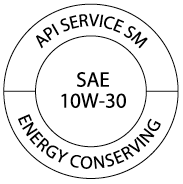
OPTION 1I
LOW VISCOSITY LUBRICATING OIL

Summary

Engine oil is the life blood of a vehicle. Not following the manufacturer recommended oil change intervals or using the wrong type of oil can void a vehicle warranty and can result in lower fuel economy.

To better understand the characteristics of the different types of engine oil on the market today (conventional, synthetic, energy conserving, etc.) the Society of Automotive Engineers (SAE) and the American Petroleum Institute (API) have established several ways to classify engine oil. These are shown in the donut shaped logo on the oil container label.



Performance Ratings

The “API Service” classification (**SM**) is a two-letter code that defines the oil performance characteristics under different engine loads, speeds and temperatures. The letter “S” designates the oil is for gasoline engine use. The second letter “M” indicates the application.

Recently API announced the new engine oil service classification (**SM**) that can provide full engine protection for all gasoline vehicle types. “Engine oils meeting the new SM service category designation are designed to provide improved oxidation resistance and deposit protection, better wear protection, and better low-temperature performance over the life of the oil...and may also qualify as having Energy Conserving properties.”[1] The current oil classifications in use for gasoline engines are SM & SL, designed for all gasoline automotive use, and SJ, designed for 2001 and older vehicles.

Viscosity

The SAE classification in the center of the donut shaped logo indicates the oil viscosity. The higher numbers indicate thicker oil. Oil classified with a “W,” such as 10W, indicate the oil viscosity when the engine is cold during winter conditions, whereas, a number rating without a “W” describes the oil viscosity during normal engine temperatures in non-winter conditions. Most vehicle manufacturers recommend multi-grade oil (i.e. 10W-30), due to its suitable flow properties during winter and warmer weather.

Fuel Economy Rating

The third part of the label classification is the “Energy Conservation” term. Oils are rated on their ability to reduce the amount of fuel consumed while driving. Those that are at least 1.5 percent better than standard reference oil are rated as “Energy Conserving.” If the oil is at least 2.7 percent better, it will be labeled as “Energy Conserving II.” Oils with this rating are designed to reduce internal engine friction and improve fuel economy.[2]

Petroleum Reduction

Petroleum reductions are occurring now as “at least ten automakers recommend the use of new energy conserving oils for their current and older gasoline powered vehicles: DaimlerChrysler, Toyota, Nissan, Mazda, Isuzu, Ford, Honda, General Motors, Suzuki an Subaru.”[3] These oils meet more stringent energy conserving requirements and in most cases have either “Energy Conserving” or “Energy Conserving II” listed on the bottom section of the donut shaped logo on the oil container.

As a result of automakers recommending the use of new energy conserving oils in vehicles sold since 2002, staff assumed that the fuel economy gains from these vehicles will be captured in the base case of the CalCars model. For purposes of this report, there is no additional petroleum reduction from vehicles 2002 or newer.

Additionally, it is difficult to identify petroleum reduction from older vehicles using the more energy efficient oil for several reasons: 1) vehicle data is not readily available, 2) older vehicles may not function as well with a different grade or viscosity of oil than was originally recommended, and 3) as a vehicle ages it tends to experience reductions in fuel economy due to irregular maintenance after the vehicle warranty period expires and from normal wear-and-tear. When considering these issues and comparing them with the possible improvement in fuel economy using the more energy efficient oils, they offset each other producing insignificant petroleum reduction results over the base case.

Description

No significant petroleum reduction.

The petroleum reduction resulting from new vehicles (2002 and newer) using Energy Conserving Oil is included in the U.S. Environmental Protection Agency (EPA) fuel economy rating and is therefore included in the CalCars base case. Older vehicles

do not pose any significant petroleum reduction. Energy conserving oil is available commercially and used in typical day-to-day vehicle operation.

Key Input Parameters and Values

N/A

Results

N/A

Key Drivers and Uncertainties

N/A

Endnotes

[1] American Petroleum Institute online media center article titled: *API Introduces New Gasoline Engine Oil Service Category SM*; January 5, 2005, http://api-ec.api.org/media/index.cfm, (March 21, 2005).

[2] 1994 SAE Handbook, vol. 1, Materials, Fuels, Emissions and Noise, *Classification of Energy-Conserving Engine Oil For Passenger Cars, Vans and Light-Duty* Trucks- *SAE J1423.*

[3] American Petroleum Institute online media center article titled: *Oils Meeting News ILSAC GF-4 Engine Oil Standard Available* September 14, 2004, http://api-ec.api.org/media/index.cfm, (March 25, 2005).