

KOWA Sample Report



Brooks Hire Brisbane (Oxley) : BRISBANE

EX152 : KOMATSU HB215LC-1 2358

Diesel Engine

Technician Geoffrey Coombes

my.komatsu.com.au/cms/samples/20221012100845

Evaluation Change of oil add package & viscosity appear to be in line with reported change of oil type. All tests on this sample appear acceptable, continue to sample at the normal rate.

Sample Number	20221012100845	20190405100320	20180117100112	20170411100311	20160804100309
Status	Normal	Query	Query	Normal	Action
Registration	588517	883439	566891	534625	116953
Sampled	18/08/2022	03/04/2019	05/01/2018	07/04/2017	29/07/2016
Evaluated	12/10/2022	05/04/2019	17/01/2018	11/04/2017	04/08/2016
Unit Hours	6130	4496	3974	3579	3049
Comp. Hours	6130	4496	3974	3579	
Oil Hours	500		395	500	500
Oil Make	FUCHS	FUCHS	FUCHS	FUCHS	FUCHS
Oil Type	TITAN TRUCK PLUS	TITAN CARGO	TITAN CARGO	TITAN CARGO	TITAN CARGO
Oil Grade	15W-40	15W-40	15W-40	15W-40	15W-40
Oil Changed	Yes	Yes	Yes	Yes	Yes
Filter Changed	Yes	Yes	Yes	Yes	Yes
Wear + Additives					
PQ Index	10	13	16	15	16
Iron (Fe)	30	39	25	40	49
Chromium (Cr)	2	2	1	2	3
Nickel (Ni)	<1	<1	<1	<1	1
Copper (Cu)	4	3	3	11	28
Tin (Sn)	<1	<1	<1	<1	<1
Lead (Pb)	1	2	1	4	4
Aluminium (Al)	2	1	1	2	2
Silicon (Si)	3	9	6	6	7
Sodium (Na)	3	2	2	6	3
Potassium (K)	3	4	4	2	4
Boron (B)	13	318	358	49	171
Molybdenum (Mo)	8	103	95	54	81
Zinc (Zn)	1001	1244	1224	1241	1171
Magnesium (Mg)	61	404	432	731	495
Phosphorus (P)	824	1153	1134	1129	1041
Calcium (Ca)	2158	1453	1421	1430	1317
Lithium (Li)	<1				
Silver (Ag)	<1				
Barium (Ba)	<1				
Manganese (Mn)	<1				
Titanium (Ti)	<1				
Vanadium (V)	<1				
Cadmium (Cd)	<1				
Oil Condition					
Nitration	12	9	9	11	11
Oxidation	14	18	19	17	19
Sulphation	28	29	28	30	33
Soot	140	103	82	135	160
Physicals					
Water	<0.1	<0.1	<0.1	<0.1	<0.1

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cms@komatsu.com.au
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KOWA Sample Report



Brooks Hire Brisbane (Oxley) : BRISBANE

L339 : KOMATSU WA320-8 86555

Technician Geoffrey Coombes

my.komatsu.com.au/cms/samples/20221012100828

Transfer Case

Evaluation All results appear acceptable for initial run-in period, continue to sample at the normal rate to further monitor.

Sample Number 20221012100828

Status Normal

Registration 737358

Sampled 28/09/2022

Evaluated 12/10/2022

Unit Hours 939

Comp. Hours 939

Oil Hours 939

Oil Make FACTORY

Oil Type FACTORY

Oil Grade OIL

Oil Changed Yes

Filter Changed Yes

Wear + Additives

PQ Index 10

Iron (Fe) 23

Chromium (Cr) <1

Nickel (Ni) <1

Copper (Cu) 18

Tin (Sn) <1

Lead (Pb) 6

Aluminium (Al) 2

Silicon (Si) 73

Sodium (Na) 3

Potassium (K) 6

Boron (B) 6

Molybdenum (Mo) 19

Zinc (Zn) 762

Magnesium (Mg) 9

Phosphorus (P) 599

Calcium (Ca) 3433

Lithium (Li) <1

Silver (Ag) <1

Barium (Ba) 4

Manganese (Mn) 1

Titanium (Ti) <1

Vanadium (V) <1

Cadmium (Cd) <1

Physicals

Water <0.1

Viscosity @ 40°C 36

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my.komatsu.co.nz/cms
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KOWA Sample Report



Status Legend	
Critical	Results indicate urgent action is required
Action	Results indicate action is required as soon as possible
Caution	Results indicate an increased trend that should be monitored
Query	Further information is required
Normal	Results are acceptable relative to the trend

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Express post and eParcel satchels can be recycled, please return any unused satchels.

Report created 12/10/2022 15:52 AEST/AEDT.

KOWA Sample Report



Brooks Hire Brisbane (Oxley) : BRISBANE

L339 : KOMATSU WA320-8 86555

Technician Geoffrey Coombes

my.komatsu.com.au/cms/samples/20221012100806

Hydraulic System

Evaluation All results appear to be acceptable, continue sampling at the normal rate.

Sample Number	20221012100806	20220316100101	20211224100402		
Status	Normal	Normal	Normal		
Registration	737367	699015	538036		
Sampled	28/09/2022	04/03/2022	09/12/2021		
Evaluated	12/10/2022	16/03/2022	24/12/2021		
Unit Hours	939	524	247		
Comp. Hours	939	524	247		
Oil Hours	939	524	247		
Oil Make	FACTORY	FACTORY	FACTORY		
Oil Type	FACTORY	FACTORY	FACTORY		
Oil Grade	OIL	OIL	OIL		
Oil Changed	Yes	No	No		
Topup	10	10	10		
Filter Changed	Yes		Yes		
Wear + Additives					
PQ Index	10	11	18		
Iron (Fe)	5	4	4		
Chromium (Cr)	<1	<1	<1		
Nickel (Ni)	<1	<1	<1		
Copper (Cu)	10	8	5		
Tin (Sn)	1	<1	<1		
Lead (Pb)	1	1	<1		
Aluminium (Al)	2	1	1		
Silicon (Si)	15	15	15		
Sodium (Na)	4	1	1		
Potassium (K)	3	3	2		
Boron (B)	454	423	449		
Molybdenum (Mo)	44	46	44		
Zinc (Zn)	1115	1152	1187		
Magnesium (Mg)	12	11	11		
Phosphorus (P)	982	1065	1153		
Calcium (Ca)	3223	3377	3422		
Lithium (Li)	<1	<1	<1		
Silver (Ag)	<1	<1	<1		
Barium (Ba)	<1	<1	<1		
Manganese (Mn)	1	1	1		
Titanium (Ti)	<1	<1	<1		
Vanadium (V)	<1	<1	<1		
Cadmium (Cd)	<1	<1	<1		
Particles					
ISO 3 Count	20/17/12	22/20/14	22/20/15		
04 Microns	6270	35687	23088		
06 Microns	642	5893	5274		
14 Microns	34	93	278		
21 Microns	12	19	57		
Oil Condition					

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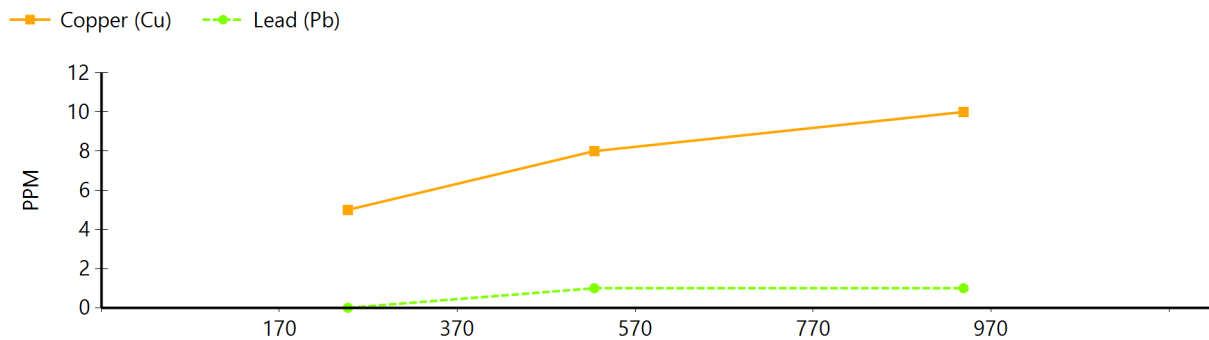
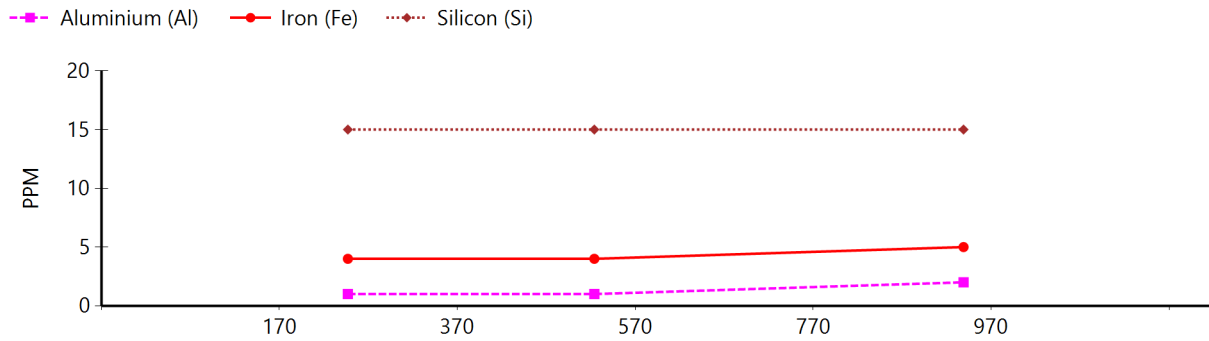
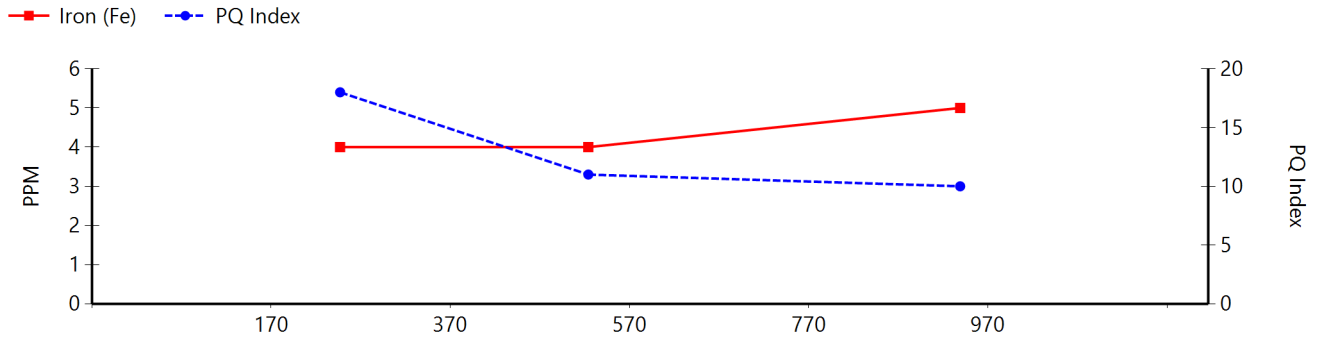
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KOWA Sample Report



Sample Number	20221012100806	20220316100101	20211224100402
Nitration	4	4	4
Oxidation	12	14	13
Sulphation	21	23	21
Physicals			
Water	<0.1	<0.1	<0.1
Viscosity @ 40°C	60	61	65



Status Legend

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Normal	Results are acceptable relative to the trend

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Report created 12/10/2022 15:51 AEST/AEDT.

