

RAVENOL DFE SAE 0W-20 (Art. 111109)

We are delighted to be present our new **RAVENOL** product to you today, which is available **with immediate effect:**

CONTENTS:

- Introduction of the new product RAVENOL DFE SAE 0W-20
- GM dexos1™ Gen 2 approval for RAVENOL DXG SAE 5W-30
- Notes on the new specification dexos1™ Gen 2

RAVENOL DFE SAE 0W-20 PRODUCT INFORMATION

RAVENOL DFE SAE 0W-20 is a fully synthetic low friction engine oil with CleanSynto® technology for petrol engines in passenger cars with and without turbocharger and direct fuel injection. This product keeps the turbocharger and intercooler clean. **RAVENOL DFE SAE 0W-20** reduces friction, wear and tear and fuel consumption. It allows oil change intervals to be extended in accordance with manufacturer instructions.

RAVENOL DFE SAE 0W-20 helps to prevent LSPI (Low Speed Pre-Ignition) and therefore prevents damage to the engine. Excellent cold-start performance ensures that the engine is optimally lubricated in the cold-running phase. Thanks to significant reductions in fuel consumption, **RAVENOL DFE SAE 0W-20** helps to reduce emissions and therefore contributes to protecting the environment.

With the new GM dexos1™ Gen 2 licence, **RAVENOL DFE SAE 0W-20** is particularly suitable for vehicles with modern engines from OPEL, GENERAL MOTORS, Chevrolet, Daewoo and Holden.

SPECIFICATIONS:

API SN (RC), ILSAC GF-5, API CF

Fulfills the requirements of the new specification API SN PLUS

LICENSED:

API SN (RC), ILSAC GF-5

APPROVAL:

GM dexos1™ Gen 2, Lizenz Nr. D10689HJ081

RECOMMENDATION:

Ford WSS-M2C947-A

GM dexos1™ Gen 2 licence for RAVENOL DXG SAE 5W-30 (Art. 111124)

We are now also able to announce that the product we launched just a few weeks ago, **RAVENOL DXG SAE 5W-30**, has now also received the official GM dexos1™ Gen 2 approval for its new formula. The product is marketed under the licence number: D10709HK081. Here's a quick recap of the key data:

- Special molybdenum and wolfram additive formula to smooth the engine surfaces
- Particularly suitable for GDI engines
- Helps prevent low speed pre-ignition (LSPI)
- No oil-related deposits in combustion chambers, in the piston ring zone and on valves
- Reduced fuel consumption in both partial and full-load operation



NOTES ON THE NEW SPECIFICATION DEXOS1™ GEN 2:

The new dexos1™ Gen 2 is specially designed for petrol passenger cars. When the new specification was being developed, there was a focus on the increasing trend for modern “downsizing” engines and problems which arise with high power density engines such pre-ignition of the petrol gaseous mixture (LSPI = Low Speed Pre-Ignition). When ignition takes place too soon in the engine’s combustion chamber, even before the actual ignition spark appears, this can lead to severe damage to the engine. The new formulas of both **RAVENOL DXG SAE 5W-30** and **RAVENOL DFE SAE 0W-20** prevent this phenomenon and ensure that the engine runs safely in all operating conditions. They are particularly well-suited to the new petrol engines from Opel and also deliver a particularly impressive performance in other standard engine oil tasks such as lubrication, cooling, cleansing and corrosion protection. Another focus when developing the specification, also for new oils, is achieving a reduction in fuel consumption during operation.

Newsletter

- Low SAPS = low sulphate ash, phosphorus and sulphur
- Very stable, extremely high-level viscosity performance and outstanding shear stability
- Very good cold start performance
- A reliable lubrication film at very high operating temperatures
- Very good protection against wear and tear and corrosion
- Excellent detergent and dispersant qualities, helps prevent foaming
- Long service life due to high oxidation stability
- Suitable for catalysts

SPECIFICATIONS:

API SN (RC), ILSAC GF-5

Fulfills the requirements of the new specification API SN PLUS

LICENSED:

API SN Resource Conserving, ILSAC GF-5

APPROVAL:

GM dexos1™ Gen 2 licence no. D10709HK081

RECOMMENDATIONS:

