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DATA SHEET

Signature Series 100% Synthetic Motor Oil

Advanced Motor Oil Technology

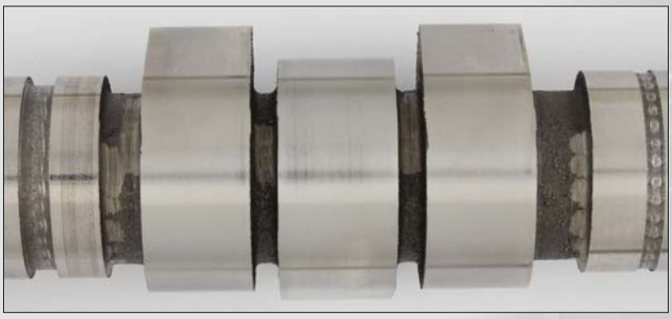
AMSOIL was founded on innovation, beginning with our introduction of the world's first API-qualified synthetic motor oil. By ignoring commonly accepted limitations and refusing to stop short of success, we set a new benchmark for lubricant performance. These same principles continue to guide our product development, resulting in Signature Series Synthetic Motor Oil. Signature Series is not only the best oil we have ever made, it's also better than any competitor oil we have tested. Some may claim that Signature Series is over-engineered. Perfect. It's not for everyone. It's for those who want the absolute best engine protection — and it delivers.



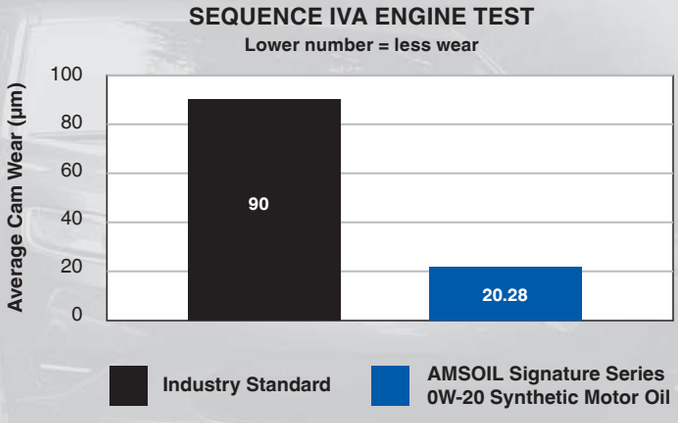
Protects Against Engine Wear

Signature Series Synthetic Motor Oil develops a strong fluid film that keeps metal surfaces separated. Its robust anti-wear additives further reduce wear in metal-to-metal contact regions for maximum engine life. The Sequence IVA Engine Test, which must be passed to meet the API SN PLUS specification, simulates extended periods of stop-and-go driving. For 100 hours, the test engine cycles between 50 minutes of idling and 10 minutes of elevated rpm — conditions that encourage engine wear. The camshaft is then measured for wear in 84 locations and an average score is determined.

We used Signature Series 0W-20, the lightest viscosity in the line, to further increase the severity of the test. AMSOIL Signature Series Synthetic Motor Oil provided **75% more engine protection against horsepower loss and wear**[1] than required by the industry standard, extending the life of vital components like pistons and cams.



After rigorous third-party testing, the cam lobes show little-to-no wear.



[1]Based on independent testing of AMSOIL Signature Series 0W-20 using the ASTM D6891 standard test.

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Protects Pistons from Low Speed Pre-Ignition

We armed Signature Series with an advanced detergent system that protects against harmful deposits and low speed pre-ignition (LSPI). Most new engines feature gasoline direct injection (GDI), often combined with a turbocharger to boost power and improve fuel economy. These new technologies, when combined with a poorly formulated motor oil, promote LSPI and threaten engine operation. LSPI is the spontaneous ignition of the fuel/air mixture prior to spark-triggered ignition. It occurs in today's advanced engines and is much more destructive than typical pre-ignition. A properly formulated motor oil is critical for protecting your engine.