KOWA Sample Report



Brooks Hire Brisbane (Oxley) : BRISBANE

L339 : KOMATSU WA320-8 86555

Differential Rear

Technician Geoffrey Coombes

my.komatsu.com.au/cms/samples/20221012100838

Evaluation Readings appear acceptable, sample at the next scheduled interval.

Sample Number	20221012100838	20220316100116	20211224100416
Status	Normal	Normal	Normal
Registration	737353	698600	538203
Sampled	28/09/2022	02/03/2022	09/12/2021
Evaluated	12/10/2022	16/03/2022	24/12/2021
Unit Hours	939	524	247
Comp. Hours	939	524	247
Oil Hours	939	524	247
Oil Make	FACTORY	KOMATSU	KOMATSU
Oil Type	FACTORY	AXO	AXO
Oil Grade	OIL	80	80
Oil Changed	Yes	No	No
Wear + Additives			
PQ Index	75	105	112
Iron (Fe)	123	137	97
Chromium (Cr)	2	2	2
Nickel (Ni)	<1	<1	<1
Copper (Cu)	2	1	1
Tin (Sn)	<1	<1	<1
Lead (Pb)	1	1	<1
Aluminium (Al)	1	1	1
Silicon (Si)	13	17	17
Sodium (Na)	3	1	<1
Potassium (K)	5	6	7
Boron (B)	106	102	104
Molybdenum (Mo)	5	6	5
Zinc (Zn)	1210	1339	1251
Magnesium (Mg)	12	13	14
Phosphorus (P)	998	1112	1075
Calcium (Ca)	3095	3501	3203
Lithium (Li)	1	1	1
Silver (Ag)	<1	<1	<1
Barium (Ba)	4	4	4
Manganese (Mn)	6	8	7
Titanium (Ti)	<1	<1	<1
Vanadium (V)	<1	<1	<1
Cadmium (Cd)	<1	<1	<1
Physicals			
Water	<0.1	<0.1	<0.1
Viscosity @ 40°C	51	52	57

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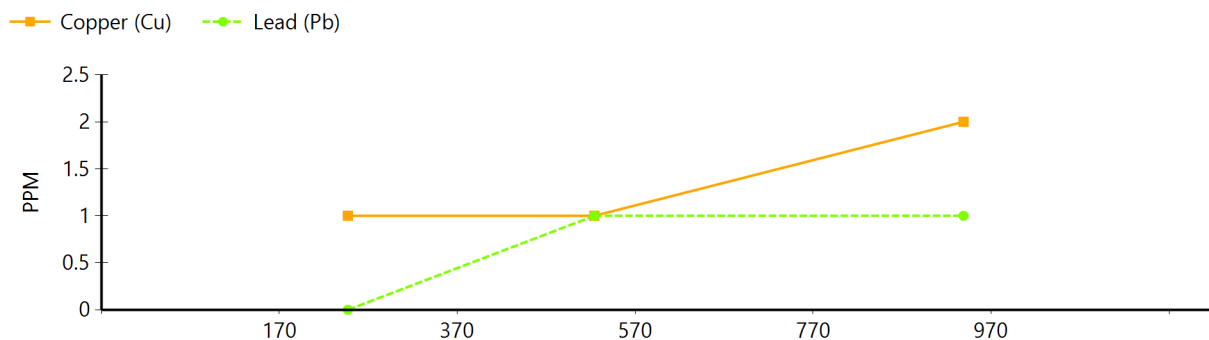
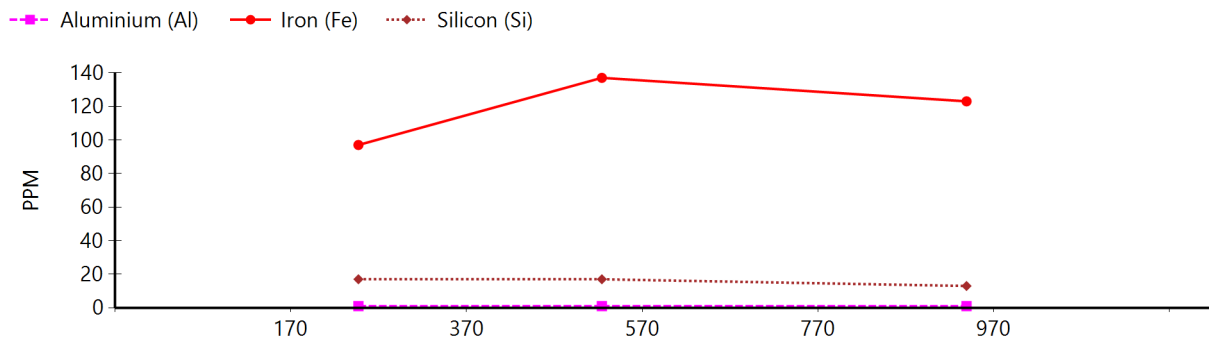
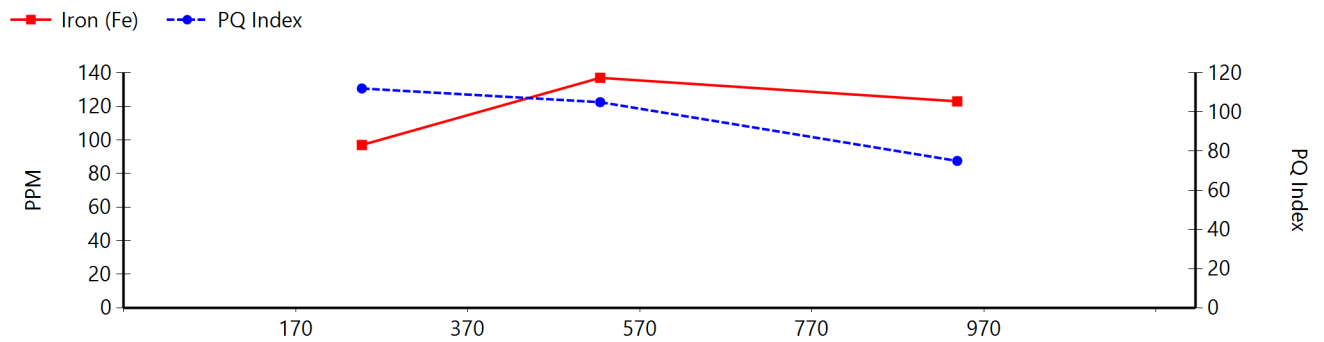


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my.komatsu.com.au/cms
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my.komatsu.co.nz/cms
New Zealand +64 0800 566 2878

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L339 : KOMATSU WA320-8 86555

Technician Geoffrey Coombes

my.komatsu.com.au/cms/samples/20221012100837

Differential Front

Evaluation All tests on this sample appear acceptable, keep sampling to monitor further.

Sample Number	20221012100837	20220316100115	20211224100415
Status	Normal	Normal	Normal
Registration	737375	699025	538015
Sampled	28/09/2022	04/03/2022	09/12/2021
Evaluated	12/10/2022	16/03/2022	24/12/2021
Unit Hours	939	524	247
Comp. Hours	939	524	247
Oil Hours	939	524	247
Oil Make	FACTORY	KOMATSU	KOMATSU
Oil Type	FACTORY	AXO	AXO
Oil Grade	OIL	80	80
Oil Changed	Yes	No	No
Wear + Additives			
PQ Index	82	98	92
Iron (Fe)	112	103	77
Chromium (Cr)	2	2	2
Nickel (Ni)	<1	<1	<1
Copper (Cu)	1	1	1
Tin (Sn)	<1	<1	<1
Lead (Pb)	1	<1	<1
Aluminium (Al)	1	1	1
Silicon (Si)	14	17	16
Sodium (Na)	3	<1	1
Potassium (K)	6	5	7
Boron (B)	108	97	106
Molybdenum (Mo)	6	7	6
Zinc (Zn)	1239	1287	1253
Magnesium (Mg)	11	12	13
Phosphorus (P)	1015	1107	1075
Calcium (Ca)	3210	3386	3210
Lithium (Li)	1	1	1
Silver (Ag)	<1	<1	<1
Barium (Ba)	4	4	4
Manganese (Mn)	6	7	7
Titanium (Ti)	<1	<1	<1
Vanadium (V)	<1	<1	<1
Cadmium (Cd)	<1	<1	<1
Physicals			
Water	<0.1	<0.1	<0.1
Viscosity @ 40°C	51	52	58

