

OIL ANALYSIS REPORT

Sample Rating Trend

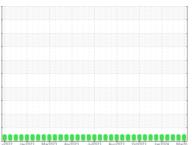
NORMAL



MACK 913016 Component

Diesel Engine Fluid

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

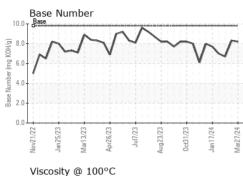


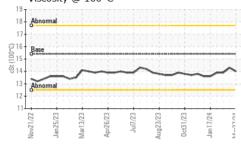


accommendation Sample Number Client Info GFL015915 GFL0115915 GFL0115815 GFL011581 GFL011581 GFL011581 GFL011581 GFL011581 GFL011581 GFL0115815 GFL0115815 </th <th>DIAGNOSIS</th> <th></th> <th></th> <th></th> <th>limit/base</th> <th>Juizoza Augzoza Octzoza Ja current</th> <th>history1</th> <th>history2</th>	DIAGNOSIS				limit/base	Juizoza Augzoza Octzoza Ja current	history1	history2
Sample Data Client Info 27 Mar 2024 11 Mar 2024 21 Feb 2024 tomponent wear rates are normal. Onl Age Ins Client Info 27 Mar 2024 11 Mar 2024 21 Feb 2024 trainer user rates are normal. Onl Age Ins Client Info 4930 4826 4705 onl Age Ins Client Info 228 121 636 onl Changed Client Info Not Changd Not Changd Changed wild Condition The Simple Status Instance Not Changd NEG NEG vild Condition the output for the output service. WC Method 3.0 <1.0					-11111/0456			, , , , , , , , , , , , , , , , , , ,
Per- Icomponent text rates are normain- ontamination tere is indication of any contamination in the Normain text is indication of any contamination of the Normain text is indication of any contamination of the Normain text is indication of any contamination of the Normain text is suitable for further service. Normain text is indication of any contamination of the Normain text is indication of any contamination of the Normain text is indication of any contamination of the Normain is indication of any contamination of the Normain text is indication of the Normain text is indication of the Normain text is indication of the Normain text is indication of the Normain text is indication of the Normain text is indication of the Normain text is indication of the Normain text is indication of the Normain text is indication of the Normain text is indication of the Normain text is indication of the Normain text is indication text is indication text is indication of the Normain text is indication of the Normain text is indication text is indicatin text is indicating text is i								
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Ontamination there is no indication of any contamination in the . Oil Changed Sample Status Oil Into the NORMAL NorRMAL NorRMAL NorRMAL NorRMAL NorRMAL I contamination of any contamination in the . is suitable for further service. Image: Status image:		-						
Sample Status NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL uil Condition ne SN roadition of the Suitable CONTAMINATION method Imit/base current history1 history1 Fuel WC Method >3.0 <1.0	al component wear rates are normal.	-	nrs					
CONTAMINATION method imit/base current history1 history2 vid Condition eBN result indicates that there is suitable kalinity remaining in the oil. The condition of the lis suitable for further service. The condition of the Water WC Method >3.0 <1.0	Contamination	-		Client Info		-		Ũ
Lind Condition Fuel WC Method >3.0 <1.0	here is no indication of any contamination in the il.				11 1. 4			
Mater WC Method >0.2 NEG NEG NEG Suitable for further service. Glycol WC Method NEG NEG NEG Wear Qlycol WC Method Innit/base current History/I History/I Wear ppm ASTM D515m >120 4 2 19 Chromium ppm ASTM D515m >20 -11 0 1 Nicel ppm ASTM D515m >20 -11 0 0 Silver ppm ASTM D515m >20 -11 0 0 Qopper ppm ASTM D515m >20 2 1 2 Lead ppm ASTM D515m >10 -1 2 Tim <ppm< td=""> ASTM D515m >10 -1 1 1 Vanadium ppm ASTM D515m 0 0 0 0 Calcinum ppm ASTM D515m 0 0 -1 1</ppm<>	uid Condition		ION					
Bit is suitable for further service. Glycal WC Method Imatbase current NEG NEG NEG Iron ppm ASTM 05156 >120 4 2 19 Ohromium ppm ASTM 05156 >20 4 2 19 Ohromium ppm ASTM 05156 >20 4 2 10 Nickel ppm ASTM 05156 >20 2 1 2 Lead ppm ASTM 05156 >20 2 1 2 Lead ppm ASTM 05156 >300 0 -1 0 Cargoper ppm ASTM 05156 >300 0 0 0 Vanadium ppm ASTM 05156 >300 0 0 0 0 Cardinum ppm ASTM 05156 0 0 0 0 0 0 Molybdenum ppm ASTM 05156 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0<	he BN result indicates that there is suitable							
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM 0518m >120 4 2 19 Othromium ppm ASTM 0518m >50 <1	kalinity remaining in the oil. The condition of the				>0.2			
Iron ppm ASTM D5185m >12.0 4 2 19 Chromium ppm ASTM D5185m >2.0 <1	I is suitable for further service.	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM DS165m >20 <1 0 1 Nickel ppm ASTM DS165m >2 0 0 0 Silver ppm ASTM DS165m >2 0 <1		WEAR METAL	.S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >5 <1 <1 3 Ttranium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >20 2 1 0 Aluminum ppm ASTM D5185m >20 2 1 0 Lead ppm ASTM D5185m >300 0 <1		Iron	ppm	ASTM D5185m	>120	4	2	19
Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >20 2 1 2 Auminum ppm ASTM D5185m >20 2 1 2 Lead ppm ASTM D5185m >40 0 -<1 0 Copper ppm ASTM D5185m >330 0 -<1 2 Vanadium ppm ASTM D5185m >15 <1 <1 1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method imit/base current history1 History2 Boron ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 2 7 2 Barium ppm ASTM D5185m 0 0 0 0 0 0 Coladiaum ppm ASTM D518		Chromium	ppm	ASTM D5185m	>20	<1	0	1
Silver ppm ASTM D518m >2 0 <1 0 Aluminum ppm ASTM D518m >20 2 1 2 Lead ppm ASTM D518m >20 0 <1 0 Copper ppm ASTM D518m >330 0 <1 1 Vanadium ppm ASTM D518m >15 <1 <1 1 Vanadium ppm ASTM D518m >15 <1 <1 1 Vanadium ppm ASTM D518m 0 0 0 0 Cadmium ppm ASTM D518m 0 2 7 2 Barium ppm ASTM D518m 0 0 0 0 Molybdenum ppm ASTM D518m 0 0 0 0 0 Magnesium ppm ASTM D518m 1010 941 965 1022 Calcium ppm ASTM D518m 1070 1003 1063 1063 Sulfar ppm ASTM D518m 1010 941 <td></td> <td>Nickel</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>5</td> <th><1</th> <td><1</td> <td>3</td>		Nickel	ppm	ASTM D5185m	>5	<1	<1	3
Auminum ppm ASTM D5185m >20 2 1 2 Lead ppm ASTM D5185m >40 0 <1		Titanium	ppm	ASTM D5185m	>2	0	0	0
Lead ppm ASTM D5185m >40 0 <1 0 Copper ppm ASTM D5185m >330 0 <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 Cadmium ppm ASTM D5185m 0 0 0 0 ASTM D5185m 0 2 7 2 Barium ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 1102 1102 Calcium ppm ASTM D5185m 1010 941 965 1022 Calcium ppm ASTM D5185m 1070 10335 1063 1109 Phosphorus ppm ASTM D5185m 1270 1221 1248		Silver	ppm	ASTM D5185m	>2	0	<1	0
Copper ppm ASTM D5185m >330 0 <1 2 Tin ppm ASTM D5185m >15 <1		Aluminum	ppm	ASTM D5185m	>20	2	1	2
Tin ppm ASTM D5185m<>15 <1 <1 1 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 7 2 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 -1 -1 Magnesse ppm ASTM D5185m 0 0 -1 -1 Magnesium ppm ASTM D5185m 1010 941 965 1022 Calcium ppm ASTM D5185m 1070 1035 1063 1109 Phosphorus ppm ASTM D5185m 1150 1009 1062 1022 Zinc ppm ASTM D5185m 1270 1231 1248 1310 Suifur ppm ASTM D5185m 2060 3370 3563 </td <td></td> <td>Lead</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>40</td> <th>0</th> <td><1</td> <td>0</td>		Lead	ppm	ASTM D5185m	>40	0	<1	0
Tin ppm ASTM D5185m <1		Copper	ppm	ASTM D5185m	>330	0	<1	2
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 0 2 7 2 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 01 0 <1				ASTM D5185m	>15	<1	<1	1
Cadimium ppm ASTM D5/85m 0 0 0 ADDITIVES method limit/base current history1 Boron ppm ASTM D5/85m 0 2 7 2 Barium ppm ASTM D5/85m 0 0 0 0 Molybdenum ppm ASTM D5/85m 0 56 62 67 Magnesium ppm ASTM D5/85m 1010 941 965 1022 Calcium ppm ASTM D5/85m 1070 1035 1063 1109 Phosphorus ppm ASTM D5/85m 1270 1231 1248 1310 Sulfur ppm ASTM D5/85m 260 3370 3563 3066 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5/85m >25 4 3 8 Sodium ppm ASTM D5/85m >26 3 4 4 Potassium ppm ASTM D5/85m >20 1 0 <td></td> <td>Vanadium</td> <td></td> <td>ASTM D5185m</td> <td></td> <th>0</th> <td>0</td> <td>0</td>		Vanadium		ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 2 7 2 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 56 62 67 Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 941 965 1022 Calcian ppm ASTM D5185m 1010 941 965 1022 Calcian ppm ASTM D5185m 1010 941 965 1022 Calcian ppm ASTM D5185m 1070 1035 1063 1022 Zinc ppm ASTM D5185m 1270 1231 1248 1310 Sulfur ppm ASTM D5185m 2060 3370 3563 3066 CONTAMINANTS method imit/base current history1 history2 Sliicon ppm ASTM D5185m >20 1 0 4 Potassium ppm ASTM D5185m		Cadmium				0		0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 56 62 67 Manganese ppm ASTM D5185m 0 0 -1 -1 Magnesium ppm ASTM D5185m 1010 941 965 1022 Calcium ppm ASTM D5185m 1070 1035 1063 1109 Phosphorus ppm ASTM D5185m 1070 1035 1063 1027 Zinc ppm ASTM D5185m 1270 1231 1248 1310 Sulfur ppm ASTM D5185m 2060 3370 3563 3066 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 1 0 4 Potassium ppm ASTM D5185m >20 1 0 4 Notressium ppm ASTM D7844		ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 56 62 67 Manganese ppm ASTM D5185m 0 0 <1		Boron	ppm	ASTM D5185m	0	2	7	2
Marganese pr ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 941 965 1022 Calcium ppm ASTM D5185m 1070 1035 1063 1109 Phosphorus ppm ASTM D5185m 1150 1009 1062 1027 Zinc ppm ASTM D5185m 1270 1231 1248 1310 Sulfur ppm ASTM D5185m 2060 3370 3563 3066 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 1 0 4 Potassium ppm ASTM D5185m >20 1 0 4 Nitration ppm ASTM D5185m >20 1 0 4 Potassium ppm ASTM D5185m >20 1 0 4 Nitration Abs/cm<*ASTM D7844		Barium	ppm	ASTM D5185m	0	0	0	0
Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 941 965 1022 Calcium ppm ASTM D5185m 1070 1035 1063 1109 Phosphorus ppm ASTM D5185m 1150 1009 1062 1027 Zinc ppm ASTM D5185m 1270 1231 1248 1310 Sulfur ppm ASTM D5185m 2060 3370 3563 3066 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 8 Sodium ppm ASTM D5185m >20 1 0 4 Potassium ppm ASTM D5185m >20 1 0 4 Ntreation ASTM D5185m >20 1 0 4 4 Potassium ppm ASTM D5185m >20 1 0 4 4 Ntreation Abs/cm		Molybdenum	ppm	ASTM D5185m	60	56	62	67
Magnesium ppm ASTM D5185m 1010 941 965 1022 Calcium ppm ASTM D5185m 1070 1035 1063 1109 Phosphorus ppm ASTM D5185m 1150 1009 1062 1027 Zinc ppm ASTM D5185m 1270 1231 1248 1310 Sulfur ppm ASTM D5185m 2060 3370 3563 3066 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 8 Sodium ppm ASTM D5185m >20 1 0 4 Potassium ppm ASTM D5185m >20 1 0 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.5 0.3 0.9 Nitration Abs/Im *ASTM D7624 >20 7.2 6.2 9.7 Sulfation Abs/Im				ASTM D5185m	0	0	<1	<1
Calcium ppm ASTM D5185m 1070 1035 1063 1109 Phosphorus ppm ASTM D5185m 1150 1009 1062 1027 Zinc ppm ASTM D5185m 1270 1231 1248 1310 Sulfur ppm ASTM D5185m 2060 3370 3563 3066 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 8 Sodium ppm ASTM D5185m >26 1 0 4 Potassium ppm ASTM D5185m >20 1 0 4 NITRACRED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.5 0.3 0.9 Nitration Abs/cm *ASTM D7824 >20 7.2 6.2 9.7 Sulfation Abs/1m *ASTM D7845 >30 19.0 18.3 20.8 FLUID DEGRADATION method		Magnesium		ASTM D5185m	1010		965	1022
Phosphorus ppm ASTM D5185m 1150 1009 1062 1027 Zinc ppm ASTM D5185m 1270 1231 1248 1310 Sulfur ppm ASTM D5185m 2060 3370 3563 3066 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 8 Sodium ppm ASTM D5185m >25 4 3 8 Potassium ppm ASTM D5185m >20 4 4 4 Potassium ppm ASTM D5185m >20 1 0 4 Nitration Abs/cm *ASTM D7624 >20 1 0.3 0.9 Nitration Abs/cm *ASTM D7624 >20 7.2 6.2 9.7 Sulfation Abs/cm *ASTM D7614 >30 19.0 18.3 20.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/cmm		-						1109
Zinc ppm ASTM D5185m 1270 1231 1248 1310 Sulfur ppm ASTM D5185m 2060 3370 3563 3066 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 8 Sodium ppm ASTM D5185m >25 4 3 8 Sodium ppm ASTM D5185m >25 4 3 8 Sodium ppm ASTM D5185m >20 1 0 4 Potassium ppm ASTM D5185m >20 1 0 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.5 0.3 0.9 Nitration Abs/cm *ASTM D7624 >20 7.2 6.2 9.7 Sulfation Abs/imm *ASTM D7815 >30 19.0 18.3 20.8 FLUID DEGRADATION method limit/ba								
SulfurppmASTM D5185m2060337035633066CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>25438SodiumppmASTM D5185m>20104PotassiumppmASTM D5185m>20104INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>40.50.30.9NitrationAbs/cm*ASTM D7624>207.26.29.7SulfationAbs/t1m*ASTM D7415>3019.018.320.8FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/t1m*ASTM D7414>2514.914.216.4								
SiliconppmASTM D5185m>25438SodiumppmASTM D5185mI344PotassiumppmASTM D5185m>20104INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>40.50.30.9NitrationAbs/cm*ASTM D7624>207.26.29.7SulfationAbs/1m*ASTM D7615>3019.018.320.8FLUID DEGRADATION methodlimit/basecurrenthistory1history2OxidationAbs/1m*ASTM D7414>2514.914.216.4								
SodiumppmASTM D5185m344PotassiumppmASTM D5185m>20104INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>40.50.30.9NitrationAbs/cm*ASTM D7624>207.26.29.7SulfationAbs/.1mm*ASTM D7415>3019.018.320.8FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2514.914.216.4		CONTAMINAN	ITS	method	limit/base	current	history1	history2
PotassiumppmASTM D5185m>20104INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>40.50.30.9NitrationAbs/cm*ASTM D7624>207.26.29.7SulfationAbs/.1mm*ASTM D7415>3019.018.320.8FLUID DEGRADATION methodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2514.914.216.4		Silicon	ppm	ASTM D5185m	>25	4	3	8
INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>40.50.30.9NitrationAbs/cm*ASTM D7624>207.26.29.7SulfationAbs/.1mm*ASTM D7415>3019.018.320.8FLUID DEGRADATION methodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2514.914.216.4		Sodium	ppm	ASTM D5185m		3	4	4
Soot % % *ASTM D7844 >4 0.5 0.3 0.9 Nitration Abs/cm *ASTM D7624 >20 7.2 6.2 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.0 18.3 20.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.9 14.2 16.4		Potassium	ppm	ASTM D5185m	>20	1	0	4
Nitration Abs/cm *ASTM D7624 >20 7.2 6.2 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.0 18.3 20.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.9 14.2 16.4		INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 7.2 6.2 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.0 18.3 20.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.9 14.2 16.4		Soot %	%	*ASTM D7844	>4	0.5	0.3	0.9
SulfationAbs/.1mm*ASTM D7415>3019.018.320.8FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2514.914.216.4			Abs/cm					
Oxidation Abs/.1mm *ASTM D7414 >25 14.9 14.2 16.4								
		FLUID DEGRA	DATION	method	limit/base	current	history1	history2
		Oxidation	Abs/ 1mm	*ASTM D7414	>25	14.9	14.2	16.4
						8.2	8.3	6.7

