

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id **3700C**

Component Natural Gas Engine

PETRO CANADA DURON GEO LD 15W40 (46 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0050272 GFL0042520 GFL003086 Sample Date Client Info 10450 10450 04450 Machine Age hrs Client Info 150 582 173 Oil Changed Client Info 150 582 173 Oil Changed Client Info Not Changed Not Changed Not Changed Sample Status Image Not Changed Not Changed Not Changed Chromium ppm ASTM 05185m 50 9 9 7 Chromium ppm ASTM 05185m 54 -1 -1 -1 Nickel ppm ASTM 05185m 54 -1 -1 -1 Nickel ppm ASTM 05185m 53 0 -1 0 0 Auminum ppm ASTM 05185m 53 -1 -1 -1 -1 Lead ppm ASTM 05185m 54 -1 -1 -1 -1	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 10450 10450 10450 Oil Age hrs Client Info 150 582 173 Oil Changed Client Info Not Changed Not Changed Not Changed Sample Status method Imit/base current NoRMAL NoRMAL VEAR METALS method Imit/base current history1 history2 Iron ppm ASTM D5165m >4 <1 <1 <1 Nickel ppm ASTM D5165m >2 0 0 0 Silver ppm ASTM D5165m >3 0 <1 0 Aluminum ppm ASTM D5165m >3 0 <1 0 Cadadium ppm ASTM D5165m >3 0 <1 <1 Vanadium ppm ASTM D5165m >4 <1 <1 <1 Vanadium ppm ASTM D5165m 5 <4 <1 <1 <th>Sample Number</th> <th></th> <th>Client Info</th> <th></th> <th>GFL0050272</th> <th>GFL0042520</th> <th>GFL0033086</th>	Sample Number		Client Info		GFL0050272	GFL0042520	GFL0033086
Oil Age hrs Client Info 150 582 173 Oil Changed Client Info Not Changd Not Changd Not Changed Sample Status Imit/base current history1 history2 Iron ppm ASTM D5185m >50 9 9 7 Chromium ppm ASTM D5185m >2 0 0 0 Nickel ppm ASTM D5185m >2 0 0 0 Nickel ppm ASTM D5185m >3 0 <1 0 Nickel ppm ASTM D5185m >9 2 2 1 1 Lead ppm ASTM D5185m >9 2 2 1 1 Lead ppm ASTM D5185m >30 0 <1 0 0 Cadmium ppm ASTM D5185m >35 <1 <1 0 0 Cadmium ppm ASTM D5185m 50 55	Sample Date		Client Info		26 Aug 2022	10 Jun 2022	04 Apr 2022
Oil Changed Sample Status Client Info Not Changd NORMAL NorMAL NorMAL WEAR METALS method limit/base current history1 history2 Iron ppm ASTM 05185m >50 9 9 7 Chromium ppm ASTM 05185m >4 <1 <1 <1 Nickel ppm ASTM 05185m >2 0 0 0 Silver ppm ASTM 05185m >3 0 <11 0 Aluminum ppm ASTM 05185m >3 0 <1 0 Lead ppm ASTM 05185m >35 <1 <1 <1 Tin ppm ASTM 05185m >30 0 0 0 Canadium ppm ASTM 05185m >30 0 0 0 Canadium ppm ASTM 05185m 0 0 0 0 Boron ppm ASTM 05185m 50 4 10 25 Barium ppm ASTM 05185m 50 5 54 54 Maganese ppm ASTM 05185m 50 56 54 54 Magnesium ppm ASTM 05185m </th <th>Machine Age</th> <th>hrs</th> <th>Client Info</th> <th></th> <th>10450</th> <th>10450</th> <th>10450</th>	Machine Age	hrs	Client Info		10450	10450	10450
Sample Status method limit/base current history1 NORMAL WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 9 9 7 Chromium ppm ASTM D5185m >4 <1 <1 <1 Nickel ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >3 0 <1 0 Aluminum ppm ASTM D5185m >9 2 2 1 1 Lead ppm ASTM D5185m >9 2 2 1 1 Lead ppm ASTM D5185m >30 0 <1 1 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 50 55 54 54 Boron ppm ASTM D5185m <t< th=""><th>Oil Age</th><th>hrs</th><th>Client Info</th><th></th><th>150</th><th>582</th><th>173</th></t<>	Oil Age	hrs	Client Info		150	582	173
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 9 9 7 Chromium ppm ASTM D5185m >4 <1 <1 <1 Nickel ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >3 0 <1 0 Aluminum ppm ASTM D5185m >3 0 <1 0 Lead ppm ASTM D5185m >9 2 2 1 <1 Lead ppm ASTM D5185m >9 2 2 1 <1 Lead ppm ASTM D5185m >0 0 0 0 0 Copper ppm ASTM D5185m 0 0 0 0 0 Cademium ppm ASTM D5185m 5 5 5 5 5 5 5 5 5	Oil Changed		Client Info		Not Changd	Changed	Not Changd
Iron ppm ASTM D5185m >50 9 9 7 Chromium ppm ASTM D5185m >4 <1 <1 <1 Nickel ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >3 0 <1 0 Aluminum ppm ASTM D5185m >30 0 <1 0 Lead ppm ASTM D5185m >30 0 <1 0 Copper ppm ASTM D5185m >30 0 <1 <1 <1 Tin ppm ASTM D5185m >30 0 0 0 0 Cadmium ppm ASTM D5185m >4 <1 <1 <1 <1 Vanadium ppm ASTM D5185m 50 5 54 54 Boron ppm ASTM D5185m 50 55 54 54 Magnaese ppm ASTM D5185m <t< th=""><th>Sample Status</th><th></th><th></th><th></th><th>NORMAL</th><th>NORMAL</th><th>NORMAL</th></t<>	Sample Status				NORMAL	NORMAL	NORMAL
