BP-22, December 2015

ORIGINAL BMW AND MINI ENGINE OIL.

TECHNICAL INFORMATION BOOKLET 2.0.

APPLIES FOR REST OF WORLD (ALL MARKETS EXCEPT: EUROPE, N, LIE, CH, USA, CA).

BMW GROUP

INTRODUCTION.

PURPOSE.

This document is a follow-up document to the technical information booklet 1.0 which was sent out in April 2015.

It contains a very detailed explanation of the technical arguments and provides a basis for further technical communication materials in 2016+.

THE FOLLOWING CONTENT APPLIES TO:

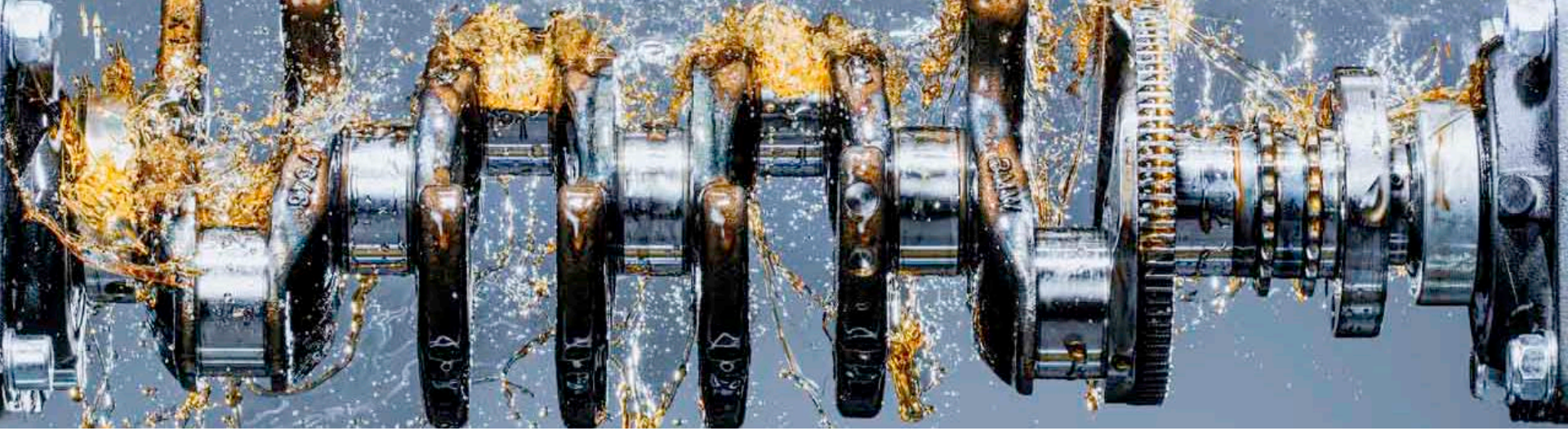
- ✓ Original BMW Engine Oil.
- ✓ Original BMW M Engine Oil.
- ✓ MINI Original Engine Oil.

EXPLANATION OF THE WORDING.

LL Stands for BMW Longlife.

01 The year the oil was developed, i.e. 2001.

FE Stands for Fuel Economy.



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1. TOP 5 TECHNICAL ARGUMENTS.

1 EFFICIENCY.
Shows improved fuel economy of up to 3%[1] which leads to reduced CO_2 emissions.

2 PROTECTION.
Protects the engine from sludge which enables a long service life.[2]

3 CLEANLINESS.
Captures dirt particles which reduces deposits in the engine.

4 ECONOMY.
Has lower tendency to evaporate which leads to low oil consumption and thus less frequent top-ups.[3]

5 PERFORMANCE.
Ensures an outstanding low temperature performance, even in temperatures as low as -40 °C which enables easier cold-start characteristics.[4]

(1) Proven fuel saving of BMW Longlife-14 FE+ SAE 0W-20 in NEDC (New European Driving Cycle) of up to 3 % compared to BMW Longlife-01 engine oils. Tested on a BMW vehicle; (2) based on industry standard sludge tests; (3) based on industry standard NOACK tests; (4) applies for all 0W-grades. 5W-grades ensure a low-temperature performance in temperatures as low as -35°C.

1. TOP 5 TECHNICAL ARGUMENTS. EFFICIENCY.

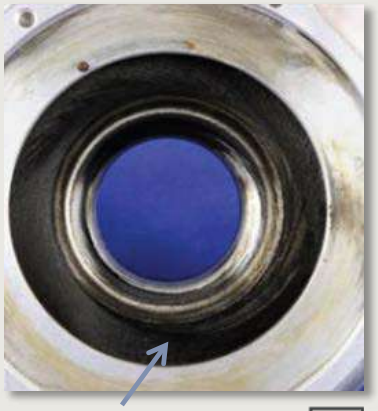
Original BMW and MINI Engine Oils work in accordance with the BMW EfficientDynamics concept which stands for the **reduction of consumption and emissions** with a simultaneous increase in performance and driving pleasure.

Original BMW Engine Oils reduce friction significantly and their propensity to vaporisation is minimised. This results in:

- reduced oil consumption
- fuel economy up to 3%[1]
- lower CO_2 emissions[2]

(1) Proven fuel saving of BMW Longlife-14 FE+ SAE 0W-20 in the NEDC (New European Driving Cycle) of up to 3% compared to BMW Longlife-01 engine oils. Tested on a BMW vehicle; (2) Concomitant with fuel economy increase.

1. TOP 5 TECHNICAL ARGUMENTS. PROTECTION.

CONVENTIONAL ENGINE OIL.	ORIGINAL BMW ENGINE OIL.	CONVENTIONAL ENGINE OIL.	ORIGINAL BMW ENGINE OIL.
			
DEPOSITS ☒	☑	DEPOSITS ☒	☑

Images show compressor back plate and housing. Tests have been conducted on a turbocharged BMW N47 under high temperature operation.

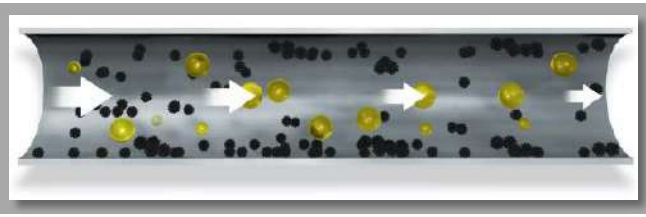
ORIGINAL BMW AND MINI ENGINE OILS

- protect the engine from sludge which enables a long engine service life.
- keep critical engine parts clean.

1. TOP 5 TECHNICAL ARGUMENTS. CLEANLINESS.

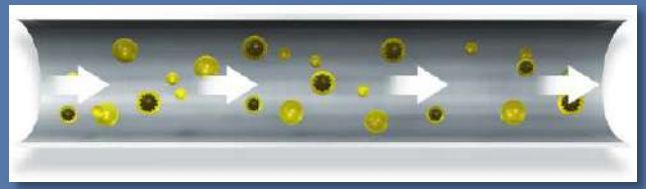
Shell PurePlus Technology, in combination with active cleansing molecules, offers **superior engine protection and cleanliness** which helps to extend the engine life.

CONVENTIONAL OIL.



Sludge build-up is caused by combustion by-products that stick together.

ORIGINAL BMW ENGINE OIL.



