

## Machine Id **77061** Component **Diesel Engine** Filuid **DIESEL ENGINE OIL SAE 15W40 (--- QTS) RECOMMENDATION**

Oil and filter change at the time of sampling has been noted. Resample
at the next service interval to monitor. Please specify the brand, type,
and viscosity of the oil on your next sample.

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All component wear rates are normal.

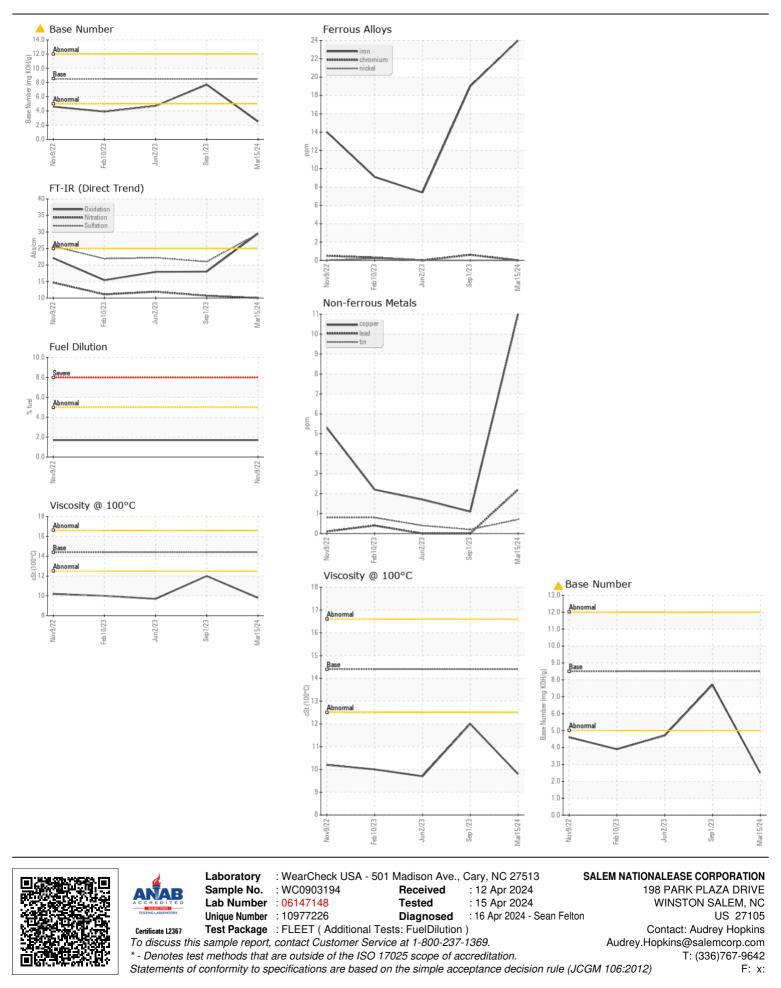
## CONTAMINATION

There is no indication of any contamination in the oil.

## FLUID CONDITION

The BN level is low.

