



SAE Viscosity Grades for Engine Oils

This gradation system, established by the Society of Automotive Engineers, has been put in place for classifying crankcase, transmission and differential lubricants according to their viscosities. SAE numbers are used in connection with recommendations for crankcase oils to meet various design, service and temperature requirements affecting viscosity only; they do not denote quality.

Take note that a “W” grade (winter grade) indicates testing at a colder temperature. This is important in cold climates since it will take longer for the oil to warm and flow free throughout the engine. A lower “W” viscosity rating results in less engine wear because the oil can run quicker through the engine.

A viscometer is used to determine the viscosity of engine oil. Higher viscosity numbers indicate thicker oils because they take longer to flow through the viscometer when tested. It is rare that an oil will fall into one viscosity range, so centistokes (cSt) are taken into account, which more accurately show oil viscosity.

Cp, or Cloud Point, is the temperature at which paraffin wax or the solid substances begin to crystallize or separate from the solution, imparting a cloudy appearance to the oils when chilled.

SAE Viscosity Grade	Maximum Viscosity, Cp at Specified Temperature, °C (ASTM Test D 2602)	Maximum Borderline Pumping Temperature, °C (ASTM Test D 3829)	Viscosity, cSt at 100 °C ASTM TEST D445	
			Min	Max
0W	3250 at -30	-35	3.8	
5W	3500 at -25	-30	3.8	
10W	3500 at -20	-25	4.1	
15W	3500 at -15	-20	5.6	
20W	4500 at -10	-15	5.6	
25W	6000 at -5	-10	9.3	
20			5.6	<9.3
30			9.3	<12.5
40			12.5	<16.3
50			16.3	<21.9
60			21.9	<26.1

For further reference, view the [Fundamentals of Viscosity](#), [Viscosity Equivalent Chart](#) & [Glossary of Energy Terms](#).