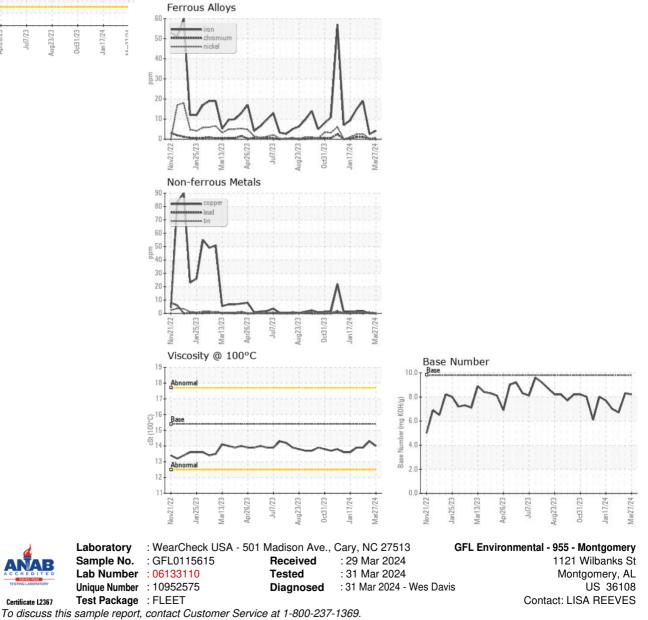


OIL ANALYSIS REPORT





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 PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.0	14.3	13.9
GRAPHS						



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

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

Certificate L2367