

Report on Militec-1 from a Virginia Division of Siemens Corp.

INTRODUCTION

Militec, Inc. based in Norfolk has recently released its product Militec-1 to the market. Militec-1 is a metal conditioner based on a synthetic hydrocarbon derivative and has been widely used in military applications. Presently, Militec is targeting this product for use as an oil additive in automotive, heavy machinery, power transmission, and weapons applications. 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. Militec Inc. 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.

Militec has produced a videotape documenting testing of this oil additive. The tests shown in the video investigate the friction-reducing effects of the agent and also its resistance to contaminants such as water and glycol. Militec Inc. also indicates that the treated oil will not be affected by other contaminants such as toluene and acetone, and that once the additive "forms a metallic bond" to the metal surface, it will resist the addition of contaminants and still maintain a lubricated surface even under the worst testing conditions shown in the videotape.

TEST PURPOSE

To determine the compatibility of Militec-1 synthetic oil additive with common lubricating and cooling media found in machines in the Components and Services area.

TEST PROCEDURE

Ten 16 oz. oil samples were collected on May 26.

- 1) *Velocite 10*
- 2) *DTE Heavy-Medium*
- 3) *DTE 24*
- 4) *Velocite 6*
- 5) *DTE Medium*
- 6) *Vactra 2*
- 7) *Hasco 748 B*
- 8-10) *Three air compressor lubricants*

A. Baseline Tests

- Viscosity was measured and recorded for each oil.
- Each oil was heated to 350 degrees Fahrenheit and observed.

B. Militec-1 Added to Each Sample

- Militec-1 was added in the proportion of 2 oz. per quart.
- Each sample was agitated by shaking for 1 minute to thoroughly mix the additive into the oil.
- After agitating, the samples were left static overnight.

C. Tests of Samples Having Militec-1

- Viscosity was measured and recorded for each sample.
- Each sample was heated to 350 degrees Fahrenheit and observed.
- 20 ml of Hasco 748 B having dirt and metal chips was added to each sample and the sample was observed.

TEST RESULTS

Most of the oils did not see a significant change in viscosity after adding Militec-1 with the exception of Vactra 2, the heaviest oil in the sample (Refer to the results on the last page of this report.)

The oils exhibited normal behavior up to 350 degrees Fahrenheit both before and after adding Militec-1. This temperature was chosen because it was understood that these oils would not see continuous duty applications above this temperature.

The samples were agitated by vigorously shaking them for a period of about one minute. None of the samples exhibited any foaming. The sample of Velocite 10 did change color after the additive was added. The original sample of Velocite 10 was a golden color, and this changed to a reddish color at room temperature and to an orange color at elevated temperatures after adding Militec-1. This color change did not affect any of the other physical properties measured.

The samples were left static overnight to see if there was any separation between the additive and the sample oil. None of the samples exhibited such behavior.

Each sample was "contaminated" with a small amount of Hasco 748 B oil containing dirt and metal chips. The treated samples showed no visual adverse response to the addition of the contaminants, even after setting for several days.

CONCLUSIONS

Both the tests performed by Militec and those performed at Siemens indicate that the use of Militec-1 be investigated further for use in the machines in the Components and Services area. The following conclusions can be made from the result of the testing at Siemens and the manufacturer's claims in the videotape:

- Militec-1 is a proven friction-reducer as demonstrated in the videotape.
- Militec-1 has minimal effect on the viscosity and thermal properties of the base oil it is added to.
- Militec can resist the addition of many different contaminants to the base oil.
- Militec-1, unlike some other additives, will not cause long term build-up nor additional wear on mechanical elements as claimed by the manufacturer.

RECOMMENDATIONS

1. Contact Militec Inc. and request any written documentation they have regarding Militec-1's usage.
2. If the documentation received complies with the intended usage Siemens has for Militec-1, a test should be run in a dynamic environment. Perhaps a machine gearbox, differential, or speed-reducer could be quarantined and this could be used as a final proving ground for the additive.

VISCOSITY DATA (Temperature 23°C)

OIL MILITEC-1	BASELINE VISCOSITY	VISCOSITY WITH
Velocite 10	57000 centipoles	57000 centipoles
DTE Heavy-Medium	169000	166000
DTE Medium	115000	108000
DTE 24	89000	86000
Velocite 6	36000	37000

Vactra 2	195000	160000
Compressor #1	82000	77000
Compressor #2	75000	74000
Compressor #3	72000	77000
Hasco 748 B (from machine)	84000	88000

[Note from Alan Roth of Advanced Product Distributors, Inc., a Master Distributor of Militec-1 (1992): While Militec- 1 was proven to have only a minimal effect on viscosity in the conditions described above, in an operational environment (compressor, engine, gearbox, etc.) Militec-1 will be absorbed with heat over time, into the micropores of the metal surfaces. The Militec-1 will no longer be present in the primary lubricant and therefore cannot affect viscosity. For operational equipment, the most important lesson learned from the test described above is that Militec-1 is fully compatible with all of the tested lubricants including periods when contaminants are present.]