



## Explanation of API-SAE Engine Oil Service Categories

The following engine service categories are guides to selecting proper oils for different engine designs and service conditions. Automotive and engine manufacturers include these category designations in their owner/operator manuals. Oils may have more than one performance level. For diesel engines, the latest category usually – but not always – includes the performance properties of an earlier category. For automotive gasoline engines, the latest engine oil service category includes the performance properties of each earlier category; for example, if an owner's manual calls for an API SJ or SL oil, an API SM oil will provide full protection.

### C – Commercial

#### Current

**CH-4 – Reduced Emission Diesel Engine Service** – The CH-4 category is intended to address the requirements for high-speed, four-stroke diesel engines to meet 1998 exhaust emission standards. CH-4 oils are specifically compounded for use with diesel fuels containing up to 0.5% sulfur. They also can be used in gasoline engines when combined with the appropriate “S” category recommended by the vehicle or engine manufacturer. CH-4 oils can replace those rated CD, CE, CF-4, and CG-4.

**CI-4 – Severe-Duty Diesel Engine Service** – The CI-4 category describes oils for use in those high-speed, four-stroke cycle diesel engines designed to meet 2004 exhaust emission standards. These oils are compounded for use in all applications with diesel fuels ranging in sulfur content up to 0.05% by weight. These oils are especially effective at sustaining engine durability where exhaust gas recirculation (EGR) and other exhaust emission componentry can be used. Optimum protection is provided for control of corrosive wear, low- and high-temperature stability, soot handling, piston deposits, valvetrain wear, oxidative thickening, foaming, and viscosity loss due to shear. CI-4 oils can effectively lubricate engines calling for CH-4, CG-4 and CF-4 categories. Used in conjunction with CI-4, **CI-4 PLUS** identifies oils formulated to provide a higher level of protection against soot-related viscosity increase and viscosity loss due to shear in diesel engines.

**CJ-4 – Heavy-Duty Diesel Engine Service; Exhaust Aftertreatment** – The CJ-4 category is for high-speed four-stroke cycle diesel engines designed to meet 2010 model year on-highway and Tier 4 non-road exhaust emission standards as well as for previous model year diesel engines. CJ-4 oils are compounded for use in

all applications with diesel fuels ranging in sulfur content up to 500 ppm (0.05% by weight). However, use of oils with greater than 15 ppm (0.0015% by weight) sulfur fuel may impact exhaust aftertreatment system durability and oil drain interval. CJ-4 oils are effective at sustaining emission control system durability where particulate filters and other aftertreatment systems are used. Optimum protection is provided for catalyst poisoning, particulate filter blocking, engine wear, piston deposits, low- and high-temperature stability, soot handling, oxidative thickening, foaming, and viscosity loss due to shear. CJ4 oils exceed the performance criteria of CI-4 with CI-4 PLUS, CI-4, CH-4, CG-4, and CF-4, and they can effectively lubricate engines calling for those API categories. When using CJ-4 oil with higher than 15 ppm sulfur fuel, consult the engine manufacturer for service interval.

**CK-4 – Heavy-Duty Diesel Engine Service** – The CK-4 category is for high-speed, four-stroke engines designed to meet 2017 model year on-highway and Tier 4 non-road exhaust emission standards as well as for previous model year diesel engines. These oils are formulated for use in all applications with diesel fuels ranging in sulfur content up to 500 ppm. However, the use of these oils with greater than 15 ppm sulfur fuel may impact exhaust aftertreatment system durability and oil drain interval. CK-4 oils are especially effective at sustaining emission control system durability where particulate filters and other advanced aftertreatment systems are used. They are designed to provide enhanced protection against oil oxidation, viscosity loss due to shear, and oil aeration as well as protection against catalyst poisoning, particulate filter blocking, engine wear, piston deposits, degradation of low- and high-temperature properties, and soot-related viscosity increase. CK-4 oils exceed the performance criteria of CJ-4, CI-4 with CI-4 PLUS, CI-4 and CH-4, and can effectively lubricate engines calling for those API categories. When using CK-4 oil with higher than 15 ppm sulfur fuel, consult the engine manufacturer for service interval recommendations.