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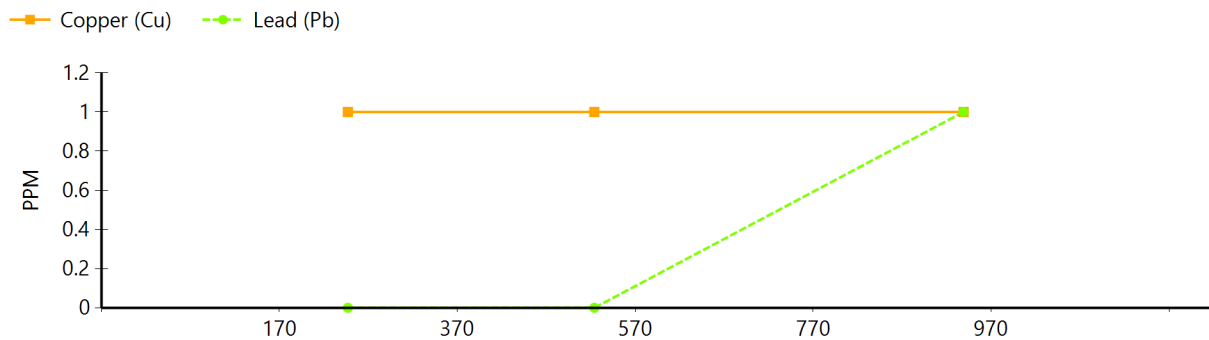
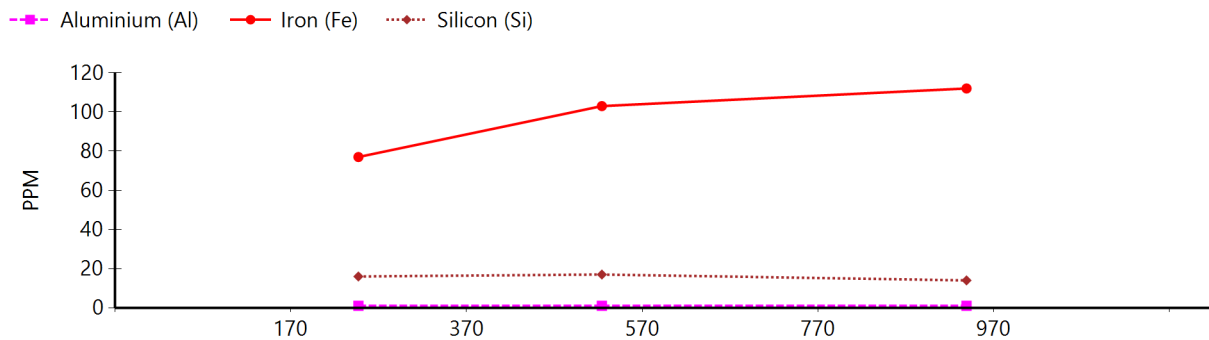
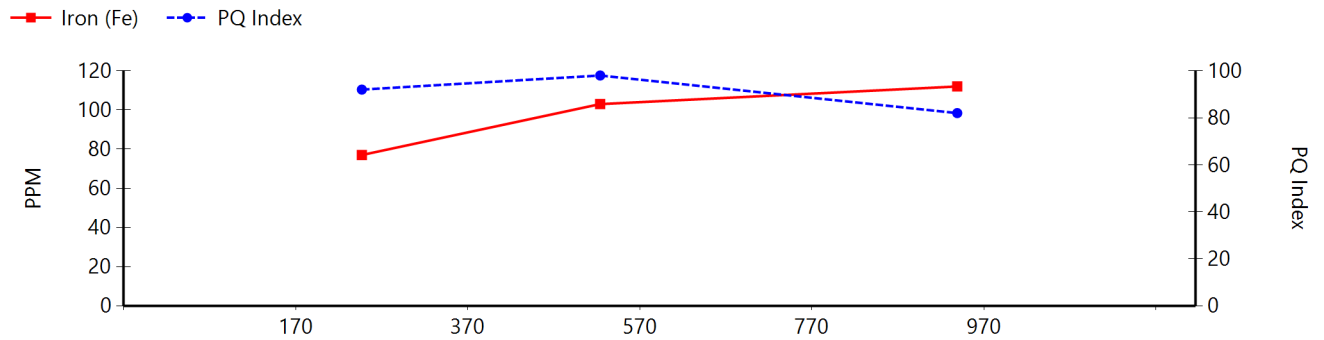


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KOWA Sample Report



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KOWA Sample Report



Brooks Hire Brisbane (Oxley) : BRISBANE

L339 : KOMATSU WA320-8 86555

Technician Geoffrey Coombes

my.komatsu.com.au/cms/samples/20221012100847

Diesel Engine

Evaluation Change of oil add package & viscosity appear to be in line with reported change of oil type from factory oil used. Results appear to be acceptable, sample at the next sample interval.

Sample Number	20221012100847	20220316100137	20211224100446
Status	Normal	Caution	Normal
Registration	737362	698591	538335
Sampled	28/09/2022	04/03/2022	09/12/2021
Evaluated	12/10/2022	16/03/2022	24/12/2021
Unit Hours	939	524	247
Comp. Hours	939	524	247
Oil Hours	440	524	247
Oil Make	FUCHS	FACTORY	FACTORY
Oil Type	TITAN CARGO	EO	FACTORY
Oil Grade	15W-40	15W-40	OIL
Oil Changed	Yes	Yes	No
Topup		5	5
Filter Changed	Yes	Yes	
Wear + Additives			
PQ Index	10	13	14
Iron (Fe)	10	13	9
Chromium (Cr)	1	1	<1
Nickel (Ni)	<1	<1	<1
Copper (Cu)	8	43	26
Tin (Sn)	<1	<1	<1
Lead (Pb)	<1	<1	<1
Aluminium (Al)	2	2	2
Silicon (Si)	5	13	13
Sodium (Na)	3	2	2
Potassium (K)	1	2	3
Boron (B)	101	73	117
Molybdenum (Mo)	58	61	59
Zinc (Zn)	1021	1080	1071
Magnesium (Mg)	909	408	415
Phosphorus (P)	904	945	972
Calcium (Ca)	848	1577	1540
Lithium (Li)	<1	<1	<1
Silver (Ag)	<1	<1	<1
Barium (Ba)	1	6	6
Manganese (Mn)	<1	2	2
Titanium (Ti)	<1	<1	<1
Vanadium (V)	<1	<1	<1
Cadmium (Cd)	<1	<1	<1
Oil Condition			
Nitration	8	8	7
Oxidation	17	19	18
Sulphation	23	24	24
Soot	3	4	3
Physicals			
Water	<0.1	<0.1	<0.1

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KOWA Sample Report

**BROOKS
HIRE**

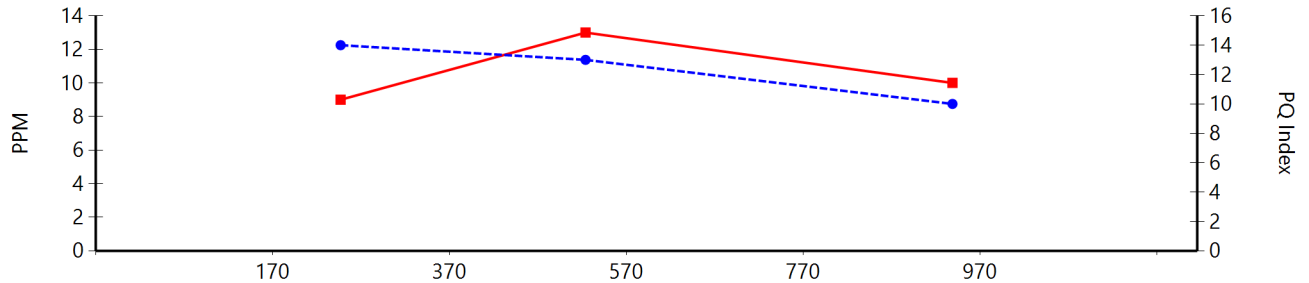
Sample Number 20221012100847 20220316100137 20211224100446

Fuel 0

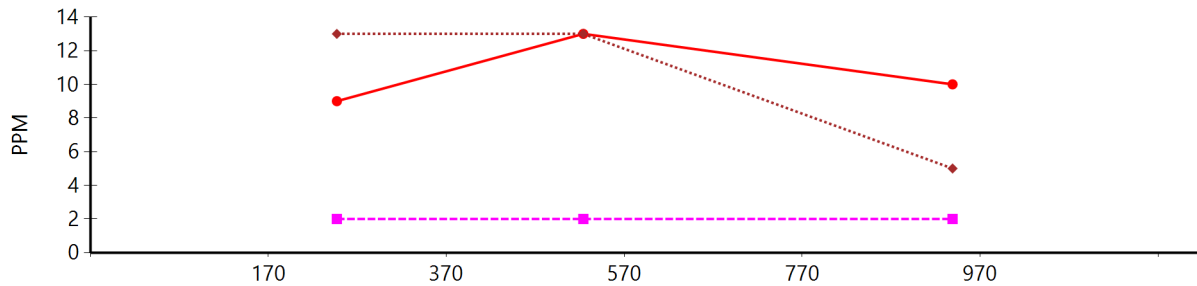
GC Fuel 1.6 1.2

Viscosity @ 100°C 14.4 13.9 14.0

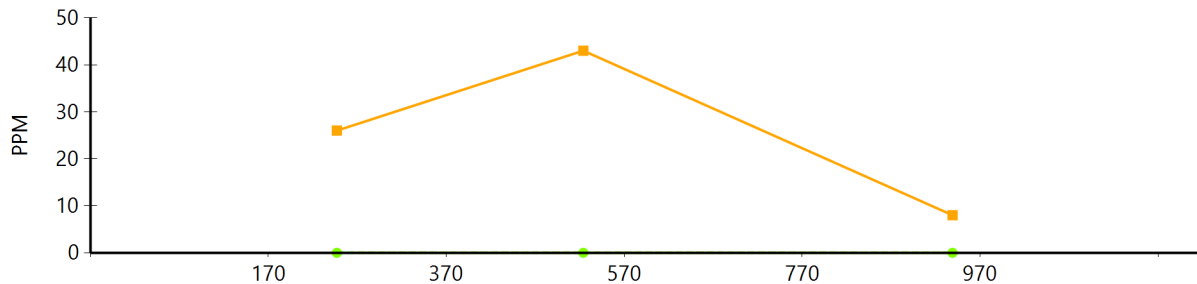
Iron (Fe) PQ Index



Aluminium (Al) Iron (Fe) Silicon (Si)



Copper (Cu) Lead (Pb)



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my.komatsu.com.au/cms
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KOWA Sample Report



Brooks Hire Brisbane (Oxley) : BRISBANE

EX262 : KOMATSU PC88MR-10 8493

Technician Geoffrey Coombes

my.komatsu.com.au/cms/samples/20221012100836

Swing Drive

Evaluation Excess water evident at >1% in component. Lab note: Sample is an emulsion. Silicon may indicate dirt/dust contamination or silicon based sealant materials.

Recommendation Recommend to flush the component to remove contaminants, monitor mag.plugs for wear debris & investigate all possible water entry points (seals, gaskets or breathers). Shorten service/sample interval to monitor. All feedback on machine inspection/repairs is appreciated.

Sample Number	20221012100836	20200828100439			
Status	Action	Normal			
Registration	737923	298058			
Sampled	28/09/2022	27/08/2020			
Evaluated	12/10/2022	28/08/2020			
Unit Hours	1423	526			
Comp. Hours	1423	526			
Oil Hours	255	526			
Oil Make	FUCHS	FACTORY			
Oil Type	?	FACTORY			
Oil Grade	30W	OIL			
Oil Changed	No	No			
Wear + Additives					
PQ Index	10	19			
Iron (Fe)	35	49			
Chromium (Cr)	1	1			
Nickel (Ni)	<1	<1			
Copper (Cu)	192	110			
Tin (Sn)	5	<1			
Lead (Pb)	<1	<1			
Aluminium (Al)	2	<1			
Silicon (Si)	123	66			
Sodium (Na)	2	6			
Potassium (K)	1	1			
Boron (B)	4	<1			
Molybdenum (Mo)	<1	<1			
Zinc (Zn)	983	890			
Magnesium (Mg)	12	12			
Phosphorus (P)	810	793			
Calcium (Ca)	3116	4153			
Lithium (Li)	8	<1			
Silver (Ag)	<1				
Barium (Ba)	6				
Manganese (Mn)	1				
Titanium (Ti)	1				
Vanadium (V)	<1				
Cadmium (Cd)	<1				
Physicals					
Water	>1.0	<0.1			
Viscosity @ 40°C	92	98			

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KOWA Sample Report



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KOWA Sample Report



Brooks Hire Brisbane (Oxley) : BRISBANE

EX262 : KOMATSU PC88MR-10 8493

Hydraulic System

Technician Geoffrey Coombes

my.komatsu.com.au/cms/samples/20221012100805

Evaluation All tests on this sample appear acceptable, keep sampling to monitor further.