Original BMW Engine Oils **reduce deposit** build-up by capturing combustion by-products and holding them in the oil.

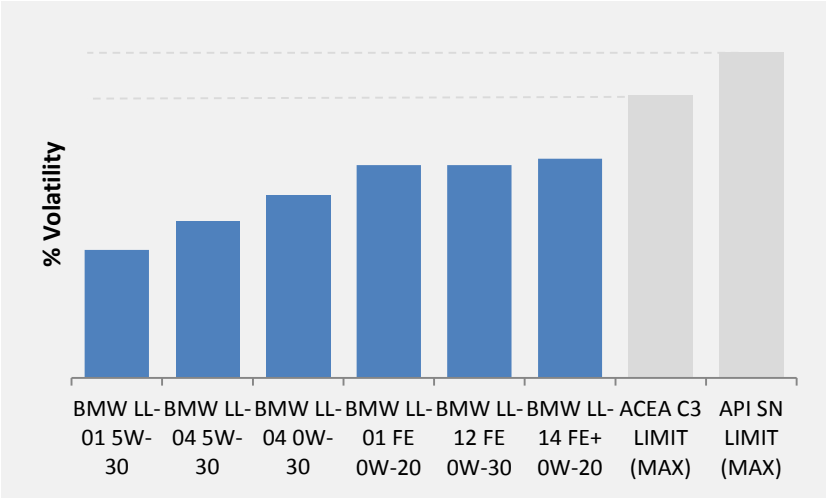
ORIGINAL BMW AND MINI ENGINE OILS

include special molecules that capture dirt particles which reduces deposits in the engine and **clean the engine** as efficiently as possible.

1. TOP 5 TECHNICAL ARGUMENTS. ECONOMY.

Original BMW and MINI Engine Oils have a low tendency to evaporate which leads to **low oil consumption** and thus less frequent top-ups.[1]

The chart below shows the favourable volatility of the Original BMW and MINI Engine Oils compared to industry standard limits.



(1) Based on NOACK Volatility test.

1. TOP 5 TECHNICAL ARGUMENTS. PERFORMANCE.

The Original BMW and MINI Engine Oil portfolio is formulated using Shell PurePlus Technology. This is used to create a base oil that provides a revolutionary foundation for an oil with enhanced viscosity characteristics.

This leads to:

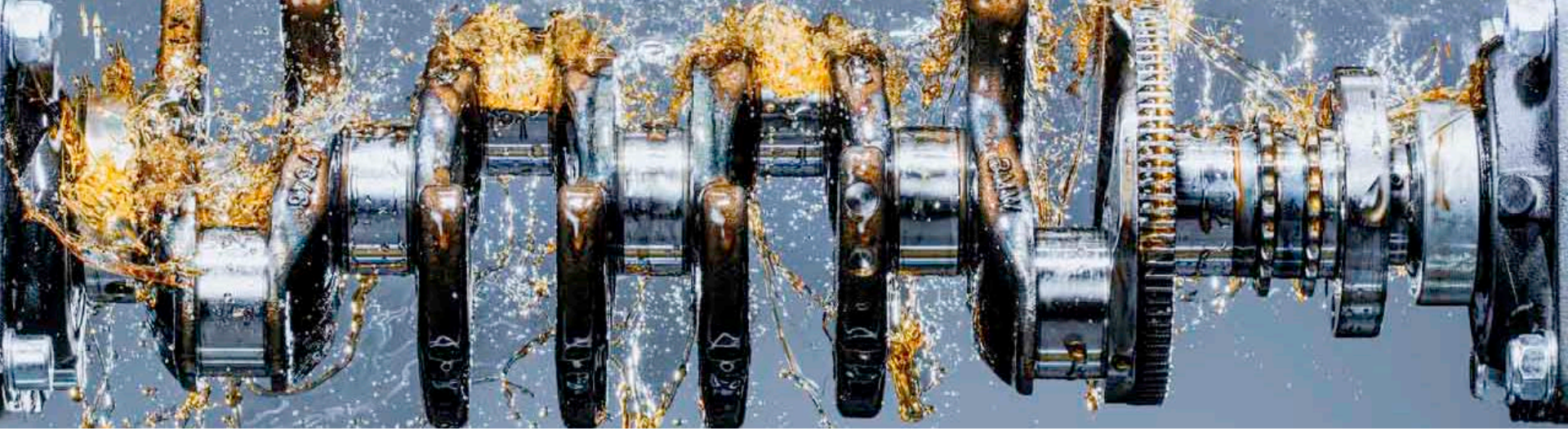
- **fast lubrication** throughout the engine.
- **outstanding low-temperature viscosity** and hence easier cold-start characteristics.

ORIGINAL BMW AND MINI ENGINE OILS BRING OUT THE FULL POWER OF YOUR ENGINE!

1. TOP 5 TECHNICAL ARGUMENTS. VISUALISATION OF TECHNICAL ARGUMENTS.

VIDEO: Technical Benefits of Original BMW Engine Oil.

- ✓ Available at Sales and Marketing Portal.
- ✓ Shared by BP-22 Market Support.

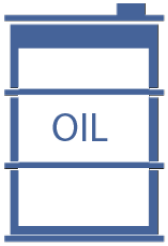


CONTENTS.

2. TECHNOLOGY.
COMPONENTS OF AN ENGINE OIL.

The quality of an engine oil is defined by the quality of both components and their balance and compatibility towards each other.

BASE OIL.
80%
(approx.)



Determines the fundamental properties of the lubricant.

+

ADDITIVES.
20%
(approx.)

To improve base fluid properties.

=

Formulated engine oil.

2. TECHNOLOGY.
BASE OIL: GAS-TO-LIQUIDS PROCESS.

Conversion of natural gas to oil products by a chemical reaction.

PRODUCT.

BASE OILS.

GTL FUEL.
KEROSENE.
NORMAL PARAFFIN.
NAPHTHA.

MANUFACTURING.

GAS.

Qatar's North Field, the world's largest natural gas field contains over 900 trillion cubic feet of natural gas, fed to the Ras Laffan refinery zone.

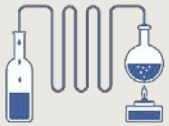
SYNGAS PRODUCTION.

In the gasifier at around 2,200-2,650°F (1,400-1,600°C) the methane and oxygen are converted into a mixture of hydrogen and carbon monoxide known as synthesis gas.

FISCHER-TROPSCH SYNTHESIS.

The synthesis gas enters one of 24 reactors containing a Shell proprietary catalyst to speed up the chemical reaction in which the synthesis gas is converted into long-chained waxy hydrocarbons and water.
(CRI Catalyst Company is the global catalyst technology company of the Shell Group.)

DISTILLATION.



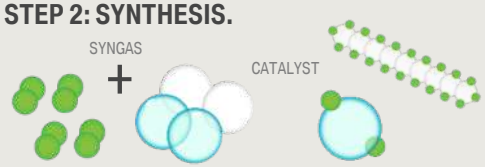
The Pearl GTL plant in Qatar creates a range of products from natural gas that would otherwise be produced from oil. Using another Shell proprietary catalyst, the long hydrocarbon molecules from the GTL reactor are contacted with hydrogen and cut (cracked) into a range of smaller molecules

R & D.

STEP 1: GASIFICATION.

