

FILTER DEBRIS ANALYSIS REPORT

The Data Analyst's evaluation provides a roadmap to the report's most important information. Any actions that need to be taken are listed first in order of severity. Justification for recommending those actions immediately follow.

Equipment and Filter Information

Filter Debris Analysis

Report Date	April 13, 2014
Account #	123456-0000-0000
Company Name	Coal Mine
Address	P.O. Box 123
City, State Zip	Indianapolis, IN 46268

Report severity is based on an overall evaluation of the analyst's observations.

0	1	2	3	4
NORMAL	ABNORMAL	CRITICAL		

Lab#	563140	Analyst	AWB
Solids (g)	0.0064		

Wear is categorized by size and type then assigned a severity level.

Metals analysis of particles present in the oil measuring less than 8 - 10µm is done by ICP. Acid Digestion is used to identify larger particles that have accumulated in the filter. Both results are reported in parts per million (ppm).

Unit ID	Secondary ID	Unit Type	Mfr	Model
G 491 E Filter		Diesel Engine	CAT	3412
Filter Mfr	Filter Number	Engine Hrs	Oil Hrs	Filter Hrs
Fleetguard		6179	258	258

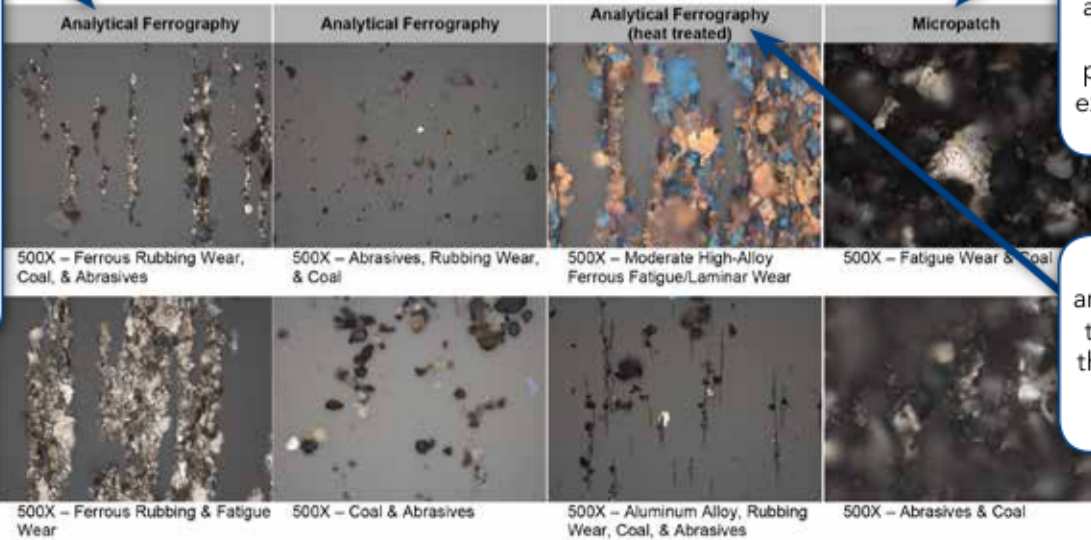
Evaluation

Moderate amount of ferrous rubbing wear. Rubbing wear is from normal sliding contact of surfaces. Moderate amount of ferrous fatigue wear. Minor amount of non-ferrous wear. Minor amount of red oxide (rust). Minor amount of black ferrous oxide. No maintenance or corrective action suggested at this time.

Method (ppm)	Iron	Chrome	Nickel	Titanium	Manganese	Copper	Lead	Tin	Aluminum	Silicon
ICP Oil	105	0	0	0	0	5	0	0	5	5
Acid Digestion / ICP	33,132	504	719	0	328	2,521	1,867	268	2,400	545

Particle Size	Ferrous	Non-Ferrous	Cutting	Fatigue	Spheres	Sliding	Red Oxides	Black Oxides	Dirt	Coal
2-5µm	2	0	0	2	0	0	1	1	2	2
5-10µm	2	1	0	2	0	0	0	0	2	2
11-25µm	2	1	0	2	0	0	0	0	2	2
25-50µm	1	1	0	2	0	0	0	0	1	2
51-100µm	1	0	0	1	0	0	0	0	0	0
>100µm	1	0	0	0	0	0	0	0	0	0

Digital images of analytical ferroglyphs with qualitative descriptions of the wear particles present. Powerful magnets trap the ferrous particles while non-ferrous and other wear debris particles are deposited randomly on slides for microscopic analysis.



Digital images of micropatch tests are also included. The samples is passed through a 0.8µm absolute filter. Residual particles are then examined through a microscope.

Ferroglyphs are heated-treated to better identify the type of metals and materials present.