

Table G-4—Requirements for API Service Category SM

Engine Test Requirements ^a	Viscosity Grade Performance Requirements	
	SAE 0W-20, SAE 5W-20 SAE 0W-30, SAE 5W-30, SAE 10W-30	All Others
Sequence IIIG	Pass	Pass
Sequence IIIGA	Pass	NR
Sequence IVA (ASTM D 6891)	Pass	Pass
Sequence VG (ASTM D 6593)	Pass	Pass
Sequence VIII (ASTM D 6709)	Pass	Pass

Bench Test and Measured Parameter ^a	Viscosity Grade Performance Requirements	
	SAE 0W-20, SAE 5W-20 SAE 0W-30, SAE 5W-30, SAE 10W-30	All Others
ASTM D 6557 (Ball Rust Test), avg. gray value, min	100	100
ASTM D 5800, evaporation loss, 1 hour at 250°C, % max ^b	15	15
ASTM D 6417, simulated distillation at 371°C, % max	10	10
ASTM D 6795, EOFT, % flow reduction, max	50	50
ASTM D 6794, EOWTT, % flow reduction, max		
with 0.6% H ₂ O	50	50
with 1.0% H ₂ O	50	50
with 2.0% H ₂ O	50	50
with 3.0% H ₂ O	50	50
ASTM D 4951, phosphorus % mass, max ^c	0.08 ^d	NR
ASTM D 4951, phosphorus % mass, min ^c	0.06 ^d	0.06 ^d
ASTM D 4951, or D 2622, sulfur % mass, max ^c		NR
SAE 0W-20, 0W-30, 5W-20, and 5W-30 multigrades	0.5 ^d	
SAE 10W-30 multigrades	0.7 ^d	
ASTM D 892 (Option A), foaming tendency		
Sequence I, mL, max, tendency/stability ^e	10/0	10/0
Sequence II, mL, max, tendency/stability ^e	50/0	50/0
Sequence III, mL, max, tendency/stability ^e	10/0	10/0
ASTM D 6082 (Option A), high-temperature foaming tendency/stability ^f	100/0	100/0
ASTM D 6922, homogeneity and miscibility	^g	^g
ASTM D 6709, (Sequence VIII) shear stability	^h	^h
TEOST MHT, high temperature deposits, deposit wt, mg, max	35	45
ASTM D 5133, gelation index, max	12 ⁱ	NR

Note: All oils must meet the requirements of the most recent edition of SAE J300; NR = Not required.

^aTests are per ASTM requirements.

^bCalculated conversions specified in ASTM D 5800 are allowed.

^cFor all viscosity grades: If CF-4, CG-4, CH-4 and/or CI-4 categories precede the "S" category and there is no API Certification Mark, the limits for phosphorus and sulfur do not apply. Note that these oils have been formulated primarily for diesel engines and may not provide all of the performance requirements consistent with vehicle manufacturers' recommendations for gasoline-fueled engines.

^dThis is a non-critical specification as described in ASTM D 3244.

^eAfter 10-minute settling period.

^fAfter 1-minute settling period.

^gShall remain homogenous and, when mixed with SAE reference oils, shall remain miscible.

^hTen-hour stripped kinematic viscosity at 100°C. Kinematic viscosity must remain in original viscosity grade.

ⁱTo be evaluated from -5°C to temperature at which 40,000 cP is attained or -40°C, or 2 Celsius degrees below the appropriate MRV TP-1 temperature (defined by SAE J300), whichever occurs first.