Original equipment manufacturers (OEMs) like GM* have addressed the issue by designing tests to determine a motor oil's ability to prevent LSPI. Signature Series Synthetic Motor Oil achieved **100% protection against LSPI**[1] in the engine test required by the GM dexos1* Gen 2 specification – zero occurrences were recorded throughout five consecutive tests.



Example of piston damage due to an LSPI event observed during the testing of a competitor's motor oil. The red arrows indicate sections of the ring land that broke away from the piston.

Protects Turbochargers

Our unique synthetic formulation is inherently stable to resist oxidation and neutralize acids. Signature Series Motor Oil provides outstanding protection against deposits common to high-temperature engine environments. The tremendous heat and stress turbos create can cause some oils to break down and form harmful bearing deposits through a process known as turbo coking. Over time, turbos can suffer reduced performance or fail altogether.

We challenged Signature Series to the GM Turbo Coking Test, which consists of 2,000 cycles of extreme heat soaks. An oil must limit the temperature change within the turbocharger to 13% or less to pass the test. Signature Series limited the temperature increase to only 3.6%, **protecting the turbocharger 72% better than required**[2] by the GM dexos1 Gen 2 specification.



Signature Series controlled heat and minimized performance-robbing deposits on the turbo-bearing and shaft surfaces.



Maximum Cleaning Power to Battle Sludge

AMSOIL Signature Series Synthetic Motor Oil has **50% more detergents**[3] to help keep oil passages clean and promote oil circulation. Engine failures due to sludge are often caused by a plugged oil pick-up tube screen — the motor is effectively starved of oil. The Sequence VG Engine Test measures an oil's ability to prevent sludge. During the test, a Ford* 4.6L engine is subjected to sludge-inducing conditions for 216 hours. The industry standard allows for 10% blockage before the motor oil fails the test. Signature Series produced a screen virtually free from sludge (see image). Its detergent and dispersant additives are so effective, Signature Series provides **90% better protection against sludge**.[4]



Trusted by Professional Engine Builders

Dedicated engine builders and mechanics put in long hours honing their craft. These architects of powerful, high-performance engines turn to Signature Series to protect their passion.

"When we use AMSOIL, I don't worry about a film breakdown or an oil breakdown — and the oil pressure is always consistent. We've tested oils back-to-back on the dyno in our shop and we're always able to make more power with AMSOIL."

Brett Bowers, Professional Engine Builder



Extends Drains: Protection Guaranteed

AMSOIL Signature Series Synthetic Motor Oil provides reserve protection, allowing you to go longer between oil changes if you choose — up to 25,000 miles (40,200 km), 700 hours of operation or one year, whichever comes first (see back page for details). Our unique synthetic formulation and long-drain additive system are inherently stable to resist oxidation and neutralize acids over longer periods. Signature Series is designed to deliver outstanding engine protection, cleanliness and performance over extended drain intervals — guaranteed. It provides peace of mind so you can fit oil changes into your schedule.

[1]Based on independent testing of AMSOIL Signature Series 5W-30 motor oil, in the LSPI engine test as required for the GM dexos1 Gen 2 specification.
[2]Based on independent testing of AMSOIL Signature Series 5W-30 in the GM turbo coking test.
[3]vs. AMSOIL OE Motor Oil
[4]Based on independent testing of AMSOIL Signature Series 5W-30 in the ASTM D6593 engine test for oil screen plugging as required by the API SN PLUS specification.

