

Results Color Codes

Results outside the normal range are highlighted red Results with borderline values are highlighted yellow

Results within the normal range are highlighted green

Oil Analysis Report

Sample Information Previous Samples Sample Dte: 5/22/20 0 <td< th=""><th></th><th>Name:</th><th></th><th></th><th>Sample Typ</th><th></th><th>Engine</th><th></th></td<>		Name:			Sample Typ		Engine	
Sample ID #: AAA:453 0 0 0 0 0 0 0 Sample Date: 5/22/20 1/0/00 0		Unit ID:			Conditio		GOOD	
Sample Date: 5/2/20 1/0/00 0	Sample Info				_	Previous	s Samples	
Oil Brand: Mobil 1 0		Sample ID #:			-	-	-	•
Viscosity Grade: OW-40 Miles: O 0<					1/0/00	1/0/00	1/0/00	1/0/00
Niles: 6014 Test Results Legend Previous Sample Results Viscosity @ JOC: 0 11.6. cSt Flow Measurement 0					-	-	-	0
Oil Health Test Results Legend Previous Sample Results Viscosity @ 100C: 0 11.6 CSt Flow Measurement 0.0						-	-	-
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Didation Value: 0 44.1 Oil Life 0.0 0.0 0.0 0.0 Suel Dilution: 0 2.56 Contamination 0 0 0 0 Water: Negative Contamination 0 0 0 0 0 Siycol: Negative Contamination 0 0 0 0 0 0 Potassium: 0 2 Contamination 0		alth	Test Results	Legend		Previous Sa	mple Results	
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Negative Contamination 0 0 0 0 0 Slycol: Negative Contamination 0 <td< td=""><td>Oxidation Value:</td><td></td><td>44.1</td><td>Oil Life</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td></td<>	Oxidation Value:		44.1	Oil Life	0.0	0.0	0.0	0.0
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Molybdenum 73 Friction Reducer 0 </td <td></td> <td>Phosphorus</td> <td>1047</td> <td>Anti-Wear</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>		Phosphorus	1047	Anti-Wear	0	0	0	0
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	'iscosity is on the lov	v end of normal w	hile oxidation and fue	el dilution are on the high end of norma	I. Please check pag	ges 2 and 3 for more info	ormation on those.	Otherwise, this sa



Results Color Codes

Results outside the normal range are highlighted red

Results with borderline values are highlighted yellow Results within the normal range are highlighted green

