



API SN Ballot Review

Ballot Results and Comments

Ballot Issued 3/31/10

Ballot Closed 4/16/10



API SN Ballot Results

Ballot Item 1:

Approve new paragraphs:

2.3.2.1, SN—2011 Gasoline Engine Warranty Maintenance Service, and
2.3.2.5.2, Resource Conserving in Conjunction with API Service Category
SN, for inclusion in API 1509.

Lubricants Committee Ballot Results:

- ❖ Approve = 13
- ❖ Approve With Comments = 2
- ❖ Disapprove = 0
- ❖ Abstain = 0

Advisory Ballot Results:

- ❖ Approve = 0
- ❖ Approve with Comments = 0
- ❖ Disapprove = 2
- ❖ Abstain = 1

Ballot Comments

Editorial Comments:

Afton:

Table 1. Resource Conserving with API SN.

Insert “max” after All Other Viscosity Grades for TEOST 33C test.

Lubrizol

For clarity and consistency edit footnote “c” of Table G-5:

Old=“Viscosity grades are limited to 0W, 5W and 10W multigrade oils.

New=“Viscosity Grades are limited to 0W, 5W, and 10W multigrade oils”

Add same footnote to the Sequence VID in Table 1.

New=“Viscosity Grades are limited to 0W, 5W, and 10W multigrade oils”



Ballot Comments

Comments on OEM Recomending S Service Category Oil:

General Motors: Section 2.3.2.1

Suggest replacing the word “performance” in the last sentence of the first paragraph of section 2.3.2.1 with “*specification*” or “*standard*” or “*service category*.”

Suggest adding the clause “*and only where API “S” category oils are recommended by the vehicle manufacturer*” to the penultimate sentence in the first paragraph of this section.

Ford: First should paragraphs should read as follows:

*API Service Category SN was adopted for use in describing engine oils available in 2011. These oils are for use in service typical of gasoline engines in current and earlier passenger cars, sport utility vehicles, vans, and light-duty trucks operating under vehicle manufacturers’ recommended maintenance procedures **and only where API SN oils are recommended by the vehicle manufacturer.** Vehicle owners and operators should follow their vehicle manufacturer’s recommendations on engine oil viscosity and performance.*



API SN Ballot Results

Ballot Item 2:

Approve Table G-5, Requirements for API Service Category SN and API SN with Resource Conserving, and Table G-6, Elastomer Compatibility, for inclusion in API 1509

Lubricants Committee Ballot Results:

- ❖ Approve = 10
- ❖ Approve With Comments = 5
- ❖ Disapprove = 0
- ❖ Abstain = 0

Advisory Ballot Results:

- ❖ Approve = 0
- ❖ Approve with Comments = 0
- ❖ Disapprove = 2
- ❖ Abstain = 1

Ballot Comments

Editorial Comments:

Afton

Table 1: Resource Conserving with API SN.

Insert “max” after All Other Viscosity Grades for TEOST 33C test.

Lubrizol

Table G-5: Footnote “C” was misapplied to ASTM D6709 (Sequence VIII) and should be with ASTM D7589 (Sequence VID)

Remove Footnote ^c from ASTM D6709 (Sequence VIII)

Apply Footnote ^c to ASTM D7589 (Sequence IVD)

(^cViscosity Grades are limited to 0W, 5W, and 10W multigrade oils)

GM

Note c

- o This note is new from the previous SN ballot. What is the technical reason for limiting the Sequence VIII corrosion test just to 0W, 5W, and 10W oils (or, conversely, for eliminating the Sequence VIII corrosion test requirement for 15W-40, 20W-50, and mono-grade oils)?



