

Universal Lubricants Inc. Dyna-Plex 21C Engine Oils Meet All OEM Performance Requirements

Universal Lubricants Inc. has reformulated its Dyna-Plex 21C Friction Shield SHPD and Dyna-Plex 21C Durazol HC engines oils to meet the new OEM requirements for emission controlled engines. These approvals are in the preferred SAE 15W-40 viscosity grade.

It has become more difficult to formulate one oil that meets all OEM requirements, as well as current API diesel and gasoline service categories. The new emission designs for diesel engines have taken two opposite paths toward EPA compliance and the optimum formulations have significant chemical differences. Cooled-EGR needs higher TBN and sulfated ash from additives for protection against the unburned fuel and mineral acids that are re-circulated from the exhaust. Exhaust after-treatment equipped diesel engines do not need the higher ash and TBN.

The additive technology used in Dyna-Plex 21C Friction Shield SHPD and Dyna-Plex 21C Durazol HC engine oils meets or exceeds the following new OEM specifications that are required in the new emission control engine designs:

- Caterpillar ECF-1: Sulfated ash <1.3% or 1.3 to 1.5% with two CAT 1-P Test passes (demonstrates superior piston deposit control).
- Mack EO-N Premium Plus 03
- Cummins CES 20078: minimum TBN of 12 (ASTM D2896)

The performance of the additive technology is so effective, that Cummins has approved Friction Shield SHPD at a TBN of 11 for CES 20078. The revised Mack EO-N Premium Plus specification requires the use of a multi-functional dispersant viscosity index (VI) improver to maintain viscosity under the higher soot loading of the cooled-EGR engines.

Dyna-Plex 21C engine oils are the best recommendation for a mixed fleet of vehicles in construction, quarry, transportation and other services that include the new emission controlled engine designs from Caterpillar, Cummins and Mack. Dyna-Plex 21C Durazol HC is formulated with API Group II, hydro-cracked base oils and special additive technology and offers the maximum in extended drain capabilities.

The following are typical specifications for the new Friction Shield SHPD 15W-40 and Durazol HC 15W-40 formulations.

<u>ASTM TEST PROPERTY</u>	<u>METHOD</u>	<u>FRICTION SHIELD SHPD</u>	<u>DURAZOL HC</u>
Viscosity @ -20°C, cP	D5293	5900	6000
Viscosity @ 40°C, cSt	D445	118.5	112
Viscosity @ 100°C, cSt	D445	15.4	15.0
Viscosity Index	D2270	138	135
Pour point, °C	D97	-34	-33
Flash point, °C	D92	241	220
Color	D1500	2.5	3.5
Gravity, °API	D287	28.0	30.3
Sulfated Ash, % wt.	D874	1.3	1.4
Zinc, %	D495	0.16	0.15
Total Base Number (TBN)	0	11	12
HT/HS, cP	D4683	4.3	4.3

Meets or exceeds the following tests and requirements:

API Service Classification CI-4, CH-4, CG-4, CF-4, CF, SL
 Caterpillar – ECF-1, 1P (2 Cat 1P passes), 1R, 1K, 1N
 Mack – EO-N Premium Plus 03, EO-M Plus, EO-M, T-10, T-8E
 Cummins – CES 20076, CES 20077, CES 20078, M11-EGR
 General Motors – 6.5L (RFWT)
 Navistar (International Harvester Company) – HEUI Foam
 Volvo – VDS-2, VDS-3
 Global – DHD-1
 Daimler Chrysler – 228.3
 ACEA – E5-99

Technical Services
 November 2003
 1103.1