Sample Date Client Info 15 Mar 2024 01 Sep 2023 02 Jun 2023   Machine Age mls Client Info 40357 33704 30588   Oil Age mls Client Info 0 0 0 0   Filter Age mls Client Info 0 0 0 0   Oil Changed Client Info Changed N/A Changed   Filter Changed Client Info Changed N/A Changed   Sample Status Client Info Changed N/A Changed   Iron ppm ASTM D5185m >100 24 19 7   Chromium ppm ASTM D5185m >20 0 <11							
Sample DateClient Info15 Mar 202401 Sep 20230 2 Jun 2023Machine AgemitsClient Info403573370430588Oil AgemitsClient Info000Filter AgemitsClient InfoChangedN/AChangedGil ChangedClient InfoChangedN/AChangedFilter AgemitsClient InfoChangedN/AChangedSample Status-ChangedN/AChangedNORMALIronppmASTM D5165m>40Q00NickelppmASTM D5165m>40Q00NickelppmASTM D5165m>30000SilverppmASTM D5165m>301112TinppmASTM D5165m>301112TinppmASTM D5165m>301112TinppmASTM D5165m>15<1<1<1VanduimppmASTM D5165m>301112TinppmASTM D5165m>15<1<1<1<1ValaduimppmASTM D5165m>15<1<1<1<1ValaduimppmASTM D5165m>15<1<1<1<1<1VisualNONENONENONENONENONENONENONENONENONENONESiliconppmASTM D5165m </th <th>Test</th> <th>UOM</th> <th>Method</th> <th>Limit/Abn</th> <th>Current</th> <th>History1</th> <th>History2</th>	Test	UOM	Method	Limit/Abn	Current	History1	History2
Machine Age mis Client Info 40357 33704 30588   Oil Age mis Client Info 0 0 0   Filter Age mis Client Info Changed N/A Changed   Oil Changed Client Info Changed N/A Changed   Sample Status Client Info Changed N/A Changed   Iron ppm ASTM D5185m >100 24 19 7   Chromium ppm ASTM D5185m >20 0 <10 0   Nickel ppm ASTM D5185m >20 0 0 0   Silver ppm ASTM D5185m >20 6 8 6   Lead ppm ASTM D5185m >20 0 0 0   Vanadium ppm ASTM D5185m >330 11 1 2   Vanadium ppm ASTM D5185m >25 6 7 1   Vanadium ppm <th>Sample Number</th> <th></th> <th>Client Info</th> <th></th> <th>WC0903194</th> <th>WC0852267</th> <th>WC0717653</th>	Sample Number		Client Info		WC0903194	WC0852267	WC0717653
Oil Age mls Client Info 0 0 0 0   Filter Age mls Client Info Changed N/A Changed   Filter Changed Client Info Changed N/A Changed   Sample Status ASTM D5185m >100 24 19 7   Chromium ppm ASTM D5185m >20 0 <1 0   Nickel ppm ASTM D5185m >20 0 <1 0   Silver ppm ASTM D5185m >3 0 0 0   Aluminum ppm ASTM D5185m >30 11 1 2   Tin ppm ASTM D5185m >330 11 1 2   Viand Metal scalar *Visual NONE NONE NONE NONE   Visual NONE NONE NONE NONE NONE NONE   Gopper ppm ASTM D5185m<>25 6 7 11 <t< th=""><th>Sample Date</th><th></th><th>Client Info</th><th></th><th>15 Mar 2024</th><th>01 Sep 2023</th><th>02 Jun 2023</th></t<>	Sample Date		Client Info		15 Mar 2024	01 Sep 2023	02 Jun 2023
Filter Age mls Client Info 0 0 0   Oil Changed Client Info Changed N/A Changed   Filter Changed Client Info Changed N/A Changed   Sample Status ABNORMAL NORMAL ATTENTION   Iron ppm ASTM D5185m >100 24 19 7   Chromium ppm ASTM D5185m >20 0 <1 0   Nickel ppm ASTM D5185m >20 0 0 0   Titanium ppm ASTM D5185m >3 0 0 0   Gopper ppm ASTM D5185m >40 2 0 0   Copper ppm ASTM D5185m >40 0 0 0   Vanadium ppm ASTM D5185m >25 6 7 11   Vanadium ppm ASTM D5185m >25 6 7 11   Vanadium ppm ASTM D5185m	Machine Age	mls	Client Info		40357	33704	30588
