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Golden Diesel EVO

SAE 15W-40

Multigrade lubricant with MID S.A.P.S. technology (medium content of Sulphated Ash, Phosphorus, Sulphur) for Heavy Duty Diesel engines. Suitable also for the latest generation on-road and off-road Diesel engines.

PAKELO GOLDEN DIESEL EVO SAE 15W/40 is a multigrade lubricant, fully formulated with Group II mineral base-stocks, developed for latest generation Heavy Duty Diesel engines.

It is suitable both for on-road and off-road Heavy Duty Diesel engines of main International OEMs.

Thanks to its particular additive package and to the Group II mineral base-stocks used (better than traditional Group I mineral base-stocks), PAKELO GOLDEN DIESEL EVO SAE 15W/40 satisfies the severe requests of American Specification **API CJ-4** and European Specification **ACEA E9**.

Furthermore, the product has been developed to satisfy other OEMs Specifications such as **MB 228.31**, **Volvo VDS-4** and **Caterpillar ECF-3** both for on and off-road Heavy Duty Diesel engines.

In order to reduce polluting emissions International OEMs are using different combustion technologies and exhaust gas after-treatment devices (EGR, SCR, DPF, etc.).

All these systems are very sensitive to the presence of some chemical elements that could also be found in lubricants of recent formulation.

In particular the chemical elements that are considered to be harmful are:

- **Sulphur:** present in the additives and in solvent neutral base stocks;
- **Phosphorus:** generally bound to Zinc in order to give greater anti-oxidative and anti-wear protection;
- **Sulphated Ash:** mostly from detergent additives.

For the reasons we just referred to, there was the need the formulate lubricants with a lower content of these elements (MID S.A.P.S.). This brought to use innovative chemistry and special almost sulphur free mineral base oil (Group II).

MID S.A.P.S. lubricant technology is the main issue for the American Specification API CJ-4 and European Specification ACEA E9.

Several Diesel engines, in particular those adopting EGR system (Exhaust Gas Recirculation), show an increase of the produced soot when compared to standard Diesel engines without EGR. For this reason they require lubricants with increased anti-wear and soot handling performance.

The Specification API CJ-4 and ACEA E9 were designed for testing suitable lubricants with high detergent and dispersant properties.

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Furthermore, lubricants that meet the API CJ-4 and ACEA E9 specifications provide better anti-oxidative and anti-wear properties, less viscosity loss in service, less deposits on pistons, and better soot thickening and corrosion control.

The particular formula of PAKELO GOLDEN DIESEL EVO SAE 15W/40 thus provides the following properties:

- **MID S.A.P.S.** (medium content of Sulphated Ash, Phosphorus and Sulphur) **technology**;
- **suitable for long drains**; it enables *Extended Service Interval*;
- **excellent low temperature properties**: easy start-ups at very low temperatures to guarantee the lubricant action for all the engine moving parts right from the first working periods and to reduce to the minimum the hazards of wear;
- **higher thermal-oxidative stability** also thanks to the base stocks used to formulate the product;
- **HT-HS** (High Temperature, High Shear) **value optimized** for severe and specific needs of modern Heavy Duty Diesel engines;
- **low formation of lacquers and varnishes** at low temperatures and in particular during stop-and-go service;
- **low volatility** of the product results into a very significant reduction of oil losses due to evaporation;
- **very high detergent properties** that guarantee cleanness performance and long drain intervals;
- **excellent dispersant properties** that guarantee a great control of sludge and oil thickening phenomena also in case of high presence of soot and deposits;
- **excellent wear control** in every working and ambient temperatures;
- **good compatibility** with gaskets;
- **excellent pumpability** at low temperatures of used oil too.

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Application fields

PAKELO GOLDEN DIESEL EVO SAE 15W/40 is a high performance lubricant recommended for the latest generation on-road and off-road Heavy Duty Diesel engines also working under severe conditions.

The product satisfies the main OEMs' performance levels and has been formulated for the requirements of new generation low emission Diesel engines. Furthermore, it can also be used in earlier generation Diesel engines.

PAKELO GOLDEN DIESEL EVO SAE 15W/40 can be adopted to extend oil drain intervals, with respect of Constructors' Recommendations and combined with a complete monitoring of oil in service through specific oil analyses.

Please also follow recommended oil drain intervals to obtain maximum engine life.

Performance levels

API CJ-4 / CI-4 PLUS / CI-4 / CH-4 / CG-4, **API** SN / SM, **ACEA** E9, **MB** 228.31, **MAN** M3575, **Volvo** VDS-4, **Renault Trucks** RLD-3, **MTU** Type 2.1, **Mack** EO-O Premium Plus, **Caterpillar** ECF-3 / ECF-2 / ECF-1a, **Cummins** CES 20.081, **Detroit Diesel** 93K218, **Deutz** DQC III-10LA.

Chemical-Physical Characteristics

Golden Diesel EVO	Method analysis	Unit measure	Value SAE 15W-40
Density at 15°C	ASTM D1298	kg/l	0,870
Kinematic Viscosity at 40°C	ASTM D445	cSt	115,0
Kinematic Viscosity at 100°C	ASTM D445	cSt	15,4
Viscosity Index	ASTM D2270	-	142
C.C.S. Viscosity at -20°C	ASTM D5293	cP	6.900
HT-HS Viscosity at 150°C / 10 ⁶ s ⁻¹	ASTM D4683	cP	4,35
T.B.N. (Total Base Number)	ASTM D2896	mg(KOH)/g	8,5
Sulphated Ash	ASTM D874	% (w/w)	1,0
Typical phosphorus content	ASTM D5185	ppm	1.100
Typical sulphur content	ASTM D5185	ppm	3.700
Flash Point (C.O.C.)	ASTM D92	°C	220
Pour Point	ASTM D97	°C	-33
Noack evaporability test	ASTM D5800	% (w/w)	12,5

The data just above refer to average values and must not be understood as guaranteed characteristics.

This Technical Data Sheet has been carefully checked to guarantee complete and precise information. However, we do not take any responsibility in case of damages caused by any mistakes or omissions. Due to continual product research and development, the information contained herein is subject to change without notification.