Oil Analysis Report - Explained

		Oil Analysis Repor	rt - Explained	
	Name:	The name of the customer	Sample Type:	The type of equipment the sample was taken from
	Unit ID:	The ID of the equipment sampled	Condition:	The overall condition of the sample
Samp	e Information			
Sample ID #:		ID Number from the sample bottle. Each SPEEDiagnostix sa	mple kit features a unique I	D number that provides traceability for each sample.
Sample Date:		The date the sample was taken. Knowing when samples we		
Oil Brand:		The brand of the oil used. This information can be used to co	ompared the used oil results	to the specifications of the new oil (if available).
Viscosity Grad	e:	The viscosity grade of the oil. The results of the lab viscosity	test is compared to the new	v oil viscosity to gauge the health of the oil.
Mileage:		The number of miles on the oil. This is critical information in	the evaluation and calculat	ion of the wear rate.
(Dil Health	Test Descriptions		
Viscosity @ 10	00C:	Viscosity measurement to check whether or not the oil is sti	ill in the correct viscosity rar	nge. A change in viscosity means a change in oil health.
Oxidation Valu	ie:	Oxidation is the chemical breakdown of the oil. The higher t	he number, the greater the	oxidation, which means greater oil degradation.
Fuel Dilution:		Fuel dilution lowers the viscosity of the oil and indicates tune	e up or fuel delivery problen	ns. POSITIVE indicates abnormal fuel dilution levels.
Water:		The presence of water in the oil indicates a problem. Water	r can come from a coolant le	eak or from extended low temperature operation.
Glycol:		POSITIVE indicates glycol contamination, which typically con	mes from a coolant leak. Gly	col will destroy the lubricating properties of the oil.
Potassium:		Potassium can also indicate coolant contamination, which the	ypically comes from a blown	head gasket. Potassium levels under 10 are normal.
Silicon:		Silicon can come from the anti-foam additive in the oil, airbo	orne dust entering the engir	ne, silicone sealants, or piston and Alusil bore wear.
Additives (ppi	n):	Different types of oil will contain various additives, so the ind	dividual additive types and l	evels will vary according to application.
	Calcium	is a detergent additive that keeps parts clean, prevents rust	and neutralizes acids. It is	typically found in motor oils and transmission fluids.
	Sodium	is also a detergent additive that keeps parts clean and neut	ralizes acids. It is found in so	ome motor oils.
	Magnesium	is also a detergent additive that keeps parts clean and neut	ralizes acids. It is found in so	ome motor oils and transmission fluids.
	Phosphorus	is an anti-wear additive, and it typically comes from ZDDP. I	Phosphorus is a key anti-wea	ar additive, and it is limited in API licensed oils.
	Zinc	is an anti-wear additive and anti-oxidant, and it also comes	from ZDDP. Combined with	Phosphorus, Zinc is a key anti-wear additive in motor oils.
	Molybdenum	is a multi-functional additive. Molybdenum provides anti-we	ear protection, reduces frict	ion and inhibits oxidation.
	Boron	reduces friction and reduces wear. Boron is typically used in	combination with Molybde	num and ZDDP.
Equi	oment Health	Test Descriptions		
Wear Trend:	Wear Metals (ppm):	The parts per million (ppm) of metals in the oil from worn pa	arts in the engine, transmiss	ion, gear box, etc
	Iron	is the main element in steel and cast iron, so the presence c	of iron in the used oil indicate	es wear of cast iron and steel parts. Rust increases Iron leve
	Chromium	is an alloy combined with iron to make steel, so the presenc	e of Chromium in the oil ind	icates wear of steel parts.
	Copper	is an alloy combined with tin to make bronze, which is a con	nmon material used to make	e bushings. Also, copper is used to make Babbitt bearings.
	Tin	is an alloy combined with copper to make bronze, which is a	common material used to	make bushings. Also, tin is used to make Babbitt bearings.
	Lead	is an alloy in Babbitt bearings, which are commonly used in a	automotive engines. Lead is	also an anti-knock compound that is found in leaded fuels.
	Aluminum	is the main element in most pistons, and some engines utiliz	e aluminum cylinder bores.	So, the presence of Aluminum indicates piston and bore we
	Manganese	is an alloy used in Manganese Bronze, which is a high streng	gth bronze often used in valv	e guides. It is also found in Octane boosters.
	Titanium	is a lightweight metal that is sometimes used in racing engi	nes to make parts such as va	alve spring retainers. Also, Titanium is an additive in some o
	Vanadium	is an alloy combined with iron to make steel, so the presenc	e of Vanadium in the oil indi	cates wear of steel parts such as crankshafts or gears.
		The total of all wear metals in parts per million (ppm) from		
	Wear / 1,000 miles:	This is the wear rate, and it is a calculation of the total wear	r metals divided by the num	ber of miles on the oil to yield the rate of wear per 1,000 mi
Comments / R	ecommendations			
*** Wear Trer	d: Statistical analysis of	the trend in wear rates for each wear metal over the history	y of samples taken from this	piece of equipment. The wear trend can help detect
problems befo	e the wear levels ever r	reach caution or warning levels. Taking used oil samples on a	regular basis is important b	ecause wear trend analysis is a powerful tool for extending
the life of equi	oment.			



Results Color Codes - Action Steps

Check sampling method & Re-sample immeadiately.

Re-sample at normal drain interval - Check trend analysis.

No action required - Results are normal.

Warning Caution Good

Oil Analysis Report - Steps To Take

If your report comes back with either a yellow "Caution" or a red "Warning" condition, it can be alarming, especially if the equipment seems to be operating normally. Don't panic, we are here to help. This page provides the steps to take if your report displays a "Caution" or "Warning" condition.

Because of the serious nature of these decisions, it is important to be 100% certain that the data and sample submitted are accurate and representative. The first step is to review the data submitted with the sample. Please ensure the correct information was submitted. The second step is to review the method used to take the sample. An improperly taken sample can cause a false "Caution" or "Warning" condition, so review the recommended sample collection method provided at https://www.speediagnostix.com/taking-a-sample. Once the sample information and sampling method have been verified, the action required for any "Caution" level condition is to resample at the normal drain interval. This provides a conservative opportunity to check the trend analysis. A "Caution" level condition means the results are within acceptable levels, but on the high side of the acceptable range. For a "Caution" level, no other steps need to be taken.