Ballot Comments

General Comment on P Max - No Standard Change Requested

Vanderbilt:

We would like to note our disappointment in not being able to find some common ground with OEM's regarding the lack of phosphorus maximum limit for API SN "other viscosity grade" oils. We understand it is a carryover from GF-4 and we also understand that a phosphorus maximum is not an "engine-critical" requirement. However, GF-5 now has a phosphorus retention requirement, representing additional catalyst protection beyond previous phosphorus maximum limits, down to the equivalent of 0.05% P (from "conventional" ZDDP). We believe it is time to adopt a phosphorus maximum of 0.08% for non-ILSAC viscosity grades so the gap of catalyst protection between ILSAC and non-ILSAC viscosity grades does not dramatically increase with GF-5 and API SN. We also understand the oil marketers concern about having phosphorus maximum at 0.08% for universal oils, so this requirement could be different for API SN oils if "C" category is listed first



Ballot Comments

Aged Oil Low-Temperature Viscosity” - Table G-5

Infineum

Two edits to Table G-5 which we believe will add clarity to the interpretation of the table.

Table G-5—Requirements for API Service Category SN and API SN with Resource Conserving

	API SN	API SN	API SN with Resource Conserving
Pertinent Viscosity Grades:	SAE 0W-20, SAE 5W-20 SAE 0W-30, SAE 5W-30, SAE 10W-30	Other Viscosity Grades	All Viscosity Grades
Engine Test Requirements^a (see Table Q-5)			
ASTM D7320, (Sequence IIIG)	Pass	Pass	Pass
Aged oil low-temperature viscosity			
ASTM D4684, (Sequence IIIGA), aged oil low-temperature viscosity	Pass ^d	NR ^d	Pass
Or			
ASTM D7528, (ROBO Test), aged oil low-temperature viscosity	Pass ^d	NR ^d	Pass

By adding footnote d to the NR for other grades, the reader will be more likely to understand that the Sequence IIIGA/ROBO is required for all other 0W-xx, 5W-xx, and 10W-xx grades.

Ballot Comments

Aged Oil Low-Temperature Viscosity” - Table G-5

Chevron

Chevron believes that requirements of “Aged oil low-temperature viscosity” as represented in Table G-5 are confusing and can lead to misinterpretation. In this table, the first column clearly specifies a number of viscosity grades of interest where uniformity of requirements throughout the column is very desirable. At the same time, the second column is a “catch-all” where deviations may be permissible. Additionally, a new or added requirement should not be expressed in a Foot-note where it can easily be missed. A new or added requirement should appear within the table while exceptions are noted within the footnotes.

Therefore, Chevron proposes the following format for requirements of “Aged oil low-temperature viscosity” as represented in Table G-5:

Aged oil low-temperature viscosity ASTM D4684, (Sequence III GA), aged oil low- temperature viscosity	Pass	Pass ^d	Pass
Or			
ASTM D7528, (ROBO Test), aged oil low- temperature viscosity	Pass	Pass ^d	Pass

And the corresponding foot note to state:

^d[Requirement waived [or] Not required] for Monogrades and 15W, 20W and 25W Multigrades.

(Note “x” should be in lower case and not repeated to denote a variable.)

Ballot Comments

Aged Oil Low-Temperature Viscosity/Pumpability

GM

Note d

- o Note d has been applied to the aged-oil low-temperature viscosity requirement of oils that fall within the non-resource conserving 0W-20, 5W-20, 0W-30, 5W-30, or 10W-30 viscosity grade column. This column is limited to a definite set of viscosity grades. Confusingly, however, Note d appears to expand the reach of this viscosity requirement to all 0W, 5W and 10W oils, some of which would be included in the “Other Viscosity Grades” column, e.g. 5W-40, 10W-40, etc. If the purpose of Note d is to expand the reach of the aged-oil low-temperature viscosity requirement, it may be less confusing if Note d were moved to the “other viscosity grade,” the requirement changed to “pass,” and the note reworded to state “applies to only viscosity grades.”

- o All multi-grade API SN oils (save perhaps 25W) should be required to pass the aged-oil low-temperature Pumpability test. A failure in an oil’s low-temperature pumping viscosity can result in engine damage.

