

ATIEL | EELQMS | SAIL

Conference Presentation

Defining and Validating ACEA lubricant performance standards through
the EELQMS framework

Mike Boyer, Director | SAIL

- Importance of Quality standards and the ACEA European Oil Sequences
- The European Engine Lubricants Quality Management System (EELQMS)
- Role of SAIL - Monitoring quality in the market

Importance of Quality standards and the ACEA European Oil Sequences

Importance of quality standards

- OEMs need to know that appropriate quality engine lubricants will be available in all their markets.
- Trade/workshops need assurance that inadequate lubricant performance will not lead to warranty claims.
- Consumers need confidence in quality of the products being used in their vehicles.



Quality and performance claims

- Although, an engine lubricant may carry a number of industry and OEM claims, today we will focus on ACEA sequence performance claims
- An ACEA claim represents the minimum level of performance required to provide basic protection. It is often quoted in vehicle handbooks as an alternative if an OEM approved lubricant is not available and is a prerequisite for many OEM engine oil specifications



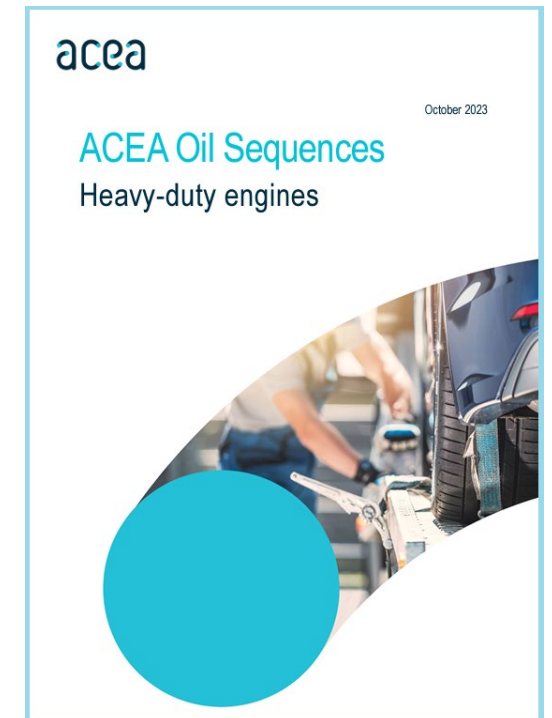
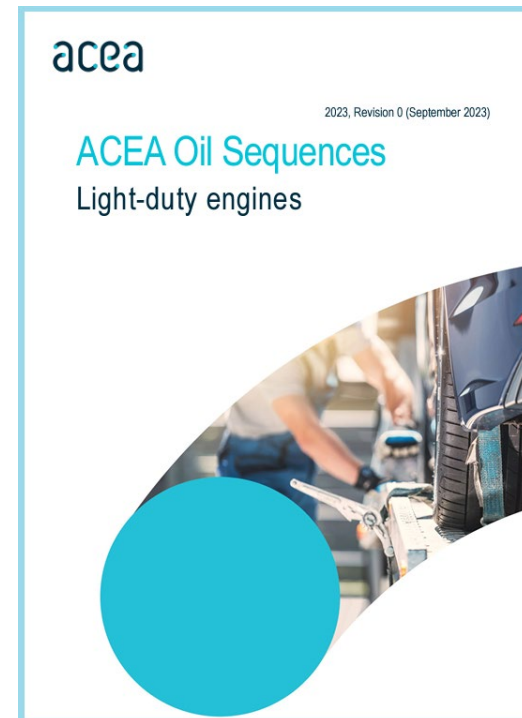
About ACEA

- ACEA (European Automobile Manufacturers Association) represents the interests of major European car, truck and bus manufacturers.
- Sets performance specifications for engine lubricants through its European Oil Sequences.
- ACEA performance specifications increasingly adopted outside Europe.



ACEA Oil Sequences

- ACEA European Oil Sequences cover light-duty passenger cars & heavy-duty trucks.
- The ACEA Oil Sequences are updated regularly to address:
 - Changes in European legislation
 - Changes in engine technology
 - Changes in fuel composition
- The current issues of the Oil Sequences are ACEA 2024 for Heavy-duty engines and ACEA 2023 for Light-duty engines.