Oil Changed Client Info Changed N/A Changed   Filter Changed Client Info Changed N/A Changed   Sample Status Client Info ASIN D5185m >100 24 19 7   Iron ppm ASTM D5185m >20 0 <1 0   Nickel ppm ASTM D5185m >20 0 <1 0   Silver ppm ASTM D5185m >3 0 0 0   Aluminum ppm ASTM D5185m >30 11 1 2   Tin ppm ASTM D5185m >40 2 0 0   Vanadium ppm ASTM D5185m >15 <1 <1 <1   Vanadium ppm ASTM D5185m >20 6 7 11   Vanadium ppm ASTM D5185m >25 6 7 11   Vanadium ppm ASTM D5185m >20 3 5 1	Oil Age	mls	Client Info		0	0	0
Filter Changed Sample Status Client Into Changed ABNORMAL N/A Changed ATTENTION   Iron ppm ASTM D5185m >100 24 19 7   Chromium ppm ASTM D5185m >200 0 <1 0   Nickel ppm ASTM D5185m >20 0 <1 0   Silver ppm ASTM D5185m >3 0 0 0   Aluminum ppm ASTM D5185m >30 0 0 0   Copper ppm ASTM D5185m >30 11 1 2 1   Vanadium ppm ASTM D5185m >15 <1 <1 1 2   Visual NONE NONE NONE NONE NONE NONE NONE   Visual NONE NONE NONE NONE NONE NONE   Visual NONE NONE NONE NONE NONE NONE   Silicon ppm <t< th=""><th>Filter Age</th><th>mls</th><th>Client Info</th><th></th><th>0</th><th>0</th><th>0</th></t<>	Filter Age	mls	Client Info		0	0	0
Sample Status ABNORMAL NORMAL ATTENTION   Iron ppm ASTM D5185m<>100 24 19 7   Chromium ppm ASTM D5185m<>20 0 <1 0   Nickel ppm ASTM D5185m<>4 0 0 0   Silver ppm ASTM D5185m<>3 0 0 0   Aluminum ppm ASTM D5185m<>30 0 0 0   Lead ppm ASTM D5185m<>330 11 1 2   Tin ppm ASTM D5185m<>15 <1 <1 <1   Vanadium ppm ASTM D5185m<>25 6 7 11   Potassium ppm ASTM D5185m<>25 5 <1.0 <1.0 <1.0   Water WC Method >0.2 NORE NONE NONE NONE   Soit % % ASTM D7843 30 0.1 0.7 0.1   Witte Metal scalar *Visual NONE NONE <	Oil Changed		Client Info		Changed	N/A	Changed
Iron ppm ASTM D5185m >100 24 19 7   Chromium ppm ASTM D5185m >20 0 <1 0   Nickel ppm ASTM D5185m >4 0 0 0   Titanium ppm ASTM D5185m >3 0 0 0   Aluminum ppm ASTM D5185m >20 6 8 6   Lead ppm ASTM D5185m >40 2 0 0   Copper ppm ASTM D5185m >40 2 0 0   Vanadium ppm ASTM D5185m >15 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 1 <1 <1 <1 <th>Filter Changed</th> <th></th> <th>Client Info</th> <th></th> <th>Changed</th> <th>N/A</th> <th>Changed</th>	Filter Changed		Client Info		Changed	N/A	Changed
Iron ppm ASTM D5185m >100 24 19 7   Chromium ppm ASTM D5185m >20 0 <1 0   Nickel ppm ASTM D5185m >4 0 0 0   Titanium ppm ASTM D5185m >3 0 0 0   Aluminum ppm ASTM D5185m >20 6 8 6   Lead ppm ASTM D5185m >40 2 0 0   Copper ppm ASTM D5185m >40 2 0 0   Vanadium ppm ASTM D5185m >15 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 1 <1 <1 <1 <th>Sample Status</th> <th></th> <th></th> <th></th> <th>ABNORMAL</th> <th>NORMAL</th> <th>ATTENTION</th>	Sample Status				ABNORMAL	NORMAL	ATTENTION
Chromium pm ASTM D5185m >20 0 <1							
