

### **OIL ANALYSIS REPORT**

# KENWORTH T880 T-895 (S/N 1NKZXOEXXPJ225384)

**Diesel Engine** 

DIESEL ENGINE OIL SAE 15W40 (--- GAL)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

#### Wear

Metal levels are typical for a new component breaking in.

#### Contamination

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. 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.

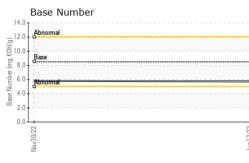


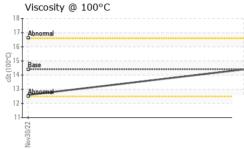
SAMPLE INFORM	<b>IATION</b>	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0804173	WC0693427	
Sample Date		Client Info		12 Jun 2023	30 Nov 2022	
Machine Age	mls	Client Info		56201	24707	
Oil Age	mls	Client Info		0	0	
Oil Changed		Client Info		Changed	Changed	
Sample Status				NORMAL	NORMAL	
CONTAMINATIO	N	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	
Glycol		WC Method		NEG	NEG	
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	45	64	
Chromium	ppm	ASTM D5185m	>20	<1	<1	
Nickel	ppm	ASTM D5185m	>4	<1	0	
Titanium	ppm	ASTM D5185m		<1	<1	
Silver	ppm	ASTM D5185m	>3	<1	0	
Aluminum	ppm	ASTM D5185m	>20	10	29	
Lead	ppm	ASTM D5185m	>40	<1	<1	
Copper	ppm	ASTM D5185m	>330	5	12	
Tin	ppm	ASTM D5185m	>15	<1	1	
Vanadium	ppm	ASTM D5185m		<1	0	
Cadmium	ppm	ASTM D5185m		0	0	
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 250	current	history1 20	history2
	ppm ppm				· · · · · ·	
Boron		ASTM D5185m	250	1	20	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	1 0	20 2	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	1 0 4	20 2 5	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	1 0 4 1	20 2 5 2	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	1 0 4 1 101	20 2 5 2 480	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	1 0 4 1 101 2555	20 2 5 2 480 1757	  
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150	1 0 4 1 101 2555 984	20 2 5 2 480 1757 791	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350	1 0 4 1 101 2555 984 1182	20 2 5 2 480 1757 791 962	   
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	250 10 100 450 3000 1150 1350 4250	1 0 4 1 101 2555 984 1182 4546	20 2 5 2 480 1757 791 962 3182	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	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	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25	1 0 4 1 101 2555 984 1182 4546 current	20 2 5 2 480 1757 791 962 3182 history1	     history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	250 10 100 450 3000 1150 1350 4250 kimit/base >25 >158	1 0 4 1 101 2555 984 1182 4546 <b>current</b> 10	20 2 5 2 480 1757 791 962 3182 history1 14	     history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	250 10 100 450 3000 1150 1350 4250 kimit/base >25 >158	1 0 4 1 101 2555 984 1182 4546 <u>current</u> 10 3	20 2 5 2 480 1757 791 962 3182 history1 14 4	     history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>Iinit/base</b> >25 >158 >20 <b>Iinit/base</b>	1 0 4 1 101 2555 984 1182 4546 <u>current</u> 10 3 23	20 2 5 2 480 1757 791 962 3182 history1 14 4 80	     history2  
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>Imit/base</b> >25 >158 >20 <b>Imit/base</b> >3	1 0 4 1 101 2555 984 1182 4546 <u>current</u> 10 3 23 23	20 2 5 2 480 1757 791 962 3182 history1 14 4 80 history1	     history2   history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>Imit/base</b> >25 >158 >20 <b>Imit/base</b> >3 >20	1 0 4 1 101 2555 984 1182 4546 <u>current</u> 10 3 23 23 <u>current</u>	20 2 5 2 480 1757 791 962 3182 history1 14 4 80 history1 0.4	     history2  history2  history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>Imit/base</b> >25 >158 >20 <b>Imit/base</b> >3 >20	1 0 4 1 101 2555 984 1182 4546 <u>current</u> 10 3 23 23 <u>current</u> 0.6 11.4	20 2 5 2 480 1757 791 962 3182 history1 14 4 80 history1 0.4 10.8	     history2   history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>imit/base</b> >25 >158 >20 <b>imit/base</b> >3 >20	1 0 4 1 101 2555 984 1182 4546 <u>current</u> 10 3 23 23 <u>current</u> 0.6 11.4 26.2	20 2 5 2 480 1757 791 962 3182 history1 14 4 80 history1 0.4 10.8 23.6	     history2  history2  history2



