Wheels: Last week was the first in a series on engine oil where you indicated that there are three things everyone should know about oil, including:

- When to change it
- What viscosity is specified
- What rating to use

Please provide more details this week.

Halderman: The most important characteristic of engine oil is the viscosity. Viscosity means resistance to flow. A low-viscosity is thin and flows easily, whereas a high-viscosity oil is thicker and does not flow easily.

All oils become thinner when hot and thicker when cold. Most oils include an additive called a viscosity index (VI) improver that allows an oil to be able to flow at cold temperatures and yet, not become too thin at higher temperatures. This type of oil is called a multiviscosity oil. Multiviscosity oils can be identified by the SAE label that has two numbers and the letter "W." The "W" means "winter" (not weight). For example, an oil rated SAE 5W-30 is an oil that flows readily at low temperatures and still has the needed viscosity at high temperatures to keep the engine lubricated properly. An SAE 5W-30 starts as an SAE 5W oil and the old viscosity index improver helps it from thinning too much at higher temperatures. At higher temperatures (212 degrees), the SAE 5W-30 is the same thickness as a straight weight SAE 30 engine oil.

Wheels: What viscosity should be used?

Halderman: Always use the viscosity specified by the vehicle manufacturer and published in the owner's manual. Most new vehicles use the SAE 5W-20, SAE 5W-30, or SAE 10W-30. Some engines, such as hybrid electric vehicles and others, specify SAE 0W-20. While there are more oil specifications, the vehicle owner should be sure that the specified viscosity is always used.

Wheels: What would happen if a thicker oil than specified is used?

Halderman: If a higher viscosity oil is used, fuel economy will be reduced and engine wear could increase. When an engine starts, a thick oil takes longer to reach the upper parts of the engine than a thinner (lower viscosity) oil.