Validity of ACEA Oil Sequences

Light-duty

Sequence issue	First allowable use	Mandatory for new formulation claims	Oils with this claim may be marketed until
2004	1 st Nov 2004	1 st Nov 2005	31 st Dec 2009
2007	1 st Feb 2007	1 st Feb 2008	23 rd Dec 2010
2008	22 nd Dec 2008	22 nd Dec 2009	22 nd Dec 2012
2010	22 nd Dec 2010	22 nd Dec 2011	22 nd Dec 2014
2012	14 th Dec 2012	14 th Dec 2013	1 st Dec 2018
2016	1 st Dec 2016	1 st Dec 2017	1 st May 2023
2021	1 st May 2021	1 st May 2022	1 st August 2025
2023	12 th Sep 2023	12 th Sep 2024	

Validity of ACEA Oil Sequences

Heavy-duty

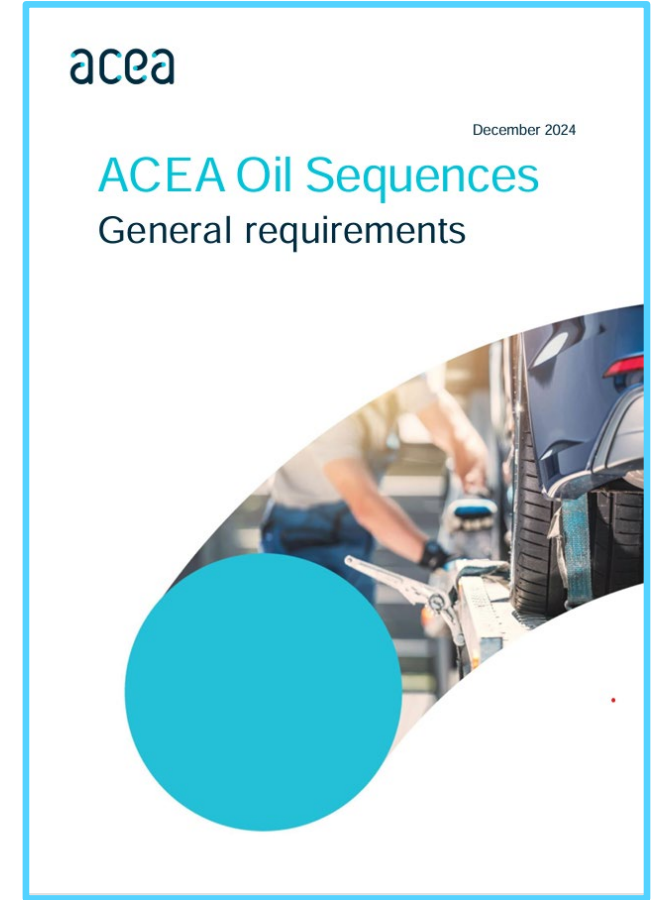
Sequence issue	First allowable use	Mandatory for new formulation claims	Oils with this claim may be marketed until
2004	1 st Nov 2004	1 st Nov 2005	31 st Dec 2009
2007	1 st Feb 2007	1 st Feb 2008	23 rd Dec 2010
2008	22 nd Dec 2008	22 nd Dec 2009	22 nd Dec 2012
2010	22 nd Dec 2010	22 nd Dec 2011	22 nd Dec 2014
2012	14 th Dec 2012	14 th Dec 2013	1 st Dec 2018
2016	1 st Dec 2016	1 st Dec 2017	1 st May 2024
2022	1 st May 2022	1 st May 2023	1 st Oct 2026
2024	1 st Oct 2024	1 st Oct 2025	

The European Engine Lubricants Quality Management System (EELQMS)

About EELQMS (European Engine Lubricant Quality Management System)

- EELQMS addresses product development testing and product performance documentation, involves the registration of all candidate and reference oil testing, and defines the compliance process.
- Compliance with the Code of Practice of the Technical Association of the European Lubricants Industry (ATIEL), which forms part of the EELQMS, is **mandatory** for any claim to meet the requirements of this issue of the ACEA sequences.
- Therefore, ACEA requires that claims against the ACEA Oil Sequences can only be made by oil companies who have signed the EELQMS oil marketers' letter of conformance

Source: ACEA Oil Sequences General requirements September 2023



About EELQMS stakeholders, inputs and framework



About the EELQMS

- Quality management system for automotive engine lubricants.
- Only for claims made against the ACEA engine oil sequences. Some OEM approvals may also require participation.
- If you choose to participate then the system rules are mandatory, for example the Codes of Practice.
- Developed by industry stakeholders to promote development of improved, fit-for-purpose engine lubricants that meet increasing technical requirements.
- Designed to assist lubricant marketers in assuring the quality of their lubricants and the performance claims being made for them in the marketplace for the benefit of end users.



