



Công ty TNHH Dầu nhờn Chevron Việt Nam

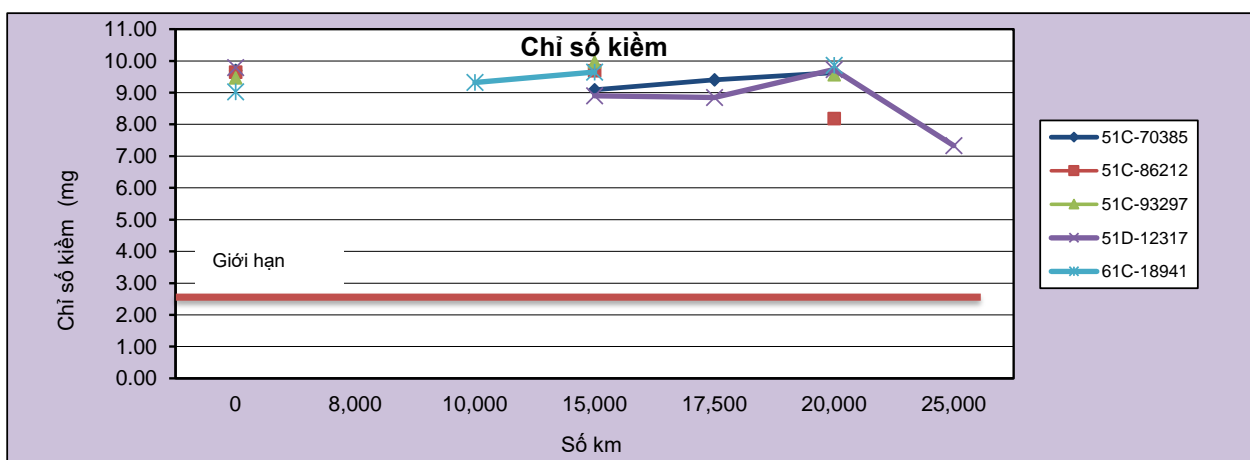
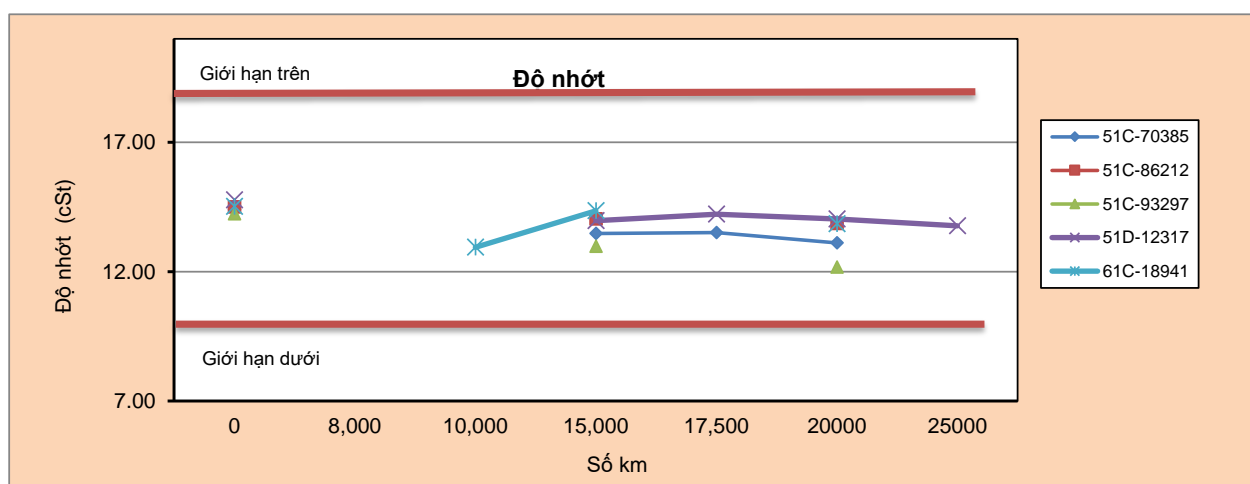
72 Lê Thánh Tôn - Quận 1 - TP. HCM

ĐT: (+84-28) 36280613 Fax: (+84-28) 36280632

BÁO CÁO XÉT NGHIỆM

Tên thiết bị: **Xe tải nặng**
Bộ phận: **Động cơ**
Hãng CT/Model: **Isuzu - Thaco - Maxxforce**
Tên khách hàng: **Công ty TNHH Bình Minh Tải**
Liên lạc:

Số mẫu dầu:
Tên dầu: **Delo 400 MGX 15W-40**
Độ nhớt ban đầu ở 100°C, cSt: **14.6**
Chỉ số kiểm ban đầu, mg KOH/g: **10.1**



Global Lubricants



Our Family of Brands



Công ty TNHH Dầu nhờn Chevron Việt Nam

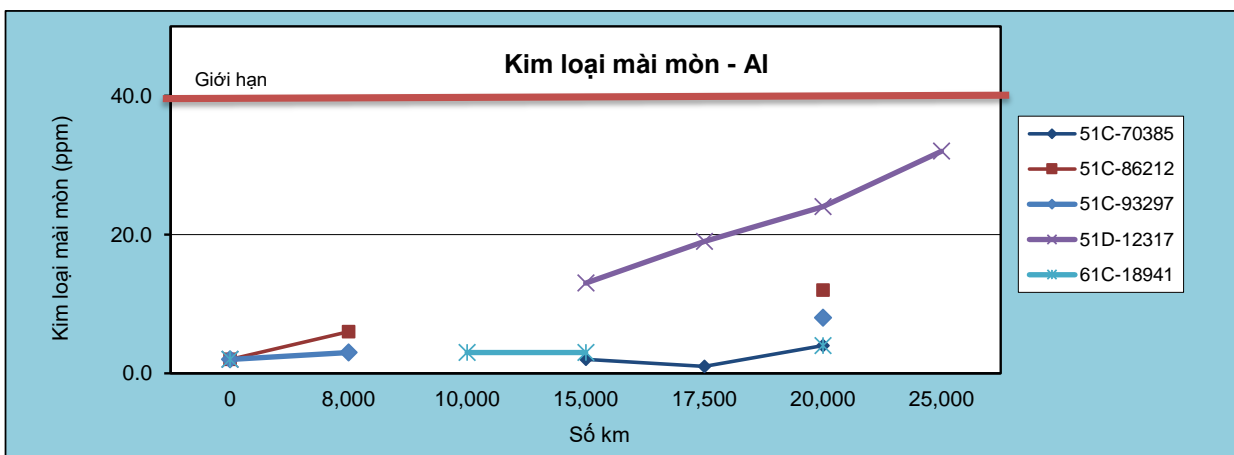
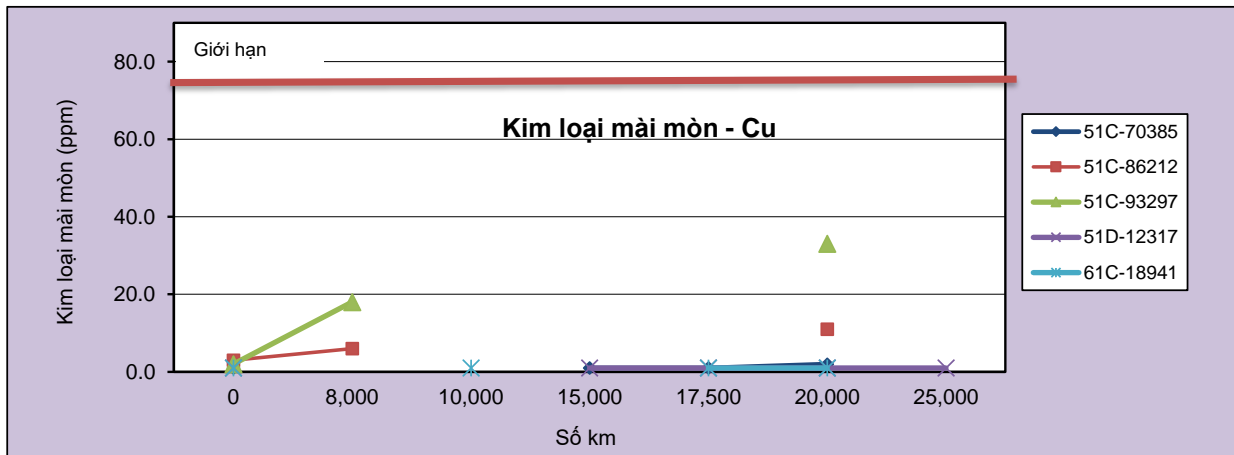
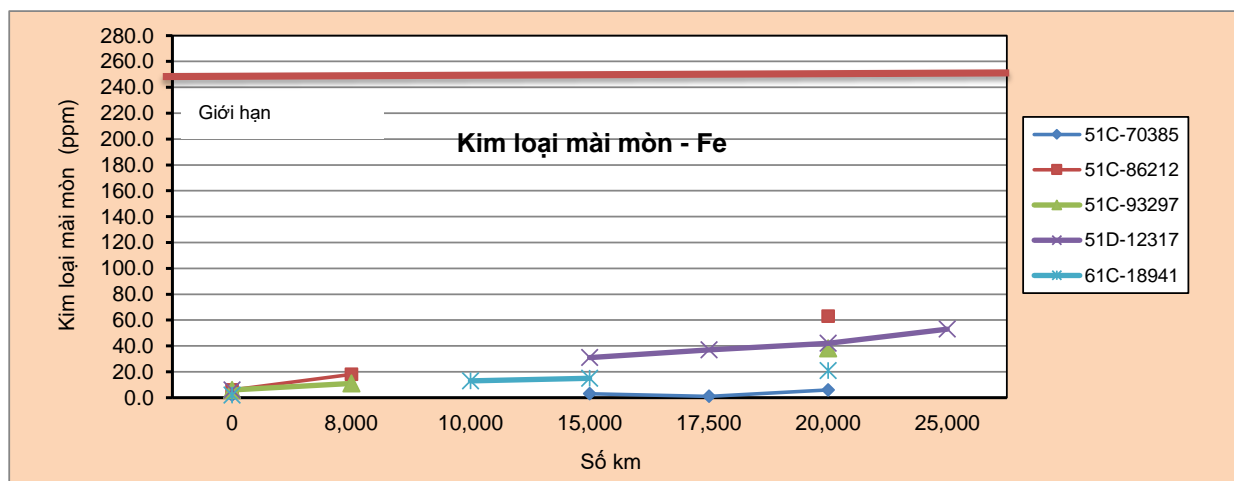
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Hãng CT/Model: **Isuzu - Thaco - Maxxforce**
Tên khách hàng: **Công ty TNHH Bình Minh Tải**
Liên lạc:

Số mẫu dầu:
Tên dầu: **Delo 400 MGX SAE 15W-40**
Độ nhớt ban đầu ở 100°C, cSt: **14.6**
Chỉ số kiểm ban đầu, mg KOH/g: **10.1**



Global Lubricants





Customer Contact

Company Name CHEVRON LUBRICANTS VIETNAM LIMITED
Address L15-06, 15th Floor,
 VINCOM B TOWER, 72 LE THANH TON
 VIETNAM 00000
Contact Number 842836280615
Email duong.luu@chevron.com
Attention Mr DUONG, LUU-THAI

Equipment Information

01298009 / AMO1

Description GLC - BINH MINH TAI
Order No
System Details 51C-70385
Product Name CHEVRON DELO GOLD ULTRA 15W40
Additional Details

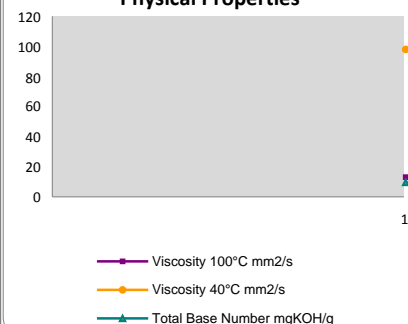
Sample Information

Lab Order Number					L162242
Date Received		-	-	-	02/04/2019
Date Tested		-	-	-	05/04/2019
Date Reported		-	-	-	05/04/2019
Fuel Used					
Equipment Life (km)					-
Oil Life (km)					20000
Oil Added (L)					0
Sampling Date		-	-	-	25/03/2019
Lubricant Condition					Normal

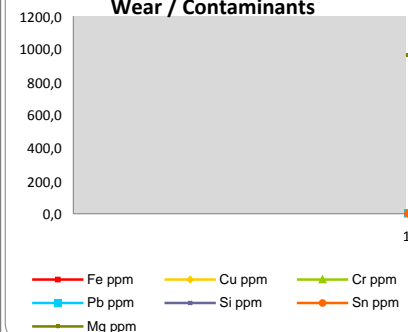
Test Parameters

Metals - Wear					1
Iron ppm	ASTM D5185-09				6
Lead ppm	ASTM D5185-09				3
Copper ppm	ASTM D5185-09				2
Chromium ppm	ASTM D5185-09				<1
Aluminium ppm	ASTM D5185-09				4
Nickel ppm	ASTM D5185-09				<1
Tin ppm	ASTM D5185-09				<1
Silver ppm	ASTM D5185-09				<1
Vanadium ppm	ASTM D5185-09				<1
Titanium ppm	ASTM D5185-09				<1
Cadmium ppm	ASTM D5185-09				<1
Manganese ppm	ASTM D5185-09				<1
Contaminants					
Lithium ppm	ASTM D5185-09				<1
Water content %	ASTM E2412-10				0.060
Fuel %	ASTM E2412-10				0.00
Soots %	ASTM E2412-10				0.00
Glycol content %	ASTM E2412-10				0.00
Silicon ppm	ASTM D5185-09				5
Sodium ppm	ASTM D5185-09				5
Potassium ppm	ASTM D5185-09				<1
Additives					
Boron ppm	ASTM D5185-09				15
Phosphorus ppm	ASTM D5185-09				1109
Zinc ppm	ASTM D5185-09				1309
Calcium ppm	ASTM D5185-09				1243
Barium ppm	ASTM D5185-09				<1
Magnesium ppm	ASTM D5185-09				964
Molybdenum ppm	ASTM D5185-09				62
Physical - Chemical					
Total Base Number mgKOH/g	ASTM D2896-11B				9.63
Flash Point @ 190°C °C	ASTM D3828-12A				>190.0
Oxidation A/mm	ASTM E2412-10				10.46

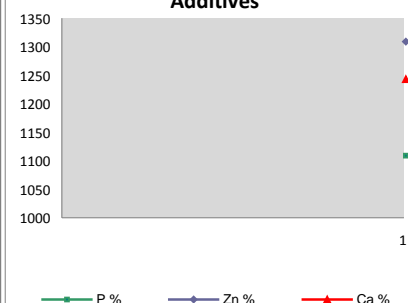
Physical Properties



Wear / Contaminants



Additives



SGS DIAGNOSIS REMARKS

Based on analysis results, there are no abnormal physical properties, wear, contamination noticed. The oil is fit for further use. Please submit sample as per schedule. We will review the results in the next sample.

[illegible]

Previous Comments

Lab Order Number :Product Name :

Lab Order Number :Product Name :

Lab Order Number :Product Name :



Customer Name GLC
Address -

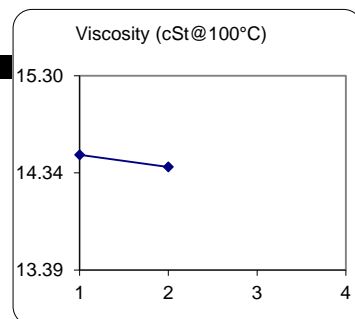
Chevron Contact person Le Van Dao

Equipment Information

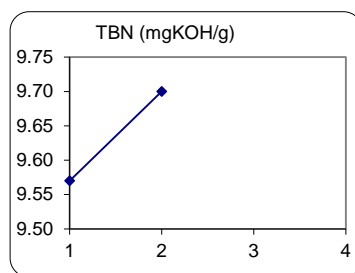
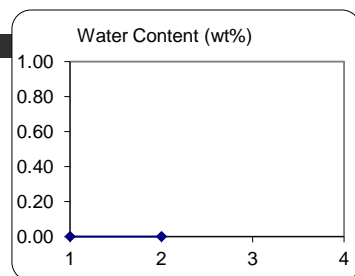
Vessel Name Binh Minh
Equipment Name 51C-70385
Equipment ID -
Equipment Model/Make -
Sample Location -
Equipment Builder -
Component Fuchs Titan
Truck Plus Delo 400 MGX
15W40 15W40

Type of Lubricant Oil

Sample Information	1	2	3	4
Bottle no.	000003341	000003342		
Sample No	CL1810253	CL1810254		
Report Date (dd/mm/yy)	11/10/18	11/10/18		
Date Received (dd/mm/yy)	08/10/18	08/10/18		
Sampling Date (ddmmyy)	28/09/18	28/09/18		
RPM	-	-		
Service Hrs (Hrs)	-	-		
Equipment Life (hrs)	-	-		
Oil Life, hrs	15000 Hrs	0 KM		
Top Up Volume	-	-		
Last Oil Change	-	-		
Capacity (Litres)	-	-		
Lubricant Condition Rating	Normal	Normal		



Results	1	2	3	4
Appearance (Visual)	Black	Black		
Viscosity @ 40°C (cSt) (ASTM D7279)	114.9	106.0	108.6	
Viscosity @ 100°C (cSt) (ASTM D7279)	14.90	14.52	14.40	
Total Base Number (mgKOH/g) (ASTM D2896)	-	9.57	9.70	
Setflash Point @ 190°C (ASTM D3828)	<190	Pass	Pass	
Water Content (wt%) (Crackle/D6304)	<0.05	-	-	
Pentane Insolubles (%) (ASTM D893)	-	-	-	
Water (A/.1mm) (ASTM E2412)	26.87	27.81		
Glycol (A/.1mm) (ASTM E2412)	0.66	0.97		
Fuel Dilution (A/.1mm) (ASTM E2412)	190.07	203.50		
Nitration (A/.1mm) (ASTM E2412)	30	6.36	5.41	
Oxidation (A/.1mm) (ASTM E2412)	30	9.63	11.29	
Soot (A/.1mm) (ASTM E2412)	2.71	0.00		
Elemental Analysis (ppm) (ASTM D5185)				
Iron (Fe)	100max	6	2	
Chromium (Cr)	20max	<1	<1	
Molybdenum (Mo)		1	50	
Copper (Cu)	50max	<1	<1	
Lead (Pb)	50max	1	<1	
Silver (Ag)	20max	<1	<1	
Tin (Sn)	20max	<1	<1	
Aluminium (Al)	20max	3	2	
Nickel (Ni)		1	1	
Vanadium (V)	200max	<1	<1	
Silicon (Si)	20max	2	5	
Boron (B)		10	11	
Sodium (Na)		1	<1	
Magnesium (Mg)		15	777	
Phosphorous (P)		961	1075	
Zinc (Zn)		1096	1213	
Barium (Ba)		<1	<1	
Calcium (Ca)		3366	1363	
Manganese		<1	<1	
Titanium		<1	<1	



Lubricant Condition Rating Normal Caution Action

Comments

ITS Comments Normal, no action required. Oil is fit for further used. Resample for testing at normal intervals.