Chromium ppm ASTM D5185m >4 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >2 0 0 0 Titanium ppm ASTM D5185m >3 0 <1 0 Silver ppm ASTM D5185m >3 0 <1 0 Aluminum ppm ASTM D5185m >30 0 <1 0 Lead ppm ASTM D5185m >30 0 <1 1 Copper ppm ASTM D5185m >35 <1 <1 <1 Tin ppm ASTM D5185m >35 <1 <1 <1 <1 Vanadium ppm ASTM D5185m 35 <1 0 0 0 Cadmium ppm ASTM D5185m 5 <1 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 55 54 54 Magnesium ppm ASTM D5185m	Iron	ppm	ASTM D5185m	>50	9	9	7
Titanium ppm ASTM D5185m 0 0 0 Silver ppm ASTM D5185m >3 0 <1 0 Aluminum ppm ASTM D5185m >9 2 2 1 Lead ppm ASTM D5185m >30 0 <1 0 Copper ppm ASTM D5185m >35 <1 <1 <1 Tin ppm ASTM D5185m >35 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 4 10 25 Boron ppm ASTM D5185m 5 <1 0 0 Molybdenum ppm ASTM D5185m 5 <1 0 0 Magnesium ppm ASTM D5185m 5 54 54 Magnesium ppm ASTM D5185m 160 1607 1627 1601	Chromium	ppm	ASTM D5185m	>4	<1	<1	<1
Silver ppm ASTM D5185m >3 0 <1	Nickel	ppm	ASTM D5185m	>2	0	0	0
Aluminum ppm ASTM D5185m >9 2 2 1 Lead ppm ASTM D5185m >30 0 <1 0 Copper ppm ASTM D5185m >35 <1 <1 <1 Tin ppm ASTM D5185m >4 <1 <1 <1 Vanadium ppm ASTM D5185m >4 <1 <1 <1 Vanadium ppm ASTM D5185m >4 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 50 4 10 25 Barium ppm ASTM D5185m 50 55 54 54 Magnaese ppm ASTM D5185m 50 583 591 596 Calcium ppm ASTM D5185m 780 698 692 820 Zinc ppm ASTM D5185m >40 2469 <td< th=""><th>Titanium</th><th>ppm</th><th>ASTM D5185m</th><th></th><th>0</th><th>0</th><th>0</th></td<>	Titanium	ppm	ASTM D5185m		0	0	0
Lead ppm ASTM D5185m >30 0 <1	Silver	ppm	ASTM D5185m	>3	0	<1	0
Copper ppm ASTM D5185m >35 <1	Aluminum	ppm	ASTM D5185m	>9	2	2	1
Tin ppm ASTM D5185m >4 <1	Lead	ppm	ASTM D5185m	>30	0	<1	0
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 4 10 25 Barium ppm ASTM D5185m 50 4 10 0 Manganese ppm ASTM D5185m 50 55 54 54 Manganese ppm ASTM D5185m 0 <1	Copper	ppm	ASTM D5185m	>35	<1	<1	<1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 4 10 25 Barium ppm ASTM D5185m 50 4 10 25 Barium ppm ASTM D5185m 50 51 54 54 Manganese ppm ASTM D5185m 50 55 54 54 Manganese ppm ASTM D5185m 50 583 591 596 Calcium ppm ASTM D5185m 560 583 591 596 Calcium ppm ASTM D5185m 780 698 692 820 Zinc ppm ASTM D5185m 740 2326 2469 2073 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 0 <th< th=""><th>Tin</th><th>ppm</th><th>ASTM D5185m</th><th>>4</th><th><1</th><th><1</th><th><1</th></th<>	Tin	ppm	ASTM D5185m	>4	<1	<1	<1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 4 10 25 Barium ppm ASTM D5185m 5 <1 0 0 Molybdenum ppm ASTM D5185m 50 55 54 54 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 560 583 591 596 Calcium ppm ASTM D5185m 780 698 692 820 Zinc ppm ASTM D5185m 780 698 692 820 Zinc ppm ASTM D5185m 70 950 968 987 Sulfur ppm ASTM D5185m 2040 2326 2469 2073 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 50 4 10 25 Barium ppm ASTM D5185m 5 <1 0 0 Molybdenum ppm ASTM D5185m 50 55 54 54 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 560 583 591 596 Calcium ppm ASTM D5185m 1510 1607 1627 1601 Phosphorus ppm ASTM D5185m 780 698 692 820 Zinc ppm ASTM D5185m 780 950 968 987 Sulfur ppm ASTM D5185m 2040 2326 2469 2073 CONTAMINANTS method imit/base current history1 history2 Silicon ppm ASTM D5185m >+100 3 4 4 Sodium ppm ASTM D5185m >20 <th>Cadmium</th> <th>ppm</th> <th>ASTM D5185m</th> <th></th> <th>0</th> <th>0</th> <th>0</th>	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 5 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 50 55 54 54 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 560 583 591 596 Calcium ppm ASTM D5185m 1510 1607 1627 1601 Phosphorus ppm ASTM D5185m 780 698 692 820 Zinc ppm ASTM D5185m 780 950 968 987 Sulfur ppm ASTM D5185m 870 950 968 987 Sulfur ppm ASTM D5185m 870 950 968 987 Sulfur ppm ASTM D5185m 2040 2326 2469 2073 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base	Boron	ppm	ASTM D5185m	50	4	10	25
Manganese ppm ASTM D5185m 0 <1	Barium	ppm	ASTM D5185m	5	<1	0	0
Magnesium ppm ASTM D5185m 560 583 591 596 Calcium ppm ASTM D5185m 1510 1607 1627 1601 Phosphorus ppm ASTM D5185m 780 698 692 820 Zinc ppm ASTM D5185m 870 950 968 987 Sulfur ppm ASTM D5185m 2040 2326 2469 2073 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 3 4 4 Sodium ppm ASTM D5185m >+20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/.mm *ASTM D7624 >20 12.1 11.7 9.1 Sulfation Abs/.limm *ASTM D7415 >30<	Molybdenum	ppm	ASTM D5185m	50	55	54	54