Quality and performance claims

- How do you know that your products meet the ACEA requirements?
- As a lubricant marketer you are responsible for all aspects of product liability!
- Typically, technology providers can provide candidate data packages that demonstrate how their technology and the approved formulations that they promote meet the constituent parts of the requirements of EELQMS



About candidate data packages

Oil Code ST123456

		Treat Rate %wt
DI	Supertec YZ2233	13.7%
VM	Supertec VI9988	10.1%
Base Oil 1	Goodbase 4 cSt	60%
Base Oil 2	Goodbase 6 cSt	16%
PPD		0.2%

ACEA 2023	C3
API	SP
Mercedes - Benz	229.51

Issue 25, January 2025

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COMPANY CONFIDENTIAL INFORMATION

Form C.3 ACEA Performance

Laboratory test	Parameter
SAE Viscosity	Kinematic viscosity at 100 °C Low-temperature cranking viscosity Low-temperature pumping viscosity
Shear Stability	Viscosity after 30 cycles measured at 100 °C
Shear Stability	Viscosity after 90 cycles measured at 100 °C
HTHS Viscosity	Viscosity at 150 °C and 10 ⁴ s ⁻¹ shear rate Viscosity at 100 °C and 10 ⁴ s ⁻¹ shear rate
Evaporative loss	Weight loss after 1 h at 250 °C
TBN	
Sulphur	
Phosphorus	
Sulphated Ash	
Choline	
Oil/Elastomer Compatibility	Max. variation of characteristics after immersion for 7 days in fresh oil without pre-ageing
	RE-6 Tensile strength Elongation at rupture Volume variation
	RE-7 Tensile strength Elongation at rupture Volume variation
	RE-8 Tensile strength Elongation at rupture Volume variation
	RE-9 Tensile strength Elongation at rupture Volume variation
Foaming Tendency	Tendency - stability
High Temp Foaming	Tendency - stability

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Issue 25, January 2025

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Form C.3 ACEA performance data set for ACEA Oil Sequence qualification

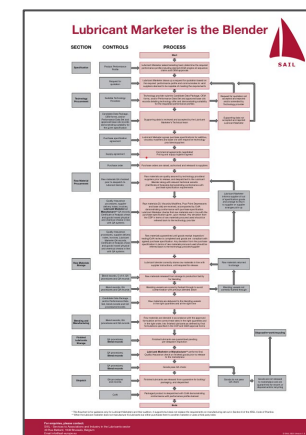
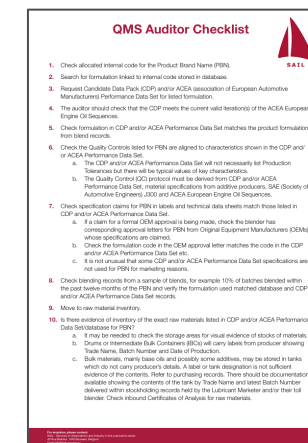
Part C Engine test results – light duty engines						
Engine test	Parameter	Test method	Units	Test result	Ref. oil result	Limits
EP6CDT	Piston Cleanliness Turbo charger deposits	CEC L-111-16	merit			
Sequence IVB	Average intake lifter volume loss (8 position average) End of test iron	ASTM D8350	mm ³ ppm			
Sequence VH	Average engine sludge Rocker cover sludge Average piston skirt varnish Average engine varnish Compression ring (hot stuck) Oil screen clogging	ASTM D8256	merit merit merit merit % %			≥ 7.6 ≥ 7.7 ≥ 8.6 ≥ 7.6 none Report
M271 EVO	Engine sludge, average	CEC L-107-19	merit			≥ 8.3
M111	Fuel economy improvement vs reference oil RL 191 (SAE 15W-40)	CEC L-54-96	%			
JASO FE	Fuel economy improvement	JASO FE M366 (Toyota 2ZR-FXE)	%			≥ 0.0
TOYOTA 1KD-FTV	Turbo Charger Compressor Deposit	CEC L-114-19	merit			≥ 25
Sequence IX	Low Speed Pre-ignition events Average number for 4 iterations Number of events per iteration	ASTM D8291	Number Number			≤ 5 ≤ 8
Sequence X	Chain wear GDI Elongation of timing chain	ASTM D8279	%			≤ 0.085
Company Document Ref. No.						