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Customer Contact

Company Name CHEVRON LUBRICANTS VIETNAM LIMITED
Address L15-06, 15th Floor,
 VINCOM B TOWER, 72 LE THANH TON
 VIETNAM 00000
Contact Number 842836280615
Email duong.luu@chevron.com
Attention Mr DUONG, LUU-THAI

Equipment Information

01298009 / AMO2

Description GLC - BINH MINH TAI
Order No
System Details 51D-86212
Product Name CHEVRON DELO GOLD ULTRA 15W40
Additional Details

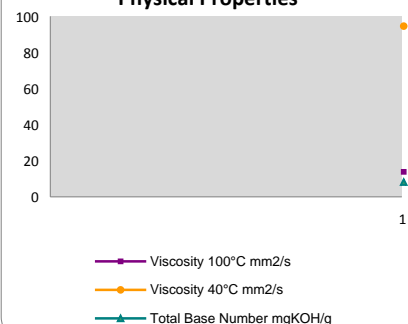
Sample Information

Lab Order Number					L162241
Date Received		-	-	-	02/04/2019
Date Tested		-	-	-	05/04/2019
Date Reported		-	-	-	05/04/2019
Fuel Used					
Equipment Life (km)					-
Oil Life (km)					20045
Oil Added (L)					0
Sampling Date		-	-	-	25/03/2019
Lubricant Condition					Caution

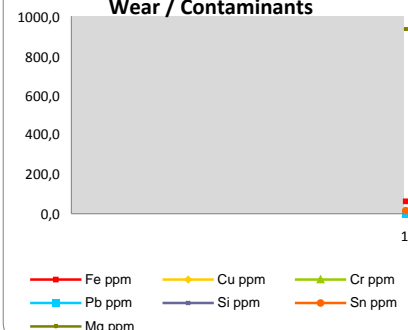
Test Parameters

Metals - Wear					1
Iron ppm	ASTM D5185-09				63
Lead ppm	ASTM D5185-09				<1
Copper ppm	ASTM D5185-09				11
Chromium ppm	ASTM D5185-09				2
Aluminium ppm	ASTM D5185-09				12
Nickel ppm	ASTM D5185-09				<1
Tin ppm	ASTM D5185-09				16
Silver ppm	ASTM D5185-09				<1
Vanadium ppm	ASTM D5185-09				<1
Titanium ppm	ASTM D5185-09				<1
Cadmium ppm	ASTM D5185-09				<1
Manganese ppm	ASTM D5185-09				<1
Contaminants					
Lithium ppm	ASTM D5185-09				<1
Water content %	ASTM E2412-10				0.091
Fuel %	ASTM E2412-10				0.00
Soots %	ASTM E2412-10				0.00
Glycol content %	ASTM E2412-10				0.00
Silicon ppm	ASTM D5185-09				16
Sodium ppm	ASTM D5185-09				5
Potassium ppm	ASTM D5185-09				<1
Additives					
Boron ppm	ASTM D5185-09				8
Phosphorus ppm	ASTM D5185-09				1107
Zinc ppm	ASTM D5185-09				1432
Calcium ppm	ASTM D5185-09				1696
Barium ppm	ASTM D5185-09				<1
Magnesium ppm	ASTM D5185-09				934
Molybdenum ppm	ASTM D5185-09				61
Physical - Chemical					
Total Base Number mgKOH/g	ASTM D2896-11B				8.18
Flash Point @ 190°C °C	ASTM D3828-12A				>190.0
Oxidation A/mm	ASTM E2412-10				14.02

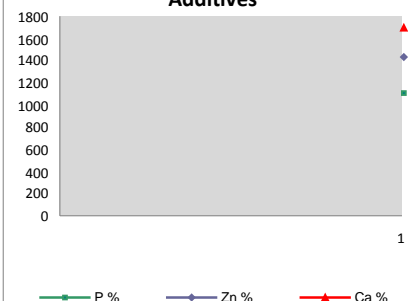
Physical Properties



Wear / Contaminants



Additives



SGS DIAGNOSIS REMARKS

Slightly high levels of Iron noticed. All other parameters are found acceptable. Wear metal: Iron suggests possible initial wear. Wear metal: Iron is likely from liners, piston rings, exhaust valves, bearings, bushings....Please check engine oil pressure/ temperature are working under normal condition, if possible. Please check lube oil filters and clean/ replace, if necessary. There is no abnormal physical properties noticed. The oil is fit for further use under close monitoring of future sample results. Please submit a sample after necessary corrective action as soon as possible to check and monitor the trend. We will review the results in the next sample.

[illegible]

Previous Comments

Lab Order Number :Product Name :

Lab Order Number :Product Name :

Lab Order Number :Product Name :



Customer Name GLC
Address -

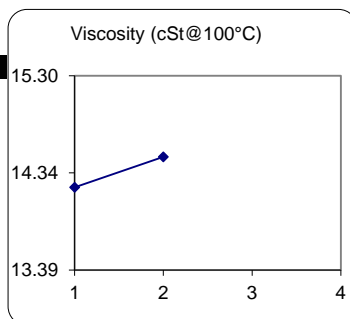
Chevron Contact person Le Van Dao

Equipment Information

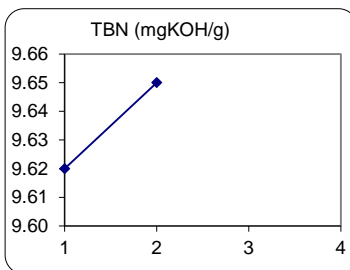
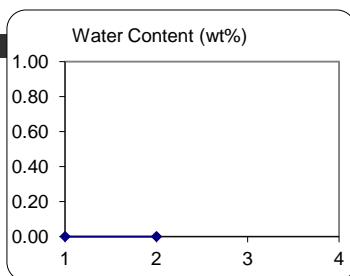
Vessel Name Binh Minh
Equipment Name 51C-86212
Equipment ID -
Equipment Model/Make -
Sample Location -
Equipment Builder -
Component Fuchs Titan
Truck Plus Delo 400 MGX
15W40 15W40

Type of Lubricant Oil

Sample Information	1	2	3	4
Bottle no.	000003229	000003230		
Sample No	CL1810251	CL1810252		
Report Date (dd/mm/yy)	11/10/18	11/10/18		
Date Received (dd/mm/yy)	08/10/18	08/10/18		
Sampling Date (ddmmyy)	28/09/18	28/09/18		
RPM	-	-		
Service Hrs (Hrs)	-	-		
Equipment Life (hrs)	-	-		
Oil Life, hrs	15000 Hrs	0 KM		
Top Up Volume	-	-		
Last Oil Change	-	-		
Capacity (Litres)	-	-		
Lubricant Condition Rating	Normal	Normal		



Results		1	2	3	4
Appearance (Visual)		Black	Black		
Viscosity @ 40°C (cSt) (ASTM D7279)	114.9	102.4	103.8		
Viscosity @ 100°C (cSt) (ASTM D7279)	14.90	14.20	14.50		
Total Base Number (mgKOH/g) (ASTM D2896)	-	9.62	9.65		
Setflash Point @ 190°C (ASTM D3828)	<190	Pass	Pass		
Water Content (wt%) (Crackle/D6304)	<0.05	-	-		
Pentane Insolubles (%) (ASTM D893)		-	-		
Water (A/.1mm) (ASTM E2412)		27.66	29.03		
Glycol (A/.1mm) (ASTM E2412)		1.37	1.03		
Fuel Dilution (A/.1mm) (ASTM E2412)		190.84	204.74		
Nitration (A/.1mm) (ASTM E2412)	30	9.19	5.83		
Oxidation (A/.1mm) (ASTM E2412)	30	12.43	11.75		
Soot (A/.1mm) (ASTM E2412)		16.22	0.00		
Elemental Analysis (ppm) (ASTM D5185)					
Iron (Fe)	100max	43	6		
Chromium (Cr)	20max	2	<1		
Molybdenum (Mo)		4	52		
Copper (Cu)	50max	29	3		
Lead (Pb)	50max	1	<1		
Silver (Ag)	20max	<1	<1		
Tin (Sn)	20max	2	<1		
Aluminium (Al)	20max	6	2		
Nickel (Ni)		1	1		
Vanadium (V)	200max	<1	<1		
Silicon (Si)	20max	12	5		
Boron (B)		27	16		
Sodium (Na)		2	<1		
Magnesium (Mg)		17	809		
Phosphorous (P)		939	974		
Zinc (Zn)		1180	1124		
Barium (Ba)		<1	<1		
Calcium (Ca)		3462	1343		
Manganese		<1	<1		
Titanium		<1	<1		



Lubricant Condition Rating Normal Caution Action

Comments

ITS Comments Normal, no action required. Oil is fit for further used. Resample for testing at normal intervals.

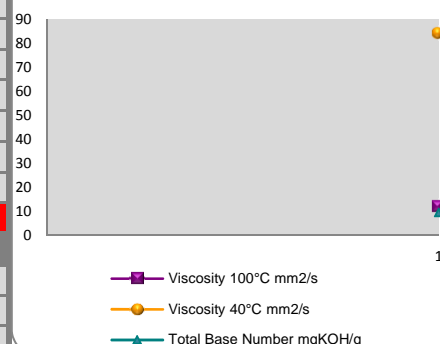
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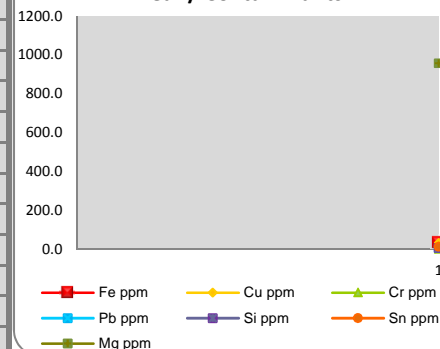
Customer Contact		Equipment Information		01298009 / AMO4	
Company Name	CHEVRON LUBRICANTS VIETNAM LIMITED	Description	GLC - BINH MINH TAI		
Address	L15-06, 15th Floor,	Order No			
	VINCOM B TOWER, 72 LE THANH TON	System Details	51C-93297		
	VIETNAM 00000	Product Name	CHEVRON DELO GOLD ULTRA 15W40		
Contact Number	842836280615	Additional Details			
Email	duong.luu@chevron.com				
Attention	Mr DUONG, LUU-THAI				

Sample Information					
Lab Order Number					L162243
Date Received		-	-	-	2/4/2019
Date Tested		-	-	-	5/4/2019
Date Reported		-	-	-	5/4/2019
Fuel Used					
Equipment Life (km)					-
Oil Life (km)					19659
Oil Added (L)					0
Sampling Date		-	-	-	25/3/2019
Lubricant Condition					Action
Test Parameters					
Metals - Wear					
Iron ppm	ASTM D5185-09				38
Lead ppm	ASTM D5185-09				6
Copper ppm	ASTM D5185-09				33
Chromium ppm	ASTM D5185-09				2
Aluminium ppm	ASTM D5185-09				8
Nickel ppm	ASTM D5185-09				<1
Tin ppm	ASTM D5185-09				12
Silver ppm	ASTM D5185-09				<1
Vanadium ppm	ASTM D5185-09				<1
Titanium ppm	ASTM D5185-09				<1
Cadmium ppm	ASTM D5185-09				<1
Manganese ppm	ASTM D5185-09				<1
Contaminants					
Lithium ppm	ASTM D5185-09				<1
Water content %	ASTM E2412-10				0.098
Fuel %	ASTM E2412-10				1.00
Soots %	ASTM E2412-10				0.00
Glycol content %	ASTM E2412-10				0.00
Silicon ppm	ASTM D5185-09				7
Sodium ppm	ASTM D5185-09				6
Potassium ppm	ASTM D5185-09				<1
Additives					
Boron ppm	ASTM D5185-09				5
Phosphorus ppm	ASTM D5185-09				1189
Zinc ppm	ASTM D5185-09				1383
Calcium ppm	ASTM D5185-09				1392
Barium ppm	ASTM D5185-09				<1
Magnesium ppm	ASTM D5185-09				956
Molybdenum ppm	ASTM D5185-09				60
Physical - Chemical					
Total Base Number mgKOH/g	ASTM D2896-11B				9.57
Flash Point @190°C °C	ASTM D3828-12A				>190.0
Oxidation A/mm	ASTM E2412-10				10.25

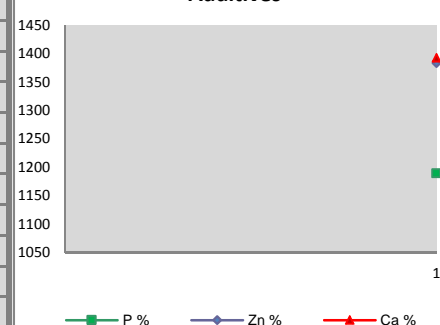
Physical Properties



Wear / Contaminants



Additives



SGS DIAGNOSIS REMARKS

Low level of Viscosity noticed. All other parameters are found to be acceptable. Low levels of Viscosity possible due to low viscosity grade oil in use/ top-up/light fuel contamination. Kindly check the viscosity type/ grade oil in use/top-up and take corrective action as necessary. Check fuel system for any signs of leaks. Please check any error during sampling or while labelling. It is recommended for partial renewal of the oil charge or replenish / top-up regularly with fresh oil in order to improve and achieve the required characteristics. Please submit a sample as soon as possible after necessary corrective actions to check & monitor the trend. We will review the results in the next sample.

