, Toyota/Lexus	DURALIFE® Hi-Temp Wheel Bearing Grease	NLGI 2
		DURALIFE® Aluminum Complex Greases AG	NLGI 0/1/2
DURALIFE® Full Synthetic Brake Fluid DOT 5	FMVSS No.166, SAE J 1703 .1	DURALIFE® Calcium Sulfonate Complex Grease CSG	NLGI 2
DURALIFE® Heavy Duty DOT 3 Break Fluid	FMVSS No.116, SAE J 1703, Federal Specification W-B-680C		
DURALIFE® Heavy Duty DOT 4 Break Fluid	FMVSS No.116, SAE J 1703, Federal Specification W-B-680C, ISO 4925 and JIS K 2233 Class 4		

### **SAE GRADES & CLASSIFICATION**

### SAE Viscosity Grades For Engine Oils — SAE J300 Dec 99

The SAE developed a classification system to define the viscosity, or thickness, of the oil. It defines "operating" engine oil viscosities for different grades and contains specifications for "cranking" viscosity and pumpability at start up, the "W" grades or winter. A multigrade oil is one that meets both a "W" low temperature viscosity requirement and a 100°C "operating temperature" requirement.

Example: SAE-15W40 for a multigrade oil and SAE-40 for a monograde oil. The first number (15W) refers to the viscosity grade at low temperatures (W from winter), whereas the second number (40) refers to the viscosity grade at high temperature.

32.0000.030.030.0		icant Viscosity G SAE J 300, Dec. 1	s1		
SAE	Low Temper	ature Viscosities			High-Temperature Viscosities
Viscosity Grade	. ,	Pumping(mPa.s) max at temp °C	(mn	matic 1²/s) 00°C	High Shear Rate (mPa.s) at 150°C, 10/s
			min	max	min
0W	6200 at -35	60 000 at -40	3.8	_	<del>_</del>
5W	6600 at -30	60 000 at -35	3.8	_	-
10W	7000 at -25	60 000 at -30	4.1	- n	_
15W	7000 at -20	60 000 at -25	5.6	_	_
20W	9500 at -15	60 000 at -20	5.6		
25W	13 000 at - 10	60 000 at -15	9.3	_	7
20	_	_	5.6	<9.3	2.6
30	=	_	9.3	<12.5	2.9
40		_	12.5	<16.3	2.9 ( 0W-40, 5W-40, and 10w-40 grades)
40	_	_	12.5	<16.3	3.7( 15W-40,20W-40, 25w-40, 40grades)
50	_	1 <del></del> 2	16.3	<21.9	3.7
60		_	21.9	<26.1	3.7

### SAE Viscosity Of Automotive Gear Oils — SAE J306 Jan 2005

Automotive Lubricant Viscosity Grades Gear Oils – Except SAE J 306, 1998					
SAE Viscosity Grade	Maximum Temperature for a viscosity of 150,000 cP (°C)	Minimum Viscosity at (cSt) a 100°C	Maximum Viscosity at (cSt) a 100°C		
	ASTM D 2983	ASTM D 445	ASTM D 445		
70W	-55	4.1			
75W	-40	4.1			
80W	-26	7.0			
85W	-12	11.0	¥¥		
80		7.0	<11.0		
85		11.0	<13.5		
90		13.5	<18.5		
110		18.5	<24.0		
140		24.0	<32.5		
190		32.5	<41.0		
250		41.0			

### **NLGI Classification System For Grease**

In the NLGI system, the types of grease are divided into nine classes which only take account of the consistency of the grease, measured in terms of the penetration figure as per ASTM D 217.

• Consistency – is the degree of hardness of a grease and may vary considerably with temperature. This has been classified by the National Lubricating Grease Institute (NLGI) into the following categories:

NLGI GRADE	PENETRATION @ 25°C (1/10th	DESCRIPTION
	mm)	
000	445 - 475	Fluid
00	400 - 430	Semi-fluid
0	355 - 385	Viscous
1	310 - 340	Semi-soft
2	265 - 295	Solid (normal grease )
3	220 - 250	Firm
4	175 - 205	Very firm
5	130 - 160	Semi-hard
6	85 - 115	Very hard

- •Shear Stability is the ability of a grease to resist a change in consistency during mechanical working. Under high rates of shear, grease structures tend to change in consistency (usually becoming softer).
- •Oil Separation is the percentage of oil which separates from the grease under static (eg. storage) conditions. It cannot predict separation tendencies in use under dynamic conditions.
- •High Temperature Stability is the ability of a grease to retain its consistency, structure and performance at temperatures above 125°C/260°F.

### API (American Petroleum Institute) System For Classifying Engine Oils

In the API classification, the quality of engine oil is determined by means of engine tests which include checks on wear and contamination of cylinder walls, piston rings, bearings and valve mechanisms, soot and cinder formation, corrosion and oxidation.

#### **Gasoline Engines**

API classifies petrol engine oils' performance into different classes where the first letter S stands for 'Service'.