Sample Number	20221012100805	20200828100402			
Status	Normal	Normal			
Registration	737957	298063			
Sampled	28/09/2022	27/08/2020			
Evaluated	12/10/2022	28/08/2020			
Unit Hours	1423	526			
Comp. Hours	1423	526			
Oil Hours	1423	526			
Oil Make	FACTORY	FACTORY			
Oil Type	FACTORY	FACTORY			
Oil Grade	OIL	OIL			
Oil Changed	No	No			
Wear + Additives					
PQ Index	10	11			
Iron (Fe)	10	6			
Chromium (Cr)	<1	<1			
Nickel (Ni)	<1	<1			
Copper (Cu)	41	28			
Tin (Sn)	<1	<1			
Lead (Pb)	1	1			
Aluminium (Al)	3	<1			
Silicon (Si)	11	12			
Sodium (Na)	3	3			
Potassium (K)	3	3			
Boron (B)	1	<1			
Molybdenum (Mo)	<1	<1			
Zinc (Zn)	749	815			
Magnesium (Mg)	13	13			
Phosphorus (P)	547	666			
Calcium (Ca)	2949	3731			
Lithium (Li)	1				
Silver (Ag)	<1				
Barium (Ba)	<1				
Manganese (Mn)	1				
Titanium (Ti)	<1				
Vanadium (V)	<1				
Cadmium (Cd)	<1				
Particles					
ISO 3 Count	22/18/12	20/17/13			
04 Microns	31021				
06 Microns	1601				
14 Microns	38				
21 Microns	12				
Oil Condition					
Nitration	5	5			
Oxidation	8	8			

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KOWA Sample Report

**BROOKS
HIRE**

Sample Number 20221012100805 20200828100402

Sulphation 19 19

Physicals

Water <0.1 <0.1

Viscosity @ 40°C 37 35

Status Legend

Critical Results indicate urgent action is required

Action Results indicate action is required as soon as possible

Caution Results indicate an increased trend that should be monitored

Query Further information is required

Normal Results are acceptable relative to the trend

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my.komatsu.com.au/cms
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KOWA Sample Report



Brooks Hire Brisbane (Oxley) : BRISBANE

EX262 : KOMATSU PC88MR-10 8493

Final Drive Right

Technician Geoffrey Coombes

my.komatsu.com.au/cms/samples/20221012100834

Evaluation Change of oil add package & viscosity appear to be in line with reported change of oil type from factory oil used. All results appear to be acceptable, continue sampling at the normal rate.

Sample Number	20221012100834	20200828100438			
Status	Normal	Normal			
Registration	737910	297390			
Sampled	28/09/2022	27/08/2020			
Evaluated	12/10/2022	28/08/2020			
Unit Hours	1423	526			
Comp. Hours	1423	526			
Oil Hours	255	526			
Oil Make	FUCHS	FACTORY			
Oil Type	GEAR	FACTORY			
Oil Grade	50W	OIL			
Oil Changed	No	No			
Wear + Additives					
PQ Index	69	170			
Iron (Fe)	63	170			
Chromium (Cr)	2	6			
Nickel (Ni)	<1	1			
Copper (Cu)	1	1			
Tin (Sn)	<1	<1			
Lead (Pb)	<1	<1			
Aluminium (Al)	1	1			
Silicon (Si)	12	11			
Sodium (Na)	1	4			
Potassium (K)	3	9			
Boron (B)	20	65			
Molybdenum (Mo)	<1	<1			
Zinc (Zn)	870	200			
Magnesium (Mg)	13	2			
Phosphorus (P)	748	497			
Calcium (Ca)	2683	244			
Lithium (Li)	2	9			
Silver (Ag)	<1				
Barium (Ba)	11				
Manganese (Mn)	1				
Titanium (Ti)	<1				
Vanadium (V)	<1				
Cadmium (Cd)	<1				
Physicals					
Water	<0.1	<0.1			
Viscosity @ 40°C	187	176			

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KOWA Sample Report



Status Legend	
Critical	Results indicate urgent action is required
Action	Results indicate action is required as soon as possible
Caution	Results indicate an increased trend that should be monitored
Query	Further information is required
Normal	Results are acceptable relative to the trend

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Brooks Hire Brisbane (Oxley) : BRISBANE

EX262 : KOMATSU PC88MR-10 8493

Final Drive Left

Technician Geoffrey Coombes

my.komatsu.com.au/cms/samples/20221012100833

Evaluation Change of oil add package & viscosity appear to be in line with reported change of oil type from factory oil used. All results appear to be acceptable, continue sampling at the normal rate.

Sample Number	20221012100833	20200828100437			
Status	Normal	Normal			
Registration	737956	297403			
Sampled	28/09/2022	27/08/2020			
Evaluated	12/10/2022	28/08/2020			
Unit Hours	1423	526			
Comp. Hours	1423	526			
Oil Hours	255	526			
Oil Make	FUCHS	FACTORY			
Oil Type	GEAR	FACTORY			
Oil Grade	50W	OIL			
Oil Changed	No	No			
Wear + Additives					
PQ Index	73	172			
Iron (Fe)	80	173			
Chromium (Cr)	2	5			
Nickel (Ni)	1	1			
Copper (Cu)	1	1			
Tin (Sn)	<1	<1			
Lead (Pb)	<1	<1			
Aluminium (Al)	2	1			
Silicon (Si)	15	12			
Sodium (Na)	1	4			
Potassium (K)	3	9			
Boron (B)	22	64			
Molybdenum (Mo)	<1	<1			
Zinc (Zn)	866	231			
Magnesium (Mg)	14	2			
Phosphorus (P)	746	509			
Calcium (Ca)	2712	387			
Lithium (Li)	1	3			
Silver (Ag)	<1				
Barium (Ba)	12				
Manganese (Mn)	2				
Titanium (Ti)	<1				
Vanadium (V)	<1				
Cadmium (Cd)	<1				
Physicals					
Water	<0.1	<0.1			
Viscosity @ 40°C	191	170			

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KOWA Sample Report



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Action	Results indicate action is required as soon as possible
Caution	Results indicate an increased trend that should be monitored
Query	Further information is required
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KOWA Sample Report



Brooks Hire Brisbane (Oxley) : BRISBANE

EX262 : KOMATSU PC88MR-10 8493

Technician Geoffrey Coombes

my.komatsu.com.au/cms/samples/20221012100846

Diesel Engine

Evaluation Variation in additive package evident & possibly due to oil change and type. All other results appear satisfactory, continue sampling at the normal rate.

Recommendation Please check and confirm oil make, type and grade.

Sample Number	20221012100846	20210120100413	20200828100419		
Status	Normal	Normal	Normal		
Registration	737954	914886	299258		
Sampled	28/09/2022	04/01/2021	27/08/2020		
Evaluated	12/10/2022	20/01/2021	28/08/2020		
Unit Hours	1423	758	526		
Comp. Hours	1423	758	526		
Oil Hours	255	232	526		
Oil Make	FUCHS	FUCHS	KOMATSU		
Oil Type	TITAN CARGO	TITAN CARGO	EO LA		
Oil Grade	15W-40	15W-40	15W-40		
Oil Changed	Yes	Yes	Yes		
Topup			270820		
Filter Changed	Yes	Yes	Yes		
Wear + Additives					
PQ Index	10	13	13		
Iron (Fe)	24	12	34		
Chromium (Cr)	<1	1	1		
Nickel (Ni)	<1	<1	<1		
Copper (Cu)	9	8	44		
Tin (Sn)	<1	<1	2		
Lead (Pb)	2	3	9		
Aluminium (Al)	3	1	2		
Silicon (Si)	17	16	40		
Sodium (Na)	3	5	6		
Potassium (K)	3	3	19		
Boron (B)	2	38	49		
Molybdenum (Mo)	1	52	106		
Zinc (Zn)	946	1165	1052		
Magnesium (Mg)	17	851	18		
Phosphorus (P)	828	1085	987		
Calcium (Ca)	2329	1149	2798		
Lithium (Li)	<1				
Silver (Ag)	<1				
Barium (Ba)	<1				
Manganese (Mn)	<1				
Titanium (Ti)	<1				
Vanadium (V)	<1				
Cadmium (Cd)	<1				
Oil Condition					
Nitration	10	10	13		
Oxidation	14	16	22		
Sulphation	22	22	23		
Soot	8	3	6		

Physicals

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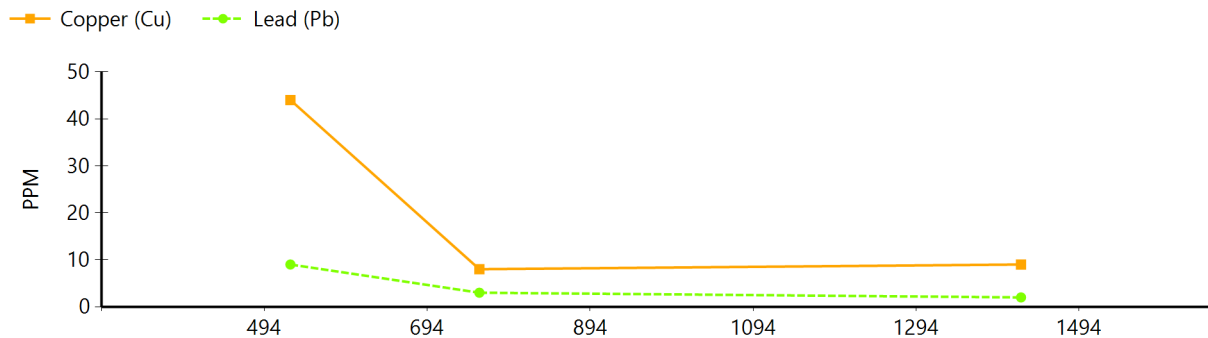
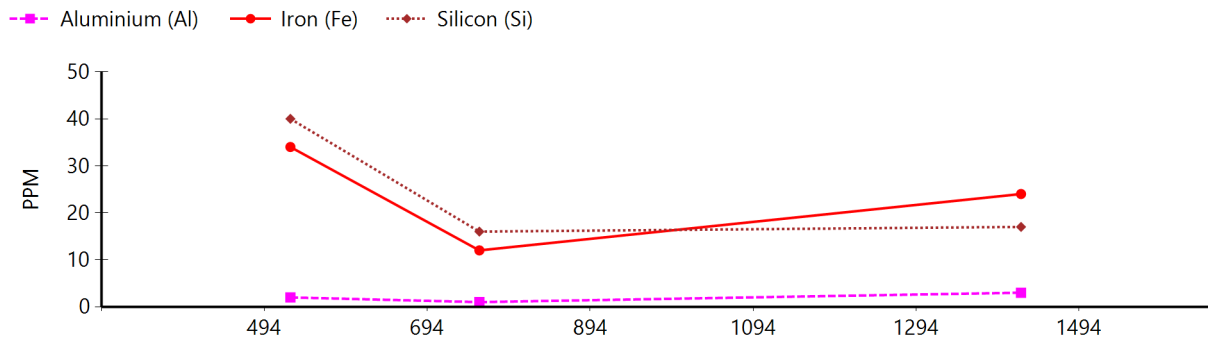
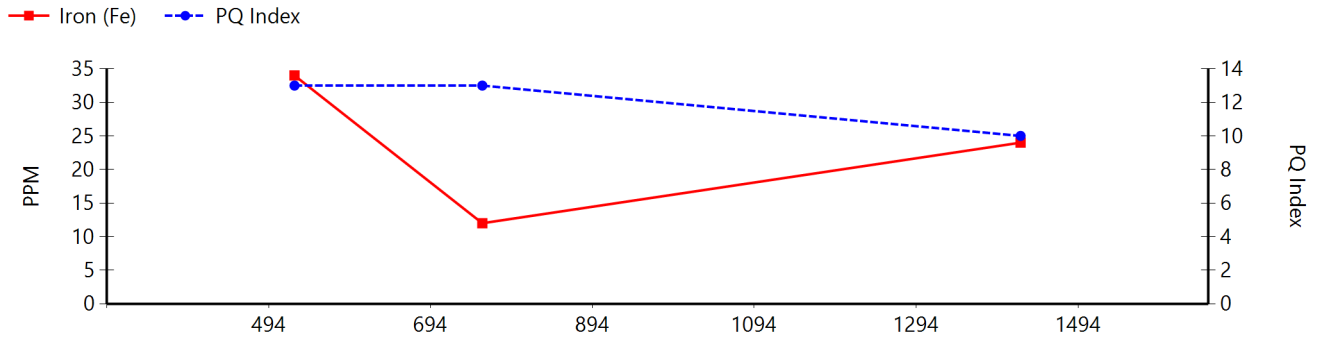
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KOWA Sample Report