Calcium ppm ASTM D5185m 1510 1607 1627 1601 Phosphorus ppm ASTM D5185m 780 698 692 820 Zinc ppm ASTM D5185m 870 950 968 987 Sulfur ppm ASTM D5185m 2040 2326 2469 2073 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 3 4 4 Sodium ppm ASTM D5185m >+20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7414 >20 12.1 11.7 9.1 Sulfation Abs/.1mm *ASTM D7415 >30 23.4 21.6 20.4 FLUID DEGRADATION method limit/base	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 780 698 692 820 Zinc ppm ASTM D5185m 870 950 968 987 Sulfur ppm ASTM D5185m 2040 2326 2469 2073 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 3 4 4 Sodium ppm ASTM D5185m >+100 3 4 4 Sodium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 12.1 11.7 9.1 Sulfation Abs/.tmm *ASTM D7415 >30 23.4 21.6 20.4 FLUID DEGRADATION Method limit/base cur	Magnesium	ppm	ASTM D5185m	560	583	591	596
Zinc ppm ASTM D5185m 870 950 968 987 Sulfur ppm ASTM D5185m 2040 2326 2469 2073 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 3 4 4 Sodium ppm ASTM D5185m >+100 3 4 4 Sodium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 12.1 11.7 9.1 Sulfation Abs/.tmm *ASTM D715 >30 23.4 21.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D7414 >25 <th>Calcium</th> <th>ppm</th> <th>ASTM D5185m</th> <th>1510</th> <th>1607</th> <th>1627</th> <th>1601</th>	Calcium	ppm	ASTM D5185m	1510	1607	1627	1601
Sulfur ppm ASTM D5185m 2040 2326 2469 2073 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 3 4 4 Sodium ppm ASTM D5185m >+100 3 4 4 Sodium ppm ASTM D5185m >20 0 0 2 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 12.1 11.7 9.1 Sulfation Abs/cm *ASTM D7624 >20 12.4 21.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 18.8 17.3	Phosphorus	ppm	ASTM D5185m	780	698	692	820
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 3 4 4 Sodium ppm ASTM D5185m >+100 3 4 4 Sodium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 12.1 11.7 9.1 Sulfation Abs/.1mm *ASTM D7415 >30 23.4 21.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 18.8 17.3	Zinc	ppm	ASTM D5185m	870	950	968	987
Silicon ppm ASTM D5185m >+100 3 4 4 Sodium ppm ASTM D5185m >100 8 7 7 Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 12.1 11.7 9.1 Sulfation Abs/.tmm *ASTM D7415 >30 23.4 21.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D7414 >25 20.1 18.8 17.3	Sulfur	ppm	ASTM D5185m	2040	2326	2469	2073
Sodium ppm ASTM D5185m 8 7 7 Potassium ppm ASTM D5185m<>20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 12.1 11.7 9.1 Sulfation Abs/.1mm *ASTM D7415 >30 23.4 21.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 18.8 17.3	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 0 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 12.1 11.7 9.1 Sulfation Abs/.1mm *ASTM D7415 >30 23.4 21.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 18.8 17.3	Silicon	ppm	ASTM D5185m	>+100	3	4	4
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 12.1 11.7 9.1 Sulfation Abs/.1mm *ASTM D7415 >30 23.4 21.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 18.8 17.3	Sodium	ppm	ASTM D5185m		8	7	7
Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 12.1 11.7 9.1 Sulfation Abs/.1mm *ASTM D7415 >30 23.4 21.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 18.8 17.3	Potassium	ppm	ASTM D5185m	>20	0	0	2
Nitration Abs/cm *ASTM D7624 >20 12.1 11.7 9.1 Sulfation Abs/.1mm *ASTM D7415 >30 23.4 21.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 18.8 17.3	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 23.4 21.6 20.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 18.8 17.3	Soot %	%	*ASTM D7844		0.1	0.1	0
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.1 18.8 17.3	Nitration	Abs/cm	*ASTM D7624	>20	12.1	11.7	9.1
Oxidation Abs/.1mm *ASTM D7414 >25 20.1 18.8 17.3	Sulfation	Abs/.1mm	*ASTM D7415	>30	23.4	21.6	20.4
	FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 10.2 5.1 5.2 7.8	Oxidation	Abs/.1mm	*ASTM D7414	>25	20.1	18.8	17.3
	Base Number (BN)	mg KOH/g	ASTM D2896	10.2	5.1	5.2	7.8