Nickel ppm ASTM D5185m >4 0 0 0   Titanium ppm ASTM D5185m >3 0 0 0   Silver ppm ASTM D5185m >20 6 8 6   Lead ppm ASTM D5185m >20 6 8 6   Lead ppm ASTM D5185m >40 2 0 0   Copper ppm ASTM D5185m >40 2 0 0   Vanadium ppm ASTM D5185m >40 0 0 0   Wate scalar *Visual NONE NONE NONE NONE   Yellow Metal scalar *Visual NONE NONE NONE NONE   Yellow Metal scalar *Visual NONE NONE NONE NONE   Yellow Metal scalar *Visual NONE NORE NEG NEG   Silicon ppm ASTM D784 >3	Iron	ppm	ASTM D5185m	>100	24	19	7
Titanium ppm ASTM D5185m 0 0 0 0   Silver ppm ASTM D5185m >3 0 0 0   Aluminum ppm ASTM D5185m >20 6 8 6   Lead ppm ASTM D5185m >40 2 0 0   Copper ppm ASTM D5185m >15 <1	Chromium	ppm	ASTM D5185m	>20	0	<1	0
Silver ppm ASTM D5185m >3 0 0 0   Aluminum ppm ASTM D5185m >20 6 8 6   Lead ppm ASTM D5185m >40 2 0 0   Copper ppm ASTM D5185m >40 2 0 0   Vanadium ppm ASTM D5185m >15 <1	Nickel	ppm	ASTM D5185m	>4	0	0	0
Aluminum ppm ASTM D5185m >20 6 8 6   Lead ppm ASTM D5185m >40 2 0 0   Copper ppm ASTM D5185m >330 11 1 2   Tin ppm ASTM D5185m >15 <1 <1 <1   Vanadium ppm ASTM D5185m >15 <1 <1 <1   Vanadium ppm ASTM D5185m >15 <1 <1 <1 <1   Vanadium ppm ASTM D5185m >15 <1 <1 <1 <1 <1   Vanadium scalar *Visual NONE NONE NONE NONE NONE   Yellow Metal scalar *Visual NONE NONE NONE NONE NONE NORE   Silicon ppm ASTM D5185m >20 3 5 1 . . . . . . . . .	Titanium	ppm	ASTM D5185m		0	0	0
Lead ppm ASTM D5185m >40 2 0 0   Copper ppm ASTM D5185m >330 11 1 2   Tin ppm ASTM D5185m >15 <1 <1 <1   Vanadium ppm ASTM D5185m 0 0 0 0   White Metal scalar *Visual NONE NONE NONE NONE NONE   Yellow Metal scalar *Visual NONE NONE NONE NONE NONE   Silicon ppm ASTM D5185m >20 3 5 1   Potassium ppm ASTM D5185m >20 3 5 1   Fuel % ASTM D5185m >20 3 5 1   Water WC Method >0.2 NEG NEG NEG   Glycol WC Method >0.2 NEG NEG NEG   Soto % % 'ASTM D7624 >20 10.0 <th>Silver</th> <th>ppm</th> <th>ASTM D5185m</th> <th>&gt;3</th> <th>0</th> <th>0</th> <th>0</th>	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper ppm ASTM D5185m >330 11 1 2   Tin ppm ASTM D5185m >15 <1 <1 <1   Vanadium ppm ASTM D5185m >15 <1 <1 <1   Vanadium ppm ASTM D5185m >10 0 0 0   White Metal scalar *Visual NONE NONE NONE NONE NONE   Yellow Metal scalar *Visual NONE NONE NONE NONE NONE   Silicon ppm ASTM D5185m<>20 3 5 1    Fuel % ASTM D5224 >5 <1.0 <1.0 <1.0   Water WC Method >0.2 NEG NEG NEG   Glycol WC Method >0.2 10.0 10.7 11.9   Sulfation Abs/(mm<*ASTM D7624<>20 10.0 10.7 11.9   Sulfation Abs/(mm<*ASTM D7624<>20 10.0 NORE	Aluminum	ppm	ASTM D5185m	>20	6	8	6
Tin ppm ASTM D5185m >15 <1	Lead	ppm	ASTM D5185m	>40	2	0	0
Vanadium ppm ASTM D5185m 0 0 0 0   White Metal scalar *Visual NONE NONE NONE NONE NONE   Yellow Metal scalar *Visual NONE NONE NONE NONE NONE   Silicon ppm ASTM D5185m >20 3 5 1   Potassium ppm ASTM D5185m >20 3 5 1   Fuel % ASTM D5185m >20 3 5 1   Water WC Method >0.2 NEG NEG NEG   Glycol WC Method >0.2 NEG NEG NEG   Soot % % *ASTM D7624 >20 10.0 10.7 11.9   Sulfation Abs/.tmm *ASTM D715 >30 29.4 21.0 22.2   Silt scalar *Visual NONE NONE NONE NONE   Debris scalar *Visual <t< th=""><th>Copper</th><th>ppm</th><th>ASTM D5185m</th><th>&gt;330</th><th>11</th><th>1</th><th>2</th></t<>	Copper	ppm	ASTM D5185m	>330	11	1	2