SA, SB, SC, SD, SE, SF, SG and SH: No longer used.

**SJ:** Engines built 2001 and earlier.

**SL:** Engines built 2004 and earlier.

**SM:** Engines built 2010 and earlier.

**SN:** Introduced in October 2010. Designed to give improved protection against deposits at high piston and turbocharger temperatures, better sludge control, improved fuel economy, improved compatibility with sealing materials, improved compatibility with after-treatment systems and better protection for engines that are run on ethanol containing fuel up to E85.

### **Diesel Engines**

API classifies diesel engines oils' performance into different classes where the first letter C stands for 'Commercial'.

CA, CB, CC, CD, CD-II, CE, CF, CF-2, CF-4, CG-4: No longer used.

**CH-4**: Introduced in 1998. For 4-stroke engines designed to fulfill the 1998 emission requirements. CH-4 oils are especially designed for diesel fuels with sulfur contents of up to 0.5 % by weight. May be used instead of CD, CE, CF-4 and CG-4 oils.

**CI-4**: Introduced in 2002. For 4-stroke engines designed to fulfill the emission requirements from 2004,

implemented in 2002. Cl-4 oils have been developed for use in engines with EGR and for use of diesel fuels with sulfur contents of up to 0.5 % by weight. May be used instead of CD, CE, CF-4, CG-4 and CH-4 oils. Certain Cl-4 oils may also be qualified for Cl-4 PLUS designation.

**CJ-4**: For 4-stroke engines designed to fulfill 2010 Tier 4 emission requirements for diesel engines.

These oils have been developed for use together with diesel fuels with a sulfur content of up to 500 ppm. Use of these oils together with fuels that contain more than 15 ppm sulfur may affect the after-treatment system and/or oil change intervals. CJ-4 oils are especially effective where particulate filters and other after-treatment systems are used. Provides optimum protection against catalyst poisoning, filter clogging, engine wear, deposits on pistons, low and high temperature stability, soot, oxidative thickening, foam formation and viscosity reduction due to shearing. API CJ-4 oils exceed the requirements for API CI-4 with CI-4 PLUS, CI-4, CH-4, CG-4 and CF-4 and can effectively lubricate engines with these requirements.

### **Classification Of 2-Stroke Engine Oil**

The performance of 2-stroke engine oils is expressed by the API, ISO, JASO or NNMA classification. As with 4-stroke oil, the classification is determined with the aid of engine and laboratory tests.

**API TA (ISO-L-ETA):** 2-stroke engines for mopeds, lawn mowers and other low-powered machines. Generally under 50 cc.

**API TB (ISO-L-ETB):** The lubricating effect of the oil is sufficient for things like low-powered motorcycles and scooters. No longer used. Generally 50-200 cc.

**API TC (ISO-L-ETC):** Engines that may be susceptible to damage from premature ignition and where the oil needs to work at very high temperatures without the piston rings seizing. The performance of the oil is also sufficient for lubricating high-powered motorcycles, snowmobiles and chain saws. Generally 50–500 cc.

**API TCS:** As API TC, but the product is synthetic

API TD (ISO-L-ETD): For lubricating outboard engines. No longer used.

JASO FB / ISO-L-EGB: Low-quality oil.

JASO FC / ISO-L-EGC: Minimum requirement for Japanese engine manufacturers.

**JASO FCS:** As JASO FC, but the product is synthetic.

**ISO-L-EGD:** 2-stroke oils with excellent cleaning properties and higher performance at high temperatures.

**NMMA TC-W3:** Outboard engine oil. Supersedes API TD.

# ACEA (European Automobile Manufacturers' Association) Classification System For Engine Oils

The ACEA is an industry association for European automotive manufacturers, and the successor to the previous organization, the CCMC. One task of the organization is to develop classifications for engine oils with particular reference to European engines and operating conditions. Engine oils are divided into three groups: petrol engine oils for cars and vans (prefixed A), diesel engine oils for cars and vans (B) and diesel engine oils for heavy trucks (E). To meet the requirements for a quality class, the oil must pass both laboratory and engine tests. The laboratory tests cover things like the viscosity of the oil, its propensity to foam, shear stability and rust properties. The engine tests check things like the ability of the oil to prevent bearing. corrosion, piston ring seizure and camshaft and cylinder wall wear. The ACEA classification of engine oils came into effect in 1996, when the earlier CCMC classes G4, G5, PD2, D4 and D5 disappeared.

#### **Oils For Gasoline And Diesel Engines**

The ACEA 'A' classes 1-5 are intended for petrol engine oils and ACEA 'B' classes 1-5 are for diesel engine oils. From 1996 onwards, ACEA A and ACEA B were separate, but in 2004 they were combined into A/B classes and now apply to both gasoline and diesel engines.

**A1/B1:** Stable oils intended for use with extended oil change intervals in gasoline engines and diesel engines in cars and vans with engines that fulfill low friction/low viscosity oils with high temperature/high shearing stability viscosity of 2.6 mPa.s for xW/20 and 2.9 to 3.5 mPa.s for other viscosity classes.