ATIEL Code of Practice
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C-7

Promoting EELQMS

- New identity with logo and branding.
- Promotional activities to raise the profile of the EELQMS logo ongoing – trade magazines, conference sponsorship etc
- New dedicated website: www.eelqms.eu
- Logo can be used in marketing material under license, but only by signatories of EELQMS.
- Integrating the EELQMS logo into your branding is more than a visual enhancement—it's a clear message of trustworthiness, technical excellence, and commitment to quality



Summary of EELQMS guidelines

- Detailed process and structure for lubricant development, production and performance validation.
- Provides assurance of the quality of engine lubricants on the market that claim to meet the performance requirements of ACEA.
- The ONLY system that can be used to qualify engine lubricants against ACEA Oil Sequences.
- Participants must sign the Marketers' Letter of Conformance and register it with ATIEL.
- EELQMS is administered by ATIEL on behalf of the other key stakeholders.
- In an industry powered by performance, trust, and technology, the EELQMS logo is more than a graphic it's an advantage waiting to be claimed.



Role of SAIL – Monitoring quality in the market

Who are SAIL?

- Subsidiary of ATIEL - The Technical Association of the European Lubricants Industry
- Contracted by ATIEL to provide administrative, financial and management services in support of ATIEL's global product compliance and Letter of Conformance activities on a non-profit making basis.
- Manages the registration system of Letter of Conformance signatories
- Responsible for managing ATIEL's product compliance monitoring programme.
- Licences the EELQMS quality trademark in association with ATC and ACEA.
- SAIL ensure all survey reports and summaries are anonymised to avoid potential conflicts of interests between members and participants



Marketer's Letter of Conformance

Compliance with the EELQMS includes signing a Lubricant Marketers' Letter of Conformance:

- Required for ACEA performance claims
- Declaration of compliance with EELQMS by lubricant marketer
- Signed Letters held by SAIL of behalf of ATIEL (EELQMS administrator)
- List of signatories on SAIL website
- Renewed annually
- Letter of Conformance template available from SAIL website: www.sail-europe.eu



Template for the EELQMS Lubricant marketers' Letter of Conformance

(to later be addressed to ATIEL) and sent by registered mail to:

ATIEL
Boulevard de Souverain 155
Seneffe B 1500
Belgium

From: (Company name)
(Insert current address)

(Insert estimated current address for correspondence)
Date: (Insert current date)

Subject: Participation in the ATIEL European Engine Lubricants Quality Management System: Letter of Conformance

(Name of the participating company), hereinafter referred to as "The Company", duly represented by the undersigned acting for The Company and acting under its brand, hereby formally declares to participate in the European Engine Lubricants Quality Management System (EELQMS).

The commitments referred to in this letter apply to all product brands owned or managed by The Company that make ACEA claims.

(Please let the original signed "I")

* The letter must include all the points listed here below which the Company has committed to comply with and not all product names.
It must also be signed and stamped in accordance with the conditions set out in the annexed document, which must be sent to the ATIEL Secretariat.

ATIEL Code of Practice
SAIL - 2018

Issue 20 - 2018

Letter of Conformance Scheme Registrants



SAIL-Europe
Services to Associations and Industry in the Lubricants sector

Participant access

Home
FAQ
News
Publications
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Contact us

About us |
Registration and Product Survey process |
EELQMS Trademark |
LoC registrations

List lubricant marketers registrants

The following companies have registered their Marketers' Letter of Conformance (LoC) effective November 30, 2025

#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
Company								Country		Brands covered by LoC																	
ADECO DOO								RS		ADECO																	
AVIA AG								DE		AVIA																	
AMALIE PETROQUIMICA								ES		AMALIE APSA																	
ACCOR LUBRIFIANTS								FR		ACCOR, KENNOL, MIRALUB, SUPERPLUS																	
ATLANTIC GREASES & LUBRICANTS FZC								AE		ATLANTIC																	
ARMORINE SAS								FR		ARMORINE																	
Astris SA								CH		Astris																	
AVISTA OIL Deutschland GmbH								DE		AVISTA																	
AEGEAN OIL SA								GR		AEGEAN VELOX, AEGEAN VIGOR																	

