

### **OIL ANALYSIS REPORT**

## KEMP QUARRIES / PRYOR STONE [66326] **WP047**

Component **Diesel Engine** 

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

### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor. ( Customer Sample Comment: PM performed. Engine oil sample taken. Engine oil, and all filters changed.)

#### 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.



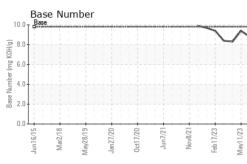
Sample Rating Trend

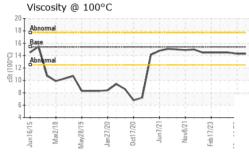


SAMPLE INFORI		method	limit/base	current	history1	history2
			mmbase		PCA0083962	
Sample Number Sample Date		Client Info Client Info		PCA0084055 07 Aug 2023	11 May 2023	PCA0086210 18 Apr 2023
	hrs	Client Info		2873		
Machine Age Oil Age	hrs	Client Info		2073	2576 263	2313 370
Oil Changed	1115	Client Info		Changed		Changed
Sample Status		Cilent Inio		NORMAL	Changed NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	16	12	14
Chromium	ppm	ASTM D5185m	>20	<1	0	0
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	3	<1	<1
Lead	ppm	ASTM D5185m	>40	3	3	<1
Copper	ppm	ASTM D5185m	>330	<1	<1	0
Tin	ppm	ASTM D5185m	>15	<1	0	0
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	2	<1	<1
Barium	ppm	ASTM D5185m	0	0	0	0
Molybdenum	ppm	ASTM D5185m	60	65	61	61
Manganese	ppm	ASTM D5185m	0	<1	0	<1
Magnesium	ppm	ASTM D5185m	1010	1064	984	977
Calcium	ppm	ASTM D5185m	1070	1186	1164	1073
Phosphorus	ppm	ASTM D5185m	1150	1117	1031	987
Zinc	ppm	ASTM D5185m	1270	1375	1275	1273
Sulfur	ppm	ASTM D5185m	2060	3974	3786	3287
CONTAMINAN	TS	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	4	3	2
Sodium	ppm	ASTM D5185m		<1	2	<1
Potassium	ppm	ASTM D5185m	>20	0	<1	<1
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	0.3	0.3	0.4
Nitration	Abs/cm	*ASTM D7624	>20	6.4	6.0	5.6
Sulfation	Abs/.1mm	*ASTM D7415	>30	17.4	18.4	16.5
FLUID DEGRA		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	13.2	14.1	13.1
Base Number (BN)	mg KOH/g	ASTM D2896		8.8	9.4	8.3
		22000				



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			VISUAL		method	limit/base	current	history1	history2
		$\sim$	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
0ct17/20			Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
0ct17/20 Jun7/21	Nov8/21	Feb17/23 Mav11/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Ju	N	Feb	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
			Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
			Free Water	scalar	*Visual		NEG	NEG	NEG
			FLUID PROF	PERTIES	method	limit/base	current	history1	history2
- F			Visc @ 100°C	cSt	ASTM D445	15.4	14.3	14.3	14.5
$\sim 1$			GRAPHS						
V			Iron (ppm)				Lead (ppm)		
			250 Severe			10	Severe		
0ct17/20 Jun7/21	Nov8/21	Feb17/23	200 - 4						
J. D.	2	· 1	e 150 - 100 - <b>Abnormal</b>			L.			
			50	$\sim$				$\sim$	
				Jun7/21-	Nov8/21-	1/23	Jun16/15 - Mar2/18 -	Jan27/20 - Oct17/20 - Jun7/21 -	Nov8/21 - Feb17/23 - Aay11/23 -
			Jun16/15 Mar2/18 May28/19	Jur Jur	Nov Feb 1	May11/23	Jun1 Mar May2	Jan2 Oct1 Jur	Nov8/21 Feb17/23 May11/23
			Aluminum (ppm	ı)			Chromium (p	pm)	
			50 Severe				Severe		
			40 + 0						
			a 30 - 20 - Abnormal			udd 2	Abnormal		
			10				0		
				<b></b>			0		
			Jun 16/15 Mar2/18 May28/19	Jun7/21	Nov8/21 Feb17/23	May11/23	Jun 16/15 Mar2/18 May28/19	Jan27/20 Oct17/20 Jun7/21	Nov8/21 Feb17/23 May11/23
			∩ ≥	Ju Det	No Feb	May	Jun Ma May	Jan	No Feb May
			Copper (ppm)			8	Silicon (ppm) <sup>0</sup> ⊤ Severe		
			Abnonmat						
			300 -				0 -		
			툡 200 -			E 4	Abnormal		
			100			2	10		
			0						
			Jun 16/15 Mar2/18 May28/19	Jun7/21	Nov8/21 Feb17/23	May11/23	Jun16/15 Mar2/18 May28/19	Jan27/20 Oct17/20 Jun7/21	Nov8/21 Feb17/23 May11/23
					Fel N	Mar	7 2		Rel Ma
			Viscosity @ 100	°С		10	Base Number	-	• • • • • • • • • • • • • • • • • • •
			Abnormal	++++	+++++++	(B/HO)	.0		$\sim$
			င္ 15 – Base Abnormal	1		Ē 6	.0		
			(5.05) (0	1		aq 4	.0		
				$\sim$		Base Number (mg KOH/g) 8 8 9 8	.0		
			5 4 6 5	20	21	0		20	23
			Jun 16/15 Mar2/18 May28/19	Jun7/21	Nov8/21 Feb17/23	May11/23	Jun16/15 Mar2/18 May28/19	Jan27/20 Oct17/20 Jun7/21	Nov8/21 Feb17/23 May11/23
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TESTING LABORATORY	Sa Lal Uni	poratory mple No o Numbe que Numi st Packa	. : PCA0084055 er : 05935203 ber : 10620474	Received Diagnos Diagnos	d : 25 ed : 28 tician : Do	ary, NC 2751 Aug 2023 Aug 2023 n Baldridge	3 Kemp (	Quarries - Pry	or Stone - Pryor 1050 E 520 Rc Pryor, Ok US 74361 Contact:
- Denotes	test me	thods the	ort, contact Customer Se at are outside of the ISC pecifications are based or	) 17025 scc	pe of accred	ditation.	(JCGM 106:2012		