

LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR R934C 024303 - Diesel Engine

Sample No: LH0178235

Oil Type: DIESEL ENGINE OIL SAE 10W30



SAMPLE INFORMATION

Sample Number	LH0178235	LH0235014	LH0214155	LH0186982
Sample Date	05 Jul 2023	08 Dec 2022	22 Nov 2021	23 Feb 2021
Machine Hours	18716	18131	17000	16193
Oil Hours	585	500	500	500
Oil Changed	Changed	Changed	Changed	Changed
Sample Status	SEVERE	ABNORMAL	ABNORMAL	ABNORMAL

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OIL CONDITION

Visc @ 100°C	cSt	17.3	13.4	20.1	17.4
Oxidation (PA)	%	62	65	101	64



CONTAMINATION

Soot %	%	5	3.7	4.4	4.3
Nitration (PA)	%	96	84	134	93
Sulfation (PA)	%	82	77	98	80
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	<1.0	<1.0	<1.0	<1.0
Silicon	ppm	7	7	7	7
Sodium	ppm	2	2	2	3
Potassium	ppm	0	0	<1	<1

Diagnosis

We advise that you check for faulty combustion, plugged air filters, or aftercoolers. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition. All component wear rates are normal. There is an abnormal amount of solids and carbon present in the oil. The oil viscosity is higher than normal. The oil is no longer serviceable due to the presence of contaminants.



WEAR METALS

Iron	ppm	24	24	51	22
Copper	ppm	2	1	2	2
Lead	ppm	<1	0	1	<1
Tin	ppm	0	0	<1	<1
Aluminum	ppm	1	1	2	1
Chromium	ppm	<1	<1	1	<1
Molybdenum	ppm	71	62	57	54
Nickel	ppm	<1	<1	<1	<1
Titanium	ppm	0	<1	<1	2
Silver	ppm	0	0	0	0
Manganese	ppm	0	<1	<1	<1
Vanadium	ppm	0	0	0	<1



ADDITIVES

Calcium	ppm	1787	1810	1407	1216
Magnesium	ppm	448	465	772	849
Zinc	ppm	1175	1180	1186	1172
Phosphorus	ppm	972	1043	1029	938
Barium	ppm	<1	0	0	<1
Boron	ppm	47	60	32	20

Depot: DOMBUR

Unique No: 5681890

Signed: Wes Davis

Report Date: 16 Nov 2023



GRAPHS