## **OIL ANALYSIS REPORT**

VISUAL





	VISUAL		method			history1	history2
	White Metal	scalar	*Visual	NONE	NONE	NONE	
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
	Precipitate	scalar	*Visual	NONE	NONE	NONE	
	Silt		*Visual	NONE	NONE	NONE	
	Debris	scalar	*Visual	NONE	NONE	NONE	
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
./23		scalar	*Visual	NORML	NORML	NORML	
Jun 12/23	Odor	scalar	*Visual	NORML	NORML	NORML	
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
	Free Water	scalar	*Visual	20.L	NEG	NEG	
			VISUAI		NEG		
	FLUID PROPER	TIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	14.4	14.4	12.6	
	GRAPHS						
	Ferrous Alloys						
	70 iron						
	60 - management chromium						
	50 -						
	= 40						
	e 40 e 30						
	20						
	10						
	2 2			53			
	Nov30/22			Jun12/23			
				nr			
	Non-ferrous Meta	ls					
	12 copper 1						
	10 - management lead						
	10 - Ilead						
	10 lead						
	10 - Ilead						
	10 lead			/			
	10 lead	<u> </u>		/			
	10 lead lin lin lead lin lin lead lin			/			
	10 8 5 6 4 2 0			e			
	10 8 5 6 4 2 0			1223			
	10 lead lin lin lead lin lin lead lin			Junt223			
	Viscosity @ 100°C			Jun12/23	Base Number		
	10 8 4 4 2 0 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7			14.0	Base Number		
	Viscosity @ 100°C			14.0	Abnormal		
	Viscosity @ 100°C			14.0	Abnormal		
	10 8 6 4 2 0 10 10 10 10 10 10 10 10 10			14.0	Abnormal		
	10 8 6 4 2 0 10 10 10 10 10 10 10 10 10			14.0	Abnormal		
	10 8 10 10 10 10 10 10 10 10 10 10			14.0	Abnormal		
	Viscosity @ 100°C			14.0	Abnormal		
	10 8 10 10 10 10 10 10 10 10 10 10			14.0	Abnormal		
	10 8 10 10 10 10 10 10 10 10 10 10			14.0 12.0 (Photo 10.0 (Photo 1	Abnormal Base Abnormal		
	10 8 10 10 10 10 10 10 10 10 10 10			14.0 12.0 (Photo 10.0 (Photo 1	Abnormal Base Abnormal		
	10 8 10 10 10 10 10 10 10 10 10 10			14.0 12.0 (9)10.0 00 8.0 900 8.0 9000 8.0 9000 8.0 9000 8.0 9000 8.0 9000 8.0 9000 8.0 9000 8.0 9000 8.0 9000 8.0 900000000000000000000000000000000000	Abnormal		
Laboratory Sample No. Lab Number Unique Number Unique Number Test Package	Viscosity @ 100°C	501 Madia Received Diagnost	son Ave., Ca d : 24 , ed : 24 , tician : We	14.0 12.0 (6)(HO) 0.0 10, 10, 0 10, 10, 10, 0 10, 10, 10, 0 10, 10, 10, 0 10, 10, 10, 10, 10, 10, 10, 10, 10, 10,	Abnormal Base Abnormal	CLAF	NT CONSTRUCTION DERICK ROA RKSBURG, M US 2083 ervice Manag

\* - 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)