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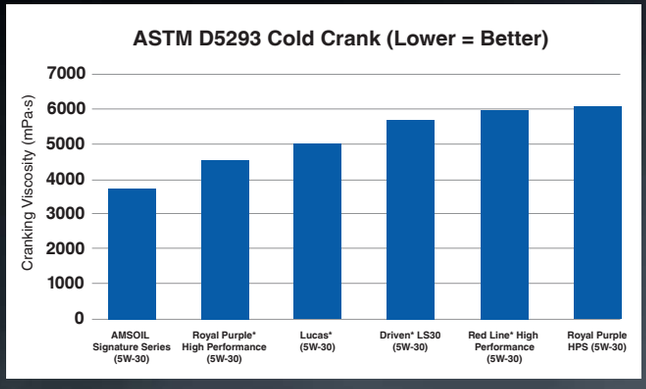
Superior Wear Protection

An independent lab compared AMSOIL synthetic motor oil head-to-head against a leading competitor in a 100,000-mile test.[5] AMSOIL provided far superior wear protection and kept bearings looking like new.



Better Startup Protection

AMSOIL provides better cold cranking viscosity, helping improve wear protection for engine components at startup.[6]



Helps Keep Engines Cleaner, Longer

AMSOIL Signature Series is fortified with a heavy treatment of detergent additives, delivering 28% more acid-neutralizing power than Mobil 1* and helping engines stay cleaner, longer.[7]



[5]Testing conducted in an independent lab using AMSOIL Signature Series 5W-30 Synthetic Motor Oil and a leading synthetic-blend 5W-30 motor oil in Ford F-150 trucks with 3.5L twin-turbo engines.

[6]Based on independent third-party testing in the industry-standard ASTM D5293 Cold Crank Simulator test as required by SAE J300.

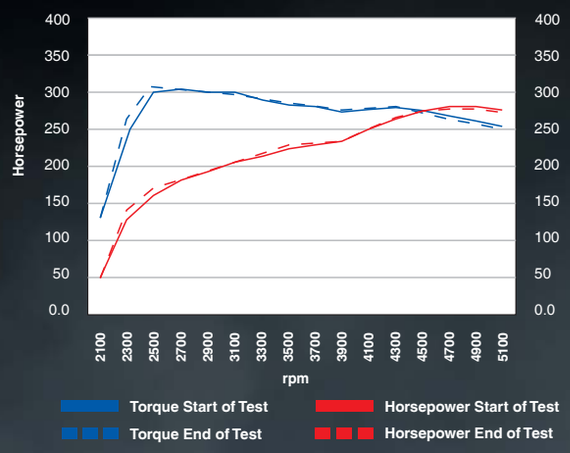
[7]Based upon independent testing of Mobil 1 Annual Protection Full Synthetic 5W-30 and AMSOIL Signature Series 5W-30 in ASTM D2896. Oils purchased July 2020.

[8]Based on independent testing of AMSOIL Signature Series 5W-30 in the Sequence IIIH Engine Test (ASTM D8111), required by the ILSAC GF-6 and API SP specifications.

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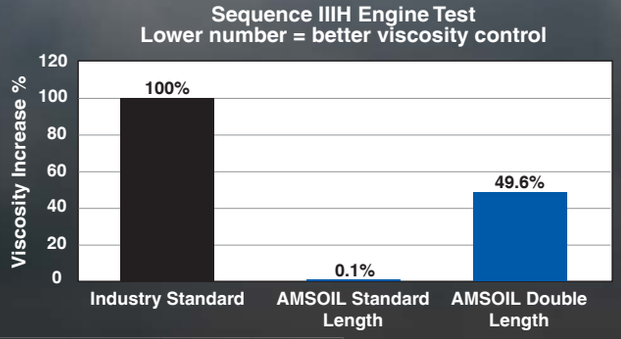
Preserves Horsepower

The extreme durability of Signature Series Motor Oil helps your engine run stronger, for longer. We installed Signature Series 5W-30 Synthetic Motor Oil in a Ford* F-150* with a new 3.5L Ecoboost* engine to test its ability to protect turbocharged direct-injection (TDGI) engines from torque and horsepower loss during extended drain intervals up to 25,000 miles (40,200 km). Power sweeps were done at the beginning and end of the test to evaluate horsepower and torque retention. As the graph shows, Signature Series helped maintain engine performance throughout the 100,000-mile (160,934 km) test.



