

All-Syn

Heavy Duty Synthetic Engine Oil

No. 416 – No. 420

SAE 0w/30 to 15w/50

DESCRIPTION:

ALL-SYN is a premium quality CI-4/SL engine oil designed for all-weather operation of passenger cars and trucks. **ALL-SYN** is a blend of the highest quality PAO synthetic base stocks and selected additives. It is compounded with Frontier's exclusive ETX extender additive package and has a much higher viscosity index (VI) than conventional oils. This exclusive formulation provides excellent protection against deposits resulting from long term high temperature operation and meets the demands of today's hotter running, high performance engines. It also provides excellent protection against sludge deposits resulting from the severe service of short trips and stop and go driving.

PERFORMANCE CHARACTERISTICS:

ALL-SYN's advanced anti-wear additives minimize wear and scuffing of metal surfaces under boundary lubrication conditions. The detergent-dispersant additives protect against sludge formation and varnish deposits. The PAO synthetic base fluid provides excellent resistance to oxidation (oil thickening) during the higher under hood temperatures common in modern high revving, high performance engines. Rust and corrosion additives protect metal parts during engine operation and shut down.

ALL-SYN contains a unique acid neutralizing additive package that protects against the formation of acidic compounds. These selected alkaline additives give a much longer lasting Total Base Number (TBN) than regular engine oils. This higher, long lasting TBN provides protection against acid buildup and allows much longer oil change intervals than conventional engine oils.

SUMMARY:

ALL-SYN Engine Oil provides the following advantages:

- **Excellent Natural Lubricity** – The high natural lubricity of PAO base stocks reduces frictional wear between surfaces.
- **High Viscosity Index** - This feature insures the oil does not thin out at elevated temperatures.
- **Long Life Lubricant** - Because synthetics can tolerate higher temperatures, there is less oxidation and less corrosive acids formed that can attack soft metals and reduce oil life.
- **Low Pour Point** - Synthetics have very low pour points which allow better low temperature fluidity. This feature provides better lubrication at start-up, reducing start-up wear.
- **Excellent Anti-Wear Properties** – Proprietary anti-wear additives, give additional protection in heavy loaded areas such as valve trains.
- **Extended Drain Intervals** - In gasoline engines, up to three times longer service than a conventional petroleum oil.
- **Better Fuel Mileage** – Synthetic oils have a lower frictional drag than petroleum oils that allows higher engine efficiency which can increase power and lower fuel consumption.

PERFORMANCE CAPABILITIES:

Frontier ALL-SYN Engine Oils conform to the most current and highest quality performance requirements of:

- API CI-4/SL
- API CH-4/CG-4/CF-4/CF-2/SJ
- ACEA /A3
- Mack EO-M
- Mack EO-M Plus
- Daimler Chrysler 228.1
- Daimler Chrysler 229.1
- MAN 271
- Cummins CES 20071
- Cummins CES 20072
- Cummins CES 20076
- Volvo VDS
- MTU Type 1

Oils meeting API SL may be used where API Service Category SJ and earlier categories are recommended.

SL - - 2001 Gasoline Engine Service Category SL was adopted to describe engine oils for use in 2001. It is for use in service typical of gasoline engines in present and earlier passenger cars, sport utility vehicles, vans and light trucks operating under vehicle manufacturer's recommended maintenance procedures. Oils meeting API SL may be used where API Service Category SJ and earlier categories are recommended.

TYPICAL PROPERTIES:

CODE	No. 416	No. 417	No. 418	No. 419	No. 420
SAE Grade	0W/30	5W/30	10W/30	10W/40	15W/50
Specific Gravity	0.856	0.857	0.854	0.860	0.861
Flash Point °F	457	455	450	460	460
Pour Point °F	-78	-76	-70	-50	-40
Viscosity, cSt @ 40°C	52.2	54.0	63.5	94.7	127.6
Viscosity, cSt @ 100°C	9.70	10.00	11.11	14.57	18.42
Viscosity, SUS @ 100°F	265	274	322	482	653
Viscosity, SUS @ 210°F	59.0	60.1	64.2	77.5	93.8
Viscosity Index	174	175	169	160	162

Values shown here are typical, and may vary.