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REPORT ON METAL CONDITIONER **MILITEC-1**

Tested at S.E.P.T.A. from April 10, 1997 - October 24, 1997

Prepared by Ted Tusek, Automotive Engineering, November 11, 1997

INTRODUCTION

During March, 1997 Advanced Product Distributors, Inc. offered to S.E.P.T.A. for a test purpose a metal conditioner Militec-1 manufactured by Adaptive Molecular Technologies, Inc.

Militec-1 is a metal conditioner based on a synthetic hydrocarbon derivative and was initially used in military applications. Presently, Militec-1 is offered as an oil additive for automotive and industrial machinery applications and as a concentrate for direct application on weapons and for machine shops. Militec-1's primary function is to serve as a friction-reducing agent, thus improving wear on the mechanical elements and reducing friction-generated heat causing the overall life of the mechanical elements and the lubricating media to increase dramatically. Manufacturer claims that since its product Militec-1 does not have a metal or Teflon base, nor does it contain any solids, the product will not cause metal surface buildup nor will it harm filters. When added to the oil, Militec-1 simply uses the oil as a means to get to metal. When the metal heats up to about 150°F, the Militec-1 in the oil will be attracted to the metal, enter the micropores of the metal, and then bond molecularly with the metal. By this chemical reaction with the metal, Militec-1 becomes part of the metal itself, not just a coating on top of the metal.

Militec-1 was assessed in accordance with OSHA CFR 1910,1200 and determined **not** to be hazardous. The required safety precautions are those typical for hydrocarbon lubricants.

The flash point of Militec-1 is 410°F and the auto-ignition temperature is 715°F. Disposal must be in accordance to regulations appropriate for waste oil.

TEST PURPOSE

The specific purpose of this test was to determine Militec-1's effect on the metal particles concentration in engine oil, particularly iron, lead and copper.

Fuel consumption, noise level, engine temperature, viscosity, thermal properties of the base oil, resistance to additional contaminants, and friction-reducing percentage as well as durability of Militec-1 mixed with oil have not been tested and monitored.

TEST PROCEDURE

Four buses from Comly Garage with high metal wear particles found in engine oil have been chosen for the test. Tested engines are Detroit Diesel 6V92 TA. The chart below shows mileage, dates and the ppm level prior to adding Militec- 1.

Bus # 8810	11,906 miles	2/2/97	iron 78	lead 8	copper 26
Bus # 8775	29,030 miles	2/4/97	iron 63	lead 14	copper 16
Bus # 3407	111,651 miles	2/20/97	iron 72	lead 12	copper 20
Bus#3416	77,567 miles	2/20/97	iron 56	lead 4	copper 10

After completed B-3 inspection (datas shown above), engine oil SAE 30 and oil filter changed, Militec-1 was added in required ratio 2 oz. per liter of oil.

Test started April 10, 1997. Laboratory oil test results have been obtained from Cleveland Technical Center, checked and recorded by Automotive Engineering approximately every 3,000 miles.

TEST RESULTS

Bus #	Miles	Date	Iron	Lead	Copper
8810	15,128	6/27/97	68	6	22
	19,897	7/12/97	61	6	17
	23,430	8/21/97	32	4	16
	27,500	9/19/97	29	5	12
	34,253	10/20/97	28	3	14
Reduction %			64%	62%	46%
8775	32 376	6/27/97	61	10	23
	34,267	7/12/97	48	7	16
	38,271	8/21/97	42	4	9
	41,465	9/19/97	21	1	14
	44,862	10/20/97	29	4	12
Reduction %			53%	71%	25%

Bus #	Miles	Date	Iron	Lead	Copper
3407	113,021	6/27/97	60	10	17
	117,323	7/12/97	54	8	13
	120,875	8/21/97	41	3	13
	123,430	9/19/97	33	7	15
	125,986	10/20/97	28	6	11
Reduction %			61%	50%	45%
3416	80,156	6/27/97	46	3	10
	83,320	7/12/97	42	4	9
	86,288	8/21/97	33	4	5
	90,091	9/19/97	18	3	2
	94,762	10/20/97	21	2	4
Reduction %			62%	50%	60%

The results of this limited test show a consistent reduction in wear metal particles for all tested engines. Even after the oil with the Militec-1 was changed, a continued reduction in ppm levels is obvious. This test confirms the manufacturer's claims about Militec-1's effectiveness.

CONCLUSIONS

This partial test of Militec-1, which includes only observation of wear metal ppm levels, indicates that the use of Militec-1 Metal Conditioner does reduce friction related wear in tested engines. The following conclusions can be made from the results of the testing:

- Militec-1 has proven its friction-reducing abilities.
- Usage of Militec-1 during the test apparently did not affect viscosity and thermal properties of the base oil to which it was added.
- There are no empirical facts to prove this statement, but tested engines seem to run smoother and more quiet.
- Tested engines did not consume oil in the amount they did prior to the test.

RECOMMENDATIONS

Automotive Engineering recommends that Militec-1 should be extensively tested for claimed benefits to mechanical equipment throughout Authority. An additional and expanded testing would provide more information to recommend and calculate potential savings.

According to a growing number of Mititec-1 industrial and commercial users and their documentation claiming significant improvements in equipment performances and related savings, the cost of Militec-1 is almost insignificant compared to the benefits it provides.

If you have any questions regarding this matter please call Ted Tusek, S.E.P.T.A., Automotive Engineering, 215/ 580 8152.