[illegible]

Previous Comments

Lab Order Number :

Product Name :

Lab Order Number :

Product Name :

Lab Order Number :

Product Name :



Customer Name GLC
Address -

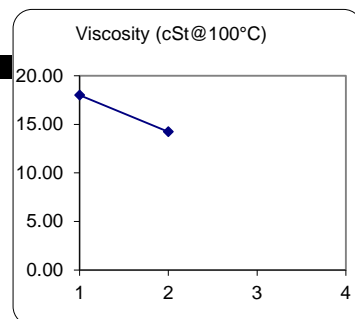
Chevron Contact person Le Van Dao

Equipment Information

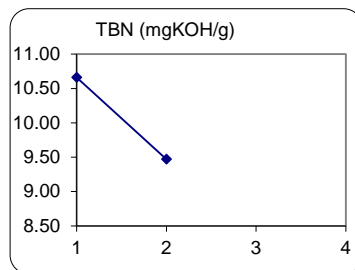
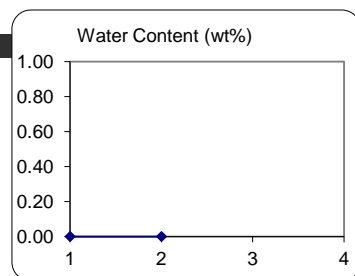
Vessel Name Binh Minh
Equipment Name 51C-93297
Equipment ID -
Equipment Model/Make -
Sample Location -
Equipment Builder -
Component -
Fuchs Titan
Truck Plus Delo 400 MGX
15W40 15W40

Type of Lubricant Oil

Sample Information	1	2	3	4
Bottle no.	000003385	000003386		
Sample No	CL1810538	CL1810543		
Report Date (dd/mm/yy)	24/10/18	24/10/18		
Date Received (dd/mm/yy)	22/10/18	22/10/18		
Sampling Date (ddmmyy)	16/10/18	16/10/18		
RPM	-	-		
Service Hrs (Hrs)	-	-		
Equipment Life (hrs)	-	-		
Oil Life, hrs	-	0 KM		
Top Up Volume	-	-		
Last Oil Change	-	-		
Capacity (Litres)	-	-		
Lubricant Condition Rating	Normal	Normal		



Results	1	2	3	4
Appearance (Visual)	Black	Black		
Viscosity @ 40°C (cSt) (ASTM D7279)	114.9	159.8	103.3	
Viscosity @ 100°C (cSt) (ASTM D7279)	14.90	18.00	14.23	
Total Base Number (mgKOH/g) (ASTM D2896)	-	10.66	9.47	
Setflash Point @ 190°C (ASTM D3828)	<190	Pass	Pass	
Water Content (wt%) (Crackle/D6304)	<0.05	-	-	
Pentane Insolubles (%) (ASTM D893)	-	-	-	
Water (A/.1mm) (ASTM E2412)	35.24	26.02		
Glycol (A/.1mm) (ASTM E2412)	0.36	1.06		
Fuel Dilution (A/.1mm) (ASTM E2412)	196.92	204.10		
Nitration (A/.1mm) (ASTM E2412)	30	6.80	5.41	
Oxidation (A/.1mm) (ASTM E2412)	30	9.95	11.04	
Soot (A/.1mm) (ASTM E2412)	16.22	4.36		
Elemental Analysis (ppm) (ASTM D5185)				
Iron (Fe)	100max	61	6	
Chromium (Cr)	20max	3	<1	
Molybdenum (Mo)		40	50	
Copper (Cu)	50max	1	2	
Lead (Pb)	50max	<1	<1	
Silver (Ag)	20max	<1	<1	
Tin (Sn)	20max	2	<1	
Aluminium (Al)	20max	11	2	
Nickel (Ni)		22	<1	
Vanadium (V)	200max	<1	<1	
Silicon (Si)	20max	9	4	
Boron (B)		327	9	
Sodium (Na)		20	1	
Magnesium (Mg)		18	874	
Phosphorous (P)		980	997	
Zinc (Zn)		1112	1158	
Barium (Ba)		<1	<1	
Calcium (Ca)		3334	1264	
Manganese		2	<1	
Titanium		<1	<1	



Lubricant Condition Rating Normal Caution Action

Comments

ITS Comments Normal, no action required. Oil is fit for further used. Resample for testing at normal intervals.

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Customer Name GLC
Address -

Chevron Contact person Le Van Dao

Equipment Information

Vessel Name Binh Minh
Equipment Name 51C-12317
Equipment ID -
Equipment Model/Make -
Sample Location -
Equipment Builder -
Component -

Delo 400 MGX 15W40 Delo 400 MGX 15W40 Delo 400 MGX 15W40

Type of Lubricant Oil

Sample Information

	1	2	3	4
Bottle no.	-	-	-	-
Sample No	CL1901148	CL1901149	CL190225	-
Report Date (dd/mm/yy)	17/01/19	17/01/19	12/02/19	-
Date Received (dd/mm/yy)	14/01/19	14/01/19	07/02/19	-
Sampling Date (ddmmyy)	04/01/19	04/01/19	21/01/19	-
RPM	-	-	-	-
Service Hrs (Hrs)	-	-	-	-
Equipment Life (hrs)	-	-	-	-
Oil Life, hrs	17707 kms	21214 kms	25493 kms	-
Top Up Volume	-	-	-	-
Last Oil Change	-	-	-	-
Capacity (Litres)	-	-	-	-
Lubricant Condition Rating	Normal	Normal	Normal	-

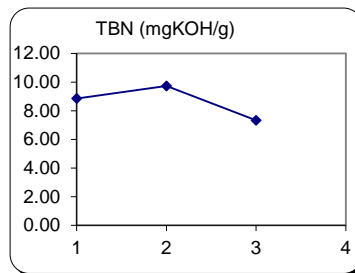
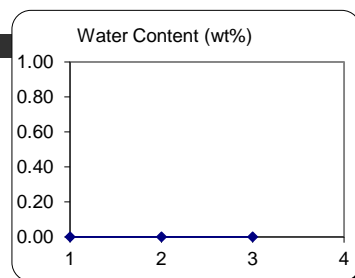
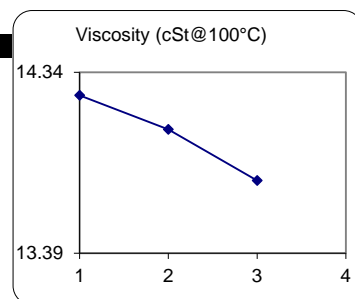
Results

	1	2	3	4
Appearance (Visual)	Black	Dark Brown Opaque	Black	-
Viscosity @ 40°C (cSt) (ASTM D7279)	120.0	101.9	103.9	109.2
Viscosity @ 100°C (cSt) (ASTM D7279)	14.60	14.22	14.04	13.77
Total Base Number (mgKOH/g) (ASTM D2896)	-	8.85	9.73	7.33
Setflash Point @ 190°C (ASTM D3828)	<190	Pass	Pass	Pass
Water Content (wt%) (Crackle/D6304)	<0.05	-	-	-
Pentane Insolubles (%) (ASTM D893)	-	-	-	-
Water (A/.1mm) (ASTM E2412)	41.98	35.55	29.71	-
Glycol (A/.1mm) (ASTM E2412)	0.00	0.00	0.00	-
Fuel Dilution (A/.1mm) (ASTM E2412)	201.15	199.57	199.80	-
Nitration (A/.1mm) (ASTM E2412)	30	8.63	8.82	7.32
Oxidation (A/.1mm) (ASTM E2412)	30	13.50	13.96	12.20
Soot (A/.1mm) (ASTM E2412)	2.89	3.66	0.00	-
Elemental Analysis (ppm) (ASTM D5185)				
Iron (Fe)	100max	37	42	53
Chromium (Cr)	20max	3	3	4
Molybdenum (Mo)		57	56	58
Copper (Cu)	50max	<1	<1	<1
Lead (Pb)	50max	<1	<1	<1
Silver (Ag)	20max	<1	<1	<1
Tin (Sn)	20max	<1	<1	<1
Aluminium (Al)	20max	19	24	32
Nickel (Ni)		7	8	8
Vanadium (V)	200max	<1	<1	<1
Silicon (Si)	20max	6	6	7
Boron (B)		23	17	21
Sodium (Na)		6	6	8
Magnesium (Mg)		834	835	836
Phosphorous (P)		1024	1011	1024
Zinc (Zn)		1190	1162	1263
Barium (Ba)		<1	<1	<1
Calcium (Ca)		1396	1393	1428
Manganese		<1	<1	<1
Titanium		<1	<1	<1

Lubricant Condition Rating Normal Caution Action

Comments

ITS Comments Normal, no action required. Oil is fit for further used. Resample for testing at normal intervals.



