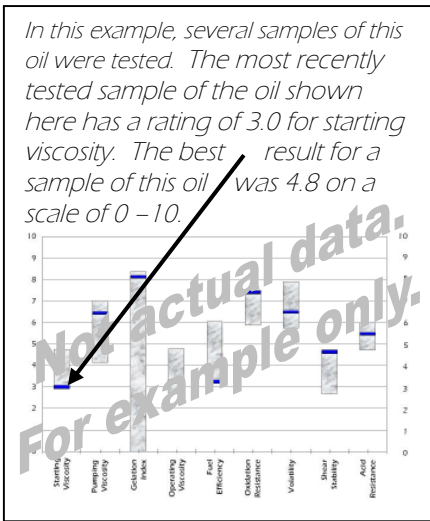


ENGINE OIL REPORT REFERENCE SHEET

**VOX
POP®**

The VoxPop® graph gives you two important pieces of information. First, most people are interested in how the brand of oil they use compares to other oils. Second, some people may also want to know how much variation their brand of oil shows from sample to sample – how consistently it is made. The VoxPop® graph gives you answers to both of these questions.



1. **To find out how your oil compares to other oils:** Use the comparison scale on the left and right sides of the graph. All the oils have been tested for nine important oil properties shown along the bottom of the graph and then ranked on a scale of 0 to 10 (with 5 being the average and 10 being the best oil). Find the blue dash in each colored bar and see where it falls on the scale. This tells you how the most recently tested sample of your oil compares to other oils of the same viscosity grade and service classification.

2. **To find out how much variation your oil shows from sample to sample:** Use the bars. When more than one sample of your oil has been tested, the bar shows the range of rankings for samples of your oil. Shorter bars mean there is less variation between different samples of your oil. A blue dash with no colored bar means that only one sample of your oil was tested or there was no variation between samples.

In addition, for the technically-minded or just curious, we have included actual bench test results from the most recent sample of the oil requested.

Test Results from the Most Recent Sample of this Engine Oil

Starting Viscosity (ASTM D5293)	6487 cP	Oxidation Resistance (ASTM D4742)	350 min.
Pumping Viscosity (ASTM D4684)	NA	Volatility (ASTM D300)	12.71 %
Gelation Index (ASTM D5133)	5.6	Shear Stability (SAVLAB VLT)	15.7 %
Operating Viscosity (ASTM D4683)	3.04 cP	Acid Resistance (ASTM D2896)	7.68 mg/g
Fuel Efficiency Index (SAVLAB FEI)	79.61		

Glossary of Terms

Viscosity - Viscosity is the single most important property of an oil. The thicker the oil, the higher its viscosity. It must be thick enough to separate rubbing surfaces in an engine yet thin enough to flow to the areas needing lubrication.

Starting Viscosity (Startability) - How easily the oil flow will let your engine start at cold temperatures. Lower values are better.

Pumping Viscosity (Pumpability) - How easily an oil will flow from the oil pump in colder temperatures. Once a cold engine has been started, it is critical for the oil to be quickly pumped to areas needing lubrication. Lower values are better.

Gelation Index (Gelling Tendency) - An oil's tendency to form gelled structures at colder temperatures, making flow to the oil pump more difficult. A lower index is better.

Operating Viscosity - The ability of an oil to lubricate critical areas of the engine such as in the bearings and on the cylinder walls where engine temperatures can reach more than 200°F during normal operation. Higher values are better.

Fuel Efficiency Index – A measure of the effect of engine oil viscosity on fuel efficiency. A higher index is better.

Oxidation Resistance - The ability of an oil to resist the attack of oxygen during engine operation. Oxidation leads to the formation of acid and deposits within the engine and may increase oil viscosity. Resistance is measured in minutes until oxidation occurs using very harsh test conditions. More minutes of resistance are better.

Volatility - The percentage of oil which may be lost through evaporation or burn-off during engine operation. A lower percentage of oil loss is better.

Shear Stability - The percent of viscosity which may be lost during engine operation. This is a measure of how well an oil retains its viscosity when used in the engine. A lower percentage of viscosity loss is better.

Acid Resistance - The ability of the oil to neutralize harmful acids which are formed in the process of fuel combustion and oil oxidation. A higher measurement is better.