**A3/B3:** Stable oils intended for use in high performance gasoline and diesel engines in cars and vans. For extended oil change intervals or year-round use of low viscosity oils and/or for severe operating conditions.

A3/B4: Stable oils intended for use in high performance gasoline engines and direct injection diesel engines, but also suitable for the applications described under A3/B3.

**A5/B5:** Stable oils intended for use with extended oil change intervals in high performance gasoline engines and diesel engines in cars and vans with engines that can use low friction, low viscosity oils with high temperature/high shearing stability (HTHS) viscosity at 2.9 to 3.5 mPa.s.

#### **Oils For Engines With Catalytic Converter**

**C1:** Stable, high-performance oils that retain their viscosity and are suitable for catalytic converters, for use in gasoline and diesel engines in vehicles with diesel particulate filters (DPFs) and three-way catalytic converters (TWCs) and where low-friction and low-viscosity SAPS oil is required. These oils prolong the service life of the DPF and TWC and offer fuel savings.

**C2:** Stable, high-performance oils that retain their viscosity and are suitable for catalytic converters, for use in gasoline and diesel engines in vehicles with diesel particulate filters (DPFs) and three-way catalytic converters (TWCs) and where low-friction and low-viscosity oil is required. These oils prolong the service life of the DPF and TWC and offer fuel savings.

C3: Stable, high-performance oils that retain their viscosity and are suitable for catalytic converters, for use in gasoline and diesel engines in vehicles with diesel particulate filters (DPFs) and three-way catalytic converters (TWCs). These oils prolong the service life of DPF and TWC.

**C4:** Stable, high-performance low-SAPS oils that retain their viscosity and are suitable for catalytic converters, for use in gasoline and diesel engines in vehicles with diesel particulate filters (DPFs) and three-way catalytic converters (TWCs). These oils prolong the service life of the DPF and TWC.

### **Oils For Heavy Duty Diesel Engines**

**E4:** Stable oils with high performance regarding piston cleanliness, wear, soot and lubrication stability. Recommended for diesel engines that fulfill Euro I, Euro II, Euro IV and Euro V requirements and are used in very severe conditions, e.g. extended oil change intervals. Suitable for engines without particulate filters and for certain EGR engines and certain engines with SCR NOx systems.

**E6:** Stable oils with high performance regarding piston cleanliness, wear, soot and lubrication stability. Recommended for diesel engines that fulfill Euro I, Euro II, Euro III, Euro IV, Euro V and Euro VI requirements and are used in severe conditions, e.g. extended oil change intervals. Suitable for EGR engines with or without particulate filter and for engines with SCR NOx systems. Recommended for engines with particulate filter and is intended for use in combination with low sulfur diesel.

**E7:** Stable oils with high performance regarding piston cleanliness, cylinder polishing, wear, soot and lubrication stability. Recommended for diesel engines that fulfil Euro I, Euro II, Euro IV and Euro V requirements and are used in severe conditions, e.g. extended oil change intervals. Suitable for engines without particulate filter, most EGR engines and most engines equipped with SCR NOx system.

**E9:** Stable oils with high performance regarding piston cleanliness, cylinder polishing, wear, soot and lubrication stability. Recommended for diesel engines that fulfil Euro I, Euro II, Euro IV, Euro V and Euro VI requirements and are used in severe conditions, e.g. extended oil change intervals.

Suitable for engines with or without particulate filter, most EGR engines and most engines equipped with SCR NOx systems. Recommended for engines with particulate filter and is intended for use in combination with low sulfur diesel.

#### **API Service Classes For Transmission Oils**

The most important function of the oil in a transmission system is to prevent wear to the generally heavily loaded gears in different types of drive train. The lubrication requirement increases from straight, conical and spiral-shaped gear trains to gears whose axes are in different planes (so-called 'hypoid gears'). The API has divided these requirements into 5 different quality classes, API GL-1 to 5, of which no 2 and 3 are now obsolete.

**GL-1**: Oils for conical worm gears, helical gears and manual gearboxes run at such low surface pressure that pure mineral oils can be used. Oxidation and rust inhibitors, anti-foaming agents and minimal flow-reducing additives may be incorporated. On the other hand, friction-modifying and EP additives may not be used.

- **GL-2:** Oil intended for e.g. helical gears. This class has been withdrawn.
- **GL-3:** Oil intended for e.g. helical gears. This class has been withdrawn.
- **GL-4:** Oil with a large quantity of EP additives, generally used in manual gearboxes.

**GL-5:** Oil with a very large quantity of EP additives (roughly twice as much as GL-4). Used in heavily loaded gear boxes and hypoid gears. When choosing gearbox and differential oil, one should use oil corresponding to the recommended GL class. The use of GL-5 class oil in a gearbox for which API GL-4 is recommended may cause the synchromesh to work more slowly.

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