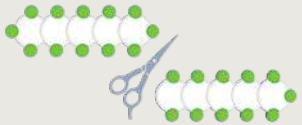
METHANE (natural gas) | OXYGEN (from air)

STEP 2: SYNTHESIS.



HYDROGEN | CARBON MONOXIDE | FISCHER-TROPSCH DISTILLATES + WATER

STEP 3: HYDROCRACKING.



HYDROCRACKING CATALYST

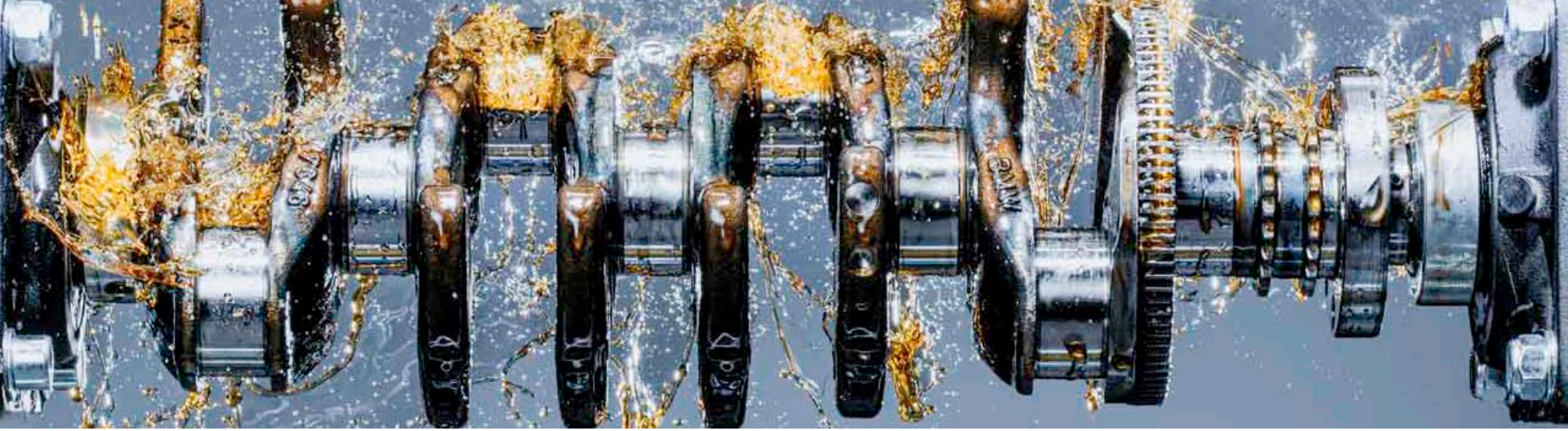
2. TECHNOLOGY.
FUNCTIONS OF AN ENGINE OIL.

KEY FUNCTIONS:

- **Lubrication** – reduce friction between moving parts.
- **Wear protection** – anti-wear performance.
- **Cooling** – piston under crowns, turbos.
- **Cleanliness** – sludge, varnish, carbon.
- **Corrosion** – iron, yellow metals.

ADDITIONAL FUNCTIONS:

- **Fuel economy** – reduce CO_2 emissions.
- **Emissions system protection** – protect catalysts.



CONTENTS.

3. BMW QUALITY STANDARDS.

INDUSTRY STANDARDS.

European Automobile Manufacturers Association.

ACEA

energy API

American Petroleum Institute.

Engine oil industry standards for all car manufacturers.

+

BMW STANDARDS.

BMW sets additional Longlife requirements. Specific BMW tests are made on top of the industry requirements (see below and next slide).

=

BMW SPECIFICATIONS.

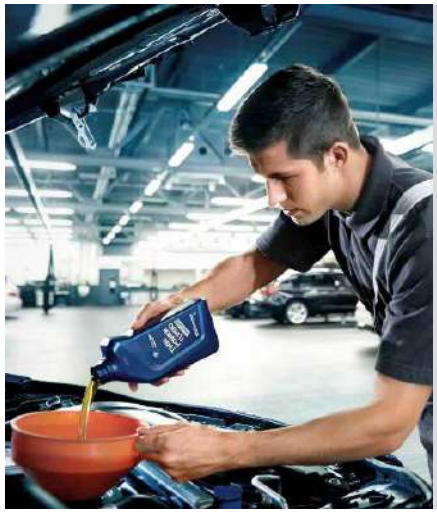
BMW Longlife-01

BMW Longlife-04

BMW Longlife-01 FE

BMW Longlife-12 FE

BMW Longlife-14 FE+



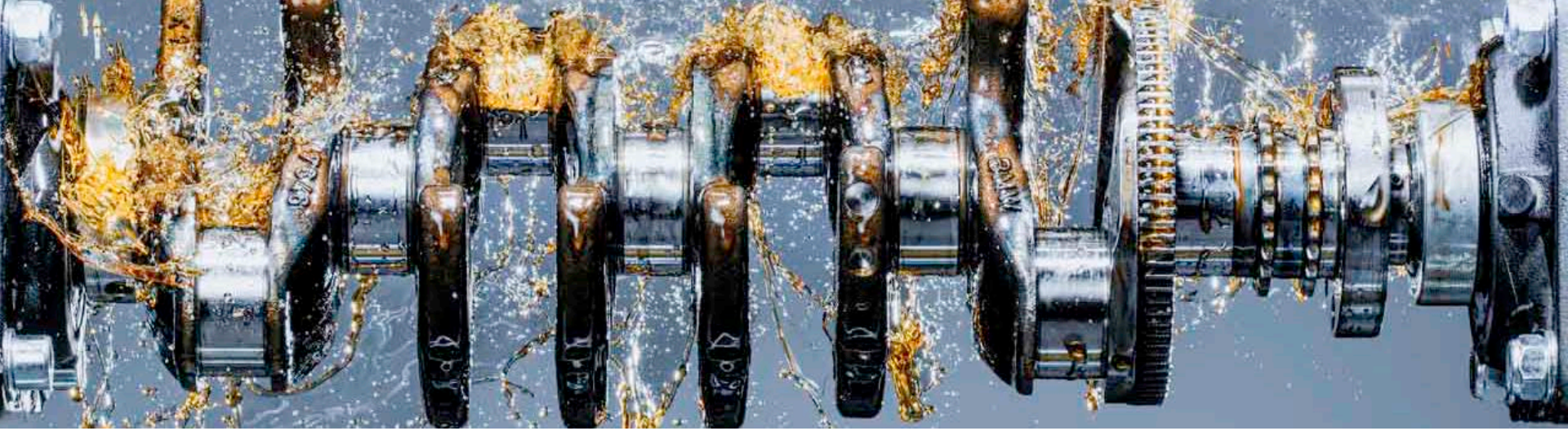
BMW EVALUATION PARAMETERS.

1. Piston Cleanliness.	Visual rating of piston deposits.
2. Sludge Performance.	Cleanliness of the engine, rated parts (e.g. oil pan, cylinder head).
3. Turbo-Charger Deposits.	Rating of the deposits at the end of the test (petrol & Diesel).
4. Viscosity Increase.	Viscositiy increase limit for KV 40 and KV 100 at end of test.
5. Aeration Tendency.	Behaviour of the oils in terms of air entrainment.
6. RNT-Test at Valve-Train.	Measurement of wear rate at the valve-train with radio-nuclide technique.
7. Fuel Economy.	Measurement of fuel economy benefit of oil versus reference (petrol & Diesel).