1 SAIL - Registration Status - Listed Website

Date Refreshed = 09-Nov-25



Number of registrants 9/11/2025

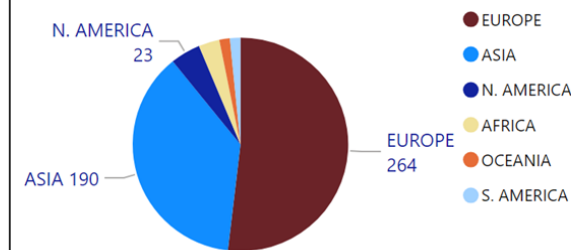
Listed on website = 509

All listed participants signed LoC

Number of signed sub-license agreements

243 signed sub-license agreements from participants listed on the website

Nb Participants Listed on Website



Nb Participants Listed on Website - Continent

CONTINENT	Nb Participants	Nb Sig %
AFRICA	16	3.1%
ASIA	190	37.3%
EUROPE	264	51.9%
N. AMERICA	23	4.5%
OCEANIA	8	1.6%
S. AMERICA	8	1.6%
Total	509	100.0%

Nb Listed Participants with signed Sub License

CONTINENT	Nb SubLicences	Nb Lic %
AFRICA	9	2%
ASIA	111	22%
EUROPE	113	22%
N. AMERICA	7	1%
OCEANIA	3	1%
Total	243	48%

