

Olson Marketing Monthly

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in partnership with Insane Oil of Omaha

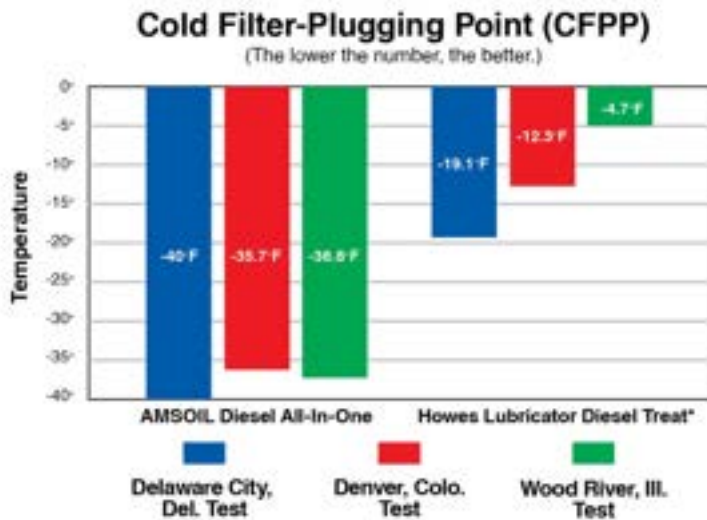
Your Amsoil Information News Source

Product Highlight: Diesel All-In-One

Diesel All-In-One is specially engineered to provide exceptional all-season protection for a serious performance boost. One dose delivers outstanding detergency, improved lubricity, better cold flow and higher cetane.

Independent testing reveals AMSOIL Diesel All-In-One provides as much as 32°F better protection against cold-temperature gelling than Howes Lubricator Diesel Treat. Plus, AMSOIL Diesel All-In-One boosts cetane by up to 4 points.

- Cleans dirty injectors to help restore horsepower and improve fuel economy
- Lubricates fuel pump and injectors to reduce wear
- Fights gelling in cold weather, enhancing fuel flow and helping prevent fuel-filter plugging
- Increases cetane up to 4 points for maximum horsepower, increased fuel economy and easier starts



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Congratulations:

New Preferred Customer

Justin Powell
Papillion, NE

Creighton Demuth
Lincoln, NE

Ryan Pfeil
Lincoln, NE

Dealer Contact

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Oil Analysis with EcoBoost Engines

Sample #	Sample Information							Contaminants			Fluid Properties					
	Date Sampled	Date Received	Lube Time mi	Unit Time mi	Lube Change	Lube Added qt	Filter Change	Fuel Dilution % Vol	Soot % Vol	Water % Vol	Viscosity 40°C cSt	Viscosity 100°C cSt	Acid Number mg KOH/g	Base Number mg KOH/g	Oxidation abs/cm	Nitration abs/0.1 mm
1	02-Apr-2015	10-Apr-2015	2500	180	Yes	0	Yes	>5 - GC	<.1	<.1 - FTIR		8.6		5.49	48	15
2	06-Nov-2015	13-Nov-2015	3910	7210	Yes	0	Yes	5.0 - GC	<.1	<.1 - FTIR		9.0		4.45	50	13
3	12-Jun-2016	17-Jun-2016	2404	219	Yes	0	Yes	2.8 - GC	<.1	<.1 - FTIR		9.3		5.86	50	12
4	04-Mar-2017	15-Mar-2017	4908	265	Yes	0	Yes	<1 - Estimate	<.1	<.1 - FTIR		9.9		4.21	48	13
5	23-Sep-2017	27-Sep-2017	7919	22427	Yes	0	Yes	<1 - Estimate	0.1 - E2412	<.1 - FTIR		10.1		3.29	55	15

The 3.5L EcoBoost engine was first deployed in 2007 and has since been utilized in a variety of vehicles. The second generation 3.5L EcoBoost has been refined and is said to be integrated in some 2017 model vehicles.

The above oil analysis sampling was taken from a 3.5L EcoBoost engine. The owner had purchased the vehicle new and ran the factory fluids for the first 800 miles. At that point he switched to [Amsoil Signature Series 5w30 Synthetic Motor Oil](#) and ran it until he reached 2500 miles. At that time he did another fluid change and continued to do so at strategic intervals.