3. BMW QUALITY STANDARDS. BMW LONGLIFE TESTS.

TEST / SPECIFICATION.	BMW Longlife-01	BMW Longlife-01 FE	BMW Longlife-04	BMW Longlife-12 FE	BMW Longlife-14 FE+
ACEA (basic requirement)	A3 / B4 -12	A5/B5 -12	C3 -12	C2 -12	A1/B1 -12
SAE class	0/5W-30/40	0/5W-30	0/5W-30/40	0/5W-30	0/5W-20
N20 performance test	+	+	+	+	+
N20 aeration test*	+	+	+	+	+
N42 Valvetronic RNT test	+	+	+	+	+
N20 FE test (X1, N20)	-	+	-	+	+
N47 ATL coking test	-	-	-	+	-
N47 FE test (520D, N47)	-	-	-	+	-

+ tests to be carried out
- tests not required
* linked to N20 performance test



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4. PORTFOLIO COMPARISON. EXPLANATION OF TIERS.

STANDARD.

STANDARD TIER.

BMW Longlife-04 SAE 5W-30.
BMW Longlife-01 SAE 5W-30.

HIGH.

HIGH TIER.

BMW Longlife-14 FE+ SAE 0W-20.
BMW Longlife-12 FE SAE 0W-30.
BMW Longlife-01 FE SAE 0W-30.
BMW Longlife-04 SAE 0W-30.

BMW M.

BMW M TIER.

BMW Longlife-01 SAE 0W-40.
SAE 10W-60.

4. PORTFOLIO COMPARISON. TECHNICAL BENEFITS – ROW.

The only engine oil portfolio specifically designed, manufactured and tested to bring out the full potential of BMW engines: offering enhanced engine performance, efficiency and protection. Each is formulated to exceed conventional industry standards and help to keep engines performing at their very best.

	petrol VEHICLES.		DIESEL VEHICLES.		M SERIES.	
	BMW Longlife-01 SAE 5W-30	BMW Longlife-01 FE SAE 0W-30	BMW Longlife-04 SAE 5W-30	BMW Longlife-12 FE SAE 0W-30	BMW Longlife-01 SAE 0W-40	SAE 10W-60
TECHNICAL BENEFITS.						
EFFICIENCY: Demonstrates fuel economy benefit[1]	●	●●●	●	●●●	●	●
PROTECTION : Protects against engine sludge[2]	●●●	●●●	●●●	●●	●●●	●●●
PROTECTION: Corrosion and Wear Protection[3]	●●●	●●●	●●●	●●●	●●●	●●●
CLEANLINESS: Captures dirt particles which reduce deposits	●●●	●●●	●●●	●●●	●●●	●●●
ECONOMY: Low oil consumption [4]	●●●	●	●●●	●	●●●	●●●
PERFORMANCE: Low temperature flow [5]	●●	●●●	●●	●●●	●●	●
PERFORMANCE: Protects & enables high performance bearing applications [6]	●●●	●●	●●●	●●	●●●	●●●

●●● Excellent ●● Very Good ● Good

ROW = APPLIES FOR ALL COUNTRIES EXCEPT: EU, N, CH, LIE, USA, CA.

(1) Based on M111 testing; (2) Based on Seq VG and M271 Sludge Tests; (3) Based on Ball Rust Test & OM646 Wear Test; (4) Based on NOACK; (5) Based on MRV data and higher viscosity grades; (6) Based on HTHS.

4. PORTFOLIO COMPARISON. ENGINE APPLICATION – ROW.

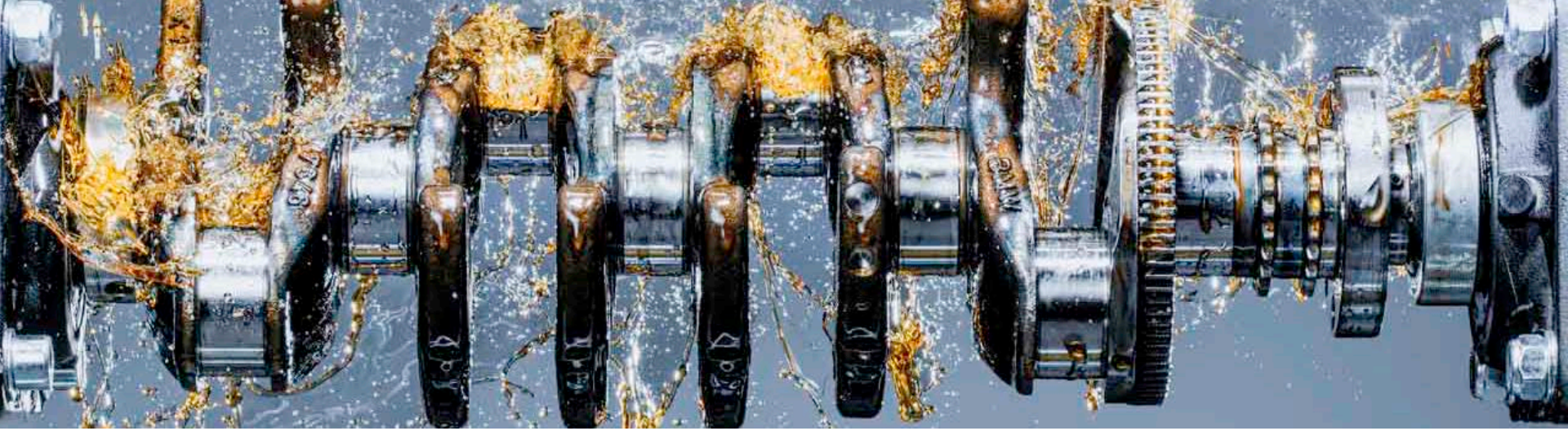
The only engine oil portfolio specifically designed, manufactured and tested to bring out the full potential of BMW engines: offering enhanced engine performance, efficiency and protection. Each is formulated to exceed conventional industry standards and helps to keep engines performing at their very best.

		petrol VEHICLES.		DIESEL VEHICLES.		M SERIES.	
		BMW Longlife-01 SAE 5W-30	BMW Longlife-01 FE SAE 0W-30	BMW Longlife-04 SAE 5W-30	BMW Longlife-12 FE SAE 0W-30	BMW Longlife-01 SAE 0W-40	SAE 10W-60
ENGINE APPLICATION.							
BMW/MINI Petrol Engines	Petrol Engines Model Year 2002+	✓	✓			✓	
	Older Petrol Engines before Model Year 2002	✓				✓	
BMW/MINI Diesel Engines	All Diesel Engines[1]			✓			
	New Diesel Engines with maximum 1 Turbocharger Model Year 2014+[2]			✓	✓		
BMW M Petrol Engines	Modern BMW M Engines [3]	✓	✓			✓	
	Older BMW M Engines[4]						✓

✓ Recommended Product ✓ Technically Permitted

ROW = APPLIES FOR ALL COUNTRIES EXCEPT: EU, N, CH, LIE, USA, CA.