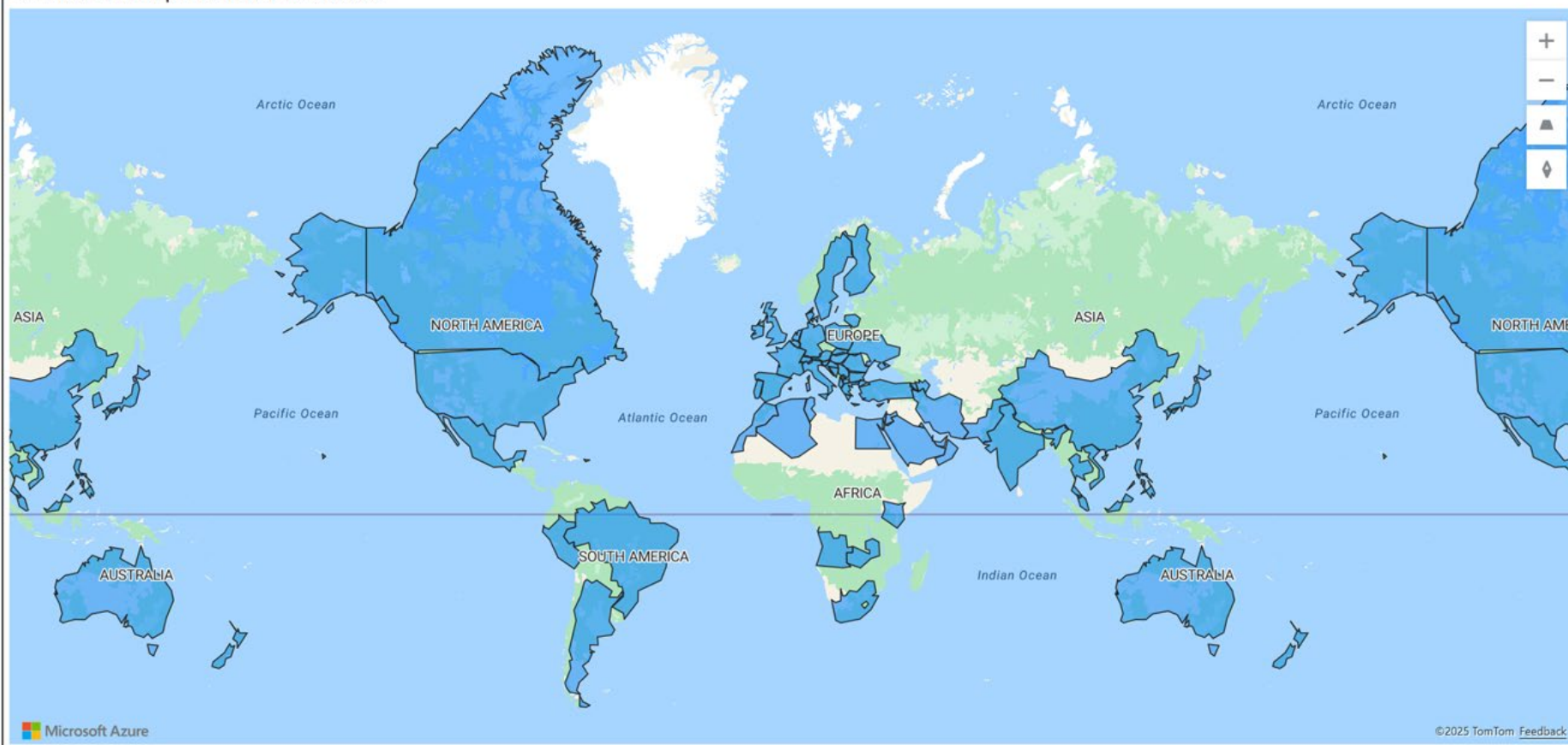
Global Reach

3. SAIL - Number of Participants listed on website

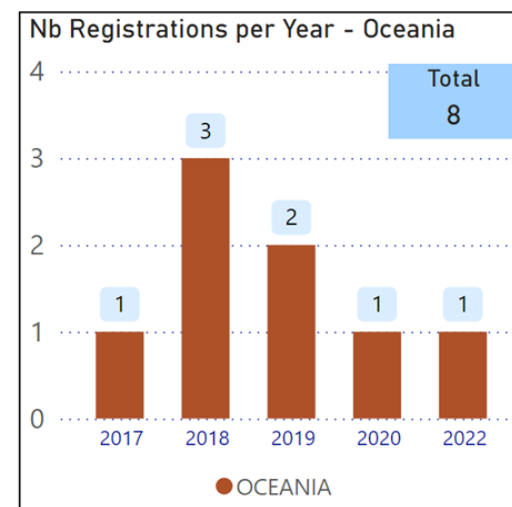
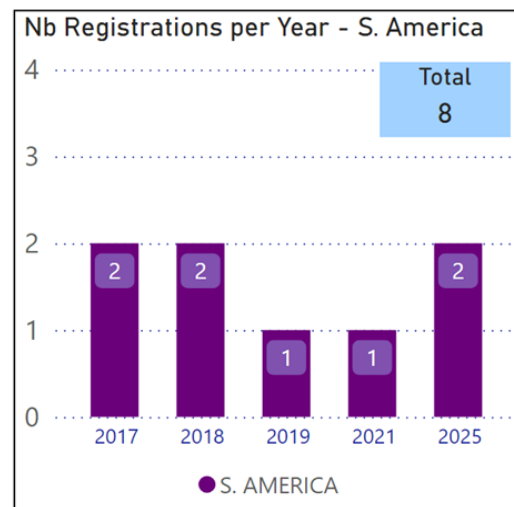
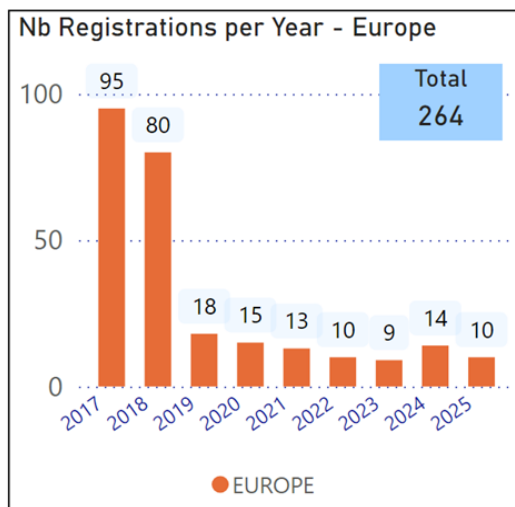
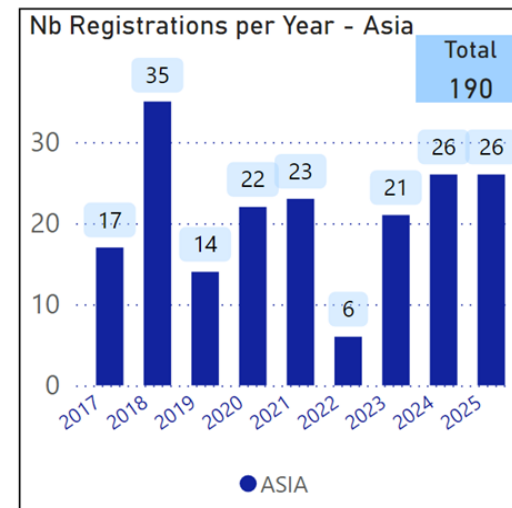
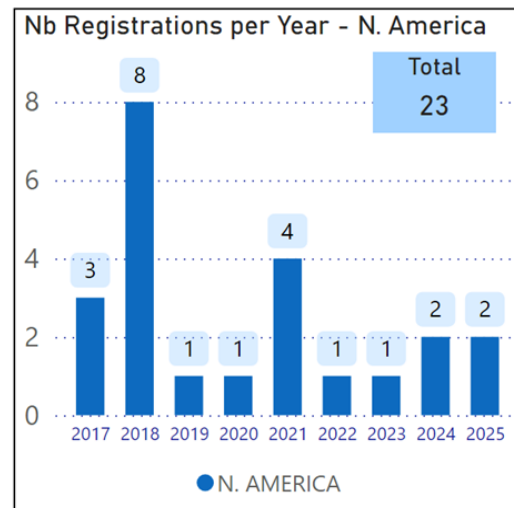
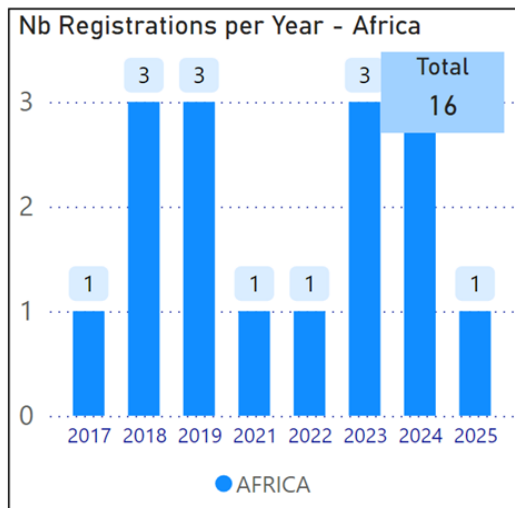
Date Refreshed = 09-Nov-25