Sample Number	20221012100846	20210120100413	20200828100419		
Water	<0.1	<0.1	<0.1		
Fuel		0	0		
GC Fuel	1.1				
Viscosity @ 100°C	14.1	14.7	13.1		



Status Legend

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KOWA Sample Report



Brooks Hire Brisbane (Oxley) : BRISBANE

EX262 : KOMATSU PC88MR-10 8493

Technician Geoffrey Coombes

my.komatsu.com.au/cms/samples/20221012100835

Damper

Evaluation Excess water evident at >1% in component. Lab note: Sample is an emulsion.

Recommendation As the oil has been reported changed, monitor mag.plugs for wear debris & investigate all possible water entry points (seals, gaskets or breathers). Shorten service/sample interval to monitor.

Sample Number 20221012100835

Status Action

Registration 737461

Sampled 28/09/2022

Evaluated 12/10/2022

Unit Hours 1423

Comp. Hours 1423

Oil Hours 255

Oil Make FUCHS

Oil Type ?

Oil Grade 30W

Oil Changed Yes

Wear + Additives

PQ Index 97

Iron (Fe) 281

Chromium (Cr) 3

Nickel (Ni) <1

Copper (Cu) 8

Tin (Sn) <1

Lead (Pb) 1

Aluminium (Al) 2

Silicon (Si) 69

Sodium (Na) 11

Potassium (K) 35

Boron (B) 12

Molybdenum (Mo) 4

Zinc (Zn) 1012

Magnesium (Mg) 10

Phosphorus (P) 798

Calcium (Ca) 2312

Lithium (Li) 1

Silver (Ag) <1

Barium (Ba) 7

Manganese (Mn) 9

Titanium (Ti) 5

Vanadium (V) <1

Cadmium (Cd) <1

Physicals

Water >1.0

Viscosity @ 40°C 85



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KOWA Sample Report



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KOWA Sample Report



Brooks Hire Brisbane (Oxley) : BRISBANE

EX152 : KOMATSU HB215LC-1 2358

Swing Drive

Technician Geoffrey Coombes

my.komatsu.com.au/cms/samples/20221012100832

Evaluation Viscosity appears to be correct for oil type. Results appear to be acceptable, sample at the next sample interval.

Sample Number	20221012100832	20190405100341	20140131100822	20130603100341
Status	Normal	Caution	Normal	Normal
Registration	654434	803349	515290	506048
Sampled	18/08/2022	03/04/2019	22/01/2014	25/05/2013
Evaluated	12/10/2022	05/04/2019	31/01/2014	03/06/2013
Unit Hours	6130	4496	1238	250
Comp. Hours	6130	4496	1238	250
Oil Hours	1000		1238	250
Oil Make	FUCHS	FUCHS	KOMATSU	KOMATSU
Oil Type	TITAN UTTO TO-4	TITAN UTTO TO-4	TO	TO
Oil Grade	30W	30W	30W	30W
Oil Changed	Yes	No	Yes	No
Wear + Additives				
PQ Index	10	10	17	31
Iron (Fe)	51	19	39	24
Chromium (Cr)	1	<1	1	<1
Nickel (Ni)	<1	<1	<1	<1
Copper (Cu)	38	39	2	4
Tin (Sn)	<1	<1	<1	<1
Lead (Pb)	1	8	<1	<1
Aluminium (Al)	1	3	1	<1
Silicon (Si)	8	53	10	10
Sodium (Na)	1	<1	6	2
Potassium (K)	2	<1	<1	<1
Boron (B)	<1	6	1	<1
Molybdenum (Mo)	<1	<1	1	<1
Zinc (Zn)	924	1043	727	704
Magnesium (Mg)	14	12	10	8
Phosphorus (P)	697	876	692	655
Calcium (Ca)	3377	3993	3045	3008
Lithium (Li)	<1	<1		
Silver (Ag)	<1			
Barium (Ba)	<1			
Manganese (Mn)	1			
Titanium (Ti)	<1			
Vanadium (V)	<1			
Cadmium (Cd)	<1			
Physicals				
Water	<0.1	<0.1	<0.1	<0.1
Viscosity @ 40°C	91	76	90	91

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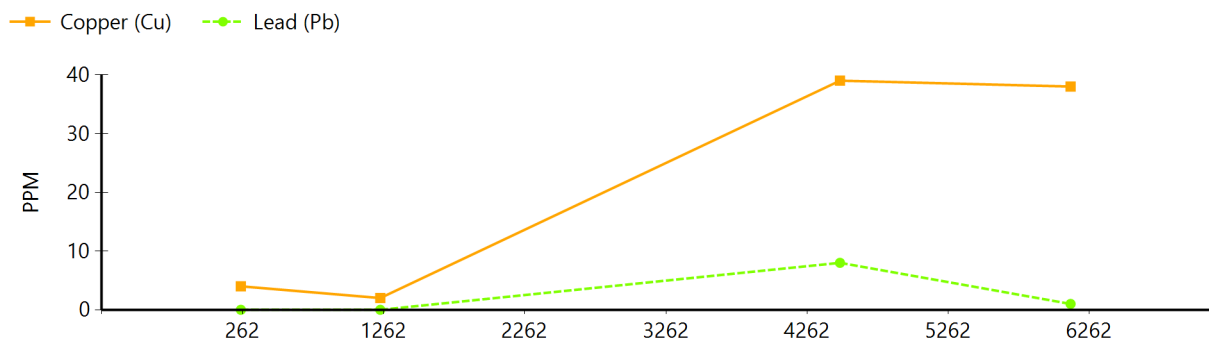
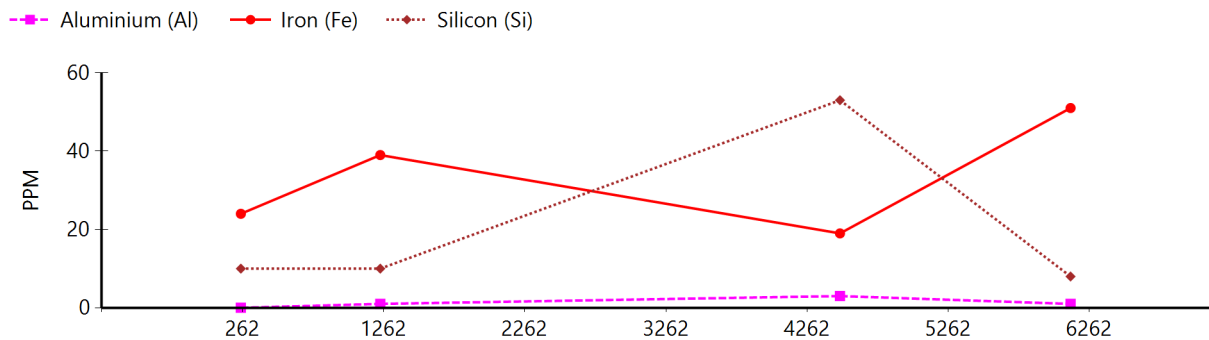
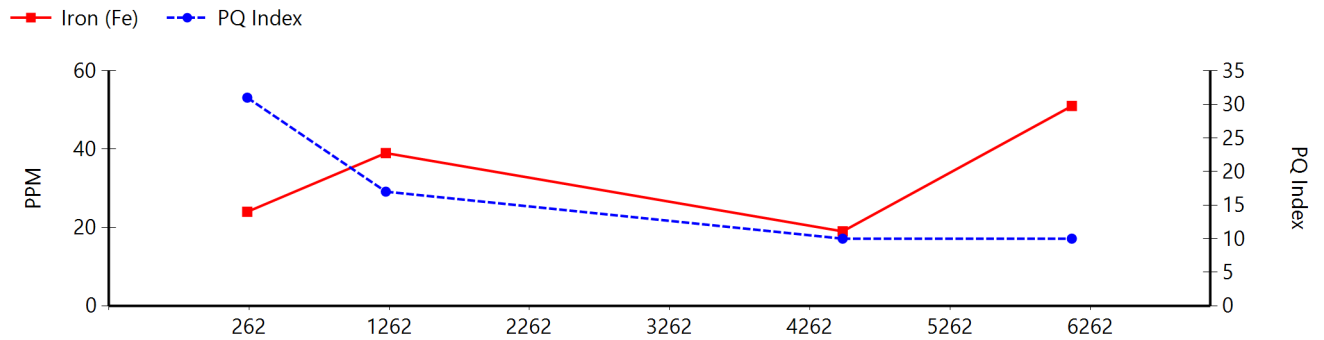


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KOWA Sample Report



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Caution	Results indicate an increased trend that should be monitored
Query	Further information is required
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KOWA Sample Report



Brooks Hire Brisbane (Oxley) : BRISBANE

EX152 : KOMATSU HB215LC-1 2358

Hydraulic System

Technician Geoffrey Coombes

my.komatsu.com.au/cms/samples/20221012100804

Evaluation Results appear to be acceptable, sample at the next sample interval.