(1) Except N47S (=N47T0, production 09/07 - 09/08): BMW M TwinPower Turbo SAE 10W-60; (2) 3-Cylinder: B37, 4-Cylinder: N47K1, N47U1, N47O1, B47K0, B47U0, B47O0, 6-Cylinder: N57O1, B57O0; (3) all BMW M vehicles except M5/M6 before 2011 and M3 before 2014.; (4) M5/M6/Z8 up to and incl. 2010. Also, all M3 built up to and incl. 2013.



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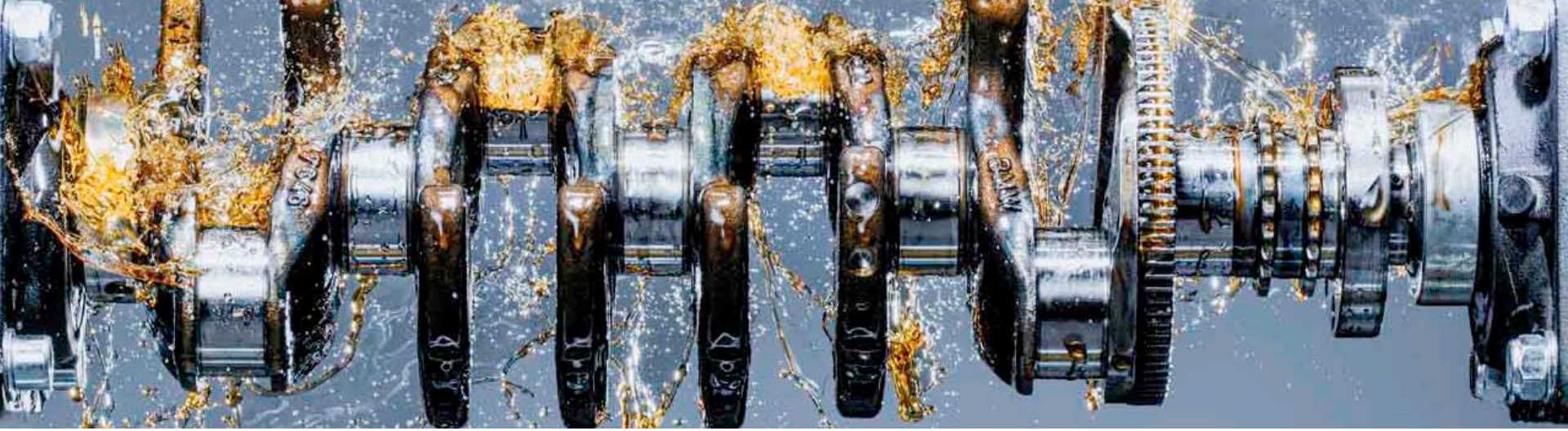


5. TOP TECHNICAL ARGUMENTS PER PRODUCT.

5. TOP ARGUMENTS PER PRODUCT. BMW LONGLIFE-01 SAE 5W-30 – SUMMARY.

CLEANLINESS.

- Captures dirt particles which reduces deposits in the engine.

PROTECTION.

- Protects the engine from sludge, enabling a long engine service life.
- Unsurpassed sludge protection,[1] helps to remove sludge left behind by inferior oils.[2]
- Superior wear and corrosion protection.[3]
- Superior resistance to oil degradation.[4]

ECONOMY.

- Has lower tendency to evaporate which leads to low oil consumption and thus less frequent top-ups.[5]

INDUSTRY CLAIMS.

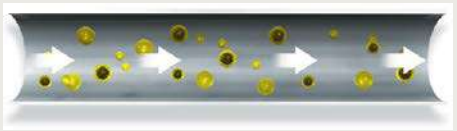
- ACEA A3/B4 (2012).
- API SL.

(1)Based on Sequence VG sludge test results using 0W-40; (2) Based on severe sludge clean-up test; (3) Based on API SN specification for Sequence IVA and Sequence VIII engine tests carried out at an independent laboratory (4) Based on API SN specification for Sequence IIIG oxidation and deposit tests carried out at an independent laboratory; (5) Based on CEC L-40-93 NOACK volatility test and OEM requirements.

5. TOP ARGUMENTS PER PRODUCT. BMW LONGLIFE-01 SAE 5W-30 – DETAILS.

CLEANLINESS.

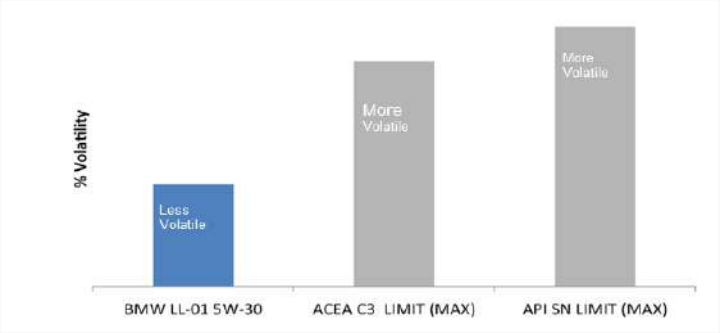
CONVENTIONAL OIL.



BMW LONGLIFE-01 SAE 5W-30

Sludge build-up is caused by combustion by-products that stick together. BMW Longlife-01 SAE 5W-30 reduces deposit build-up by capturing combustion by-products and holding them in the oil.

ECONOMY.



BMW Longlife-01 SAE 5W-30 offers superior volatility control based on the NOACK volatility test.

PROTECTION.

BMW Longlife-01 SAE 5W-30 provides unsurpassed sludge protection in the Sequence VG sludge test.[1]

CONVENTIONAL OIL.

BMW LONGLIFE-01 SAE 5W-30.

Images show industry standard valve covers comparing the use of BMW Longlife-01 SAE 5W-30 with that of an inferior, SN capable, oil.

(1) Based on Sequence VG sludge test results using 0W-40.

5. TOP ARGUMENTS PER PRODUCT. BMW LONGLIFE-04 SAE 5W-30 – SUMMARY.

PROTECTION.

- Protects the engine from sludge, enabling a long engine service life.
- Unsurpassed sludge protection.[1]
- Low-SAPS oil – helps to protect the emission system by helping to keep diesel particulate filters clean.
- Protects against wear and corrosion.

CLEANLINESS.

- Captures dirt particles which reduces deposits in the engine.

ECONOMY.

- Has lower tendency to evaporate which leads to low oil consumption and thus less frequent top-ups.[2]

INDUSTRY CLAIMS.

- ACEA C3 (2012).
- API SN.

(1) Based on Sequence VG sludge test results using 0W-40.; (2) Based on CEC L-40-93 NOACK volatility test and OEM requirements.

5. TOP ARGUMENTS PER PRODUCT. BMW LONGLIFE-04 SAE 5W-30 – DETAILS.

PROTECTION.

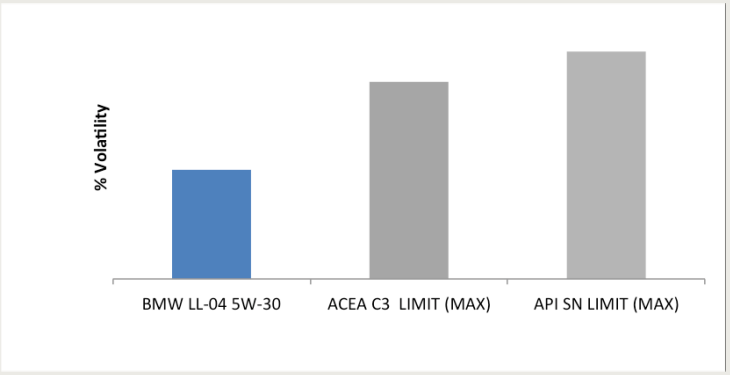
BMW Longlife-04 SAE 5W-30 provides unsurpassed sludge protection in the Sequence VG sludge test.[1]

Images show an industry standard timing chain, comparing the use of BMW Longlife-04 SAE 5W-30 with that of an inferior, passing, oil.