Looking at the data, fuel dilution reached critically high levels during the first 4000 miles on the vehicle. Touched on in the [October issue](#) of the newsletter, Gasoline Direct Injection (GDI) technology is one of the EcoBoost secrets to achieving good fuel economy. During this process the fuel is injected directly into the combustion chamber which can be closely controlled achieving better fuel usage. However, it can lead to fuel seeping by the piston

rings and entering into the oil supply. On top of this, new engines have a break-in period that can range from 1000 to 5000 miles. Theoretically, the manufacturer breaks-in the engine during the production cycle but in reality, there is still a break-in cycle once you purchase a new vehicle. Many owner's manuals will even recommend gentle use for the first 1000 miles.

The goal of a modern engine break-in period is the settling of the piston rings into the engine's cylinder wall. A cylinder wall is not perfectly smooth but has a deliberate slight roughness to help oil adhesion. As the engine is powered up, the piston rings between the piston and the cylinder wall will begin to seal against the wall's small ridges.

Some research indicates that this break-in period can be as short as 5-10 hours. I would be interested to see additional data sets (similar to the oil analysis frequency cycle for the data above) for EcoBoost engines.

With regards to the Fuel Dilution data in the chart above, my conclusion based upon this one data

set is that during the initial break-in of the engine during the first 4000 or so miles, there was an excessive amount of fuel passing by the piston rings. Once the piston rings developed a friendship with the cylinder wall, fuel dilution was substantially reduced.

Taking a look at the Viscosity data, fuel dilution will lower the oil viscosity, hence the change in values over the five oil analysis cycles. Less fuel dilution, higher viscosity numbers.

TBN data is negligible as the fuel dilution issues do not seem to exorbitantly affect the results. Sample #5 abnormal rating is most likely due to increased milage.



Oil Analysis with EcoBoost Engines...continued

Comments Flagged data does not indicate an immediate need for maintenance action. Continue to observe the trend and monitor equipment and fluid conditions. Base Number is MODERATELY LOW. As Base Number depletes, the ability to neutralize acids is diminished. Copper is at a MINOR LEVEL; Boron is slightly low for this lubricant. Boron levels may naturally decline with use so this is not a cause for concern. Lubricant and filter change acknowledged.

Sample #	Wear Metals (ppm)										Contaminant Metals (ppm)			Multi-Source Metals (ppm)				Additive Metals (ppm)					
	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus
1	28	0	1	5	96	0	0	0	0	33	7	4	0	137	0	16	0	147	13	3150	0	687	783
2	25	1	0	5	103	0	0	0	1	22	8	2	0	146	0	15	0	85	13	3349	0	597	774
3	16	0	1	3	83	0	0	0	0	13	7	4	0	127	0	8	0	125	10	3094	0	605	691
4	25	1	0	5	96	0	0	0	0	13	8	2	0	154	2	7	0	74	16	3688	0	656	770
5	35	1	1	4	67	0	0	0	0	16	7	3	0	135	0	7	0	33	14	3359	0	602	661

A further look into the oil analysis report provides some additional information. Copper levels are identified as low and typically come from the following:

Slipper (wrist pin) bushings, connecting rod and crankshaft bearings, cam follower roller bushings, rocker arm clevis bushings, thrust washers or lechate from gaskets/sealants, oil coolers and radiators. Also hydraulics/compressor valves and bushings.

Copper can also be an oil anti-oxidant additive and is commonly found alloyed with lead, tin and/or aluminum. These results show lead, tin and aluminum all negligible and thus the Copper is likely from engine wear/break-in.

I was interested when I saw the Silicone values as they have decreased substantially since the engine was new. Silicone comes from silicone gaskets and sealant, anti-foam additives, silica from airborne sand and dust (dirt). In the case of this engine, it again is probably due to the breaking in of the engine and cleaning out all the

junk that gets in there during the manufacturing process.

Manganese is sometimes used in certain steel alloys. It can also be used in gasoline additives. Given that the value has declined, I would assume it also due to the break in cycle of the vehicle.

Boron values are probably directly related to the additive package in the oil. Boron is used as a corrosion inhibitor, anti-wear and anti-oxidant additive. In general, concentration levels vary greatly between oil brands. I would correlate the boron levels directly to the mileage at the oil change interval.

