

MUSCLE PRODUCTS CORP. _____

COST STUDY

_____ METAL TREATMENT MT-10®



752 Kilgore Road | Jackson Center, PA 16133 USA | 814-786-0166

www.musclelubricants.com



Can an operational cost savings be achieved by using Muscle Metal Treatment MT-10®?

Background

The oil analysis test data was provided to us by Mr. Phillip Williams, Fleet Management Consultant of NIPSCO (Northern Indiana Public Service Co.), after an eight-month study.

NIPSCO employs an oil sampling program of its heavy coal moving equipment to monitor the condition of their dozers, loaders, etc. The reason for this study was to determine if the additional cost of including Muscle Metal Treatment MT-10® in their maintenance program would save money long term over the life cycle of the equipment.

The oil analyzed was from two KTA 1150 Cummins diesel engines (referred to as MF92 and MR98 in the data to follow).

The Results

Upon review of the oil analysis reports from the eight-month study, two points were apparent after treating the units with **Metal Treatment MT-10®**:

- 1) There was a reduction in iron ppm (wear metal)
- 2) A conservative cost breakdown concluded a **savings of \$0.44 per hour** of dozer operation.

The cost analysis is very impressive. When the entire scope of operations and savings is realized, it was concluded that the cost savings ratio is **3.36 : 1**.

Factors such as downtime, parts replacement, etc. were not taken into consideration. If they were, we were told the ratio would have been even greater.



MF92 Oil Analysis Reports

	PPM, IRON	HRS ON OIL	PPM, IRON / HOUR	OIL
12/21/98	39	474	0.0822785	XD3 EXTRA
1/26/99	55	630	0.0873016	XD3 EXTRA
4/16/99	34	502	0.067729	* MT-10[®] ADDED
6/29/99	15	440	0.0340909	* DELVAC 1
10/18/99	36	530	0.0679245	* DELVAC 1

* Metal Treatment MT-10[®] added to Delvac 1 oil in the system on 4/27/99 at a dose rate of 5% by volume (6.4 oz MT-10[®] per gallon of oil).

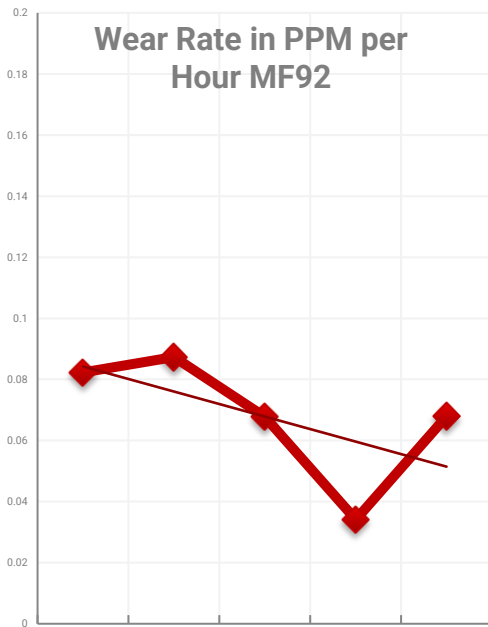
MF92 Wear Rate

Iron ppm / Hour

Metal Treatment MT-10[®] was added to the oil after the third oil change.

An initial reduction in iron particulates is immediately seen, with an increase in ppm the next oil analysis. **This increase is typically temporary** – caused by the **MT-10[®]**'s ability to remove sludge and debris during its metal-treating action.

The thin red line shows the trend in ppm reduction.





“What we saw was a reduction in wear metals of all types in the components treated with MT-10®”

- P. Williams

MF98 Oil Analysis Reports

	PPM, IRON	HRS ON OIL	PPM, IRON / HOUR	OIL
9/29/98	9	39	0.2307692	XD3 EXTRA
11/19/98	28	360	0.0777778	XD3 EXTRA
1/14/99	37	444	0.0833333	XD3 EXTRA
3/8/99	36	474	0.0759494	XD3 EXTRA
6/7/99	28	364	0.0769231	*XD3+MT-10®
7/9/99	110	496	0.2217742	*XD3+MT-10®
8/3/99	10	251	0.0398406	*XD3+MT-10®
8/25/99	24	436	0.0550459	*XD3+MT-10®
10/14/99	30	387	0.0775193	XD3 EXTRA

* Metal Treatment MT-10® added to XD3 Extra oil in the system on 4/27/99 at a dose rate of 5% by volume (6.4 oz MT-10® per gallon of oil).