INFERIOR PASSING COMPETITOR OIL.

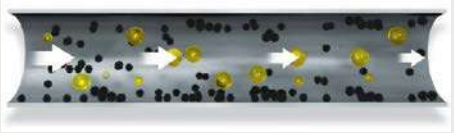
BMW LONGLIFE-04 SAE 5W-30.

ECONOMY.

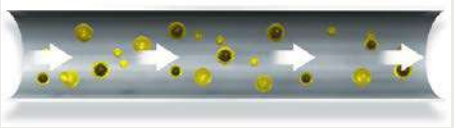


BMW Longlife-04 SAE 5W-30 offers superior volatility control based on the NOACK volatility test.

CLEANLINESS.



CONVENTIONAL OIL.



BMW LONGLIFE-04 SAE 5W-30.

Sludge build-up is caused by combustion by-products sticking together. BMW Longlife-04 SAE 5W-30 reduce deposit build-up by capturing combustion by-products and holding them in the oil.

(1)Based on Sequence VG sludge test results using 0W-40.

5. TOP ARGUMENTS PER PRODUCT. BMW LONGLIFE-04 SAE 0W-30 – SUMMARY.

INDUSTRY CLAIMS.

- ACEA C3 (2012).
- API SN.

PROTECTION.

- Protects the engine from sludge, enabling a long engine service life.
- Unsurpassed sludge protection.[1]
- Low-SAPS oil – helps to protect the emission system by helping to keep diesel particulate filters clean.
- Protects against wear and corrosion.

CLEANLINESS.

- Captures dirt particles which reduces deposits in the engine.

ECONOMY.

- Has lower tendency to evaporate which leads to low oil consumption and thus less frequent top-ups.[2]

PERFORMANCE.

- Ensures an outstanding low temperature performance even in temperatures as low as -40°C which enables easier cold-start characteristics.[3]

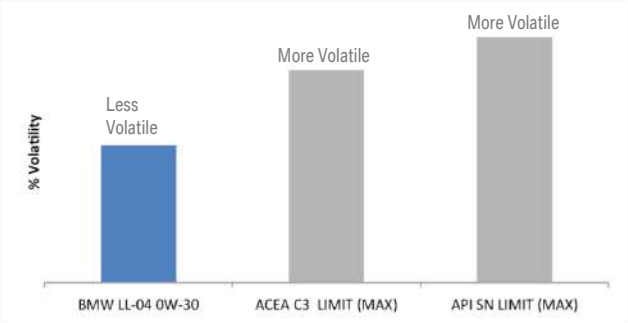
EFFICIENCY.

- ACEA FE testing: Up to 2.1% greater fuel economy based on M111 European standard testing versus industry reference oil.[4]

(1) Based on Sequence VG sludge test results using 0W-40.; (2) Based on CEC L-40-93 NOACK volatility test and OEM requirements.; (3) Compared with higher-viscosity oils; (4) Further BMW specific Fuel Economy testing expected in 2016.

5. TOP ARGUMENTS PER PRODUCT. BMW LONGLIFE-04 SAE 0W-30 – DETAILS.

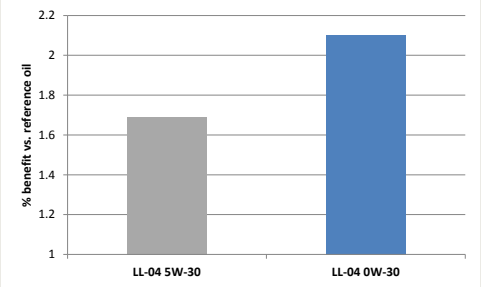
ECONOMY.



BMW Longlife-04 SAE 0W-30 offers superior volatility control.[1]

EFFICIENCY.

ACEA TESTING: BMW Longlife-04 SAE 0W-30 can provide up to 2.1% greater fuel economy based on European M111 standard testing versus industry reference oil.[2]



M111 Testing

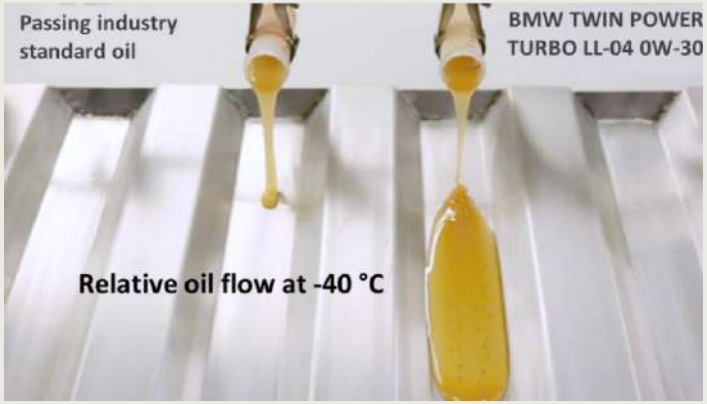
PERFORMANCE.

BMW Longlife-04 SAE 0W-30 has very good low-temperature performance.

It takes less time to reach the engine's moving parts, which results in:

- faster engine cranking,
- easier starting
- quicker warm-up.[3]

The engine could reach peak operating efficiency sooner in extreme conditions.



(1) Based on NOACK volatility test; (2) BMW Specific Fuel Economy Testing expected in 2016; (3) Compared with higher viscosity oils tested using ASTM D5293

5. TOP ARGUMENTS PER PRODUCT. BMW LONGLIFE-01 FE SAE 0W-30 – SUMMARY.

INDUSTRY CLAIMS.

- ACEA A5/B5 (2012).
- API SN.

PROTECTION.

- Protects the engine from sludge, enabling a long engine service life
- Superior engine cleanliness.[1]
- Excellent corrosion protection. [2]
- Improved wear protection.[3]

CLEANLINESS.

- Captures dirt particles which reduces deposits in the engine.
- Demonstrates excellent turbocharger cleanliness.[4]

ECONOMY.

- Has lower tendency to evaporate which leads to low oil consumption and thus less frequent top-ups.[5]

PERFORMANCE.

- Ensures an outstanding low temperature performance even in temperatures as low as -40°C which enables easier cold-start characteristics.[6]

EFFICIENCY.

- BMW FE Testing: Proven fuel saving in petrol engines in the NEDC of at least 1% compared to BMW Longlife-01 Engine oils[7]
- ACEA FE Testing: Up to 3.5 % greater fuel economy based on M111 European standard testing versus industry reference oil.

(1) Based on Sequence VG engine test vs API SN and updated M111 performance (M271) vs ACEA 2012; Based on new LL-01 FE sludge requirements; (2) Based on Sequence VIII engine test and higher TBN limits; (3) Compared with previous BMW LL-01 specification and based on OM646LA ACEA engine test; (4) Based on BMW N20 performance test; (5) Based on CEC L-40-93 NOACK volatility test and OEM requirements; (6) Compared with higher-viscosity oils ; (7) NEDC = New European Drive Cycle, based on in-house BMW vehicle testing.