Vanadium ppm ASTM D5185m 0 0 0 0   White Metal scalar *Visual NONE NONE NONE NONE NONE   Yellow Metal scalar *Visual NONE NONE NONE NONE NONE   Silicon ppm ASTM D5185m >25 6 7 11   Potassium ppm ASTM D5185m >20 3 5 1   Fuel % ASTM D5185m >20 3 5 1   Water WC Method >0.2 NEG NEG NEG   Soot % % *ASTM D7624 >20 10.0 10.7 11.9   Sulfation Abs/tmm<*ASTM D7618 NONE	Tin		ASTM D5185m	>15	<1	<1	<1
Yellow Metal scalar *Visual NONE NONE NONE NONE   Silicon ppm ASTM D5185m<>25 6 7 11   Potassium ppm ASTM D5185m<>20 3 5 1   Fuel % ASTM D5185m<>20 3 5 1   Water WC Method >0.2 NEG NEG NEG   Glycol WC Method >0.2 NEG NEG NEG   Soot % % *ASTM D7844<>3 0.1 0.7 0.1   Nitration Abs/cm *ASTM D7624<>20 10.0 10.7 11.9   Sulfation Abs/tmm *ASTM D7415<>30 29.4 21.0 22.2   Silt scalar *Visual NONE NONE NONE   Debris scalar *Visual NOR NORE NORE   Appearance scalar *Visual NORM NORML NORML NORM   Appearance scalar *Visual	Vanadium		ASTM D5185m		0	0	0
Silicon ppm ASTM D5185m< >25 6 7 11   Potassium ppm ASTM D5185m >20 3 5 1   Fuel % ASTM D5185m >20 3 5 1   Fuel % ASTM D5185m >20 3 5 1   Water WC Method >0.2 NEG NEG NEG Seg   Glycol WC Method >0.2 NEG NEG NEG Seg   Soot % % *ASTM D7844 >3 0.1 0.7 0.1   Nitration Abs/cm *ASTM D7624 >20 10.0 10.7 11.9   Sulfation Abs/cm *ASTM D7844 >30 0.1 0.7 0.1   Debris scalar *Visual NONE NONE NONE NONE   Appearance scalar *Visual NORML NORML NORML NORML NORML   Gotor scalar *Visual	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Silicon ppm ASTM D5185m< >25 6 7 11   Potassium ppm ASTM D5185m >20 3 5 1   Fuel % ASTM D5185m >20 3 5 1   Fuel % ASTM D5185m >20 3 5 1   Water WC Method >0.2 NEG NEG NEG Seg   Glycol WC Method >0.2 NEG NEG NEG Seg   Soot % % *ASTM D7844 >3 0.1 0.7 0.1   Nitration Abs/cm *ASTM D7624 >20 10.0 10.7 11.9   Sulfation Abs/cm *ASTM D7844 >30 0.1 0.7 0.1   Debris scalar *Visual NONE NONE NONE NONE   Appearance scalar *Visual NORML NORML NORML NORML NORML   Gotor scalar *Visual	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Potassium ppm ASTM D5185m >20 3 5 1   Fuel % ASTM D3524 >5 <1.0 <1.0 <1.0   Water WC Method >0.2 NEG NEG NEG   Glycol WC Method NEG NEG NEG Seg   Soot % % *ASTM D7844 >3 0.1 0.7 0.1   Nitration Abs/cm *ASTM D7624 >20 10.0 10.7 11.9   Sulfation Abs/.tm *ASTM D715 >30 29.4 21.0 22.2   Silt scalar *Visual N							
Fuel % ASTM D3524 >5 <1.0	Silicon	ppm	ASTM D5185m	>25	6	7	11
Water WC Method >0.2 NEG NEG NEG   Glycol WC Method NEG NEG NEG NEG   Soot % % *ASTM D7844 >3 0.1 0.7 0.1   Nitration Abs/cm *ASTM D7624 >20 10.0 10.7 11.9   Sulfation Abs/cm *ASTM D7115 >30 29.4 21.0 22.2   Silt scalar *Visual NONE NONE NONE NONE   Appearance scalar *Visual NORM NORML NORML NORML   Odor scalar *Visual NOR NORML NORML NORML   Emulsified Water scalar *Visual	Potassium	ppm	ASTM D5185m	>20	3	5	1