Keeps Pistons Cleaner

We formulated Signature Series with superior thermal durability that resists breakdown and keeps pistons clean. The Sequence IIIH Test uses the Chrysler* 3.6L Pentastar* engine to evaluate a motor oil's ability to resist heat and keep pistons clean. The test is conducted with oil temperatures of 304°F (151°C), much hotter than normal operation, to accelerate oil thickening and deposits. A single-length 90-hour test didn't even challenge Signature Series. Its viscosity was like that of new oil, and the pistons were still nearly spotless. To really test the oil, we told the lab to reassemble the engine and run the test again using the same oil. Even after **doubling the length of the industry-standard test**, the oil limited oil thickening to well under the allowable threshold while delivering 40% cleaner pistons than required by the standard.[8]





Even after doubling the length of the standard test, Signature Series maintained viscosity and minimized performance-robbing piston deposits for a clean, long-lasting engine.

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TYPICAL TECHNICAL PROPERTIES

AMSOIL Signature Series Synthetic Motor Oil

	0W-20 (ASM)	5W-20 (ALM)	0W-30 (AZO)	5W-30 (ASL)	10W-30 (ATM)	0W-40 (AZF)	5W-50 (AMR)	0W-16 (AZS)
Kinematic Viscosity @ 100°C, cSt (ASTM D445)	8.8	8.8	10.4	10.3	10.0	14.8	19.4	8.0
Kinematic Viscosity @ 40°C, cSt (ASTM D445)	47.1	50.6	57.1	59.7	62.3	84.6	119.5	42.0
Viscosity Index (ASTM D2270)	169	153	173	162	147	184	185	165
CCS Viscosity, cP @ (°C) (ASTM D5293)	5122 (-35)	4385 (-30)	5372 (-35)	3968 (-30)	4278 (-25)	6062 (-35)	5108 (-30)	4653 (-35)
Flash Point °C (°F) (ASTM D92)	220 (428)	220 (428)	220 (428)	220 (428)	230 (446)	222 (431)	224 (435)	218
Fire Point °C (°F) (ASTM D92)	244 (471)	244 (471)	238 (460)	244 (471)	256 (492)	238 (460)	244 (471)	240
Pour Point °C (°F) (ASTM D97)	-53 (-63)	-50 (-58)	-50 (-58)	-50 (-58)	-47 (-52)	-50 (-58)	-48 (-54)	-53
NOACK Volatility, % weight loss (g/100g) (ASTM D5800)	8.5	5.8	8.8	6.7	4.1	7.7	6.1	8.5
High-Temperature/High-Shear Viscosity @ 150°C, 1.0 X 10^6 $s.^{-1}$, cP (ASTM D5481)	2.67	2.67	3.07	3.11	3.11	3.76	4.45	2.45
Total Base Number (ASTM D2896)	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5

The typical properties listed above reflect the general characteristics of the product and are not manufacturing specifications. Variations that do not affect product performance should be expected. Product formulations are subject to change without notice.

APPLICATIONS

Use AMSOIL Signature Series Synthetic Motor Oil in applications that require any of the following specifications:

0W-16 (AZS): API SP (Resource Conserving), SN Plus, SN...; ILSAC GF-6B

0W-20 (ASM): API SP (Resource Conserving), SN PLUS, SN…; GM dexos1* Gen 3 (supersedes dexos1 Gen 2 and 6094M); ACEA A1/B1; Ford WSS-M2C947-B1, WSS-M2C947-A, WSS-M2C962-A1; Chrysler MS-6395; ILSAC GF-6A, GF-5, GF-4

5W-20 (ALM): API SP (Resource Conserving), SN PLUS, SN…; GM dexos1* Gen 3 (supersedes dexos1 Gen 2 and 6094M); ACEA A1/B1; Ford WSS-M2C945-B1, WSS-M2C945-A, WSS-M2C930-A, WSS-M2C960-A1; Chrysler MS-6395; ILSAC GF-6A, GF-5, GF-4