Countries Participants listed on website



New Registrations by Region



ATIEL Quality Surveys

Enhance the overall robustness of quality management

One of the most effective ways to measure levels of compliance with EELQMS

Has become an ongoing activity and a core part of ATIEL's Quality Management Committee's initiatives

Conducted and administered on behalf of ATIEL by SAIL



SAIL-Europe

Services to Associations and Industry in the Lubricants sector

ATIEL Quality Surveys - Non-responders

- SAIL has introduced a new transparency measure for LoC participants who do not respond to failed test notifications.
- Lubricants that fail testing and receive no response after 56 days will be published on the SAIL-Europe.eu website.
- Listings will show marketer, product name, batch number, country of purchase, failure details, and key dates, and remain online for six months.
- Participants can appeal, during which the listing is temporarily removed and deleted if the issue is resolved.
- The measure enhances accountability, transparency, and protection of lubricant quality and ACEA standard integrity.
- New policy has been incorporated into SAIL operations, with LoC participants informed and the website updated to support the process.

Example Report

4800 James Savage Road
Midland, MI 48642



Analytical results

Sample Number	630641	
Country		
Supplier		
Brand		
Batch Number		
Production date		Specification Evaluation
Bottle 1		*Incorrect representation of claims. Year identifiers are not to be used for consumer use. See https://atiel.eu/code-of-practice/acea-oil-sequences-performance-claims/ *ACEA 2008 is obsolete standard, formulation has to be updated to ACEA 2016. See https://atiel.eu/code-of-practice/acea-oil-sequences-performance-claims/ *TBN results outside specification limits and outside 95% statistical confidence limits for A3/B4. Considered a fail for TBN *SA results outside specification limits and outside 95% statistical confidence limits for A3/B4. Considered a fail for SA *HTHS result outside specification limits, but within 95% statistical confidence limit. Considered a pass. *Other tested parameters are considered meeting specification for stated claims
Bottle 2		
SAE	5W30	
ACEA	A3/B3, A3/B4	
ACEA Stated	A3/B3-08, A3/B4-08	
API	SN/CF	
OEM	RENAULT RN 0700, MB-APPROVAL 229.1	