Glycol WC Method NEG NEG NEG   Soot % % *ASTM D7844 >3 0.1 0.7 0.1   Nitration Abs/cm *ASTM D7624 >20 10.0 10.7 11.9   Sulfation Abs/cm *ASTM D7624 >20 10.0 10.7 11.9   Sulfation Abs/cm *ASTM D7624 >20 10.0 10.7 11.9   Sulfation Abs/cm *ASTM D7615 >30 29.4 21.0 22.2   Silt scalar *Visual NONE NONE NONE NONE NONE   Debris scalar *Visual NONE NONE NONE NONE NORM   Appearance scalar *Visual NORML NORML NORML NORML NORML   Odor scalar *Visual >0.2 NEG NEG NEG   Sodium ppm ASTM D5185m >158 5 2 2 2	Fuel	%	ASTM D3524	>5	<1.0	<1.0	<1.0
Soot % % *ASTM D7844 >3 0.1 0.7 0.1   Nitration Abs/cm *ASTM D7624 >20 10.0 10.7 11.9   Sulfation Abs/lmm *ASTM D7624 >20 29.4 21.0 22.2   Silt scalar *Visual NONE NONE NONE NONE NONE   Debris scalar *Visual NONE NONE NONE NONE NONE   Sand/Dirt scalar *Visual NOR NOR NOR NOR NOR   Appearance scalar *Visual NOR NORML NORML NORML NORML   Odor scalar *Visual NOR NOR NORML NORML NORML   Emulsified Water scalar *Visual >0.2 NEG NEG NEG   Sodium ppm ASTM D5185m 100 0 <1 0   Magnesium ppm ASTM D5185m 100 78 <th>Water</th> <th></th> <th>WC Method</th> <th>&gt;0.2</th> <th>NEG</th> <th>NEG</th> <th>NEG</th>	Water		WC Method	>0.2	NEG	NEG	NEG
Nitration Abs/cm *ASTM D7624 >20 10.0 10.7 11.9   Sulfation Abs/.1mm *ASTM D7415 >30 29.4 21.0 22.2   Silt scalar *Visual NONE NONE NONE NONE NONE   Debris scalar *Visual NONE NONE NONE NONE NONE   Sand/Dirt scalar *Visual NOR NORE NONE NORE NORE   Appearance scalar *Visual NORML <td< th=""><th>Glycol</th><th></th><th>WC Method</th><th></th><th>NEG</th><th>NEG</th><th>NEG</th></td<>	Glycol		WC Method		NEG	NEG	NEG
Sulfation Abs/.tmm *ASTM D7415 >30 29.4 21.0 22.2   Silt scalar *Visual NONE NONE NONE NONE NONE   Debris scalar *Visual NONE NONE NONE NONE NONE   Sand/Dirt scalar *Visual NONE NONE NONE NONE   Appearance scalar *Visual NORML NORML NORML NORML NORML   Odor scalar *Visual NORL NORML NORML NORML NORML   Emulsified Water scalar *Visual >0.2 NEG NEG NEG   Sodium ppm ASTM D5185m 250 92 12 31   Barium ppm ASTM D5185m 250 92 12 31   Manganese ppm ASTM D5185m 100 0 <1 0   Magnesium ppm ASTM D5185m 100 78 70 <th>Soot %</th> <th>%</th> <th>*ASTM D7844</th> <th>&gt;3</th> <th>0.1</th> <th>0.7</th> <th>0.1</th>	Soot %	%	*ASTM D7844	>3	0.1	0.7	0.1
Siltscalar*VisualNONENONENONENONENONEDebrisscalar*VisualNONENONENONENONENONESand/Dirtscalar*VisualNONENONENONENONENONEAppearancescalar*VisualNORMNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMNORMLNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGSodiumppmASTM D5185m>158522BoronppmASTM D5185m250921231BariumppmASTM D5185m1000<10MolybdenumppmASTM D5185m100787094ManganeseppmASTM D5185m3000935982844PhosphorusppmASTM D5185m1150681900678ZincppmASTM D5185m13507771116830SulfurppmASTM D5185m4250254731552705OxidationAbs/1mm'ASTM D28668.529.518.017.9Base Number (BN)mg KOHgASTM D28968.5<2.57.74.7	Nitration	Abs/cm	*ASTM D7624	>20	10.0	10.7	11.9
Debrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNONENONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLNORMLNORMIOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGSodiumppmASTM D5185m>158522BoronppmASTM D5185m250921231BariumppmASTM D5185m100<10MolybdenumppmASTM D5185m100787094ManganeseppmASTM D5185m3000935982844PhosphorusppmASTM D5185m1150681900678ZincppmASTM D5185m13507771116830SulfurppmASTM D5185m4250254731552705OxidationAbs/1mm'ASTM D7141>2529.518.017.9Base Number (BN)mg KOHgASTM D28968.5▲ 2.57.74.7	Sulfation	Abs/.1mm	*ASTM D7415	>30	29.4	21.0	22.2
Sand/Dirtscalar*VisualNONENONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGSodiumppmASTM D5185m>158522BoronppmASTM D5185m250921231BariumppmASTM D5185m100<10MolybdenumppmASTM D5185m100787094ManganeseppmASTM D5185m1007885116833CalciumppmASTM D5185m3000935982844PhosphorusppmASTM D5185m1150681900678ZincppmASTM D5185m13507771116830SulfurppmASTM D5185m4250254731552705OxidationAbs/1mm'ASTM D28668.529.518.017.9Base Number (BN)mg KOHgASTM D28968.5A2.57.74.7	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearancescalar*VisualNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGSodiumppmASTM D5185m>158522BoronppmASTM D5185m250921231BariumppmASTM D5185m100<10MolybdenumppmASTM D5185m100787094ManganeseppmASTM D5185m450485851683CalciumppmASTM D5185m3000935982844PhosphorusppmASTM D5185m1150681900678ZincppmASTM D5185m13507771116830SulfurppmASTM D5185m4250254731552705OxidationAbs/1mm'ASTM D28968.5 <b>2</b> .57.74.7	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Odor scalar *Visual NORML NOR NORML NOR NORML NOR NORML NO	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Emulsified Water scalar *Visual >0.2 NEG NEG NEG   Sodium ppm ASTM D5185m >158 5 2 2   Boron ppm ASTM D5185m 250 92 12 31   Barium ppm ASTM D5185m 10 0 <1 0   Molybdenum ppm ASTM D5185m 100 78 70 94   Manganese ppm ASTM D5185m 6 <1 2   Magnesium ppm ASTM D5185m 683 851 683   Calcium ppm ASTM D5185m 3000 935 982 844   Phosphorus ppm ASTM D5185m 1150 681 900 678   Zinc ppm ASTM D5185m 1350 777 1116 830   Sulfur ppm ASTM D5185m 4250 2547 3155 2705   Oxidation Abs/.1mm<*ASTM D2896 8.5 2.5 7.	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Sodium ppm ASTM D5185m<>158 5 2 2   Boron ppm ASTM D5185m 250 92 12 31   Barium ppm ASTM D5185m 10 0 <1 0   Molybdenum ppm ASTM D5185m 100 78 70 94   Manganese ppm ASTM D5185m 100 78 <1 2   Magnesium ppm ASTM D5185m 100 78 <1 2   Magnesium ppm ASTM D5185m 450 485 851 683   Calcium ppm ASTM D5185m 3000 935 982 844   Phosphorus ppm ASTM D5185m 1150 681 900 678   Zinc ppm ASTM D5185m 1350 777 1116 830   Sulfur ppm ASTM D5185m 4250 2547 3155 2705   Oxidation Abs/.1mm<*ASTM D7414 >25 29.5 <th>Odor</th> <th>scalar</th> <th>*Visual</th> <th>NORML</th> <th>NORML</th> <th>NORML</th> <th>NORML</th>	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Boron ppm ASTM D5185m 250 92 12 31   Barium ppm ASTM D5185m 10 0 <1 0   Molybdenum ppm ASTM D5185m 100 78 70 94   Manganese ppm ASTM D5185m 100 78 <1 2   Magnesium ppm ASTM D5185m 6 <1 2   Magnesium ppm ASTM D5185m 485 851 