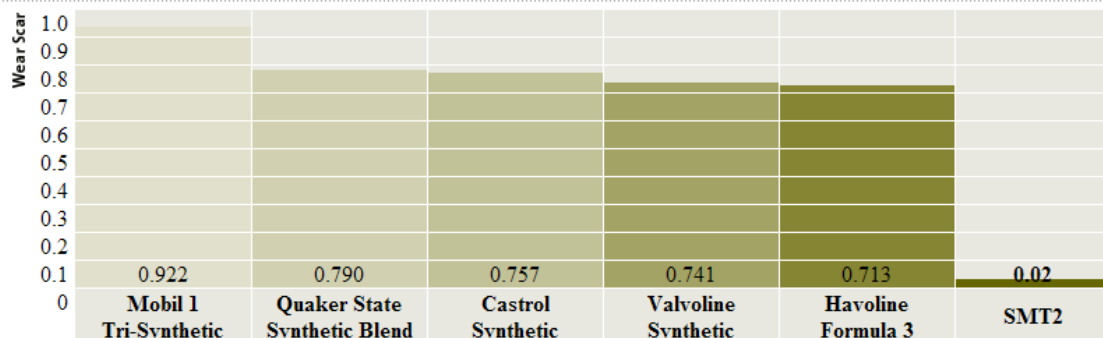


SMT2 has been tested at Queensland University of Technology and extensively in the United States. A few of the tests and the results can be viewed here. Some of the tests have been conducted by the Tribology Department of the University of Pittsburg.

United States Test Result



Test ASTM-D-4172 (20W-50 Four Ball Wear Scar Testing)



- Four-Ball wear test (ASTM-D-4172); 60Kg pressure; 150°C; 1,800 RPM. Duration per specification of 1 hour.
- Oils tested were 20W-50 (Mobil 1 was 15W-50).
- SMT2 is more resistant to galling thus reducing the coefficient of friction.

NOTE: SMT2 has an ASTM-D-4172 Four Ball Weld Load of 900 Kg minimum and an EP ASTM-D-2783 Timken OK load of 138lbs (when mixed in proper dilution).

Timken OK Load, EP / Timken Falex Film Strength, EP – ASTM-D-2783

Product Name	Timken OK Load, EP (Lbs.) ASTM-D-2783	Timken Falex Film Strength, EP (PSI) ASTM-D-2783
Amsoil Synthetic SG Series Gear Oils	75	131,250
#203A Moly EP Industrial Machine Lube	65	113,750
Brad Penn E.P. Industrial Gear Oils	65	113,750
Chevron Open Gear Lubricants	45	78,750
Citgo EP Oils	70	122,500
Exxon SPARTAN Synthetic EP Industrial Gear Oils	60	105,000
Forsythe Misting Oils	75	131,250
Lyondel Lubricants – Pennant NL Oils	60	105,000
Mobilgear SHC Series Oils – Synthetic Heavy-Duty Industrial Gear Lubricants	60	105,000
Mystik Power Lubricants – EP Gear Lubricants	60	105,000
Pennzoil – Super Maxol EP Gear Oils	75	131,250
Royal Purple – PARA-SYN/Paper Machine Premium Para-Synthetic Paper Machine Oil	100	175,000
Shell Oil Company – OMALA Oils	32	56,000
TS Moly Lubricants TS-319 SAE 250	60	105,000

Industrial Gear Lube

SMT2 Anti-Friction Additive

138

250,000

SMT2– ASTM References

End Use Oil Grades	ISO 68-220	ISO 220M-320	ISO 460-1000	ASTM Test
AGMA Lubricant No. (EP Gear Oils)	2EP-4EP	5EP-6EP	7EP-8AEP	
Color, GARD	1	1	1	ASTM-D-1544
SG/50°C	1.39	1.413	1.43	ASTM-D-1298
SUS/210°F	90	105	135	ASTM-D-2161
POISE/25°C	40	62.9	90	ASTM-D-445
cStokes/25°C	31	48	68	ASTM-D-445
Copper Corrosion	1A	1A	1A	
Pour Point/°C	-26	-22	-18	ASTM-D-97
Evaporation Loss (NOACK)	<1%	<1%	<1%	ASTM-D-5800
Flash Point/°C	N/A	N/A	N/A	ASTM-D-92
Water	N/A	N/A	N/A	ASTM-D-1744
Ethylene Glycol	N/A	N/A	N/A	ASTM-D-

				2982
Rust Test, 24 hours	None	None	None	ASTM-D-665-A
Oxidation Stability	>2000	>2000	>2000	ASTM-D-943
Four-Ball Wear Test – Scar	0.2	0.1	0.02	ASTM-D-4172*
Four-Ball Weld Load/Kg, Min	650	800	900	ASTM-D-4172*
Timken OK Load/Lbs, Min.	125	138	158	ASTM-D-2783

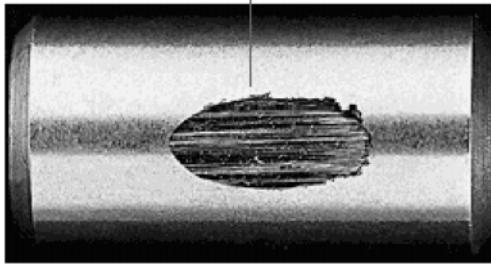
* 60 Kg pressure; 150°C; 1,800 RPM; Duration per Specification of 1 Hour

- Noise reduction (as measured by decibels) in a diesel IVECO was reduced by 12.5%.
- In a city bus operation, 10 buses were tested over a 15,000 mile maintenance interval using industry standard fluids in the motor and transmission. A wear metal analysis was performed. Then the same buses over the same maintenance interval were treated with SMT2 at proper dilution ratios and a wear metal analysis was performed showing a minimum of 60% reduction across the board and a fuel saving of 8% was achieved.