Sample Number	20221012100804	20190405100306	20180117100101	20160804100301	20150306100101
Status	Normal	Normal	Normal	Normal	Normal
Registration	590735	880592	568609	1168806	220830
Sampled	18/08/2022	03/04/2019	05/01/2018	29/07/2016	17/02/2015
Evaluated	12/10/2022	05/04/2019	17/01/2018	04/08/2016	06/03/2015
Unit Hours	6130	4496	3974	3049	1932
Comp. Hours	6130	4496	3974	3049	1932
Oil Hours	2130	4496	3974	3049	1932
Oil Make	FUCHS	FUCHS	FUCHS	FUCHS	FUCHS
Oil Type	RENOLIN B PLUS	RENOLIN B PLUS	TITAN	TITAN	UTTO
Oil Grade	46	46	10W	10W	10W-30
Oil Changed	No	No	No	No	No
Filter Changed	Yes		Yes	Yes	Yes
Wear + Additives					
PQ Index	10	12	11	12	12
Iron (Fe)	6	6	6	2	3
Chromium (Cr)	<1	<1	<1	<1	<1
Nickel (Ni)	<1	<1	<1	<1	<1
Copper (Cu)	5	8	9	5	9
Tin (Sn)	<1	<1	<1	<1	<1
Lead (Pb)	1	1	1	3	1
Aluminium (Al)	2	1	<1	<1	7
Silicon (Si)	5	4	5	8	5
Sodium (Na)	3	3	3	2	2
Potassium (K)	1	1	1	1	1
Boron (B)	7	<1	4	4	2
Molybdenum (Mo)	2	<1	<1	<1	<1
Zinc (Zn)	525	543	598	826	591
Magnesium (Mg)	24	19	25	20	32
Phosphorus (P)	432	476	493	693	462
Calcium (Ca)	871	934	1222	2318	1311
Lithium (Li)	<1				
Silver (Ag)	<1				
Barium (Ba)	<1				
Manganese (Mn)	<1				
Titanium (Ti)	<1				
Vanadium (V)	<1				
Cadmium (Cd)	<1				
Particles					
ISO 3 Count	20/17/14	18/15/11	19/16/13	23/22/16	
04 Microns	5769				
06 Microns	866				
14 Microns	94				
21 Microns	32				
Oil Condition					
Nitration	4	4	5	4	

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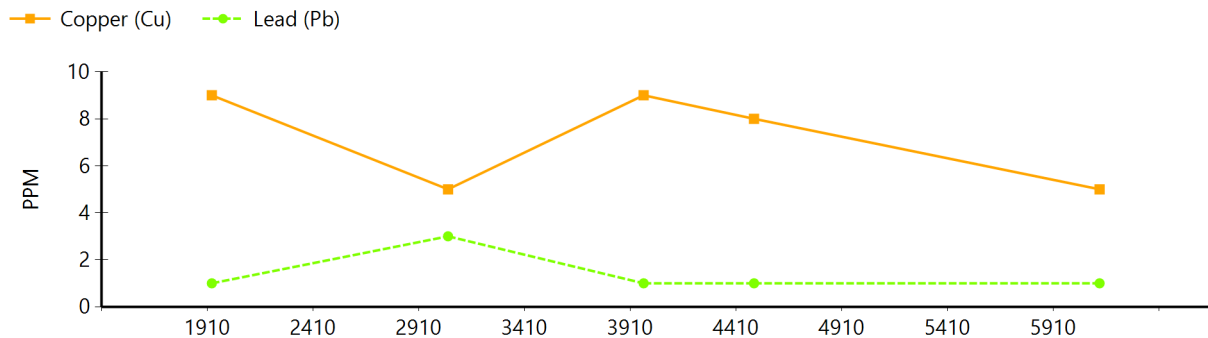
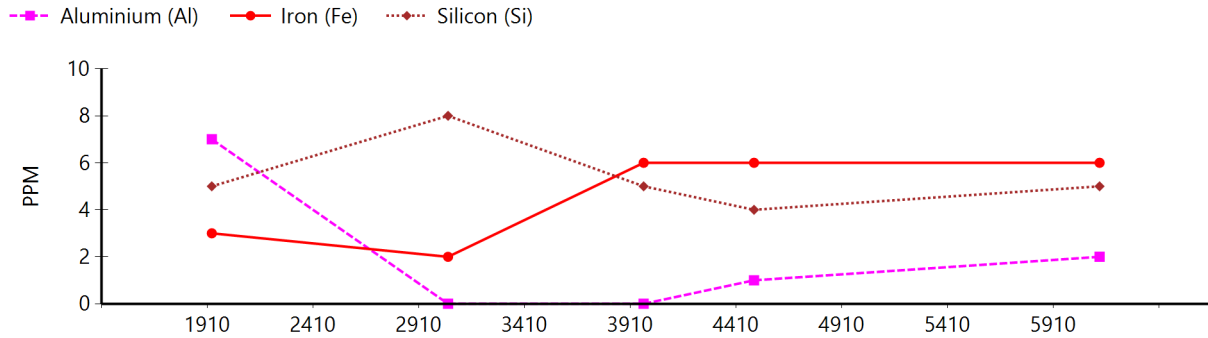
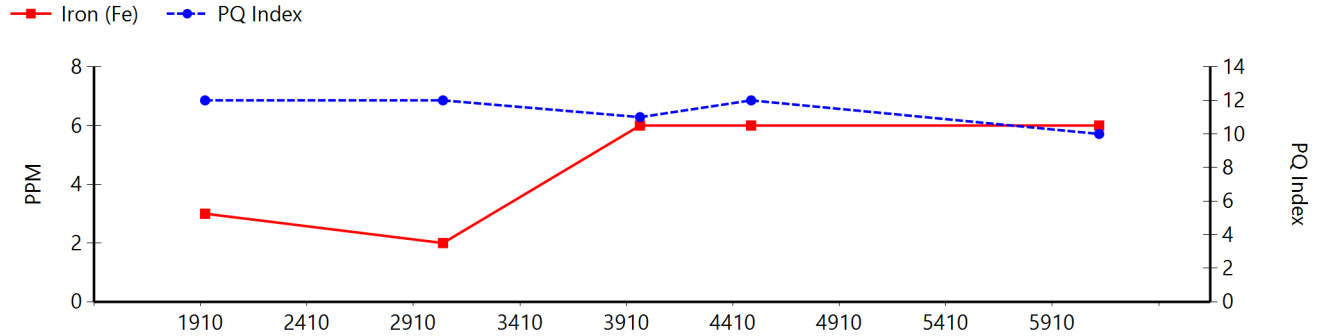
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KOWA Sample Report

**BROOKS
HIRE**

Sample Number	20221012100804	20190405100306	20180117100101	20160804100301	20150306100101
Oxidation	16	26	34	21	
Sulphation	24	35	42	27	
Physicals					
Water	<0.1	<0.1	<0.1	<0.1	<0.1
Viscosity @ 40°C	48	44	44	41	46



Status Legend

Critical	Results indicate urgent action is required
Action	Results indicate action is required as soon as possible
Caution	Results indicate an increased trend that should be monitored
Query	Further information is required
Normal	Results are acceptable relative to the trend

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KOWA Sample Report



Brooks Hire Brisbane (Oxley) : BRISBANE

EX152 : KOMATSU HB215LC-1 2358

Final Drive Right

Technician Geoffrey Coombes

my.komatsu.com.au/cms/samples/20221012100830

Evaluation Aluminium & Silicon may still indicate a degree of dirt/dust which appears to be causing elevated results for Iron, Chromium, Copper & PQ Index.

Recommendation As the oil has been reported changed, monitor mag.plugs for wear debris & investigate all possible dirt entry points (seals, duo-cones, gaskets or breathers). Shorten service/sample interval to monitor.

Sample Number	20221012100830	20190405100340	20180117100124	20170411100338	20160804100325
Status	Critical	Action	Normal	Caution	Action
Registration	590081	806862	566885	534637	116048
Sampled	28/09/2022	03/04/2019	05/01/2018	07/04/2017	29/07/2016
Evaluated	12/10/2022	05/04/2019	17/01/2018	11/04/2017	04/08/2016
Unit Hours	6130	4496	3974	3579	3049
Comp. Hours	6130	4496	3974	3579	
Oil Hours	1000		395	530	500
Oil Make	FUCHS	FUCHS	FUCHS	FUCHS	FUCHS
Oil Type	TITAN UTTO TO-4	TITAN UTTO TO-4	TITAN UTTO TO-4	UTTO	UTTO
Oil Grade	30W	30W	30W	10W-30	10W-30
Oil Changed	Yes	Yes	Yes	Yes	Yes
Wear + Additives					
PQ Index	1008	108	45	77	179
Iron (Fe)	1415	204	104	212	387
Chromium (Cr)	31	7	3	4	8
Nickel (Ni)	3	1	<1	<1	1
Copper (Cu)	65	4	3	17	9
Tin (Sn)	<1	<1	<1	<1	<1
Lead (Pb)	<1	2	1	10	<1
Aluminium (Al)	115	12	<1	5	11
Silicon (Si)	627	91	28	41	81
Sodium (Na)	18	1	1	3	3
Potassium (K)	41	1	1	2	3
Boron (B)	2	2	1	3	1
Molybdenum (Mo)	6	3	<1	1	1
Zinc (Zn)	1012	1111	1071	1062	1040
Magnesium (Mg)	19	14	14	15	15
Phosphorus (P)	821	972	955	964	900
Calcium (Ca)	2871	3717	3547	3384	3302
Lithium (Li)	<1	<1	<1	<1	<1
Silver (Ag)	<1				
Barium (Ba)	2				
Manganese (Mn)	12				
Titanium (Ti)	9				
Vanadium (V)	2				
Cadmium (Cd)	<1				
Physicals					
Water	<0.1	<0.1	<0.1	<0.1	<0.1
Viscosity @ 40°C	90	90	90	87	86