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Customer Name GLC
Address -

Chevron Contact person Le Van Dao

Equipment Information

Vessel Name Binh Minh
Equipment Name 51D-12317
Equipment ID -
Equipment Model/Make -
Sample Location -
Equipment Builder -
Component Fuchs Titan
Truck Plus Delo 400 MGX Delo 400 MGX
15W40 15W40 15W40

Type of Lubricant Oil

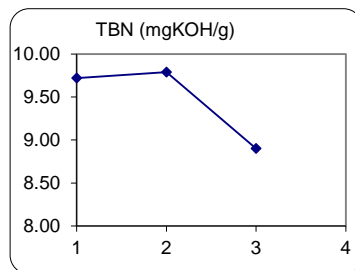
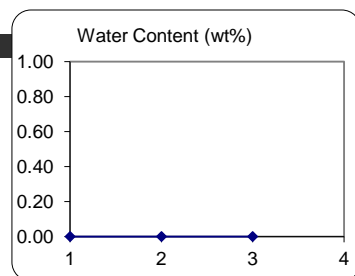
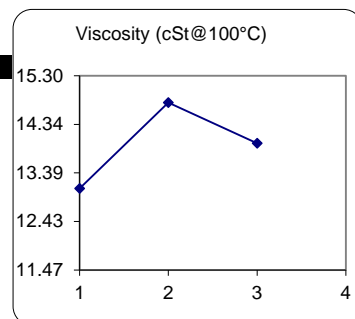
Sample Information	1	2	3	4
Bottle no.	000003387	000003388	-	
Sample No	CL1810539	CL1810540	CL1812208	
Report Date (dd/mm/yy)	24/10/18	24/10/18	14/12/18	
Date Received (dd/mm/yy)	22/10/18	22/10/18	11/12/18	
Sampling Date (ddmmyy)	16/10/18	16/10/18	5/12/18	
RPM	-	-	-	
Service Hrs (Hrs)	-	-	-	
Equipment Life (hrs)	-	-	-	
Oil Life, hrs	-	0 KM	14228 KM	
Top Up Volume	-	-	-	
Last Oil Change	-	-	-	
Capacity (Litres)	-	-	-	
Lubricant Condition Rating	Normal	Normal	Normal	

Results	1	2	3	4
Appearance (Visual)	Black	Dark Brown Opaque	Black	
Viscosity @ 40°C (cSt) (ASTM D7279)	114.9	93.41	109.5	105.4
Viscosity @ 100°C (cSt) (ASTM D7279)	14.90	13.08	14.77	13.97
Total Base Number (mgKOH/g) (ASTM D2896)	-	9.72	9.79	8.90
Setaflash Point @ 190°C (ASTM D3828)	<190	Pass	Pass	Pass
Water Content (wt%) (Crackle/D6304)	<0.05	-	-	-
Pentane Insolubles (%) (ASTM D893)	-	-	-	-
Water (A/.1mm) (ASTM E2412)	25.13	27.02	29.97	
Glycol (A/.1mm) (ASTM E2412)	0.37	1.08	0.00	
Fuel Dilution (A/.1mm) (ASTM E2412)	191.20	205.49	203.03	
Nitration (A/.1mm) (ASTM E2412)	30	7.18	5.25	7.59
Oxidation (A/.1mm) (ASTM E2412)	30	9.40	11.00	13.04
Soot (A/.1mm) (ASTM E2412)	27.91	0.00	1.71	
Elemental Analysis (ppm) (ASTM D5185)				
Iron (Fe)	100max	29	6	31
Chromium (Cr)	20max	1	<1	2
Molybdenum (Mo)		3	53	57
Copper (Cu)	50max	17	<1	<1
Lead (Pb)	50max	2	<1	<1
Silver (Ag)	20max	<1	<1	<1
Tin (Sn)	20max	2	<1	<1
Aluminium (Al)	20max	5	2	13
Nickel (Ni)		2	2	7
Vanadium (V)	200max	<1	<1	<1
Silicon (Si)	20max	4	5	6
Boron (B)		25	36	27
Sodium (Na)		5	<1	4
Magnesium (Mg)		12	862	831
Phosphorous (P)		918	1005	989
Zinc (Zn)		1055	1130	1123
Barium (Ba)		<1	<1	<1
Calcium (Ca)		3214	1203	1213
Manganese		<1	<1	<1
Titanium		<1	<1	<1

Lubricant Condition Rating Normal Caution Action

Comments

ITS Comments Normal, no action required. Oil is fit for further used. Resample for testing at normal intervals.



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Customer Name GLC
Address -

Chevron Contact person Le Van Dao

Equipment Information

Vessel Name Binh Minh Tai
Equipment Name 61C-18941
Equipment ID -
Equipment Model/Make -
Sample Location -
Equipment Builder -
Component -

Delo Gold MGX 15W40 Delo Gold MGX 15W40 Delo Gold MGX 15W40

Type of Lubricant Oil

Sample Information

	1	2	3	4
Bottle no.	-	-	-	-
Sample No	CL18-11/300	CL18-12/209	CL19-01/150	
Report Date (dd/mm/yy)	29/11/18	14/12/18	17/01/19	
Date Received (dd/mm/yy)	26/11/18	11/12/18	14/01/19	
Sampling Date (ddmmyy)	26/11/18	05/12/18	04/01/19	
RPM	-	-	-	
Service Hrs (Hrs)	-	-	-	
Equipment Life (hrs)	-	-	-	
Oil Life, hrs	10000 kms	14317 KM	20069 kms	
Top Up Volume	-	-	-	
Last Oil Change	-	-	-	
Capacity (Litres)	-	-	-	
Lubricant Condition Rating	Caution	Normal	Normal	

Results

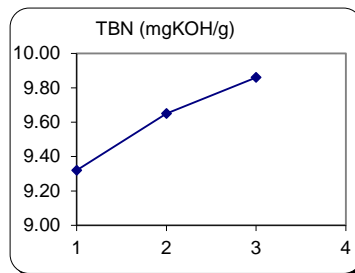
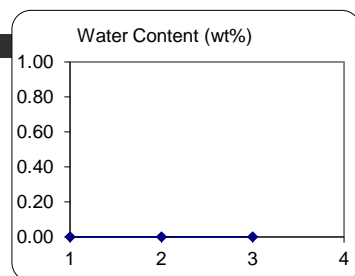
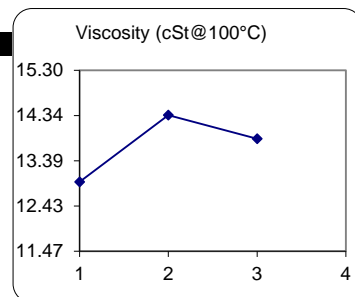
	1	2	3	4
Appearance (Visual)	Black	Black	Black	
Viscosity @ 40°C (cSt) (ASTM D7279)	115.0	94.54	108.2	104.7
Viscosity @ 100°C (cSt) (ASTM D7279)	15.10	12.94	14.35	13.85
Total Base Number (mgKOH/g) (ASTM D2896)	10.20	9.32	9.65	9.86
Setaflash Point @ 190°C (ASTM D3828)	<190	Pass	Pass	Pass
Water Content (wt%) (Crackle/D6304)	<0.05	-	-	-
Pentane Insolubles (%) (ASTM D893)	-	-	-	-
Water (A/.1mm) (ASTM E2412)	29.08	26.55	31.76	
Glycol (A/.1mm) (ASTM E2412)	0.00	0.37	0.00	
Fuel Dilution (A/.1mm) (ASTM E2412)	204.08	200.58	199.97	
Nitration (A/.1mm) (ASTM E2412)	30	6.80	6.81	7.86
Oxidation (A/.1mm) (ASTM E2412)	30	12.04	11.66	12.00
Soot (A/.1mm) (ASTM E2412)		33.18	35.38	49.73
Elemental Analysis (ppm) (ASTM D5185)				
Iron (Fe)	100max	13	15	21
Chromium (Cr)	20max	1	1	1
Molybdenum (Mo)		62	53	54
Copper (Cu)	50max	<1	<1	1
Lead (Pb)	50max	<1	2	2
Silver (Ag)	20max	<1	<1	<1
Tin (Sn)	20max	<1	<1	<1
Aluminium (Al)	20max	3	3	4
Nickel (Ni)		<1	<1	<1
Vanadium (V)	200max	<1	<1	<1
Silicon (Si)	20max	3	4	4
Boron (B)		34	107	99
Sodium (Na)		2	2	2
Magnesium (Mg)		918	646	660
Phosphorous (P)		1065	967	1030
Zinc (Zn)		1233	1089	1189
Barium (Ba)		<1	<1	<1
Calcium (Ca)		1386	1684	1871
Manganese		<1	<1	<1
Titanium		<1	<1	<1

Lubricant Condition Rating

Normal Caution Action

Comments

ITS Comments Normal, no action required. Oil is fit for further used. Resample for testing at normal intervals.



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Customer Name GLC
Address -

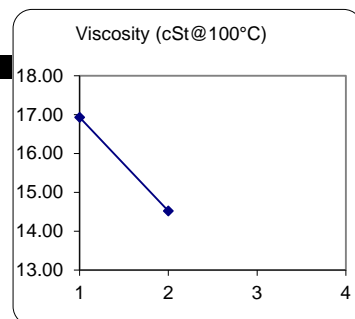
Chevron Contact person Le Van Dao

Equipment Information

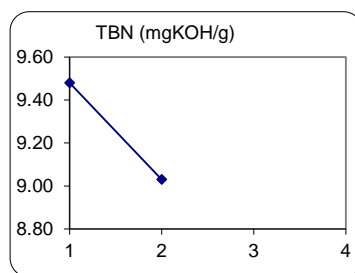
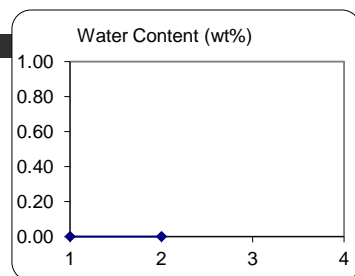
Vessel Name Binh Minh
Equipment Name 51C-18941
Equipment ID -
Equipment Model/Make -
Sample Location -
Equipment Builder -
Component PTT Dynamic
Ultra Plus Delo 400 MGX
20W50 15W40