A "Warning" level means the results are beyond acceptable, which means the equipment sampled is at risk. The list of test results and recommended actions below provides the correct steps to take if your report comes back with red "Warning" conditions on one or more individual tests. Besides following the recommended steps below, take another sample as soon as possible to determine the trend analysis. Two samples that both indicate

Titanium sample unused oil to check for the presence of titanium as an oil additive in the fresh oil. Vanadium Typically indicates wear of steel parts such as crankshafts or timing chains and gears. Check filter for debris. Indicates the overall wear metals in the sample. A red "Warning" level on this and other individual wear metals indicates a higher level of severity. Inspect the equipment before continued use of the equipment to prevent catastrophic damage. A red "Warning" level indicates an elevated wear rate. Check the sampling procedure and the recorded mileage or hours on the sample to ensure the sample was taken properly and the actual mileage. Wear / 1,000 miles: or hours were recorded on the sample submission form.)il Health	Recommended Action
Viscosity @ 100c Ingh viscosity reading is due to oxidation. Available Ingh viscosity reading is due to oxidation. Available Ingh oxidation reading means the oil is past its useful life or it contains Ester base oils. If the oil is not Ester based, then reduce the drain interval. If the oil is Ester based, please submit a sample of the ovidation Value unused oil to estabilish the oxidation baseline for your oil. Fuel Dilution: Assisted above, check the injectors or carburetor. Diriy injectors or gummed-up carburetors can cause fuel dilution problems. Check the coolant system for leaks. Blow head gaskets and damaged bores can introduce water into the oiling system. Also, frequently starting an engine during storage without bringing the engine fully up to operating temperature (typically 20 minutes). Givec: Clycci Comes from anti-freeze, so check for coolant system for leaks. Potassium: chem the could as off the coolation, so glycol indicates a coolant leak. Accordingly, check the cooling system for leaks. Potassium: chem the could as off the coolation, so glycol indicates a coolant leak. Accordingly, check the cooling system for leaks. Potassium: chemistic dest bappen by accident, and it can be the cause of "Caution" level conditions. Silicon typically comes from anti-freeze, so check for coolant system for leaks. Recommended Action Wear Metal (Dpm) Any red "Warning" level wear metal results should be taken seriously. Recommended actins and investigations should be hand		
A high oxidation reading means the oil is past its useful life or it contains Ester base oils. If the oil is not Ester based, then reduce the drain interval. If the oil is Ester based, please submit a sample of the Oxidation Value Insued oil to establish the oxidation baseline for your oil. Fuel Dilution As stated above, check the injectors or arburetor. Dirty injectors or gummed-up carburetors can cause fuel diluton problems. Check the coolant system for leaks. Blown head gaskets and damaged bores can introduce water into the oiling system. Also, frequently starting an engine during storage without bringing the engine fully up to operating temperature (anguase a build up of water from condensation. As a result, avoid starting the engine unless it is going to run long enough to get up to a normal operating Water: temperature (typically 20 minutes). Glycol: Glycol comes from Anti-Freeze, so check for coolant system leaks and make sure any funnels used to fill the equipment were not used to fill the radiator. Cross contamination of automotive Potassium typically comes from anti-freeze, so check the air filter and/or breathers on the equipment. High levels of silicon can also come from seals and sealants, so replacing or installing new parts car Silicon: cause the silicon levels to spike. Continued sampling will reval if the silicon cares on the equipment. High levels of silicon can also come from seals and sealants, so replacing or installing new parts car Silicon: Typically indicates plane. Continued sampling will reval. The silicon sam investigations should be handled prompty. I'more Typically indicates plane in the vare. Check leak down and valve lash. Copper Typically indicates bearing were. Teck leak down. Anronium can also come from weat elash. Copper Typically indicates bearing were. Teck leak down. Check Miler for wear debris. Tim Typically indicates bearing were. The check leak down. Check Miler for wear debris. Lead Typically indicates bearing were. The check leak down. Check Miler for wear debris. Tim		
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Water: temperature (typically 20 minutes). Glycol: Glycol: Glycol comes from Anti-Freeze contamination, so glycol indicates a coolant leak. Accordingly, check the cooling system for leaks. Potassium: chemicals does happen by accident, and it can be the cause of "Caution" level conditions. Silicon: cause the silicon levels to spike. Continued sampling will reveal if the silicon came from sealants or from dust and dirt contamination. Good filters with proper fit greatly reduce silicon contamination. upment Health Recommended Action Vear Metals (ppm): Any red "Warning" level wear metal results should be taken seriously. Recommended actions and investigations should be handled prompty. Iron Typically indicates cylinder bore and/or valvetrain wear. Check leak down and valve lash. Copper Typically indicates bearing, bushing or distributor gear wear. Check leak down and valve lash. Copper Typically indicates bearing wear. If copper, tin and lead are all high, bearing damage has likely occurred. Check filter for wear debris. Tim Typically indicates bearing wear. If only lead is high, check fue to read wear and valve lash. Aluminum Typically indicates bearing wear. If only lead is high, check fue to read wear and valve gas as used. Aluminum Typically indicates variang wear. If only lead is high, check fue to read wear and valve gas as used. Manganesez Typically indicates varing wear. If only lead i		
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