Report Id: GFL018 [WUSCAR] 05628713 (Generated: 07/17/2023 15:53:37) Rev: 1

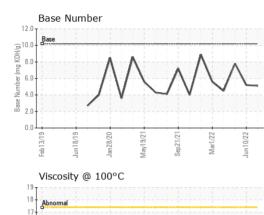


cSt (100°C) 13 Abno

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Feb13/19

OIL ANALYSIS REPORT

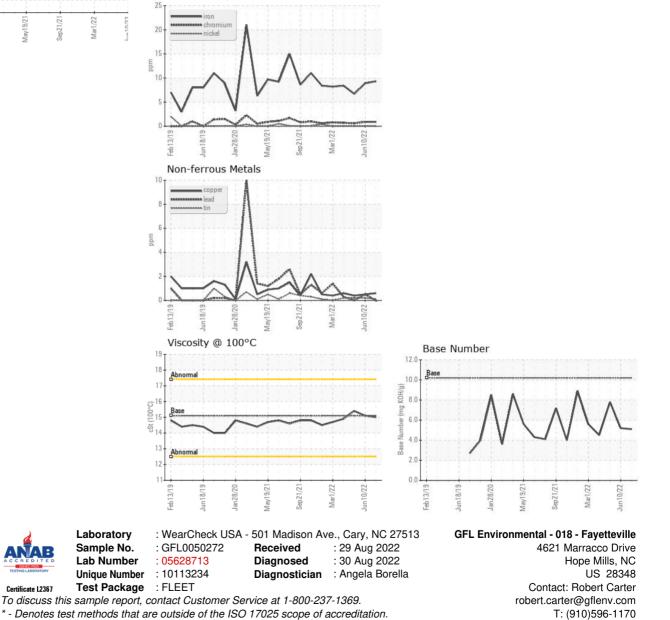


Jan28/20

Mav19/21

VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.1	15.0	15.1	15.4
GRAPHS						

Ferrous Alloys



Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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