As noted on the previous page, I would be very interested in conducting this same oil analysis collection intervals for another 3.5L EcoBoost engine to see if the results are similar.

All in all, Amsoil is and will continue to protect this engine. Thank you to my customer in Omaha, Nebraska for providing us with this data.

The Altrum Minute

Stay Healthy This Winter

Ultra Multi is much more than a standard multivitamin. Its 86 ingredients give you more than 14 supplements in one formula. With more than 25 vitamins and minerals, antioxidants, phytonutrients, enzymes, herbs and amino acids, Ultra Multi is your foundation for well-being. This unique formula is balanced and whole for optimum health and vitality.



Learn more at:

AltrumOnline.com

Diesel Digest - Cylinder Block and Cylinder Liners

The cylinder block is the foundation of the diesel engine. It supports all of the other engine components. The block contains openings for each cylinder, internal passages for coolant and lubricating oil, bores for the crankshaft and camshaft, and openings for the push tubes or push rods and cam followers.

Cylinder openings are cast in the block. In most diesel engines, cylinder liners (sleeves) are placed in these openings to form the walls of the combustion chamber. The top of each liner is sealed by the cylinder head, while the bottom is sealed by the piston. As the engine operates, the moving piston contact the liner, not the cylinder block itself. When the liner becomes worn, it can be removed from the block and replaced. This is one of the keys to long diesel engine life.



Video on Cylinder Liner Installation

[Click Here](#)



Shop Talk...

with Dr. Jonathan D. Olson, EdD
ZO #10458

Missouri retailers were ordered to immediately stop selling John Deere 303 tractor hydraulic fluids after the state's Department of Agriculture Weights, Measures and Consumer Protection Division determined the specification fails to meet modern performance demands.

John Deere developed JD 303 57 years ago and replaced it in 1974 with J14B, which was replaced in 1978 with J20A. John Deere has declared all of those specifications obsolete and has two current specs – JDM-J20C and J20D – along with its genuine Hy-Gard fluid. Some lubricant marketers have continued marketing hydraulic tractor fluids labeled as meeting the 303 standard, but critics say they do not meet the lubrication requirements of modern tractors and in fact can harm them.

“[The] use of [JD] 303 fluids can cause damage to the spiral gear in the final drive, cause excessive wear in the planetaries, and result in improper and poor shifting. It could also cause improper operation of wet brakes,” noted Tom Glenn, president of Petroleum Trends International, the Petroleum Quality Institute and Jobbers World newsletter.

Fortunately, you have been running [Amsoil Tractor Hydraulic/Transmission Oil](#), product code ATH, which meets John Deere JDT303 specifications.

[AMSOIL Synthetic Tractor Hydraulic/Transmission Oil](#) is an all-weather Universal Tractor Transmission Oil (UTTO) engineered to meet the tough demands of heavy-duty, hydraulic-powered farm and commercial equipment. Its unique formulation of synthetic base oils and additives effectively reduces wear, resists heat, protects against rust and extends fluid and equipment service life. Synthetic Tractor Hydraulic/Transmission Oil is recommended for extended oil drains based on oil analysis.

[Read More Here](#)



Dealer's Zone

By Don Olson, ZO #4901

API SN Plus: In the Fast Lane

Amid pressure from original equipment manufacturers (OEMs), the American Petroleum Institute (API) is accelerating the release of a supplemental motor oil specification, API SN Plus, to further address low-speed pre-ignition (LSPI). AMSOIL is ahead of the game with three lines of motor oil that achieved 100 percent protection against LSPI.

[Signature Series Synthetic Motor Oil](#)
[XL Synthetic Motor Oil](#)
[OE Synthetic Motor Oil](#)

Preferred Customer Price Increase Jan. 5

Effective Jan. 5, [Preferred Customers](#) are subject to a minimal 5 percent price increase. Even with the price adjustment, Preferred Customers still save up to 25 percent over retail prices. The rest of the market, including competitors like Mobil*, is issuing 6-9 percent price increases to all consumers, and none of them offer a wholesale buying option. The AMSOIL P.C. Program is the best value out there.

Hope everyone has a very happy, healthy and Merry Christmas and a Prosperous New Year!!!