Type of Lubricant Oil

Sample Information	1	2	3	4
Bottle no.	000003343	000003344		
Sample No	CL1810255	CL1810256		
Report Date (dd/mm/yy)	11/10/18	11/10/18		
Date Received (dd/mm/yy)	08/10/18	08/10/18		
Sampling Date (ddmmyy)	28/09/18	28/09/18		
RPM	-	-		
Service Hrs (Hrs)	-	-		
Equipment Life (hrs)	-	-		
Oil Life, hrs	12000 KM	0 KM		
Top Up Volume	-	-		
Last Oil Change	-	-		
Capacity (Litres)	-	-		
Lubricant Condition Rating	Normal	Normal		



Results	1	2	3	4
Appearance (Visual)	Black	Black		
Viscosity @ 40°C (cSt) (ASTM D7279)	114.9	149.2	105.5	
Viscosity @ 100°C (cSt) (ASTM D7279)	14.90	16.93	14.52	
Total Base Number (mgKOH/g) (ASTM D2896)	-	9.48	9.03	
Setflash Point @ 190°C (ASTM D3828)	<190	Pass	Pass	
Water Content (wt%) (Crackle/D6304)	<0.05	-	-	
Pentane Insolubles (%) (ASTM D893)	-	-	-	
Water (A/.1mm) (ASTM E2412)	36.13	29.32		
Glycol (A/.1mm) (ASTM E2412)	0.66	1.07		
Fuel Dilution (A/.1mm) (ASTM E2412)	196.23	207.06		
Nitration (A/.1mm) (ASTM E2412)	30	6.29	5.35	
Oxidation (A/.1mm) (ASTM E2412)	30	9.57	11.42	
Soot (A/.1mm) (ASTM E2412)	34.39	0.00		
Elemental Analysis (ppm) (ASTM D5185)				
Iron (Fe)	100max	14	2	
Chromium (Cr)	20max	<1	<1	
Molybdenum (Mo)		43	58	
Copper (Cu)	50max	<1	<1	
Lead (Pb)	50max	2	<1	
Silver (Ag)	20max	<1	<1	
Tin (Sn)	20max	<1	<1	
Aluminium (Al)	20max	3	2	
Nickel (Ni)		1	1	
Vanadium (V)	200max	<1	<1	
Silicon (Si)	20max	4	4	
Boron (B)		357	30	
Sodium (Na)		1	<1	
Magnesium (Mg)		12	881	
Phosphorous (P)		1047	1076	
Zinc (Zn)		1173	1204	
Barium (Ba)		<1	<1	
Calcium (Ca)		3564	1197	
Manganese		<1	<1	
Titanium		<1	<1	



Lubricant Condition Rating Normal Caution Action

Comments

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Báo cáo kết quả thử nghiệm nhớt động cơ Chevron
Cho xe tải nặng của Cty CP PT TM DV VT Ánh Dương Xanh
Chevron diesel engine oil field trial report for
trucks of Anh Duong Xanh JSC

Mục đích của thử nghiệm:

Objectives

Để đánh giá chất lượng của nhớt động cơ diesel **Delo 400 MGX SAE 15W-40** và khuyến nghị định kỳ thay nhớt phù hợp cho xe tải của Công ty CP PT TM DV VT Ánh Dương Xanh trong điều kiện vận hành và khí hậu thực tế. Dựa trên kết quả thử nghiệm, các đánh giá hiệu quả kinh tế được rút ra, làm cơ sở để Công ty CP PT TM DV VT Ánh Dương Xanh sử dụng dầu nhờn của Chevron.

In order to evaluate diesel engine oil Delo 400 MGX SAE 15W-40 and recommend appropriate oil drain interval for trucks of Anh Duong Xanh JSC under normal operating conditions. Based on trial, economic benefits are evaluated, Anh Duong Xanh JSC will consider to use Chevron products.

Các bên tham gia thực hiện thử nghiệm bao gồm:

Parties include:

- Công ty CP PT TM DV VT Ánh Dương Xanh:
Anh Duong Xanh JSC
 - Ông Lê Anh Ngân – Giám đốc
Mr. Le Anh Ngan – Director
 - Anh Bảo – Phụ trách Kỹ thuật
Mr. Bao – Technical
- Công ty TNHH Dầu nhờn Chevron Việt Nam:
Chevron Lubricants Vietnam Limited
 - Ông Weerapong Numtee – Tổng Giám đốc
Mr. Weerapong Numtee – General Director
 - Ông Hoàng Đại Hiệp – Phụ trách Kinh doanh
Mr. Hoang Dai Hiep – Front Line Sales Representative
 - Ông Lưu Thái Dương – Chuyên viên Kỹ thuật
Mr. Luu Thai Duong – Technical Specialist
- Công ty Cổ phần Đầu tư GLC – Nhà phân phối dầu nhờn Chevron:
GLC Investment JSC – Chevron Lubricants Distributor
 - Ông Lương Mạnh Chiến – Giám đốc
Mr. Luong Manh Chien – Director
 - Ông Hoàng Phương Linh – Nhân viên Kinh doanh
Mr. Hoang Phuong Linh – Sales Executive

Loại xe và số lượng xe thử nghiệm:

Types and number of vehicles trialed:

Nhớt Chevron được thử nghiệm cho 5 xe tải có tuổi thọ khác nhau. Danh sách cụ thể các xe thử nghiệm như sau:

Chevron lubricant was put on trial for 5 trucks that have different equipment life. Details are as follows:

TT / No.	Biển số xe / Registration No.	Dòng xe / Model	Số km hoặc số dặm xe đã vận hành / Vehicle mileage	Loại nhớt thử nghiệm / Trial lubricant
1	51C-70385	Isuzu 15T	191.499 km	Delo 400 MGX 15W-40 API CJ-4
2	51C-86212	Isuzu 2T	60.727 km	Delo 400 MGX 15W-40 API CJ-4
3	51C-93297	JAC 8T	53.330 km	Delo 400 MGX 15W-40 API CJ-4
4	51D-12317	Maxxforce	574.678 km	Delo 400 MGX 15W-40 API CJ-4
5	61C-18941	Thaco 15T	179.808 km	Delo 400 MGX 15W-40 API CJ-4

Loại nhớt động cơ đang sử dụng hiện nay là: Fuchs Titan Universal SAE 15W-40 với định kỳ thay nhớt là 10.000 km & 15.000 km tùy thuộc vào dòng xe

Current engine oil: Fuchs Titan Universal SAE 15W-40 with oil drain interval is 10.000 kms or 15.000 kms depending on vehicle models

Loại nhớt thử nghiệm:

Trial lubricant:

Nhớt động cơ diesel Delo 400 MGX SAE 15W-40, chất lượng hảo hạng, đạt tiêu chuẩn API CJ-4 dùng cho động cơ tải trọng nặng chạy bằng nhiên liệu diesel của Chevron.

Premium diesel engine oil Delo 400 MGX SAE 15W-40, API CJ-4, recommended for heavy duty diesel engine oil

Quy trình thay nhớt và lấy mẫu nhớt và xét nghiệm:

Oil change and oil sampling procedure

- Các dụng cụ phục vụ thử nghiệm bao gồm bơm lấy mẫu và chai đựng mẫu chuẩn được cung cấp bởi Chevron.
Tools and sampling kits provided by Chevron.
- Tháo hết nhớt đang sử dụng, thay phin lọc nhớt. Cho nhớt mới vào động cơ để chạy thử nghiệm.
Drain current engine oil, change oil filter. Fill in with Chevron lubricant for trial.
- Lấy mẫu tại 0 km; 5.000 km và sau đó lấy mẫu theo định kỳ 5.000 km tiếp theo cho đến khi cần phải thay nhớt.
Get oil sample at 0 km; 5.000 kms and then continue at 5.000 kms time interval until oil change needed.
- Mẫu nhớt được xét nghiệm chi tiết tại phòng thí nghiệm quốc tế Intertek/SGS – Singapore.
Oil samples are analyzed at Intertek/SGS – Singapore laboratory.
- Các chỉ tiêu xét nghiệm:
Tests
 - Độ nhớt ở 40°C và 100°C
Kinematic viscosity at 40 °C & 100°C
 - Chỉ số kiềm tổng TBN
Total base number TBN

- Điểm chớp cháy

Flash point COC

- Hàm lượng phụ gia Zn, Ca, Mg, B, P, Mo

Additives' concentration Zn, Ca, Mg, B, P, Mo

- Hàm lượng muối / cặn không tan

Insolubles

- Nước và các chất nhiễm bẩn

Water & Contaminations

- Kim loại mài mòn như Fe, Cr, Cu, Pb, Al ...

Wear metals Fe, Cr, Cu, Pb, Al ...

Kết quả thử nghiệm:

Test results

- Thời gian thử nghiệm là từ tháng 11/2018 đến tháng 05/2019. 05 xe thử nghiệm đã vận hành đến 20.000 km.

Field trial had been run from Nov 2018 to May 2019. 05 vehicles had been run for 20.000 kms.

- Báo cáo kết quả xét nghiệm của Phòng thí nghiệm Intertek/SGS-Singapore được gửi kèm theo đây.

Intertek/SGS – Singapore used oil analysis are attached in this report.

- **Kết quả xét nghiệm cho thấy, tại 20.000 km đối với các xe có dung tích các-te nhớt ≥ 18 lít, các chỉ tiêu của nhớt đều ở mức bình thường và nằm trong giới hạn sử dụng. Các chỉ tiêu về kim loại mài mòn đều nằm trong giới hạn cho phép chứng tỏ động cơ được bảo vệ tốt.**

Test results showed that, at 20.000 km of vehicles with crankcase ≥ 18 liters, all oil specifications were in normal range, oil was in good condition for usage. All wear metals were well under limits, this meant engines were well protected.

- **Và đối với các xe có dung tích các-te nhớt < 18 lít, tại 15.000 km, các chỉ tiêu của nhớt đều ở mức bình thường và nằm trong giới hạn sử dụng. Các chỉ tiêu về kim loại mài mòn đều nằm trong giới hạn cho phép chứng tỏ động cơ được bảo vệ tốt.**

And for vehicles with crankcase < 18 liters, at 15.000 km, all oil specifications were in normal range, oil was in good condition for usage. All wear metals were well under limits, this meant engines were well protected.

