DID YOU KNOW?

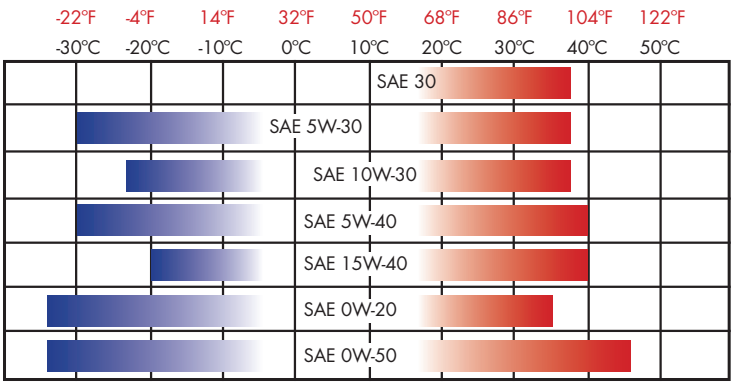
THE PROPERTIES OF VISCOSITY

WHAT IS VISCOSITY?

Viscosity is the thickness, or rate of fluidity, of engine oil.
In general, high viscosity provides more protection of engine components but greater fluid resistance, resulting in slower engine start-ups, decreased performance, and increased fuel consumption.

VISCOSITY AND TEMPERATURE

Generally, the higher the temperature of the oil, the lower the viscosity. At the highest temperatures, decreased viscosity results in engine wear.



External temperature range for each Viscosity Rating

HOW TO READ VISCOSITY RATINGS

Example: SAE* 5W-30

EXTERNAL
"W" stands for "Winter," or the rating for external temperatures. A lower number indicates better fluidity at lower temperatures. A "0W" oil has the least resistance at startup and cold temperatures.

INTERNAL
This number indicates oil's viscosity at high internal temperatures, when the engine is running. Higher numbers indicate "thicker" oils at 100°C/212°F.

Single vs. Multi

Engine oil with a single grade viscosity (such as **SAE** 30) has a much smaller range of external temperature conditions. Multi grade viscosity is important for ensuring engine protection in use outside of moderate external temperature ranges. Most passenger vehicles are recommended to use multi grade, lower viscosity oil due to technological improvement providing increased fuel economy.

VISCOSITY INDEX

Also known as "VI," the Viscosity Index scale was set up by the SAE to measure performance over a range of temperatures. Higher VIs provide more stability and consistency throughout all temperatures of operation, resulting in better performance, protection, and fuel economy.

VISCOSITY MODIFIERS

Low viscosity provides less fluid resistance, which can place engines at risk if not property formulated with performance-enhanced additives. Viscosity Modifiers (VMs) can increase the VI; however, too many VMs may increase risk of damage.

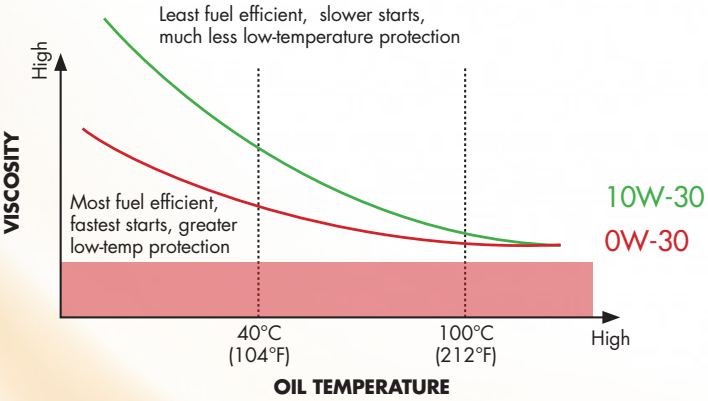
The challenge: finding an ideal balance of base oil viscosity and performance additives.

*Society of Automotive Engineers

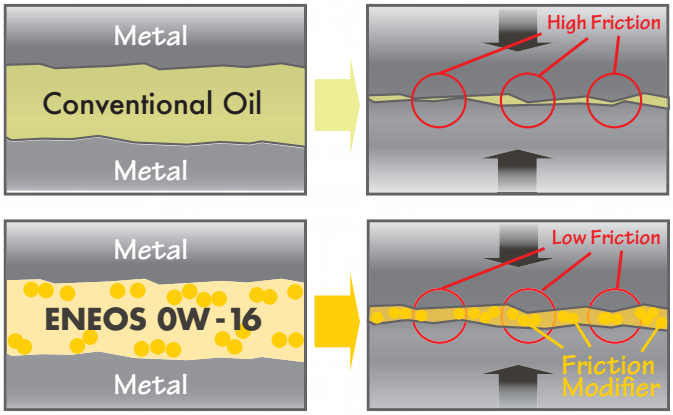
LOW VISCOSITY WITHOUT COMPROMISE

JX Nippon Oil & Energy, parent company of ENEOS, has been working with the Japanese automotive industry and API/ILSAC* for decades to formulate new standards and safely lower viscosity of engine oils to increase fuel efficiency while decreasing environmental impact.

ENEOS products are the result of this research, providing the best mix of quality base oil and additives based on our expertise in OE co-development and formulation.



The external, or "winter" rating applies to viscosity when the engine is not running. The "internal," or second number, applies to the viscosity when the engine is operating.



High-quality Friction Modifiers are used by lower-viscosity ENEOS products in just the right balance to protect engines at higher temperatures.

WE SWEAR BY OUR BLEND

The ideal balance of quality ingredients provides the high Viscosity Index (VI) of ENEOS products, ensuring your vehicle will operate optimally, with high performance, protection, and efficiency, at a wide range of temperatures.

TECHNOLOGY HORIZON

JX fine-tuned 0W-16 with Japanese automakers for nearly two decades and is currently working on even lower viscosity oils. Our foundation in and dedication to R&D means we continue to develop new and existing products using the latest technology, constantly striving to make the best lubricants for vehicles of past, present and future.

*JX research data considered by American Petroleum Institute / International Lubricants Standardization and Approval Committee in development of GF-6 standard and 0W-16.

www.eneos.us/products

ENEOS MOTOR OIL