0W-30 (AZO): API SP (Resource Conserving), SN PLUS, SN…; GM dexos1* Gen 3 (supersedes dexos1 Gen 2, LL-A-025, 6094M and 4718M); ACEA A5/B5, A1/B1; Ford WSS-M2C963-A1; Chrysler MS-6395; ILSAC GF-6A, GF-5, GF-4

5W-30 (ASL): API SP (Resource Conserving), SN PLUS, SN…; GM dexos1* Gen 3 (supersedes dexos1 Gen 2, LL-A-025, 6094M and 4718M); ACEA A5/B5, A1/B1; Honda HTO-06; Ford WSS-M2C946-B1, WSS-M2C946-A, WSS-M2C929-A, WSS-M2C961-A1; Chrysler MS-6395; ILSAC GF-6A, GF-5, GF-4

10W-30 (ATM): API SP (Resource Conserving), SN PLUS, SN…; ACEA A5/B5, A1/B1; Ford WSS-M2C205-A; Chrysler MS-6395; GM LL-A-025, 6094M, 4718M; ILSAC GF-6A, GF-5, GF-4…

0W-40 (AZF): API SP, SN PLUS, SN…; Chrysler MS-A0921, MS-12633, MS-10725, MS-10850; Nissan GT-R; GM dexos R

5W-50 (AMR): API SP, SN PLUS, SN…; Ford WSS-M2C931-C (Mustang); GM dexos R

COMPATIBILITY

AMSOIL Signature Series Synthetic Motor Oil is compatible with other conventional and synthetic motor oils. Mixing other oils with AMSOIL motor oils, however, will shorten the oil's life expectancy and reduce its performance benefits. AMSOIL does not support extended drain intervals where oils have been mixed.

Aftermarket oil additives are **not recommended** for use with AMSOIL synthetic motor oils.

TECHNICAL SERVICES

For immediate answers to your technical questions call 715-399-8324 (TECH) between 8 a.m. and 5 p.m. Central time or email tech@amsoil.com.

SERVICE LIFE

Normal Service – Up to 25,000 miles (40,200 km), 700 hours of operation or one year, whichever comes first, in personal vehicles not operating under severe service.

Severe Service – Up to 15,000 miles (24,140 km), 700 hours of operation or one year, whichever comes first. Severe service conditions include commercial or fleet vehicles; excessive idling; or frequent towing, hauling, plowing or driving in dusty conditions.

- Modified engines (non-stock), racing vehicles and vehicles using alternative fuels (E85, CNG, propane, etc.) are excluded from extended drain interval recommendations.
- Change at the vehicle manufacturer's recommended drain interval outside U.S. and Canada.
- AMSOIL Oil Filters are designed for extended drain intervals. Do not exceed 12,000 miles (19,312 km) or one year with other brand filters unless longer intervals are recommended by the vehicle manufacturer. Always change filter when changing oil.
- Check oil regularly to maintain proper fill levels.

AMSOIL Oil Filters stop smaller particles, flow more oil and last longer than regular filters. For best performance, use AMSOIL Oil Filters.

AMSOIL PRODUCT WARRANTY

Using AMSOIL synthetic lubricants does not void your new vehicle or equipment manufacturer's warranty. All AMSOIL lubricants and filters are covered by the AMSOIL Limited Warranty. For complete information visit AMSOIL.com/warranty.aspx.

HEALTH & SAFETY

This product is not expected to cause health concerns when used for the intended application and according to the recommendations in the Safety Data Sheet (SDS). An SDS is available at AMSOIL.com or upon request at 715-392-7101. **Keep Out of Reach of Children.** Don't pollute. Return used oil to collection centers.

AMSOIL The First in Synthetics®

AMSOIL products and Dealership information are available from your local full-service AMSOIL Dealer.

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