Đánh giá hiệu quả kinh tế:

Economic benefits

So với loại nhớt và định kỳ sử dụng hiện nay, khi Công ty CP PT TM DV VT Ánh Dương Xanh sử dụng nhớt Delo 400 MGX SAE 15W-40 với định kỳ thay nhớt mới là 20.000 km đối với xe có dung tích các-te ≥ 18 lít và 15.000 km đối với xe có dung tích các-te nhớt < 18 lít sẽ giúp mang lại tiết kiệm được chi phí như sau:

Comparing to current oil, Caltex Delo 400 MGX SAE 15W-40, with new oil drain interval 20.000 kms for ≥ 18 liters crankcase vehicles and 15.000 kms for < 18 liters crankcase vehicles, can help Anh Duong Xanh JSC to save costs as described below:

- Tiết kiệm chi phí mua nhớt: 535 triệu đồng/năm
Saving on lubricants: 535 million VND/year

- Tiết kiệm chi phí mua phin lọc: 115 triệu đồng/năm
Saving on oil filters: 115 million VND /year
- **Tổng số tiền tiết kiệm là: 650 triệu đồng/năm**
Total saving: 650 million VND/year

Số liệu trên được tính dựa trên cơ sở các thông số đầu vào như sau:

These savings were calculated based on input data below:

- Số xe đang vận hành của Anh Dương Xanh: 400 xe
Total vehicles of Anh Duong Xanh: 400 units
- Số km trung bình mỗi xe chạy trong 1 năm: 60.000 km/năm
Average mileage per year per vehicle: 60.000 kms/year
- Định kỳ thay nhớt hiện nay: 10.000 km và 15.000 km
Current oil drain interval: 10.000 kms & 15.000 km
- Định kỳ lọc nhớt hiện nay: 10.000 km và 15.000 km
Current oil filter change interval: 10.000 kms & 15.000 km
- Định kỳ thay nhớt và lọc nhớt mới: 15.000 km và 20.000 km
New oil and filter change interval: 15.000 kms và 20.000 kms
- Lượng nhớt cho 1 lần thay: 7 lít và 25 lít
Oil capacity per oil change per vehicle: 7 liters and 25 liters
- Giá của loại nhớt đang dùng: 70.000 đ/L
Current oil price: 70.000 vnd/L
- Giá trung bình dự kiến của Delo Gold Ultra: 70.000 đ/L
Estimated average Delo Gold Ultra price: 70.000 vnd/L
- Giá của phin lọc: 150.000 đ/bộ và 250.000 đ/bộ
Oil filter price: 150.000 vnd/set and 250 vnd/set

Kết luận:

Conclusions:

Chương trình thử nghiệm nhớt động cơ Delo 400 MGX SAE 15W-40 của Chevron trên các xe của Công ty CP PT TM DV VT Ánh Dương Xanh có thể đưa ra những đánh giá sau:

Based on Chevron Delo 400 MGX SAE 15W-40 field trial at Anh Duong Xanh JSC we can have following evaluations:

- Tại 20.000 km, đối với xe có các-te nhớt ≥ 18 lít, các chỉ tiêu hiệu năng của nhớt đều ở mức bình thường và nằm trong giới hạn sử dụng. Các chỉ tiêu về kim loại mài mòn đều nằm trong giới hạn cho phép chứng tỏ động cơ được bảo vệ tốt.
At 20.000 kms, regarding ≥ 18 liters crankcase vehicles, all oil specifications are in normal ranges and oil is fit for further usage, all wear metals are well below limits. This means engines are well protected.
- Tại 15.000 km, đối với xe có các-te nhớt < 18 lít, các chỉ tiêu hiệu năng của nhớt đều ở mức bình thường và nằm trong giới hạn sử dụng. Các chỉ tiêu về kim loại mài mòn đều nằm trong giới hạn cho phép chứng tỏ động cơ được bảo vệ tốt.
At 15.000 kms, regarding < 18 liters crankcase vehicles, all oil specifications are in normal ranges and oil is fit for further usage, all wear metals are well below limits. This means engines are well protected.

- Dựa trên kết quả này, Công ty Chevron khuyến nghị Quý công ty nên chọn định kỳ thay nhớt mới tại 20.000 km đối với xe có dung tích các-te nhớt ≥ 18 lít và 15.000 km đối với xe có dung tích các-te nhớt < 18 lít; đồng thời áp dụng định kỳ kiểm tra mẫu nhớt thải của ngẫu nhiên 10 xe theo chu kỳ 6 tháng một lần. Định kỳ mới này áp dụng cho các xe đang trong điều kiện hoạt động bình thường, nhớt không nhiễm nhiên liệu, lượng hao hụt nhớt không đáng kể ($\leq 6.0\%$) và mức độ nhiễm cát bụi (Si) thấp (≤ 20 ppm) trong suốt chu kỳ vận hành 20.000 km và 15.000 km.

Based on used oil analytical results, Chevron recommend Anh Duong Xanh to extend oil drain interval up to 20.000 kms for ≥ 18 liters crankcase vehicles and 15.000 kms for < 18 liters crankcase vehicles and apply used oil analysis program for 10 vehicles randomly on 6 months regular basis. This extended oil drain interval is applied for vehicles that operate under normal conditions, engine oil is not contaminated with fuel, engine oil consumption is not significant ($\leq 6.0\%$) and solid contaminant (Si) is low (≤ 20 ppm) throughout 20.000 kms and 15.000 kms oil drain interval.

- Về lợi ích kinh tế, với đoàn xe 400 chiếc, Công ty CP PT TM DV VT Ánh Dương Xanh có thể tiết kiệm hàng năm được khoảng 650 triệu đồng.

Regarding economic benefits, with 400 vehicles fleet, Anh Duong Xanh JSC can potentially save 650 million VND.

- Về lợi ích xã hội, Công ty Ánh Dương Xanh có thể tăng số chuyến xe, phục vụ thêm được nhiều lượt hàng hóa, giảm ô nhiễm môi trường do nhớt thải và khí thải.

Regarding social benefits, Anh Duong Xanh JSC can increase number of serviced trips, reduce emissions and waste oil disposal.

Như vậy với nhớt Delo 400 MGX SAE 15W-40 của Chevron, Công ty CP PT TM DV VT Ánh Dương Xanh có thêm lựa chọn để kéo dài định kỳ sử dụng nhớt lên đến 20.000 km và 15.000 km vẫn bảo đảm độ tin cậy và độ bền của xe, đồng thời tiết kiệm được nhiều chi phí, đạt hiệu quả kinh tế xã hội cao hơn.

With Chevron Delo 400 MGX SAE 15W-40, Anh Duong Xanh JSC have additional option to extend engine oil drain interval up to 20.000 kms and 15.000 kms while still ensure engine reliability and durability, to save total operating costs, and to achieve higher economic / social benefits.

21 Tháng Sáu 2019

21 June 2019

CÔNG TY TNHH DẦU NHỜN CHEVRON VIỆT NAM
CHEVRON LUBRICANTS VIETNAM CO. LIMITED

CÔNG TY CP PT TM DV VT ÁNH DƯƠNG XANH
ANH DUONG XANH JOINT STOCK COMPANY

Ông Weerapong Numtee - Tổng Giám đốc
Mr. Weerapong Numtee – General Director

Ông Lê Anh Ngân – Giám Đốc
Mr. Le Anh Ngan – Director

CÔNG TY CỔ PHẦN ĐẦU TƯ GLC
GLC INVESTMENT JSC

Ông Lương Mạnh Chiến – Giám đốc
Mr. Luong Manh Chien – Director

HÌNH ẢNH QUÁ TRÌNH THỬ NGHIỆM NHỚT ĐỘNG CƠ TẠI
CÔNG TY CP PT TM DV VT ÁNH DƯƠNG XANH
PICTURES DURING FIELD TRIAL AT
ANH DUONG XANH JSC



Hình 1: Xe thử nghiệm 51C-70385
 Picture 1: Trial vehicle 51C-70385



Hình 2: Xe thử nghiệm 51C-86212

Picture 2: Trial vehicle 51C-86212

**HÌNH ẢNH QUÁ TRÌNH THỬ NGHIỆM NHỚT ĐỘNG CƠ TẠI
CÔNG TY CP PT TM DV VT ÁNH DƯƠNG XANH
*PICTURES DURING FIELD TRIAL AT
ANH DUONG XANH JSC***



Hình 3: Xe thử nghiệm 61C-18941

Picture 3: Trial vehicle 61C-18941



Customer Name GLC
Address -

Chevron Contact person Le Van Dao

Equipment Information

Vessel Name	Binh Minh		
Equipment Name	51C-64170		
Equipment ID	-		
Equipment Model/Make	-		
Sample Location	-		
Equipment Builder	-		
Component	-		
	Fuchs Titan		
	Truck Plus	Delo 400 MGX	Delo 400 MGX
	15W40	15W40	15W40

Type of Lubricant Oil

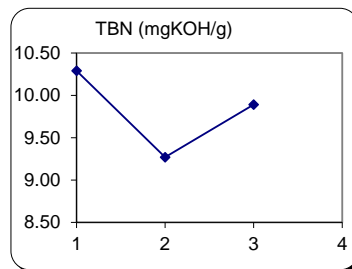
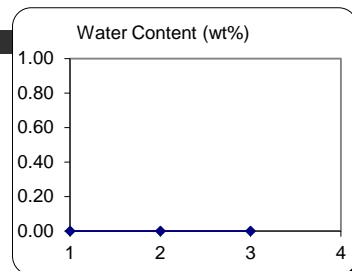
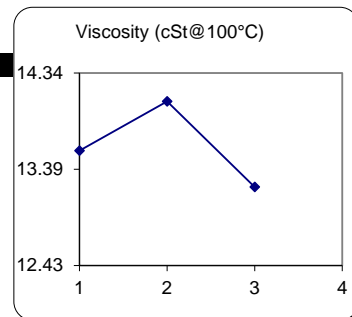
Sample Information	1	2	3	4
Bottle no.	-	-	-	-
Sample No	CL1811244	CL1811245	CL190226	
Report Date (dd/mm/yy)	19/11/18	19/11/18	12/02/19	
Date Received (dd/mm/yy)	15/11/18	15/11/18	07/02/19	
Sampling Date (ddmm/yy)	13/11/18	13/11/18	21/01/19	
RPM	-	-	-	
Service Hrs (Hrs)	-	-	-	
Equipment Life (hrs)	-	-	-	
Oil Life, hrs	12000 kms	0 km	8007 kms	
Top Up Volume	-	-	-	
Last Oil Change	-	-	-	
Capacity (Litres)	-	-	-	
Lubricant Condition Rating	Normal	Normal	Normal	