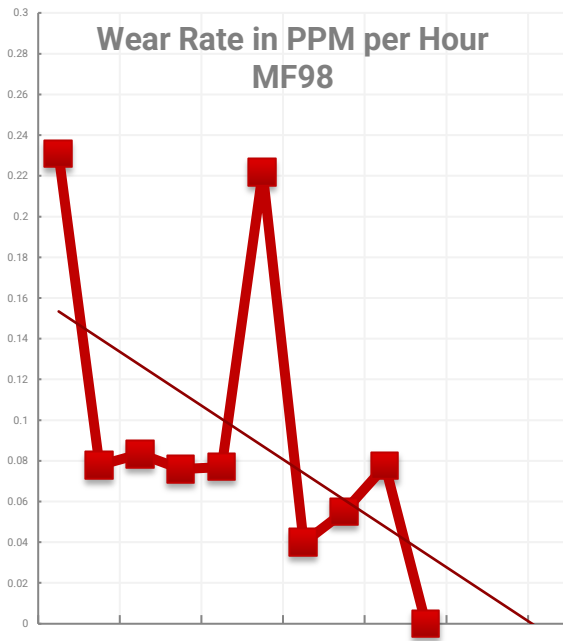
MF98 Wear Rate

Iron ppm / Hour

Metal Treatment MT-10[®] added to the oil at the fifth oil change.

An increase in ppm is seen in the next oil sampling. **This ppm increase is typically temporary** – caused by the MT-10[®]'s ability to remove sludge, old wear particulates and debris during its metal-treating action. A dramatic decrease in iron is noticed with the next oil sampling.

The thin red line shows the trend in ppm reduction.



Conclusion

The cost per hour *without* the addition of **Metal Treatment MT-10®** is calculated to the right.

Mr. Williams included the MT-10® in the calculations below at a dose rate of 5% by volume. Using a factor of 29% reduction in iron ppm from MF98, he felt that **20% could reasonably be added to the engine design life** because of the reduced wear. **This would increase the life cycle to 12,000 hours.**

Cost of KTA1150 overhaul	\$ 32,000
Cost of oil during study	\$ 2,150
Design Life of KTA1150 in a dozer	10,000 hours
Cost per hour is	\$ 3.42

Cost of KTA1150 overhaul	\$ 32,000
Cost of oil PLUS MT-10® during study	\$ 3,720
Increased Design Life of KTA1150	12,000 hours
Cost per hour is	\$ 2.98

If we achieve the 12,000-hour life cycle:

**Savings: \$ 0.44 per hour
or
\$5,280 per engine**

In short, a \$1570 investment could save \$5280 if the operating and maintenance of the equipment allows it to run the 12,000 hours or more.

Summary

20 %

Reasonably
anticipated increase
in engine design life

12.9 %

Reasonably
anticipated savings in
operational costs

29 %

Reduction in iron ppm
per hour of operation
(MF98)

Data Provided on Other Treated Components Treated with MT-10[®]

46 %

Reduction in iron ppm
on left side of MF98
TD40 track dozer

56 %

Reduction in iron ppm
on right side of MF98
TD40 track dozer

66 %

Reduction in copper
ppm in transmission
of MF98 TD40 track
dozer

About Us

Manufacturer of the “Original” Metal Treatment, Muscle Products Corp. has led the industry in producing specialty lubricants, additives and greases for more than 35 years.

**We solve lubrication problems.
Period.**

Our goal is to keep your equipment operating efficiently so you can focus your time and energy on managing the rest of your business. How? Because our products are engineered for performance providing:

- More effective, superior lubrication
- Optimal equipment operation
- Reduced equipment downtime
- Less maintenance and lower energy costs
- Longer equipment life





Additives and Lubricants Engineered for Performance



752 Kilgore Road | Jackson Center, PA 16133 USA | 814-786-0166
www.musclelubricants.com