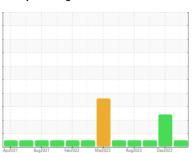


OIL ANALYSIS REPORT

Sample Rating Trend







Machine Id
4664M
Component
Diesel Engine
Fluid

PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

Fuel content negligible. There is no indication of any contamination in the oil.

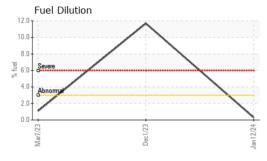
Fluid Condition

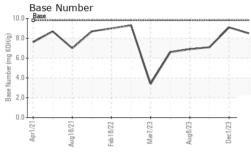
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

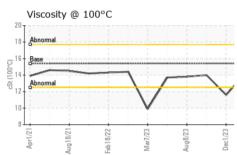
SAMPLE INFORMATION method limit/base current history1 history2	N SHP 15W40 (- GAL)	Apr2021	Aug2021 Feb2022	Mar2023 Aug2023 De	c2023	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 15536 15228 14859 143388 14338 14338 14338 14338 14338 14338 14338 14338 14338 14338 14338	Sample Number		Client Info		GFL0108848	GFL0101478	GFL0093173
Oil Age hrs Client Info 15228 14859 14338 Oil Changed Sample Status Client Info Changed Changed Not Changed Not Changed North Chang	Sample Date		Client Info		12 Jan 2024	01 Dec 2023	17 Oct 2023
Coli Changed Changed Nor Changed	Machine Age	hrs	Client Info		15536	15228	14859
NORMAL SEVERE NORMAL CONTAMINATION method mini/base current history1 history2	Oil Age	hrs	Client Info		15228	14859	14338
CONTAMINATION method limit/base current history1 history2	Oil Changed		Client Info		Changed	Not Changd	Changed
Water WC Method >0.2 NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >90 9 24 31 Chromium ppm ASTM D5185m >20 <1 0 <1 Nickel ppm ASTM D5185m >2 0 0 <1 Silver ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >20 2 2 5 Lead ppm ASTM D5185m >40 <1 0 0 Copper ppm ASTM D5185m >330 <1 6 1 Tin ppm ASTM D5185m 0 1 25 1 Quandium ppm ASTM D5185m 0 1 25 <t< td=""><td>Sample Status</td><td></td><td></td><td></td><th>NORMAL</th><td>SEVERE</td><td>NORMAL</td></t<>	Sample Status				NORMAL	SEVERE	NORMAL
WEAR METALS	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >90 9 24 31 Chromium ppm ASTM D5185m >20 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Part	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1 0 <1 Nickel ppm ASTM D5185m >2 0 0 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>90	9	24	31
Silver	Chromium	ppm	ASTM D5185m	>20	<1	0	<1
Silver	Nickel	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	Titanium		ASTM D5185m	>2	0	0	0
Lead ppm ASTM D5185m >40 <1 0 0 Copper ppm ASTM D5185m >330 <1 6 1 Tin ppm ASTM D5185m >15 <1 0 0 Vanadium ppm ASTM D5185m <1 0 0 0 Cadmium ppm ASTM D5185m 0 1 25 1 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 00 <1 2 0 Magnesium ppm ASTM D5185m 1070 1053 1246 1096 Phosphorus ppm ASTM D5185m 1270 1325 1132 1259 Sulfur ppm ASTM D5185m 2060 3207	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >330 <1 6 1 Tin ppm ASTM D5185m >15 <1	Aluminum	ppm	ASTM D5185m	>20	2	2	5
Tin ppm ASTM D5185m > 1.5 <1 0 0 0 Vanadium ppm ASTM D5185m	Lead	ppm	ASTM D5185m	>40	<1	0	0
Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 25 1 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 46 62 46 62 Manganese ppm ASTM D5185m 0 <1 2 0 Magnesium ppm ASTM D5185m 1010 1021 600 945 Calcium ppm ASTM D5185m 1070 1053 1246 1096 Phosphorus ppm ASTM D5185m 1270 1325 1132 1259 Sulfur ppm ASTM D5185m 2060 3207 2762 3047 CONTAMINANTS method limit/base curre	Copper	ppm	ASTM D5185m	>330	<1	6	1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 25 1 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 60 60 46 62 Manganese ppm ASTM D5185m 0 <1 2 0 Magnesium ppm ASTM D5185m 1010 1021 600 945 Calcium ppm ASTM D5185m 1070 1053 1246 1096 Phosphorus ppm ASTM D5185m 1270 1325 1132 1259 Sulfur ppm ASTM D5185m 2060 3207 2762 3047 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 <td>Tin</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>15</td> <th><1</th> <td>0</td> <td>0</td>	Tin	ppm	ASTM D5185m	>15	<1	0	0
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	0	0
Boron ppm ASTM D5185m 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 60 46 62 Manganese ppm ASTM D5185m 0 <1 2 0 Magnesium ppm ASTM D5185m 1010 1021 600 945 Calcium ppm ASTM D5185m 1070 1053 1246 1096 Phosphorus ppm ASTM D5185m 1150 1105 955 1014 Zinc ppm ASTM D5185m 1270 1325 1132 1259 Sulfur ppm ASTM D5185m 2060 3207 2762 3047 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 7 14 Sodium ppm ASTM D5185m >20 2 0 6 Fuel % ASTM D5185m	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 60 46 62 Manganese ppm ASTM D5185m 0 <1	7.00111120					1010191	,
Manganese ppm ASTM D5185m 0 <1 2 0 Magnesium ppm ASTM D5185m 1010 1021 600 945 Calcium ppm ASTM D5185m 1070 1053 1246 1096 Phosphorus ppm ASTM D5185m 1150 1105 955 1014 Zinc ppm ASTM D5185m 1270 1325 1132 1259 Sulfur ppm ASTM D5185m 2060 3207 2762 3047 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 7 14 Sodium ppm ASTM D5185m >20 2 0 6 Fuel % ASTM D5185m >20 2 0 6 Fuel % ASTM D5185m >20 2 0 6 Fuel % ASTM D5185m >20		ppm					
Magnesium ppm ASTM D5185m 1010 1021 600 945 Calcium ppm ASTM D5185m 1070 1053 1246 1096 Phosphorus ppm ASTM D5185m 1150 1105 955 1014 Zinc ppm ASTM D5185m 1270 1325 1132 1259 Sulfur ppm ASTM D5185m 2060 3207 2762 3047 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 7 14 Sodium ppm ASTM D5185m >20 2 0 6 Fuel % ASTM D5844 >6	Boron		ASTM D5185m	0	1	25	1
Calcium ppm ASTM D5185m 1070 1053 1246 1096 Phosphorus ppm ASTM D5185m 1150 1105 955 1014 Zinc ppm ASTM D5185m 1270 1325 1132 1259 Sulfur ppm ASTM D5185m 2060 3207 2762 3047 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 7 14 Sodium ppm ASTM D5185m >20 2 0 6 Fuel % ASTM D585m >3.0 0.3 11.7 <1.0	Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	1 0	25 0	1