Ford

Low temperature used oil pumpability should be required on all W grades.



Ballot Comments

Phosphorus Retention, TEOST 33C and Emulsion Test

ILSAC

0W-20, 5W-20, 0W-30, 5W-30 and 10W-30 non-resource conserving column:

These viscosity grades bearing the API SN designation will be primarily recommended for vehicles with gasoline-fueled engines. In this case, catalyst compatibility (phosphorus retention and phosphorus maximum) and turbocharger protection (TEOST 33C) are important for the adequate protection of modern gasoline-fueled engines. ILSAC would like to see the IIIGB, phosphorus maximum and TEOST 33C (except for 0W-20) included in this column of API SN.

Ford

Phosphorus retention, TEOST33C and emulsion retention should be in Table G-5 at least for all 0W-XX, 5W-XX and 10W-XX oils. These are all oils that are the same as the ILSAC GF-5 viscosity grades and can easily be used to service vehicles recommending GF-5 oils. Additionally in other parts of the world where GF-5 oils aren't available, S category oils (without Resource Conserving or Energy Conserving) could be recommended for gasoline vehicles with catalysts. These oils should at least provide the engine and emissions system protection of GF-5 that is needed, even if that customer won't be getting the fuel economy advantage of GF-5.

Ballot Comments

Universal Oil - C Service Category First

ILSAC

Test Exemptions when “C” category precedes API SN category

API proposed test exemptions for SN oils that are preceded by certain “C” categories. API further provides a footnote noting that oils primarily formulated for diesel engines might not provide all performance requirements consistent with vehicle manufacturers’ recommendations for gasoline-fueled engines. Given the footnote, ILSAC questions the need for those “C” category oils to also be licensed to SN. At the very least, ILSAC believes that efforts should be made to make end users fully aware of the deficiencies of these “universal” oils with respect to performance in gasoline-fueled engines (including the cautionary text in a footnote of API 1509 is not sufficient notice for end-users). Please provide ILSAC with information on how API plans to communicate these deficiencies to customers.

GM

Note b

- o API SN licensed oils are designed for “service typical of gasoline engines.” Note b, however, extirpates several key tests for proving adequate performance in gasoline engines if the “S” category is preceded by API CI-4 and/or CJ-4 categories. It may be that oils meeting API CI-4 and/or CJ-4 generally would pass the gasoline engine oil tests eliminated by note b, but it seems that just saying they do is nothing more than an ipse dixit.

Note f

- o API SN licensed oils are designed for “service typical of gasoline engines.” Note f, however, extirpates several key tests for ensuring adequate protection of gasoline-fueled engines/vehicles if the “S” category is preceded by API CH-4, CI-4 and/or CJ-4 categories. The note goes on to caution users that some API SN oils, specifically those that have the “S” category preceded by a “C” category, may not provide the necessary “performance requirements consistent with vehicle manufacturers’ recommendations for gasoline-fueled engines.” It is time to remove note f from API SN. If an oil can pass all of the requirements of the aforementioned “C” categories as well as meeting all of the tests necessary for proper performance and protection of gasoline-fueled engines then there would be no issue licensing the oil to both “C” and “S” categories. If the “S” and “C” categories are mutually exclusive, however, as they appear to be in this case, then it is technically disingenuous to force the two categories together. At the very least, the cautionary note regarding the performance of these oils should not be buried in a footnote, written in 8-point font, in the middle of API 1509 (a document that runs to well over 100 pages).



Ballot Comments

Universal Oil - C Service Category First

Ford

It is now time to end the practice of "universal oils" C and S categories on the same product. The requirements of these two categories are diverging and the use of C category oils in gasoline vehicles with catalysts is no longer acceptable. Higher phosphorus and sulfur levels and volatile phosphorus are damaging to catalysts. With more turbochargers entering the market over the next few years eliminating TOEST33C poses a risk. Reducing complexity in fleets isn't an acceptable argument anymore. A responsible fleet owner who is interested in correctly maintaining their vehicles shouldn't have a problem with carrying two drums of oil. Customer expectations are that oils labeled SN will meet all gasoline engine requirements and using "C/S category" with different requirements will mislead the customer as to gasoline engine performance. In some markets we recommend only the API S category and this should represent the same performance where ever used.