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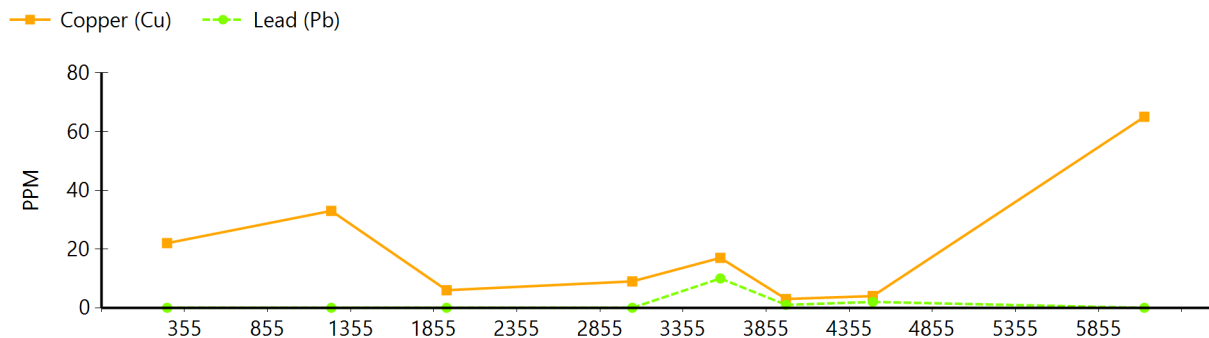
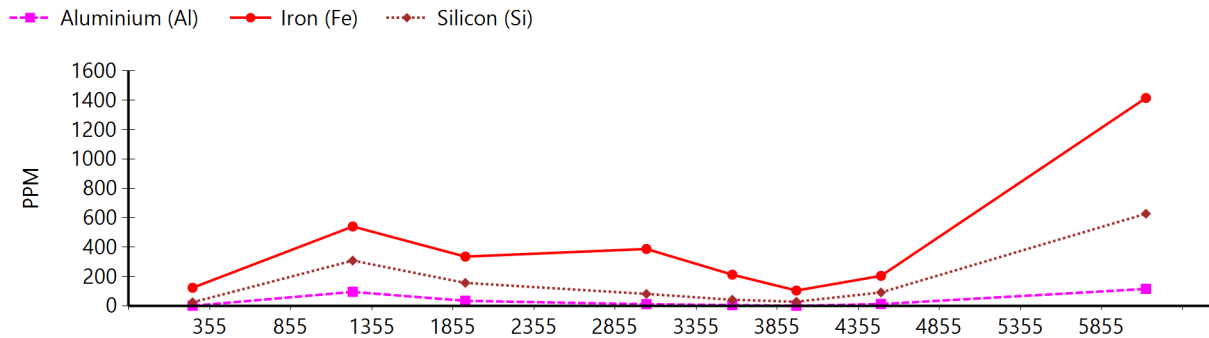
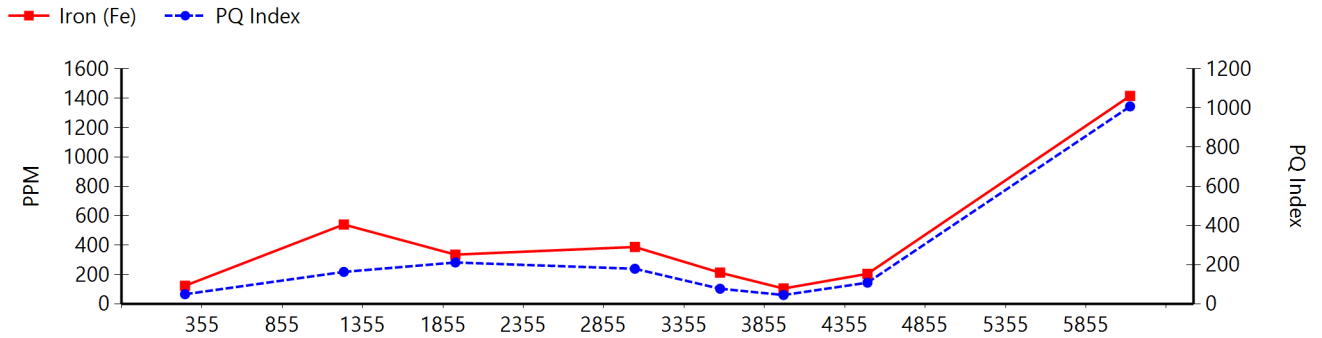


cms@komatsu.com.au
my.komatsu.com.au/cms
Australia +61 1300 566 287

cms@komatsu.co.nz
my.komatsu.co.nz/cms
New Zealand +64 0800 566 2878

New Caledonia +687 435 306

KOWA Sample Report



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Report created 12/10/2022 15:52 AEST/AEDT.

KOWA Sample Report



Brooks Hire Brisbane (Oxley) : BRISBANE

EX152 : KOMATSU HB215LC-1 2358

Final Drive Left

Technician Geoffrey Coombes

my.komatsu.com.au/cms/samples/20221012100829

Evaluation Aluminium & Silicon may still indicate a degree of dirt/dust which appears to be causing elevated results for Iron, Chromium, Copper & PQ Index.

Recommendation As the oil has been reported changed, monitor mag.plugs for wear debris & investigate all possible dirt entry points (seals, duo-cones, gaskets or breathers). Shorten service/sample interval to monitor.

Sample Number	20221012100829	20190405100339	20180117100123	20170412100137	20160804100324
Status	Action	Action	Normal	Caution	Action
Registration	654943	803031	567597	534208	116050
Sampled	18/08/2022	03/04/2019	05/01/2018	07/04/2017	29/07/2016
Evaluated	12/10/2022	05/04/2019	17/01/2018	12/04/2017	04/08/2016
Unit Hours	6130	496	3974	3579	3049
Comp. Hours	6130	4496	3974	3579	
Oil Hours	1000		395	530	500
Oil Make	FUCHS	FUCHS	FUCHS	FUCHS	FUCHS
Oil Type	TITAN UTTO TO-4	TITAN UTTO TO-4	TITAN UTTO TO-4	TITAN UTTO TO-4	UTTO
Oil Grade	30W	30W	30W	30W	10W-30
Oil Changed	Yes	Yes	Yes	Yes	Yes
Wear + Additives					
PQ Index	1065	181	71	106	163
Iron (Fe)	965	327	144	268	363
Chromium (Cr)	16	6	3	3	4
Nickel (Ni)	2	1	<1	<1	<1
Copper (Cu)	45	9	2	4	5
Tin (Sn)	<1	<1	<1	<1	<1
Lead (Pb)	<1	2	<1	1	<1
Aluminium (Al)	72	24	8	59	7
Silicon (Si)	379	106	50	84	66
Sodium (Na)	12	3	1	4	3
Potassium (K)	22	4	1	3	3
Boron (B)	2	2	2	1	1
Molybdenum (Mo)	4	3	<1	1	<1
Zinc (Zn)	980	1108	1042	1022	1024
Magnesium (Mg)	16	16	14	15	14
Phosphorus (P)	816	968	977	915	873
Calcium (Ca)	3097	3678	3452	3243	3227
Lithium (Li)	<1	<1	<1	<1	<1
Silver (Ag)	<1				
Barium (Ba)	1				
Manganese (Mn)	7				
Titanium (Ti)	5				
Vanadium (V)	1				
Cadmium (Cd)	<1				
Physicals					
Water	<0.1	<0.1	<0.1	<0.1	<0.1
Viscosity @ 40°C	99	91	90	88	86

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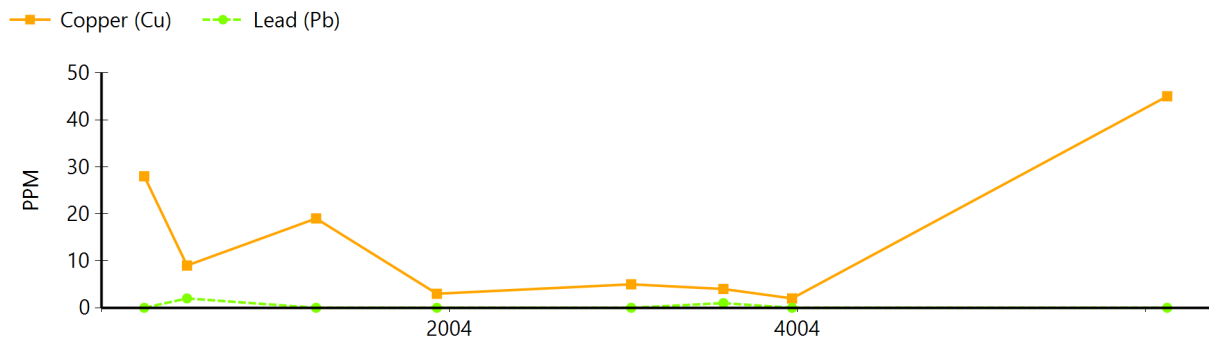
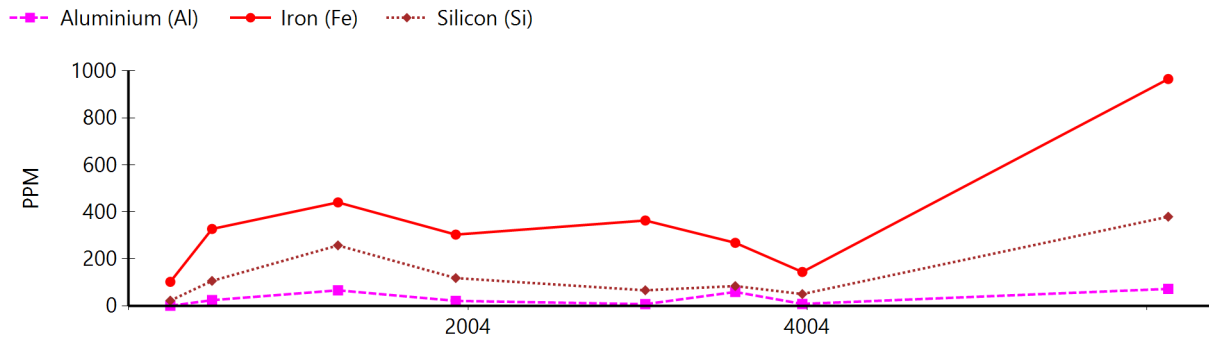
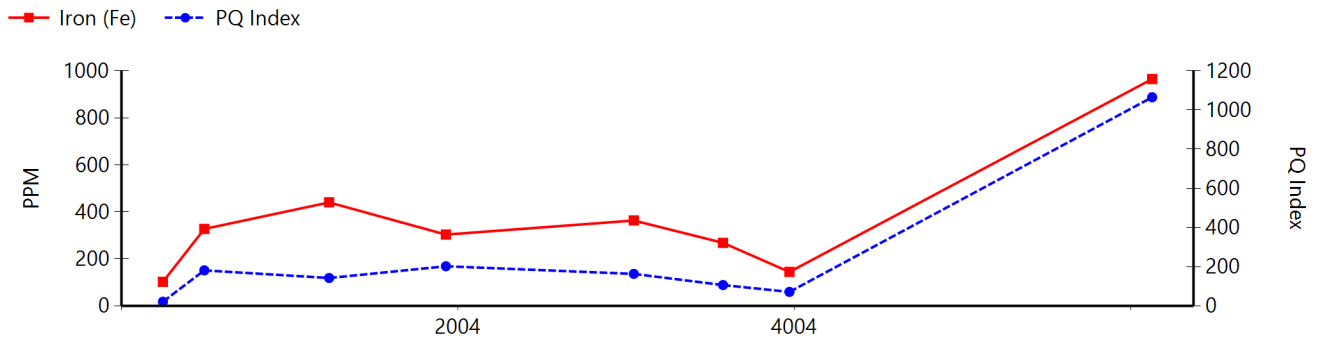


cms@komatsu.com.au
my.komatsu.com.au/cms
Australia +61 1300 566 287

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my.komatsu.co.nz/cms
New Zealand +64 0800 566 2878

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KOWA Sample Report



Brooks Hire Brisbane (Oxley) : BRISBANE

EX152 : KOMATSU HB215LC-1 2358

Electric Swing Motor

Technician Geoffrey Coombes

my.komatsu.com.au/cms/samples/20221012100831

Evaluation Last time this component was sampled was 03/2014. Viscosity increase noted. Viscosity appears high (>15% above new oil spec) for the stated oil in this sample. All other results appear satisfactory, continue sampling at the normal rate.