Phosphorus ppm ASTM D5185m 1150 1105 955 1014 Zinc ppm ASTM D5185m 1270 1325 1132 1259 Sulfur ppm ASTM D5185m 2060 3207 2762 3047 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 7 14 Sodium ppm ASTM D5185m >20 2 0 6 Fuel % ASTM D5185m >20 2 0 6 Fuel % ASTM D5185m >20 2 0 6 Fuel % ASTM D3524 >3.0 0.3 11.7 <1.0	Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	1 0 60	25 0 46	1 0 62
Zinc ppm ASTM D5185m 1270 1325 1132 1259 Sulfur ppm ASTM D5185m 2060 3207 2762 3047 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 7 14 Sodium ppm ASTM D5185m 3 3 7 Potassium ppm ASTM D5185m >20 2 0 6 Fuel % ASTM D5185m >20 2 0 6 Soot % % *ASTM D7844 >6 0.2 0.2 0.9 Nitration Abs/cm *ASTM D7415 >30 18.3 20.0	Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	1 0 60 <1	25 0 46 2	1 0 62 0
Sulfur ppm ASTM D5185m 2060 3207 2762 3047 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 7 14 Sodium ppm ASTM D5185m 3 3 7 Potassium ppm ASTM D5185m >20 2 0 6 Fuel % ASTM D3524 >3.0 0.3 11.7 <1.0	Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	1 0 60 <1 1021	25 0 46 2 600	1 0 62 0 945
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 7 14 Sodium ppm ASTM D5185m 3 3 7 Potassium ppm ASTM D5185m >20 2 0 6 Fuel % ASTM D3524 >3.0 0.3 11.7 <1.0	Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	1 0 60 <1 1021 1053	25 0 46 2 600 1246	1 0 62 0 945 1096
Silicon ppm ASTM D5185m >25 5 7 14 Sodium ppm ASTM D5185m 3 3 7 Potassium ppm ASTM D5185m >20 2 0 6 Fuel % ASTM D3524 >3.0 0.3 11.7 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.2 0.2 0.9 Nitration Abs/cm *ASTM D7624 >20 6.5 9.3 10.0 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 20.0 20.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 18.5 17.3	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	1 0 60 <1 1021 1053 1105	25 0 46 2 600 1246 955	1 0 62 0 945 1096 1014
Sodium ppm ASTM D5185m 3 3 7 Potassium ppm ASTM D5185m >20 2 0 6 Fuel % ASTM D3524 >3.0 0.3 11.7 <1.0	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	1 0 60 <1 1021 1053 1105 1325	25 0 46 2 600 1246 955 1132	1 0 62 0 945 1096 1014 1259
Potassium ppm ASTM D5185m >20 2 0 6 Fuel % ASTM D3524 >3.0 0.3 11.7 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.2 0.2 0.9 Nitration Abs/cm *ASTM D7624 >20 6.5 9.3 10.0 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 20.0 20.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 18.5 17.3	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	1 0 60 <1 1021 1053 1105 1325 3207	25 0 46 2 600 1246 955 1132 2762	1 0 62 0 945 1096 1014 1259 3047
Fuel % ASTM D3524 >3.0 0.3	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	1 0 60 <1 1021 1053 1105 1325 3207 current	25 0 46 2 600 1246 955 1132 2762 history1	1 0 62 0 945 1096 1014 1259 3047 history2
INFRA-RED	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	1 0 60 <1 1021 1053 1105 1325 3207 current	25 0 46 2 600 1246 955 1132 2762 history1	1 0 62 0 945 1096 1014 1259 3047 history2
Soot % % *ASTM D7844 > 6 0.2 0.2 0.9 Nitration Abs/cm *ASTM D7624 > 20 6.5 9.3 10.0 Sulfation Abs/.1mm *ASTM D7415 > 30 18.3 20.0 20.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 > 25 14.4 18.5 17.3	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	1 0 60 <1 1021 1053 1105 1325 3207 current 5	25 0 46 2 600 1246 955 1132 2762 history1 7	1 0 62 0 945 1096 1014 1259 3047 history2
Nitration Abs/cm *ASTM D7624 >20 6.5 9.3 10.0 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 20.0 20.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 18.5 17.3	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	1 0 60 <1 1021 1053 1105 1325 3207 current 5 3	25 0 46 2 600 1246 955 1132 2762 history1 7 3	1 0 62 0 945 1096 1014 1259 3047 history2 14 7 6
Sulfation Abs/.1mm *ASTM D7415 >30 18.3 20.0 20.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 18.5 17.3	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0	1 0 60 <1 1021 1053 1105 1325 3207 current 5 3 2 0.3	25 0 46 2 600 1246 955 1132 2762 history1 7 3 0	1 0 62 0 945 1096 1014 1259 3047 history2 14 7 6 <1.0
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 18.5 17.3	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm	ASTM D5185m	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20 >3.0	1 0 60 <1 1021 1053 1105 1325 3207 current 5 3 2 0.3	25 0 46 2 600 1246 955 1132 2762 history1 7 3 0 11.7	1 0 62 0 945 1096 1014 1259 3047 history2 14 7 6 <1.0
Oxidation	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm	ASTM D5185m	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20 >3.0 limit/base	1 0 60 <1 1021 1053 1105 1325 3207 current 5 3 2 0.3	25 0 46 2 600 1246 955 1132 2762 history1 7 3 0 11.7 history1 0.2	1 0 62 0 945 1096 1014 1259 3047 history2 14 7 6 <1.0 history2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base	1 0 60 <1 1021 1053 1105 1325 3207 current 5 3 2 0.3 current	25 0 46 2 600 1246 955 1132 2762 history1 7 3 0 11.7 history1 0.2 9.3	1 0 62 0 945 1096 1014 1259 3047 history2 14 7 6 <1.0 history2 0.9 10.0
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D76145	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >6 >20 >30	1 0 60 <1 1021 1053 1105 1325 3207 current 5 3 2 0.3 current 0.2 6.5 18.3	25 0 46 2 600 1246 955 1132 2762 history1 7 3 0 11.7 history1 0.2 9.3 20.0	1 0 62 0 945 1096 1014 1259 3047 history2 14 7 6 <1.0 history2 0.9 10.0 20.3
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAI	ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7624 *ASTM D7415 method	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base	1 0 60 60 <1 1021 1053 1105 1325 3207 current 5 3 2 0.3 current 0.2 6.5 18.3 current	25 0 46 2 600 1246 955 1132 2762 history1 7 3 0 11.7 history1 0.2 9.3 20.0 history1	1 0 62 0 945 1096 1014 1259 3047 history2 14 7 6 <1.0 history2 0.9 10.0 20.3 history2