Results	1	2	3	4
Appearance (Visual)	Black	Dark Brown Opaque	Black	
Viscosity @ 40°C (cSt) (ASTM D7279)	120.0	102.9	110.0	95.28
Viscosity @ 100°C (cSt) (ASTM D7279)	14.60	13.57	14.06	13.21
Total Base Number (mgKOH/g) (ASTM D2896)	-	10.29	9.27	9.89
Setaflash Point @ 190°C (ASTM D3828)	<190	Pass	Pass	Pass
Water Content (wt%) (Crackle/D6304)	<0.05	-	-	-
Pentane Insolubles (%) (ASTM D893)	-	-	-	-
Water (A/.1mm) (ASTM E2412)	22.75	23.17	19.87	
Glycol (A/.1mm) (ASTM E2412)	0.53	0.45	0.18	
Fuel Dilution (A/.1mm) (ASTM E2412)	188.48	200.45	203.24	
Nitration (A/.1mm) (ASTM E2412)	30	8.49	5.41	5.79
Oxidation (A/.1mm) (ASTM E2412)	30	11.75	11.66	11.22
Soot (A/.1mm) (ASTM E2412)	16.32	0.00	0.76	
Elemental Analysis (ppm) (ASTM D5185)				
Iron (Fe)	100max	30	3	16
Chromium (Cr)	20max	<1	<1	<1
Molybdenum (Mo)		2	48	50
Copper (Cu)	50max	1	<1	<1
Lead (Pb)	50max	<1	<1	<1
Silver (Ag)	20max	<1	<1	<1
Tin (Sn)	20max	2	<1	<1
Aluminium (Al)	20max	5	2	4
Nickel (Ni)		<1	<1	<1
Vanadium (V)	200max	<1	<1	<1
Silicon (Si)	20max	8	5	5
Boron (B)		6	3	5
Sodium (Na)		2	<1	<1
Magnesium (Mg)		55	775	808
Phosphorous (P)		940	1047	1061
Zinc (Zn)		1170	1193	1295
Barium (Ba)		<1	<1	<1
Calcium (Ca)		3313	1371	1544
Manganese		<1	<1	<1
Titanium		<1	<1	<1

Lubricant Condition Rating Normal Caution Action

Comments

ITS Comments Normal, no action required. Oil is fit for further used. Resample for testing at normal intervals.



Intertek Testing Services Singapore, OCM

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Customer Name GLC
Address -

Chevron Contact person Le Van Dao

Equipment Information

Vessel Name Binh Minh
Equipment Name 51D-07537
Equipment ID -
Equipment Model/Make -
Sample Location -
Equipment Builder -
Component -
Fuchs Titan
Truck Plus Delo 400 MGX
15W40 15W40

Type of Lubricant Oil

Sample Information

	1	2	3	4
Bottle no.	-	-	-	-
Sample No	CL1811248	CL1811247	-	-
Report Date (dd/mm/yy)	19/11/18	19/11/18	-	-
Date Received (dd/mm/yy)	15/11/18	15/11/18	-	-
Sampling Date (ddmm/yy)	13/11/18	13/11/18	-	-
RPM	-	-	-	-
Service Hrs (Hrs)	-	-	-	-
Equipment Life (hrs)	-	-	-	-
Oil Life, hrs	12000 kms	0 km	-	-
Top Up Volume	-	-	-	-
Last Oil Change	-	-	-	-
Capacity (Litres)	-	-	-	-
Lubricant Condition Rating	Action	Normal	-	-

Results

	1	2	3	4
Appearance (Visual)	Black	Black	-	-
Viscosity @ 40°C (cSt) (ASTM D7279)	120.0	197.8	122.5	-
Viscosity @ 100°C (cSt) (ASTM D7279)	14.60	20.74	15.22	-
Total Base Number (mgKOH/g) (ASTM D2896)	-	9.04	9.11	-
Setaflash Point @ 190°C (ASTM D3828)	<190	Pass	Pass	-
Water Content (wt%) (Crackle/D6304)	<0.05	-	-	-
Pentane Insolubles (%) (ASTM D893)	-	-	-	-
Water (A/.1mm) (ASTM E2412)	211.54	23.25	-	-
Glycol (A/.1mm) (ASTM E2412)	1.50	0.63	-	-
Fuel Dilution (A/.1mm) (ASTM E2412)	189.98	199.58	-	-
Nitration (A/.1mm) (ASTM E2412)	30	14.33	6.43	-
Oxidation (A/.1mm) (ASTM E2412)	30	15.92	11.61	-
Soot (A/.1mm) (ASTM E2412)	274.14	56.63	-	-
Elemental Analysis (ppm) (ASTM D5185)				
Iron (Fe)	100max	124	24	-
Chromium (Cr)	20max	2	<1	-
Molybdenum (Mo)		37	50	-
Copper (Cu)	50max	1	<1	-
Lead (Pb)	50max	<1	<1	-
Silver (Ag)	20max	<1	<1	-
Tin (Sn)	20max	1	<1	-
Aluminium (Al)	20max	4	2	-
Nickel (Ni)		<1	<1	-
Vanadium (V)	200max	<1	<1	-
Silicon (Si)	20max	8	5	-
Boron (B)		260	66	-
Sodium (Na)		<1	<1	-
Magnesium (Mg)		15	660	-
Phosphorous (P)		887	1011	-
Zinc (Zn)		1211	1175	-
Barium (Ba)		1	1	-
Calcium (Ca)		3530	1618	-
Manganese		1	<1	-
Titanium		<1	<1	-

Lubricant Condition Rating

Normal

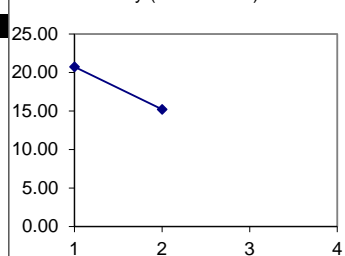
Caution

Action

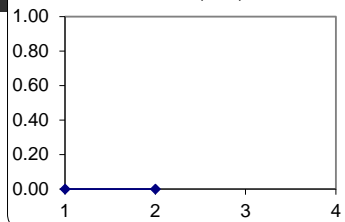
Comments

ITS Comments Normal, no action required. Oil is fit for further used. Resample for testing at normal intervals.

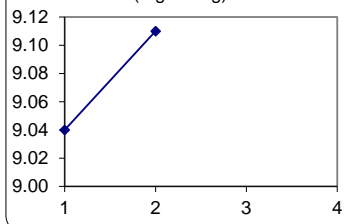
Viscosity (cSt@100°C)



Water Content (wt%)



TBN (mgKOH/g)



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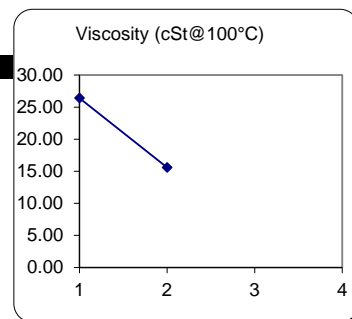
Customer Name GLC
Address -
Chevron Contact person Le Van Dao

Equipment Information

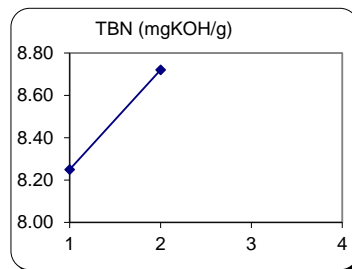
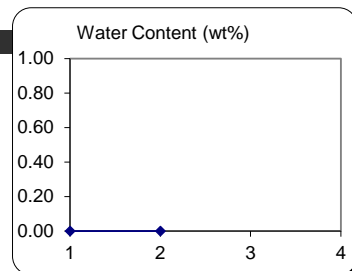
Vessel Name Binh Minh
Equipment Name 61C-18599
Equipment ID -
Equipment Model/Make -
Sample Location -
Equipment Builder -
Component -
Fuchs Titan
Truck Plus Delo 400 MGX
15W40 15W40

Type of Lubricant Oil

Sample Information	1	2	3	4
Bottle no.	000003388	00000390		
Sample No	CL1810541	CL1810542		
Report Date (dd/mm/yy)	24/10/18	24/10/18		
Date Received (dd/mm/yy)	22/10/18	22/10/18		
Sampling Date (ddmm/yy)	16/10/18	16/10/18		
RPM	-	-		
Service Hrs (Hrs)	-	-		
Equipment Life (hrs)	-	-		
Oil Life, hrs	-	0 KM		
Top Up Volume	-	-		
Last Oil Change	-	-		
Capacity (Litres)	-	-		
Lubricant Condition Rating	Action	Normal		



Results	1	2	3	4
Appearance (Visual)	Black	Black		
Viscosity @ 40°C (cSt) (ASTM D7279)	114.9	209.7	117.4	
Viscosity @ 100°C (cSt) (ASTM D7279)	14.90	26.40	15.60	
Total Base Number (mgKOH/g) (ASTM D2896)	-	8.25	8.72	
Setaflash Point @ 190°C (ASTM D3828)	<190	Pass	Pass	
Water Content (wt%) (Crackle/D6304)	<0.05	-	-	
Pentane Insolubles (%) (ASTM D893)	-	-	-	
Water (A/.1mm) (ASTM E2412)	271.22	29.60		
Glycol (A/.1mm) (ASTM E2412)	8.32	0.89		
Fuel Dilution (A/.1mm) (ASTM E2412)	204.67	203.46		
Nitration (A/.1mm) (ASTM E2412)	30	46.75	7.12	
Oxidation (A/.1mm) (ASTM E2412)	30	98.05	11.54	
Soot (A/.1mm) (ASTM E2412)		457.49	93.93	
Elemental Analysis (ppm) (ASTM D5185)				
Iron (Fe)	100max	179	35	
Chromium (Cr)	20max	4	1	
Molybdenum (Mo)		32	50	
Copper (Cu)	50max	33	6	
Lead (Pb)	50max	<1	<1	
Silver (Ag)	20max	<1	<1	
Tin (Sn)	20max	1	<1	
Aluminium (Al)	20max	8	3	
Nickel (Ni)		<1	<1	
Vanadium (V)	200max	<1	<1	
Silicon (Si)	20max	13	6	
Boron (B)		183	39	
Sodium (Na)		2	<1	
Magnesium (Mg)		23	752	
Phosphorous (P)		888	966	
Zinc (Zn)		1050	1101	
Barium (Ba)		1	<1	
Calcium (Ca)		3149	1384	
Manganese		2	<1	
Titanium		<1	<1	



Lubricant Condition Rating Normal Caution Action

Comments

ITS Comments Normal, no action required. Oil is fit for further used. Resample for testing at normal intervals.

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