Example Report Tracking

Comments on Analyses Synlab

Month	SampleNu	Action	Report	Customer Id	Company Name	Marketer	Product Name	SAE Grade	
Jan-22	630779	ACTIVE	630779-Report	645967C				5W40	

Month	SampleNb	SampleRep	SAE Grade	ACEA Stated	TBN-28	TBN-47	KV	MRV	Yield	P	S	CCS	SA	HTHS	NOACK
Jan-22	630779	630779a	5W40	C2/C3	7.30		13.68	25000	35	774.30	2001.20	5670	0.78	3.72	10.00

Record: 1 of 1

Select

All Samples
Open
Closed

SampleNu: 630779
Date Reported: 17/11/2021
Report: 630779-Report

Action: ACTIVE
Resp Due:
Select for Month: Jun

Empty Comments Field
Add Comments

*Your actions concerning the change of the labels are notified.

*ATIEL TEC Committee has noted the steps you have taken, ATIEL/SAIL considers this report as closed.

Comments

*Incorrect representation of claims. Should be C2,C3. See: <https://atiel.eu/code-of-practice/acea-oil-sequences-performance-claims/>*Other tested parameters are considered meeting specification for stated claims* Please check with your additive provider or blender if ACEA C2 is a valid performance claim given that this is a 5W-40 formulation

Mailing
Re-Sample-Click

Activity Timeline 1

No Activity
No Activity
No Activity
No Activity
No Activity
No Activity
No Activity

Report Sent
SAIL
TEC
Mark
IOM

***17-Jan-22 SAIL: Report sent

***10-Mar-22 SAIL: Reminder sent

***29-Apr-22 SAIL: Reminder sent

***04-May-22 Marketer: Thank you for pointing out the compliance requirements.

Please note that product is yet to be in market and currently we do not have any product to be recalled from the market.

I have attached the updated label artwork to be used for the product as per the ATIEL compliance requirements.

Kindly let us know if this is good to go.

***04-May-22 SAIL: Many thanks for your email. Were you able to check with your technology provider that the formulation meets the requirements of ACEA C2 and C3? Would it be possible to ask them to confirm that these claims are correct? For ACEA C2, a fuel economy improvement of $\geq 2.5\%$ relative to a 15W-40 reference oil is required. It would normally be extremely difficult to achieve that level of fuel economy improvement with a 5W-40 grade lubricant.

***05-May-22 Marketer: I shall check with our additive supplier and revert.

Shall take the necessary corrective action accordingly.

Once again thank you for pointing out the requirements.

***25-May-22 Marketer: We have checked the requirements internally with our team and technology supplier as well. As you have rightly pointed out, the package meets the requirements of ACEA C3 only. We have taken the necessary corrective action to meet the ATIEL compliance requirements.

I have attached the corrected label artwork for your confirmation. Thank you again for pointing out the same.

Please advise if we need to take any further corrective action as well.

***25-May-22 SAIL: Many thanks for your email. The changes made to your label are duly noted and I will advise ATIEL QMS Technical Committee accordingly. They will advise if any further

A Very Bad Example

Analytical Parameter	Standard	Unit	Result	Repetition	Limit
Kinematic Viscosity at 100°C	D445	mm ² /s	9,971	9,962	12.5 - <16.3
CCS at -30°C	D5293	mPa•s	40199	39861	6600
MRV at -35°C	D4684	mPa•s	TVTM	TVTM	30,000
Yield Stress	D4684	Pa	< 350	< 350	No yield stress
HTHS at 150°C	D4683	mPa•s	3.15	3.16	≥3.5
Noack Volatility	D5800	%M/M	7.5		≤13
Sulphated Ash	D874	mass %	0.62		≤0.8
TBN D2896	D2896	mg KOH/g	5.3	5.5	≥6.0
Phosphorus content	D5185	% m/m	0.0426	0.0426	≥0.07 - ≤0.09
Sulphur content	D5185	% m/m	0.03539		≤0.03

Thank you!

Any questions?



For more information visit:

www.atiel.eu

www.sail-europe.eu

www.eelqms.eu

www.acea.be