OIL ANALYSIS REPORT



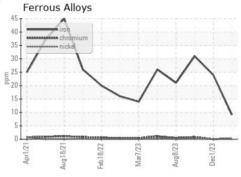




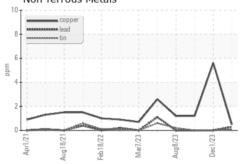
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

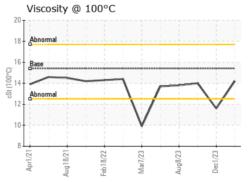
FLUID PROP	ERHES	method			history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.2	▲ 11.6	14.0

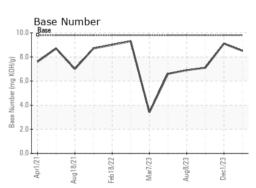
GRAPHS



Non-ferrous Metals











Laboratory Sample No. Lab Number **Unique Number**

: GFL0108848 : 06064832 : 10836214

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved : 18 Jan 2024 Diagnosed

: 23 Jan 2024 Diagnostician : Wes Davis

Test Package : FLEET (Additional Tests: PercentFuel) To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

GFL Environmental - 415 - Michigan East

6200 Elmridge Sterling Heights, MI US 48313 Contact: Frank Wolak fwolak@gflenv.com T: (586)825-9514

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