Infineum

The issue of Universal Oils is a real concern to the catalyst viability of gasoline powered engines and the API LC should address this issue with the ILSAC/EMA community for future categories.



Ballot Comments

Performance Differences GF-5 vs. SN

ILSAC

ILSAC believes that “S” category users perceive the modern “S” category, SN here, to be equivalent to the modern ILSAC category, GF-5 here. Therefore, it is reasonable to assume that users will expect API SN to have the same level of performance and engine protection as ILSAC GF-5. IF API chooses not to incorporate the above tests into API SN, ILSAC believes API should work to clearly explain the oil’s deficiency to end users. ILSAC would like to understand API’s plans to communicate with end users.

ASTM D7589, (Sequence VID)

GM

- o Eliminating the Sequence VID requirement from the “other viscosity grades” column is understandable. However, the Sequence VID should be applied to the 0W-20, 5W-20, 0W-30, 5W-30 and 10W-30 column. I understand that the Resource Conserving tag is supposed to designate that the oil meets additional fuel economy requirements. However, it seems doubtful that many users will understand the nuance that not all 5W-20 engine oils labeled as licensed to the API SN standard are formulated to help improve fuel economy.

ASTM D4951, phosphorus % mass, max

GM

The 0.08wt% limit should be on all SN oils. This is an important parameter for catalyst compatibility in gasoline-fueled engines. API keeps old “S” categories, with higher phosphorus limits, as “active”; those old categories can satisfy the perceived need for “S” category oils with higher phosphorus limits.



API SN BALLOT DETAILS



SN Ballot Details

2.3.2.1 SN—2011 Gasoline Engine Warranty Maintenance Service

API Service Category SN was adopted for use in describing engine oils available in 2011. These oils are for use in service typical of gasoline engines in current and earlier passenger cars, sport utility vehicles, vans, and light-duty trucks operating under vehicle manufacturers' recommended maintenance procedures. **Vehicle owners and operators should follow their vehicle manufacturer's recommendations on engine oil viscosity and performance.**

Engine oils that meet the API Service Category SN designation (see Appendix G, Table G-5) may be used where API Service Category SM and earlier S categories have been recommended.

Engine oils that meet the API Service Category SN designation have been tested in accordance with the ACC Code and may use the API Base Oil Interchangeability Guidelines and the API Guidelines for SAE Viscosity-Grade Engine Testing (see Appendices E and F).

Starting October 1, 2010, oils that have passed the tests for API Service Category SN at the limits shown in Table G-5 and are properly licensed by API may display API Service SN in the upper portion of the API Service Symbol. Before the October 1, 2010, introduction date, oil marketers may license API SN oils as API SM.



SN Ballot Details

2.3.2.5.2 Resource Conserving in Conjunction with API Service Category SN

API Service SN engine oils designated as Resource Conserving are formulated to help improve fuel economy and protect vehicle emission system components in passenger cars, sport utility vehicles, vans, and light-duty trucks powered by gasoline engines. These oils have demonstrated a fuel economy improvement (FEI) in the Sequence VID test at the percentages listed in Table 1 when compared with a baseline oil (BL) used in the Sequence VID test. Additionally, these oils have demonstrated in the tests listed in Table 1 that they provide greater emission system **and turbocharger** protection, and help protect engines when operating on ethanol-containing fuels up to E85.

Many previous S-categories made reference to "Energy Conserving," but this reflected an emphasis on fuel-economy performance alone. Resource Conserving in conjunction with API SN focuses on fuel economy, emission system **and turbocharger protection**, and compatibility with ethanol-containing fuel up to E85.