Recommendation Please check and confirm oil make, type and grade.

Sample Number	20221012100831	20140131100819	20130603100226		
Status	Normal	Normal	Normal		
Registration	653693	255600	543709		
Sampled	18/08/2022	22/01/2014	25/05/2013		
Evaluated	12/10/2022	31/01/2014	03/06/2013		
Unit Hours	6130	1238	250		
Comp. Hours	6130	1238	250		
Oil Hours	1000	1238	250		
Oil Make	FUCHS	KOMATSU	KOMATSU		
Oil Type	TITAN UTTO TO-4	TO	TO		
Oil Grade	10W	10W	10W		
Oil Changed	Yes	Yes	No		
Wear + Additives					
PQ Index	10	10	16		
Iron (Fe)	18	6	3		
Chromium (Cr)	<1	<1	<1		
Nickel (Ni)	<1	<1	<1		
Copper (Cu)	52	31	15		
Tin (Sn)	<1	<1	<1		
Lead (Pb)	6	7	6		
Aluminium (Al)	4	2	2		
Silicon (Si)	41	87	78		
Sodium (Na)	2	4	3		
Potassium (K)	1	3	3		
Boron (B)	4	4	2		
Molybdenum (Mo)	<1	1	<1		
Zinc (Zn)	872	716	707		
Magnesium (Mg)	13	10	11		
Phosphorus (P)	695	598	567		
Calcium (Ca)	3167	3122	3561		
Lithium (Li)	<1				
Silver (Ag)	<1				
Barium (Ba)	<1				
Manganese (Mn)	<1				
Titanium (Ti)	<1				
Vanadium (V)	<1				
Cadmium (Cd)	<1				
Physicals					
Water	<0.1	<0.1	<0.1		
Viscosity @ 40°C	77	40	38		

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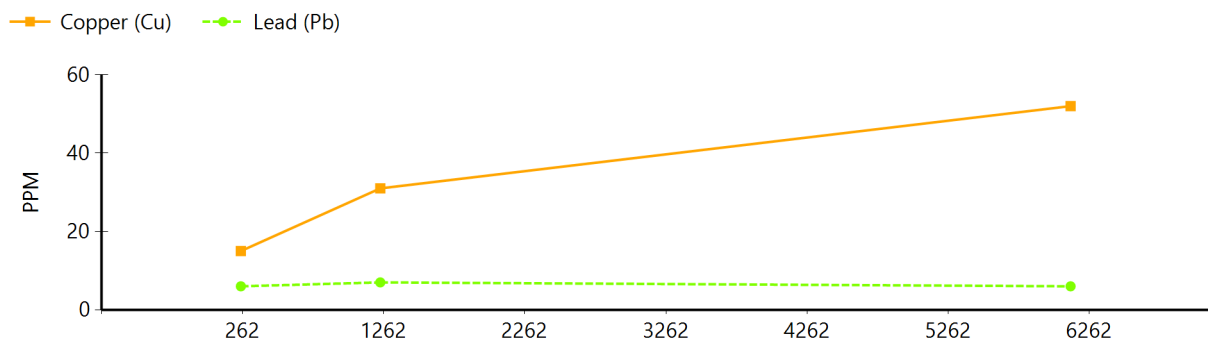
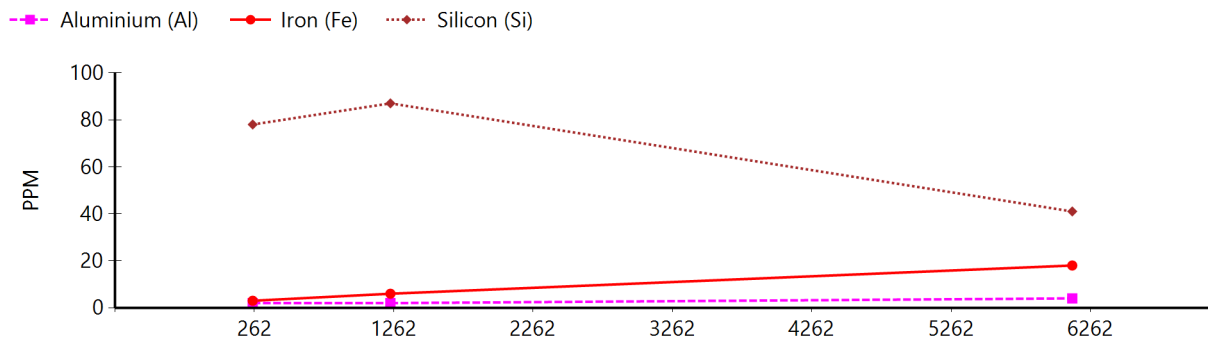
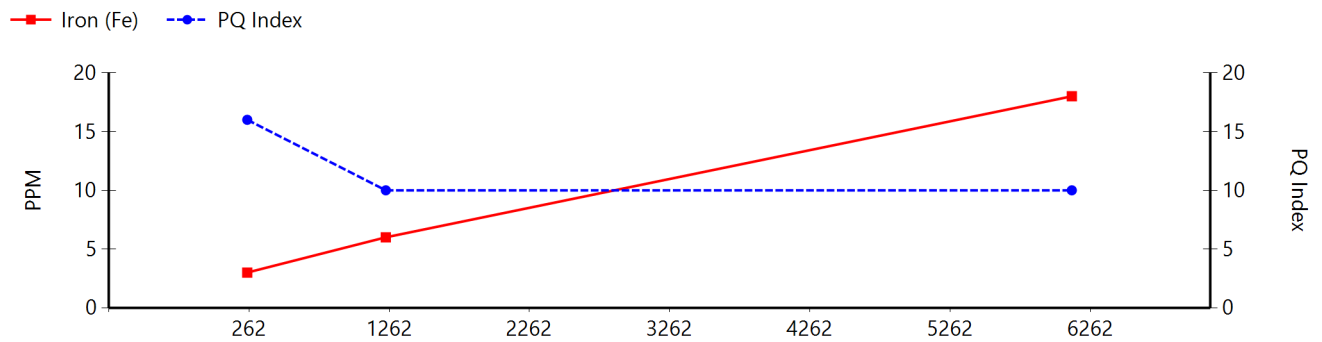
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my.komatsu.com.au/cms
Australia +61 1300 566 287

cms@komatsu.co.nz
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KOWA Sample Report

**BROOKS
HIRE**



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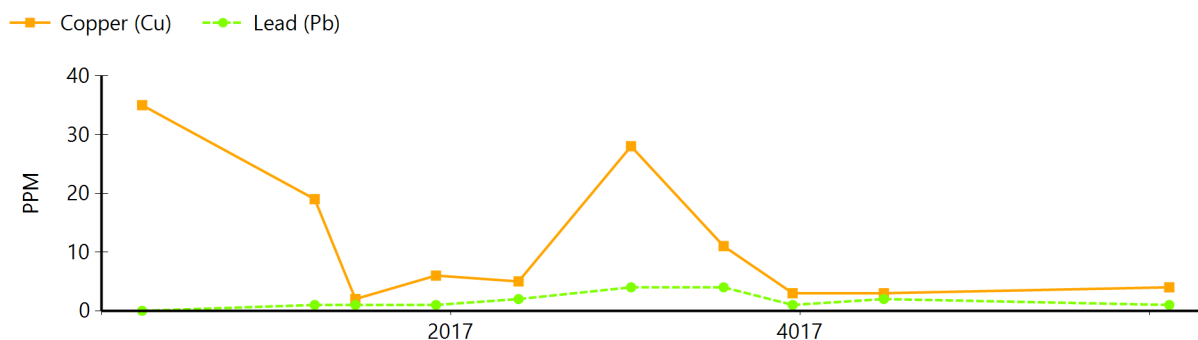
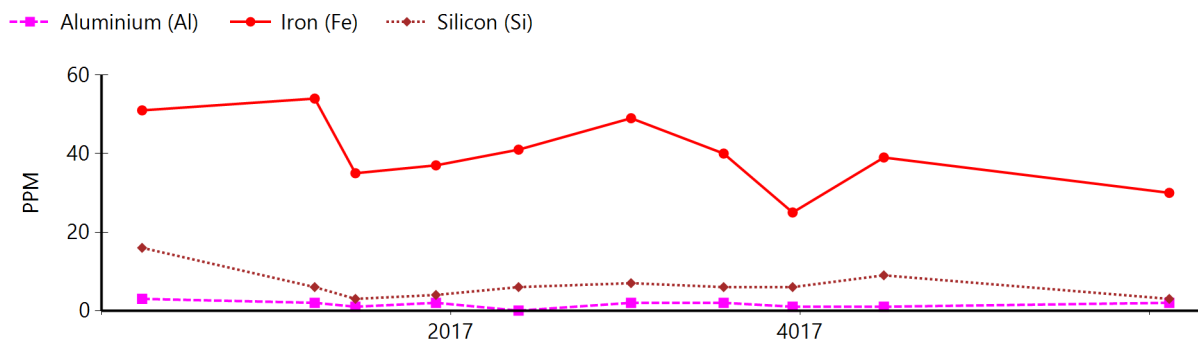
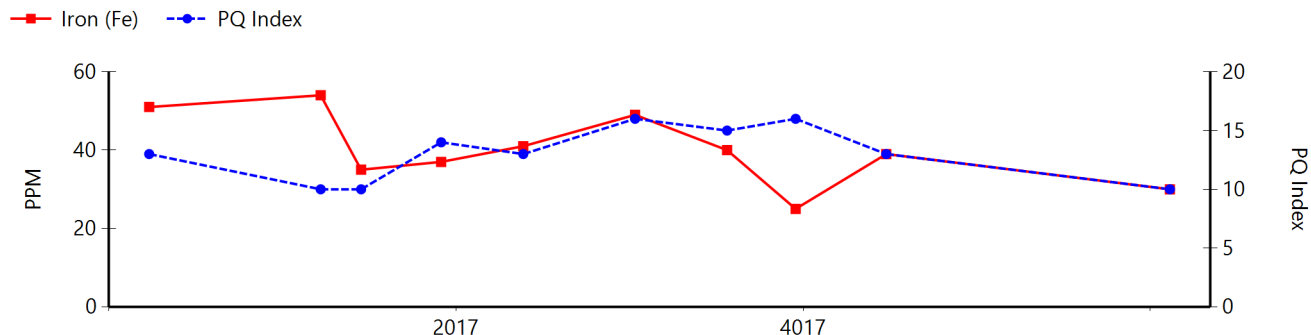
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KOWA Sample Report

**BROOKS
HIRE**

Sample Number	20221012100845	20190405100320	20180117100112	20170411100311	20160804100309
Fuel		0	0	0	0
GC Fuel	0.7				
Viscosity @ 100°C	15.4	14.4	14.6	15.9	16.8



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cms@komatsu.com.au
my.komatsu.com.au/cms
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New Caledonia +687 435 306