

SAE ENGINE OIL VISCOSITIES

SAE Viscosity Grades for Engine Oils^a - SAE J300 Dec99

SAE Viscosity Grade	Low Temperature Viscosities		High-Temperature Viscosities		
	Cranking ^b (cP) max at temp °C	Pumping ^c (cP) max with no yield stress at temp °C	Kinematic ^d (cSt) at 100°C		High Shear ^d (cP) at 100°C at 150°C aCd 10 ⁶ s ⁻¹ min
			min	max	
0W	6200 @ -35	60,000 at -40	3.8	—	—
5W	6600 @ -30	60,000 at -35	3.8	—	—
10W	7000 @ -25	60,000 at -30	4.1	—	—
15W	7000 @ -20	60,000 at -25	5.6	—	—
20W	9500 @ -15	60,000 at -20	5.6	—	—
25W	13000 @ -10	60,000 at -15	9.3	—	—
20	—	—	5.6	<9.3	2.6
30	—	—	9.3	<12.5	2.9
40	—	—	12.5	<16.3	2.9 (0W-40, 5W-40, 10W-40, grades)
40	—	—	12.5	<16.3	3.7 (15W-40, 20W-40, 25W-40, 40 grades)
50	—	—	16.3	<21.9	3.7
60	—	—	21.9	<26.1	3.7

^aAll values are critical specifications as defined by ASTM D 3244. ^bASTM D 5293 ^cASTM D 4684: The presence of any yield stress detectable by this method constitutes a failure regardless of viscosity. ^dASTM D 445 ^eASTM D 4683, ASTM 4741, CEC-L-36-A-90

Military Grades

Specification:	MIL-L-CID	2104F	2104F	2104F			2104F
					A-A-52039B	A-A-52039B	A-A-52306A
Viscosity Grade		10W	30	40	5W-30	10W-30	15W-40
Cranking Viscosity ^a (cP) at temperature °C	min	3500 at -25	—	—	3500 at -30	3500 at -25	3500 at -20
	max	3500 at -20	—	—	3500 at -25	3500 at -20	3500 at -15
Pumping Viscosity ^b (cP) at temperature °C	max	30,000 at -25	—	—	30,000 at -30	30,000 at -25	30,000 at -20
Viscosity ^c (cSt) at 100°C	min	5.6	9.3	12.5	9.3	9.3	12.5
	max	<7.4	<12.5	<16.3	<12.5	<12.5	<16.3
Viscosity Index,	min	—	80	80	—	—	—
HTHS Viscosity (cP)	min	2.9	—	—	2.9	2.9	3.7
Pour Point (°C)	max	-30	-18	-15	-35	-30	-23
Stable Pour Point (°C)	max	-30	—	—	-35	-30	-23
Flash Point (°C)	min	205	220	225	200	205	215
Evaporative Loss ^d (%)	max	18	—	—	20	17	15

^aASTM D 2602 Modified ^bASTM D 4684, allows no detectable yield stress ^cASTM D 445 ^dNot required for all military specifications.