



## AUTOMOTIVE ENGINEERING

# FACT SHEET



## Engine Oil Quality

### BACKGROUND

Oil is the lifeblood of any engine. Modern engine oil is a mixture of conventional and/or synthetic oil and an additive package that provides a variety of essential functions designed to protect vehicle engines.

Since their introduction, it has been claimed that synthetic oils have various performance benefits such as the ability to minimize engine wear and maintain its viscosity at high temperatures.

To determine the validity of these claims, AAA conducted primary and secondary research to understand the differences between conventional and synthetic engine oils that are readily available for use in gasoline engines.

### KEY FINDINGS

**On average, synthetic oils outperformed conventional oils in the conducted tests by 47 percent.** This indicates that synthetic oil offers more engine protection than conventional oil. Individual test results can be found in the **full report**.

**Very few vehicles specifically require synthetic oil**, rather, most vehicle manufacturers require compliance to an oil specification for warranty purposes. In most cases, drivers have a choice between a conventional or synthetic oil that meets their vehicle's specification.

**A survey of AAA's Approved Auto Repair facilities reveals that the average cost of a conventional oil change is \$38, while a synthetic oil change is \$70.** This translates to an extra \$64 per year, or \$5.33 per month, for the average driver to switch to a synthetic oil.

⇒ For those who change their vehicle's oil themselves, the average cost of 5 quarts of conventional oil is approximately \$28, while synthetic oil is \$45.

**Nearly one-third (30%) of U.S. drivers typically use conventional oil in their vehicle, while 45 percent use synthetic oil.**

⇒ Nearly one-quarter of U.S. drivers are unaware of what oil is used in their vehicle.

**44 percent of U.S. drivers either do not believe synthetic motor oil is better for their engine (17%), or are unsure of which oil is best (27%).**

⇒ Reasons that U.S. drivers cite for regularly choosing the cheaper, conventional oil include feeling that synthetic oil is too expensive or offers no benefit, that the upgrade to synthetic oil is an unnecessary up-sell by a repair facility, or simply not being offered the choice.

### RESEARCH QUESTIONS

1. Are there differences in performance between conventional and synthetic oils?
2. What is the percentage of current model year vehicles that "require" synthetic engine oil?
3. What is the cost increase, if any, associated with switching to a synthetic oil?
4. What are current consumer trends regarding oil changes and the use of synthetic engine oil?

## ASK THE EXPERT

### What makes one oil better than another?

Oil quality comes down to the oil's ability to withstand the extreme conditions that exist inside an engine. The greater the resistance to deterioration, the greater protection of vital engine components.



**John Nielsen**  
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### Is synthetic oil better for all vehicles?

In AAA's tests, synthetic oil outperformed conventional oil by an average of 47 percent. While any oil that meets the vehicle manufacturer's standards is safe to use in your vehicle, synthetic oil will offer better engine protection.

### Is AAA recommending that drivers switch to synthetic oil?

It's really a personal choice. If your budget allows, synthetic oils will offer additional protection for your vehicle, particularly if it frequently tows heavy loads, operates in extreme temperatures or is driven in stop-and-go traffic.

### Will conventional oil damage a vehicle's engine?

No. A conventional oil that meets a manufacturer's specifications will not harm a vehicle's engine.

### Does using synthetic oil mean you can extend the interval between oil changes?

Drivers should always follow the oil change interval provided by their vehicle manufacturer. This can be found in the owner's manual, or the on-board oil life system.

### How do you know what type of oil to use in your vehicle?

Your owner's manual is the best resource. This will provide not only the viscosity required for your operating conditions, but the specification. Always ensure that any oil used in your engine meets the internal performance standards required by the vehicle manufacturer.

*John Nielsen has more than 25 years of experience in the automotive industry. Starting as an automotive technician in 1979, Nielsen oversees all automotive testing, repair and reviews for AAA. He has given testimony to the state and national legislatures, regularly provides guidance to industry groups and serves as an automotive expert to the national media.*



## METHODOLOGY

Eight ASTM (American Society for Testing and Materials) tests were selected to identify differences in engine oil marketed as a conventional versus engine oil marketed as a full synthetic. The selected tests are commonly used to evaluate various performance characteristics of lubricating oils. This research analyzed high-temperature/high-shear viscosity, shear stability, moderate-temperature deposit formation, high-temperature deposit formation, evaporation loss, low-temperature pumpability, oxidation stability and oxidation viscosity. By analyzing the results as a whole, conclusions regarding the overall performance of an engine oil can be made. All ASTM tests with the exception of ASTM D4742 are required for ILSAC GF-5 certification.

Full test methodology and detailed research findings can be found in the **full report**.

The consumer survey was conducted April 6-9, 2017 using two probability samples: randomly selected landline telephone numbers and randomly selected mobile telephone numbers. The combined sample consists of 1,007 adults (18 years old and older) living in the continental United States. The margin of error for the sample of 1,007 is +/- 3% at the 95% confidence level.