Starting October 1, 2010, oils that have passed the tests at the limits shown in Table 1 and are properly licensed by API may display "Resource Conserving" in the lower portion of the API Service Symbol in conjunction with API Service SN in the upper portion. The fuel economy and other resource conserving benefits obtained by individual vehicle operators using engine oils labeled Resource Conserving may differ because of many factors, including the type of vehicle and engine, engine manufacturing variables, the mechanical condition and maintenance of the engine, oil that has been previously used, operating conditions, and driving habits. Before the October 1, 2010, introduction date, oil marketers may license oils meeting Resource Conserving in conjunction with API Service SN as Energy Conserving in conjunction with API Service SM.



SN Ballot Details

Table 1—Resource Conserving Primary Performance Criteria with API Service Category SN

Performance Test	Performance Criteria	
Sequence VID (ASTM D7589)		
Viscosity Grade	FEI2 minimum after 100 hours aging	FEI SUM minimum (FEI1 after 16 hours aging + FEI2)
XW-20	1.2%	2.6%
XW-30	0.9%	1.9%
10W-30 and all other viscosity grades not listed above	0.6%	1.5%
Sequence IIIGB (ASTM D7320)	79% phosphorus retention, min	
Emulsion Retention (ASTM D7563)	No water separation	
High Temperature Deposits, TEOST 33C (ASTM D6335), Total Deposit Weight, mg	Not Required	
SAE 0W-20	30	
All other viscosity grades		
Elastomer Compatibility (ASTM D7216 Annex A2)	Pass in accordance with Table G-6	

SN Ballot Details

Table G-5—Requirements for API Service Category SN and API SN with Resource Conserving

Engine Test Requirements ^a (see Table Q-5)	SAE 0W-20, SAE 5W-20 SAE 0W-30, SAE 5W-30, SAE 10W-30	Other Viscosity Grades	API SN with Resource Conserving
ASTM D7320, (Sequence IIIG)	Pass	Pass	Pass
ASTM D6891, (Sequence IVA)	Pass	Pass	Pass
ASTM D6593, (Sequence VG) ^b	Pass	Pass	Pass
ASTM D7589, (Sequence VID)	NR	NR	Pass
ASTM D6709, (Sequence VIII) ^c	Pass	Pass	Pass
Bench Test and Measured Parameter^a			
Aged oil low-temperature viscosity ASTM D4684, (Sequence IIIGA), aged oil low- temperature viscosity	Pass ^d	NR	Pass
Or			
ASTM D7528, (ROBO Test), aged oil low- temperature viscosity	Pass ^d	NR	Pass
ASTM D7320, (Sequence IIIGB) phosphorus volatility, % min	NR	NR	79
ASTM D6557 (Ball Rust Test), avg. gray value, min ^b	100	100	100
ASTM D5800, evaporation loss, 1 hour at 250°C, % max ^e	15	15	15
ASTM D6417, simulated distillation at 371°C, % max	10	10	10
ASTM D6795, EOFT, % flow reduction, max	50	50	50

SN Ballot Details

Table G-5—Requirements for API Service Category SN and API SN with Resource Conserving (Cont'd)