**FA-4 – Heavy-Duty Diesel Engine Service** – The FA-4 category is for certain XW-30 oils specifically formulated for use in select high-speed four-stroke cycle diesel engines designed to meet 2017 model year on-highway greenhouse gas emission standards. These oils are formulated for use in on-highway applications with diesel fuel sulfur content up to 15 ppm. Refer to individual engine manufacturer recommendations regarding compatibility. FA-4 oils are blended to a high-temperature high shear viscosity



range of 2.9cP-3.2cP to assist in reducing GHG emissions. These oils are especially effective at sustaining emission control system durability where particulate filters and other advanced aftertreatment systems are used. FA-4 oils are designed to provide enhanced protection against oil oxidation, viscosity loss due to shear, and oil aeration as well as protection against catalyst poisoning, particulate filter blocking, engine wear, piston deposits, degradation of low- and high-temperature properties, and soot related viscosity increase. These oils are neither interchangeable nor backward compatible with API CK-4, CJ-4, CI-4 with CI-4 PLUS, CI-4 and CH-4 oils. Refer to engine manufacturer recommendations to determine if FA-4 oils are suitable for use. FA-4 oils are not recommended for use with fuels having greater than 15 ppm sulfur.

#### **Obsolete**

- CA – 1940s Mild to Moderate Diesel Engine Service**
- CB – 1949 Mild to Moderate Diesel Engine Service**
- CC – Moderate-Duty Diesel and Gasoline Engine Service**
- CD – Severe-Duty Diesel Engine Service**
- CD-II – Severe-Duty Two-Cycle Diesel Engine Service**
- CE – Very Severe Diesel Engine Service**
- CF-4 – Severe Diesel Engine Service**
- CF – Indirect Injected Diesel Engine Service**
- CF-2 – Severe-Duty Two-Stroke Cycle Diesel Engine Service**
- CG-4 – 1994 Diesel Engine Service**

#### **LE's Diesel Engine Oils Meeting "C" Qualifications**

- SAE 5W-40 – Monolec Ultra® Syn Heavy Duty Engine Oil (8854/8855):** CK-4, CJ-4, CI-4, CI-4 Plus, CH-4
- SAE 15W-40 & 10W-30 – Monolec Ultra® Engine Oils (8800/8801 & 8130):** CK-4, CJ-4, CI-4, CI-4 Plus, CH-4
- SAE 15W-40 & 10W-30 – Monolec® Engine Oils (8700 & 8730):** CJ-4, CI-4, CI-4 Plus, CH-4
- SAE 20, 30, 40 & 50 – Monolec® GFS Engine Oils (8420, 8430, 8440 & 8450):** CF/SJ (unlicensed)

## **S – Service**

#### **Current**

#### **SJ – Gasoline Engine Service**

Category SJ was adopted in 1996 and became mandatory in 1997, superseding API rating SH for gasoline-only engine oils.

It addresses improved performance in compatibility for catalytic converters, volatility, high-temperature deposits, and low-temperature pumpability. Usual SJ viscosities include 0W-20, 5W-20, 5W-30 and 10W-30. SAE 15W-40 viscosity is allowed but does not have to meet the phosphorus limit for catalyst compatibility because it is usually a heavy-duty diesel oil.

#### **SL – 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 manufacturers' recommended maintenance procedures. They may be used where SJ and earlier API service categories are recommended.

#### **SM – Gasoline Engine Service**

Introduced in 2004, SM oils are designed to provide improved oxidation resistance, improved deposit protection, better wear protection, and better low-temperature performance over the life of the oil. Some SM oils also may meet the latest ILSAC specification and qualify as Energy Conserving.

#### **SN – Gasoline Engine Service**

Introduced in 2010, SN oils are designed to provide improved high-temperature deposit protection for pistons, more stringent sludge control, and seal compatibility. API SN with Resource Conserving matches ILSAC GF-5 by combining API SN performance with improved fuel economy, turbocharger protection, emission control system compatibility, and protection of engines operating on ethanol-containing fuels up to E85.

#### **Obsolete**

- SA – Utility Gasoline Engine Service**
- SB – Minimum Duty Gasoline Engine Service**
- SC – 1964 Gasoline Engine Warranty Service**
- SD – 1968 Gasoline Engine Warranty Maintenance Service**
- SE – 1972 Gasoline Engine Warranty Maintenance Service**
- SF – 1980 Gasoline Engine Warranty Maintenance Service**
- SG – 1989 Gasoline Engine Warranty Maintenance Service**
- SH – 1994 Gasoline Engine Service**

#### **LE's Gasoline Engine Oils Meeting "S" Qualifications**

- SAE 5W-20 & 5W-30 – Monolec® Tetra-Syn™ Engine Oils (8521-8522 & 8531-8532)** are qualified as API SN/SM/SL, ILSAC GF-5, and all preceding API and ILSAC gasoline categories.
- SAE 20, 30, 40 & 50 – Monolec® GFS Engine Oils (8420-8450)** are qualified as API CF/SJ (unlicensed) and all preceding API gasoline categories.