5. TOP ARGUMENTS PER PRODUCT. BMW LONGLIFE-01 FE SAE 0W-30 – DETAILS.

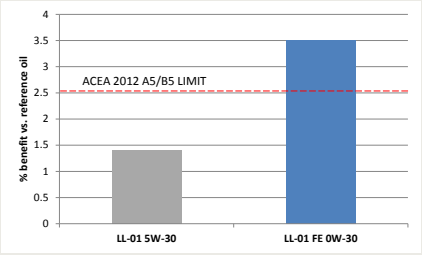
CLEANLINESS.

The build up of turbo-charger deposits can harm the performance of an engine, and demonstrating turbo-charger cleanliness is a key performance parameter for BMW Longlife-01 FE SAE 0W-30.[1]

Images show BMW turbo-charger unit from N20 engine

EFFICIENCY.

BMW FE TESTING: Fuel saving in petrol engines in the NEDC of **at least 1%** compared to BMW Longlife-01 Engine oils.[2]



M111 Testing

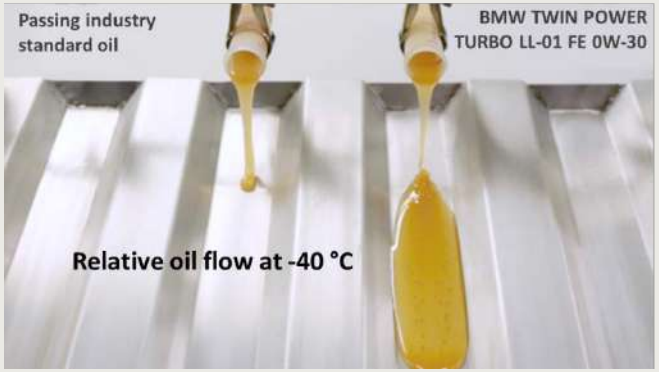
ACEA FE TESTING: can provide **up to 3.5%** greater fuel economy based on European M111 standard testing versus industry reference oil.

PERFORMANCE.

BMW Longlife-01 FE SAE 0W-30 has exceptional low-temperature performance.

It takes less time to reach the engine's moving parts, which means faster engine cranking, easier starting and quicker warm-up.[3]

The engine could reach peak operating efficiency sooner in extreme conditions.



(1) Based on turbo-charger deposit rating in BMW N20 engine test. (2) Based on BMW in-house fuel economy testing. (3) Compared with higher viscosity oils tested using ASTM D5293

5. TOP ARGUMENTS PER PRODUCT. BMW LONGLIFE-12 FE SAE 0W-30 – SUMMARY.

INDUSTRY CLAIMS.

– ACEA C2 (2012).

PROTECTION.

– Protects the engine from sludge, enabling a long engine service life.
– Low-SAPS oil – helps to protect the emission system by helping to keep diesel particulate filters clean.
– Excellent protection against sludge.[1]
– Superior wear protection.[2]

CLEANLINESS.

– Captures dirt particles which reduces deposits in the engine.
– Demonstrates excellent turbocharger cleanliness.[3]

ECONOMY.

– Has lower tendency to evaporate which leads to low oil consumption and thus less frequent top-ups.[4]

PERFORMANCE.

– Ensures an outstanding low temperature performance even in temperatures as low as -40°C, which enables easier cold-start characteristics.[5]

EFFICIENCY.

– BMW FE TESTING: Proven fuel saving in diesel engines in the NEDC (New European Driving Cycle) of up to 1.5% compared to BMW Longlife-01 engine oils.[6]
– ACEA FE TESTING: Up to 2.9 % greater fuel economy based on M111 European standard testing versus industry reference oil.

(1) Based on M271 sludge test and BMW N20 BMW endurance test; (2) Based on BMW N42 RNT (3) Based on BMW N20 performance test and N47 Turbocharger coking test; (4) Based on CEC L-40-93 NOACK volatility test and OEM requirements; (5) Compared with higher-viscosity oils; (6) Based on industry standard and BMW specific fuel economy testing.

5. TOP ARGUMENTS PER PRODUCT. BMW LONGLIFE-12 FE SAE 0W-30 – DETAILS.

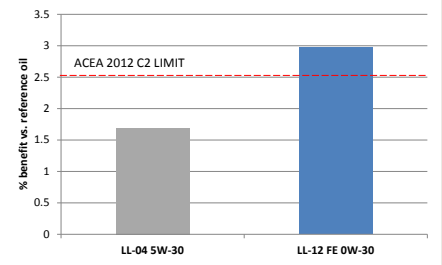
CLEANLINESS.

The build-up of turbo-charger deposits can harm the performance of an engine, and demonstrating turbo-charger cleanliness is a key performance parameter for BMW Longlife-12 FE SAE 0W-30.[1]

Images show BMW turbo-charger unit from N20 engine

EFFICIENCY.

BMW FE TESTING: Fuel saving in diesel engines in the NEDC (New European Driving Cycle) of **up to 1.5%** compared to BMW Longlife-01 engine oils.[2]



M111 Testing

ACEA FE TESTING: can provide **up to 2.9%** greater fuel economy based on European M111 standard testing versus industry reference oil.

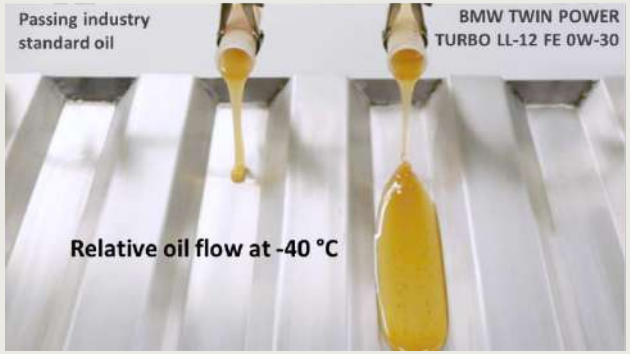
PERFORMANCE.

BMW Longlife-12FE SAE 0W-30 has **exceptional low-temperature performance.**

It takes less time to reach the engine's moving parts which means:

- faster engine cranking
- easier starting
- quicker warm-up.[3]

The engine could reach peak operating efficiency sooner in extreme conditions.



(1) Based on turbo-charger deposit rating in BMW N20 engine test. (2) Based on BMW in-house fuel economy testing. (3) Compared with higher viscosity oils tested using ASTM D5293.

5. TOP ARGUMENTS PER PRODUCT.
BMW LONGLIFE-14 FE+ SAE 0W-20 – SUMMARY.

INDUSTRY CLAIMS.

- ACEA A1/B1 (2012).
- API SN.

PROTECTION.

- Protects the engine from sludge, enabling a long engine service life.
- Excellent protection against sludge.[1]
- Superior wear protection.[2]

CLEANLINESS.

- Captures dirt particles which reduces deposits in the engine.
- Demonstrates excellent engine cleanliness.[3]

ECONOMY.

- Has lower tendency to evaporate which leads to low oil consumption and thus less frequent top-ups.[4]

PERFORMANCE.