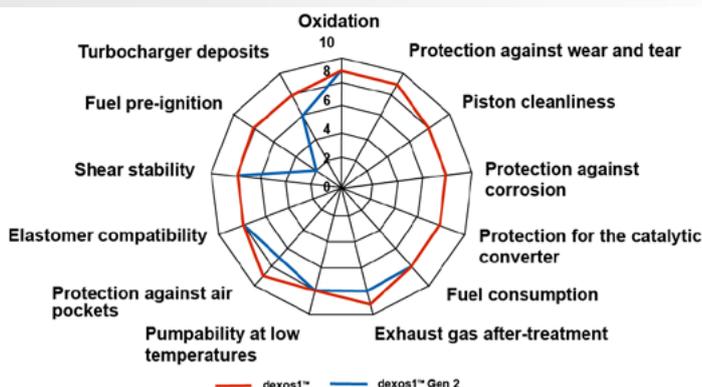
Ford WSS-M2C946-A, Ford WSS-M2C929-A, Chrysler MS-6395, Honda/Acura HTO-06

Various new tests were therefore developed for the approval pursuant to dexos1™ Gen 2, which were necessary in order to check the stringent requirements for the oil. You will find an overview of the test programme below:

TEST REQUIREMENTS	2010	2015 (gen. 2)
OXIDATION OIL RELEASE	IIIG, OP1	GMOD*, OP1/OP2*
PISTON CLEANLINESS, SLUDGE	IIIG, TUSJP, VG, M271 SL	GMOD*, TUSJP, VG/H, M271 SL
TURBOCHARGER DEPOSITS	-	NEW GM TURBOCHARGER DEPOSIT TEST GMW17299
PROTECTION AGAINST AIR POCKETS	MEC024	NEW GM AERATION TEST GMW17295
FUEL PRE-IGNITION	-	NEW GM PRE-IGNITION TEST GMW17244
WEAR AND TEAR	RNT, TU3MS	RNT, TU3MS
FUEL CONSUMPTION	VID	VID/VIE, GMVFE
FLOW PROPERTIES IN COLD CONDITIONS	IIIGA	GMOD*
PHOS RETENTION	-	GMOD*
BEARING CORROSION	VIII	VIII

*GMOD test limits released by GM for dexos1: 2015 specification

The diagram shows the developmental progress of the oil in various areas, comparing the requirements of the old dexos® specification and the new specification:



BELOW YOU WILL FIND AN OVERVIEW OF ALL THE AVAILABLE CONTAINER SIZES:

RAVENOL DFE SAE 0W-20

ARTICLE NUMBER: 1111109

ARTICLE NUMBER CONTAINER SIZES

1111109-001	20 x 1 L can
1111109-004	4 x 4 L can
1111109-005	4 x 5 L can
1111109-010	1 x 10 L canister
1111109-020	1 x 20 L bag in box
1111109-020	1 x 20 L canister
1111109-060	1 x 60 L design barrel
1111109-060	1 x 60 L barrel
1111109-208	1 x 208 L design barrel
1111109-208	1 x 208 L barrel

RAVENOL DXG SAE 5W-30

ARTICLE NUMBER: 1111124

ARTICLE NUMBER CONTAINER SIZES

1111124-001	20 x 1 L can
1111124-004	4 x 4 L can
1111124-005	4 x 5 L can
1111124-010	1 x 10 L canister
1111124-020	1 x 20 L bag in box
1111124-020	1 x 20 L canister
1111124-060	1 x 60 L design barrel
1111124-060	1 x 60 L barrel
1111124-208	1 x 208 L design barrel
1111124-208	1 x 208 L barrel

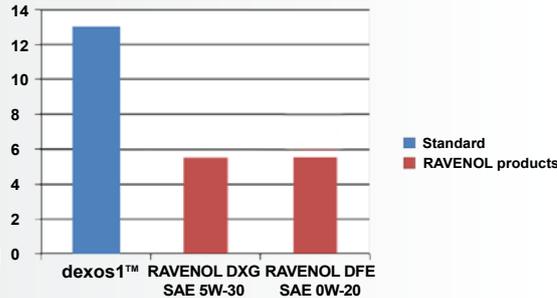
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In the following, we have taken a closer look at several tests which are necessary for the approval according to dexos1™ Gen 2 and taken a closer look at our products. The technical progress of both RAVENOL products became clear in the process:

Turbocharger protection

RAVENOL DXG SAE 5W-30 protects the turbocharger and keeps it cleaner for significantly longer than is usually required by the industry standards. Not only does this extend the service life of the turbocharger considerably, and therefore also of the engine as a whole, it also contributes to reducing fuel consumption:

je smaller, the better the protection of the turbocharger



GDI (Gasoline Direct Injection) – for example, Hyundai Santa Fe, i30/40 or Kia cee'd, Sorento, Optima

DISI (Direct Injection Spark Ignition) – for example, Mazda 3, 5, CX-7er

DIG-T (Direct Injection Gasoline Turbo) – Nissan Juke F15 oder Micra

SIDI (Spark Ignition Direct Injection) - GM, Opel Insignia, Chevrolet Captiva

HPI (High-Pressure Direct Injection) or THP (Turbo High Pressure) - Peugeot and Citroën

D-4 – Toyota GT86 and Lexus

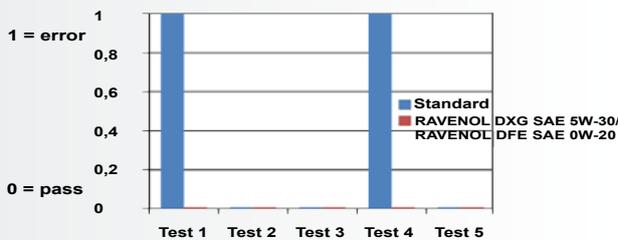
SCI (Smart Charged injection): SCTi (Sequential Charge Turbo Injection) Ford

S-JET (Star Jet), T-JET (Turbo Jet), TBi (Turbo Benzina injection) - Fiat and Alfa Romeo

IDE (Injection Directe Essence) - Renault

Fuel pre-ignition

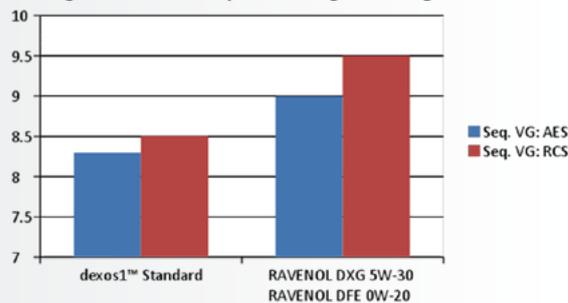
RAVENOL DXG SAE 5W-30 meets the requirements with ease: in five consecutive control tests, pre-ignition must only occur in a maximum of 2 of 5 tests. It never took place with RAVENOL DXG SAE 5W-30.



Sludge protection

Sludge protection was verified using the Seq VG test. This test checks for dirt on various engine parts after various time intervals, at different oil temperatures and engine revolutions. The diagram below shows that both RAVENOL products provide significantly greater protection than the standards require.

Higher value = better protection against sludge



IT IS POSSIBLE TO USE RAVENOL DFE SAE 0W-20 AND RAVENOL DXG SAE 5W-30 IN MANY MODERN PASSENGER CARS. IF THIS PRODUCT IS NOT SUITABLE FOR YOUR VEHICLE, WE WOULD RECOMMEND THAT YOU CONSULT OUR OIL FINDER ON WWW.RAVENOL.DE/OEL-FINDER.HTML YOU ARE GUARANTEED TO FIND THE RIGHT OIL FOR YOUR VEHICLE HERE.

FOR FURTHER INFORMATION AND SPECIFICATIONS, PLEASE CONTACT OUR SALES TEAM OR REFER TO OUR WEBSITE FOR INFORMATION ON: WWW.RAVENOL.DE/EN/PRODUCTS/USAGE/D/PRODUCT/SHOW/P/RAVENOL-DFE-SAE-0W-20-1.HTML AND WWW.RAVENOL.DE/EN/PRODUCTS/USAGE/D/PRODUCT/SHOW/P/RAVENOL-DXG-SAE-5W-30.HTML