683   Calcium ppm ASTM D5185m 3000 935 982 844   Phosphorus ppm ASTM D5185m 1150 681 900 678   Zinc ppm ASTM D5185m 1350 777 1116 830   Sulfur ppm ASTM D5185m 4250 2547 3155 2705   Oxidation Abs/.1mm<*ASTM D7414 >25 29.5 18.0 17.9   Base Number (BN) mg KOH/g ASTM D2896 8.5 2.5	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Boron ppm ASTM D5185m 250 92 12 31   Barium ppm ASTM D5185m 10 0 <1 0   Molybdenum ppm ASTM D5185m 100 78 70 94   Manganese ppm ASTM D5185m 100 78 <1 2   Magnesium ppm ASTM D5185m 6 <1 2   Magnesium ppm ASTM D5185m 485 851 683   Calcium ppm ASTM D5185m 3000 935 982 844   Phosphorus ppm ASTM D5185m 1150 681 900 678   Zinc ppm ASTM D5185m 1350 777 1116 830   Sulfur ppm ASTM D5185m 4250 2547 3155 2705   Oxidation Abs/.1mm<*ASTM D7414 >25 29.5 18.0 17.9   Base Number (BN) mg KOH/g ASTM D2896 8.5 2.5					_		
Barium ppm ASTM D5185m 10 0 <1							
Molybdenum ppm ASTM D5185m 100 78 70 94   Manganese ppm ASTM D5185m 100 78 6 <1 2   Magnesium ppm ASTM D5185m 450 485 851 683   Calcium ppm ASTM D5185m 3000 935 982 844   Phosphorus ppm ASTM D5185m 1150 681 900 678   Zinc ppm ASTM D5185m 1350 777 1116 830   Sulfur ppm ASTM D5185m 4250 2547 3155 2705   Oxidation Abs.1mm<*ASTM D7414 >25 29.5 18.0 17.9   Base Number (BN) mg KOH/g ASTM D2896 8.5 ▲ 2.5 7.7 4.7							
Manganese ppm ASTM D5185m 6 <1							
Magnesium ppm ASTM D5185m 450 485 851 683   Calcium ppm ASTM D5185m 3000 935 982 844   Phosphorus ppm ASTM D5185m 1150 681 900 678   Zinc ppm ASTM D5185m 1350 777 1116 830   Sulfur ppm ASTM D5185m 4250 2547 3155 2705   Oxidation Abs/.1mm *ASTM D7414 >25 29.5 18.0 17.9   Base Number (BN) mg KOH/g ASTM D2896 8.5 ▲ 2.5 7.7 4.7	-			100			
Calcium ppm ASTM D5185m 3000 935 982 844   Phosphorus ppm ASTM D5185m 1150 681 900 678   Zinc ppm ASTM D5185m 1350 777 1116 830   Sulfur ppm ASTM D5185m 4250 2547 3155 2705   Oxidation Abs/.1mm *ASTM D7144 >25 29.5 18.0 17.9   Base Number (BN) mg KOH/g ASTM D2896 8.5 ▲ 2.5 7.7 4.7				4=0			
Phosphorus ppm ASTM D5185m 1150 681 900 678   Zinc ppm ASTM D5185m 1350 777 1116 830   Sulfur ppm ASTM D5185m 4250 2547 3155 2705   Oxidation Abs/.1mm *ASTM D7414 >25 29.5 18.0 17.9   Base Number (BN) mg KOH/g ASTM D2896 8.5 ▲ 2.5 7.7 4.7	0						
Zinc ppm ASTM D5185m 1350 777 1116 830   Sulfur ppm ASTM D5185m 4250 2547 3155 2705   Oxidation Abs.1mm *ASTM D7414 >25 29.5 18.0 17.9   Base Number (BN) mg KOH/g ASTM D2896 8.5 ▲ 2.5 7.7 4.7							
Sulfur ppm ASTM D5185m 4250 2547 3155 2705   Oxidation Abs/.1mm *ASTM D7414 >25 29.5 18.0 17.9   Base Number (BN) mg KOH/g ASTM D2896 8.5 4 2.5 7.7 4.7		ppm					
Oxidation Abs/.1mm *ASTM D7414 >25 29.5 18.0 17.9   Base Number (BN) mg KOH/g ASTM D2896 8.5 4 2.5 7.7 4.7					777		
Base Number (BN) mg KOH/g ASTM D2896 8.5 ▲ 2.5 7.7 4.7		ppm				3155	2705
Visc @ 100°C cSt ASTM D445 14.4 \ 9.8 / 12.0   9.7	( )	mg KOH/g	ASTM D2896		<b>A</b> 2.5	7.7	4.7
	Visc @ 100°C	cSt	ASTM D445	14.4	9.8	12.0	9.7



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