- Ensures an outstanding low temperature performance even in temperatures as low as -40 °C which enables easier cold-start characteristics.[5]

EFFICIENCY.

- BMW FE TESTING: Shows improved fuel economy of up to 3%, which leads to reduced CO_2 emissions.[6]
- ACEA FE TESTING: Up to 3.5 % greater fuel economy based on M111 European standard testing versus industry reference oil.

(1) Based on M271 sludge test and BMW N20 endurance test; (2) Based on BMW N42 RNT; (3) Based on BMW N20 performance test and N47 Turbocharger coking test; (4) Based on CEC L-40-93 NOACK volatility test and OEM requirements; (5) Compared with higher-viscosity oils; (6) proven fuel saving of BMW Longlife-14 FE+ SAE 0W-20 in NEDC (New European Driving Cycle) of up to 3% compared to BMW Longlife-01 engine oils (tested on a BMW vehicle).

5. TOP ARGUMENTS PER PRODUCT.
BMW LONGLIFE-14 FE+ SAE 0W-20 – DETAILS.

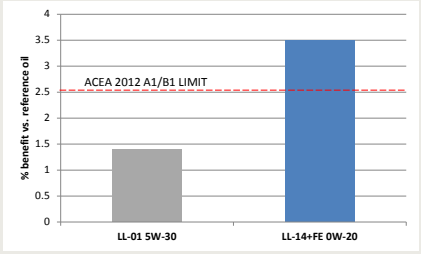
PROTECTION.

BMW Longlife-14 FE+ SAE 0W-20 protects the engine from sludge, keeps it clean and enables a long service life.[1]

Images show industry standard rocker cover and front cover

EFFICIENCY.

BMW FE TESTING: Proven fuel saving in NEDC (New European Driving Cycle) of **up to 3%** compared to BMW Longlife-01 5W-30 engine oils.[2] Tested on a BMW.



M111 Fuel Economy Test.

ACEA FE TESTING: Can provide **up to 3.5%** greater fuel economy based on European M111 standard testing versus industry reference oil.

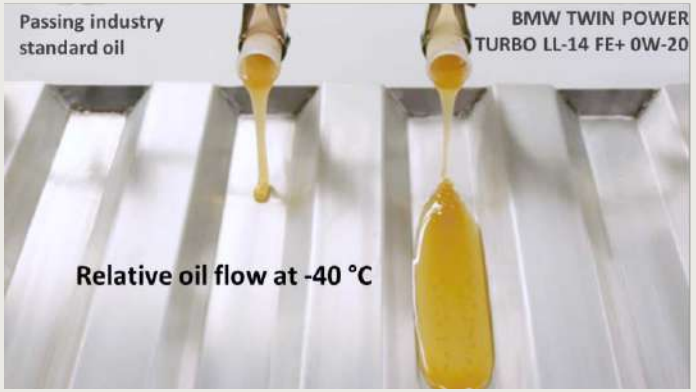
PERFORMANCE.

BMW Longlife-14 FE+ SAE 0W-20 has exceptional low-temperature performance.

It takes less time to reach the engine's moving parts, which means:

- faster engine cranking.
- easier starting.
- quicker warm-up.[3]

The engine could reach peak operating efficiency sooner in extreme conditions.



(1) Based on M271 Sludge Testing and BMW N20 Endurance Test (2) BMW testing. (3) Compared with higher viscosity oils tested using ASTM D5293.

5. TOP 5 ARGUMENTS PER PRODUCT.
BMW M ENGINE OILS – SAE 0W-40 & SAE 10W-60

REFILLING WITH ADRENALINE.

Engine oils in the **RED** category are tailored perfectly to BMW M high-performance engines and provide exceptional bearing protection under extreme performance performance and racing conditions.
The BMW Engine Oil portfolio offers two oils that are specifically recommended for use in BMW M vehicles:

BMW M Longlife-01 SAE 0W-40.
Suitable for all BMW M vehicles with petrol engines except M5/M6 built before 2011 and M3 built before 2014.

BMW M SAE 10W-60.
Suitable for M5/M6/Z8 petrol vehicles built until and including 2010. Also, all M3 petrol vehicles built until and including 2013.

PERFORMANCE.

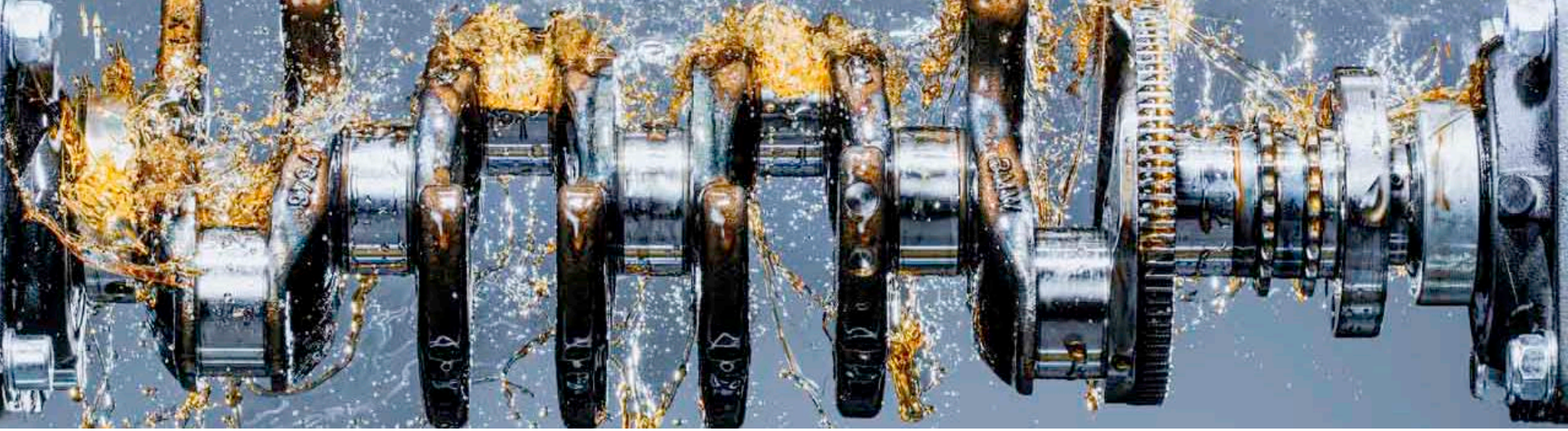
- Fast oil Lubrication throughout the engine.
- Thicker oils (-W40 & -W60) protect and enable high-performance bearing application (due to higher HTHS-values).

PROTECTION.

- Protects the engine from sludge, enabling a long engine service life.
- Superior wear and corrosion protection.

CLEANLINESS.

- Helps to ensure maximum cleanliness and protection for powerful BMW M engines.
- Captures dirt particles which reduce deposits in the engine.



CONTENTS.

6. OUTLOOK. COMMUNICATION IN 2016.

1. MARKETING TOOLBOX.

Provides a selection of marketing examples as well as an overview of potential communication materials for original BMW and MINI Original Engine Oil.

Focus on best practice exchange.

2. FOCUS ON TECHNICAL COMMUNICATION.

The technical information Booklet 2.0. provides a basis for further technical communication materials in 2016, e.g.:

- TOP 5 technical arguments and technical benefits video (see chapter 1).
- Technical benefits matrix and engine application matrix (see chapter 4).