ASTM D4951, phosphorus % mass, max ^f	0.08 ^g	NR	0.08 ^g
ASTM D4951, phosphorus % mass, min ^f	0.06 ^g	0.06 ^g	0.06 ^g
ASTM D4951, or D2622, sulfur % mass, max ^f			
SAE 0W-20, 0W-30, 5W-20, and 5W-30	0.5 ^g	NR	0.5 ^g
SAE 10W-30	0.6 ^g	NR	0.6 ^g
All other viscosity grades	NR	NR	0.6 ^g
ASTM D892 (Option A), foaming tendency			
Sequence I, ml, max, tendency/stability	10/0 ^h	10/0 ⁱ	10/0 ^h
Sequence II, ml, max, tendency/stability	50/0 ^h	50/0 ⁱ	50/0 ^h
Sequence III, ml, max, tendency/stability	10/0 ^h	10/0 ⁱ	10/0 ^h
ASTM D6082 (Option A), high-temperature foaming ml, max, tendency/stability ^h	100/0	100/0	100/0
ASTM D6922, homogeneity and miscibility	j	j	j
ASTM D6709, (Sequence VIII) shear stability	k	k	k
ASTM D7097, TEOST MHT, high-temperature deposits, deposit wt, mg, max ^f	35	45	35
ASTM D5133, gelation index, max ^b	12 ^l	NR	12 ^l
ASTM D6335, high-temperature deposits, TEOST 33C, total deposit weight, mg			
SAE 0W-20	NR	NR	NR
All other viscosity grades	NR	NR	30
ASTM D7563, emulsion retention	NR	NR	no water separation
Elastomer compatibility (ASTM D7216 Annex A2)	Table G-6	Table G-6	Table G-6



SN Ballot Details

Table G-5—Requirements for API Service Category SN and API SN with Resource Conserving (Cont'd)

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

^aTests are per ASTM requirements.

^bIf CI-4 and/or CJ-4 categories precede the "S" category and there is no API Certification Mark, the Sequence VG (ASTM D6593), Ball Rust (ASTM D6557), and Gelation Index (ASTM D5133) tests are not required.

^cViscosity grades are limited to 0W, 5W and 10W multigrade oils.

^dApplies to all 0W-XX, 5W-XX, and 10W-XX viscosity grades.

^eCalculated conversions specified in ASTM D5800 are allowed.

^fFor all viscosity grades: If CH-4, CI-4 and/or CJ-4 categories precede the "S" category and there is no API Certification Mark, the "S" category limits for phosphorus, sulfur, and the TEOST MHT do not apply. However, the CJ-4 limits for phosphorus and sulfur do apply for CJ-4 oils. Note that these "C" category 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.

^gThis is a non-critical specification as described in ASTM D3244.

^hAfter 1-minute settling period.

ⁱAfter 10-minute settling period.

^jShall remain homogenous and, when mixed with ASTM reference oils, shall remain miscible.

^{kH}Ten-hour stripped kinematic viscosity at 100°C. Kinematic viscosity must remain in original viscosity grade.

^lTo 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.

SN Ballot Details

Table G-6—Elastomer Compatibility

Candidate oil testing for elastomer compatibility shall be performed using the five Standard Reference Elastomers (SREs) referenced herein and defined in SAE J2643. Candidate oil testing shall be performed according to ASTM D7216 Annex A2, The post-candidate-oil-immersion elastomers shall conform to the specification limits detailed herein

Elastomer Material (SAE J2643)	Test Procedure	Material Property	Units	Limits
Polyacrylate Rubber (ACM-1)	ASTM D471	Volume	% ?	-5, 9
	ASTM D2240	Hardness	pts.	-10, 10
	ASTM D412	Tensile Strength	% ?	-40, 40
Hydrogenated Nitrile Rubber (HNBR-1)	ASTM D471	Volume	% ?	-5, 10
	ASTM D2240	Hardness	pts.	-10, 5
	ASTM D412	Tensile Strength	% ?	-20, 15
Silicone Rubber (VMQ-1)	ASTM D471	Volume	% ?	-5, 40
	ASTM D2240	Hardness	pts.	-30, 10
	ASTM D412	Tensile Strength	% ?	-50, 5
Fluorocarbon Rubber (FKM-1)	ASTM D471	Volume	% ?	-2, 3
	ASTM D2240	Hardness	pts.	-6, 6
	ASTM D412	Tensile Strength	% ?	-65, 10
Ethylene Acrylic Rubber (AEM-1)	ASTM D471	Volume	% ?	-5, 30
	ASTM D2240	Hardness	pts.	-20, 10
	ASTM D412	Tensile Strength	% ?	-30, 30