ASTM-D-2782-88 Timken Bearing Test

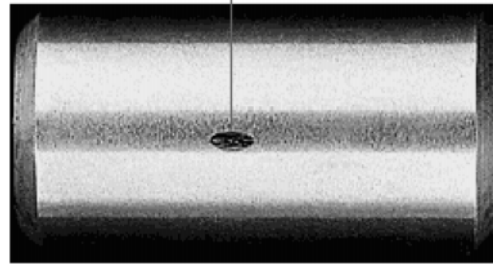
A product's ability to reduce friction can best be illustrated using the industry standard ASTM-D-2782-88 Timken Bearing Test. In the Timken Bearing Test, a bearing is rotated in a lubricant bath and a metal "bullet" is lowered onto the bearing as weight on the "bullet" is increased. The damage to the "bullet" and the time to achieve the damage reflect the anti-friction properties of the lubricant. The four pictures below illustrate the results of this test using (a) QUAKER STATE® 10W-30 oil, (b) QUAKER STATE 10W-30 oil treated with SLICK 50®, (c) QUAKER STATE 10W-30 oil treated with SMT2, (d) no oil after treatment with SMT2.

DAMAGE SIZE .3205" without SMT²

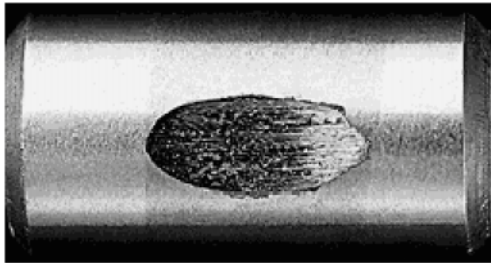


(a) QUAKER STATE 10W-30 oil, 90 lbs/5 sec.

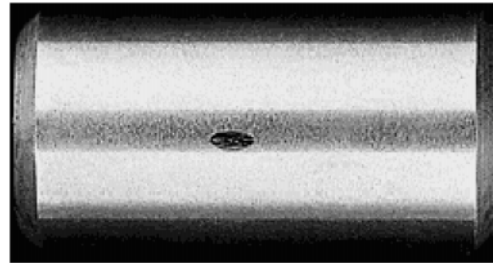
DAMAGE SIZE .0935" with SMT²



(c) QUAKER STATE 10W-30 oil treated with SMT², 600 lbs/10 min.

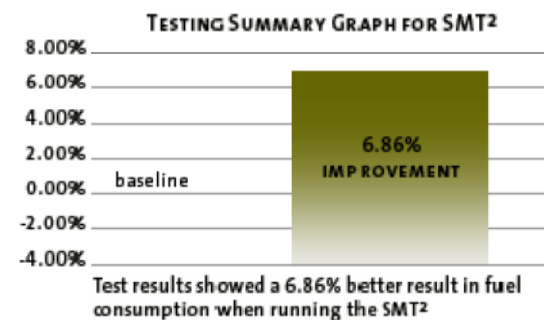
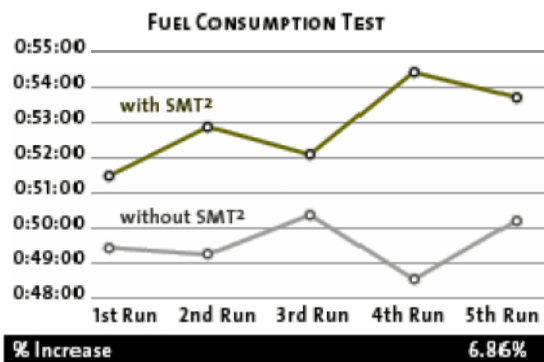


(b) QUAKER STATE 10W-30 oil treated with SLICK 50, 90 lbs/8 sec.



(d) and no oil after treatment with SMT²

The SAE J1321 "Joint TMC/SAE Fuel Consumption Test Procedure – Type II"



I. INTRODUCTION

The purpose of this test was to generate irrefutable test data to evaluate the fuel economy benefit of adding SMT² (Synthetic Metal Treatment) to the engine oil using a test procedure, SAE J1321, accepted by the trucking industry. The SAE J1321 "Joint TMC/SAE Fuel Consumption Test Procedure – Type II" was developed to specifically meet the needs of the trucking industry.

II. TEST PLAN

1. The test methodology involves using a test stand mounted Cummins N14 engine and standard transmission so that all operating conditions could be precisely duplicated on each test.
2. The Cummins N14 engine, treated with 12 gallons of Delo 400 oil, had 406 hours operation prior to conducting the base line test.
3. The tests were conducted with the engine running at 1500 rpm and the transmission

in 7th gear.

III. VEHICLE PREPARATION AND TESTING

The following preparations were carried out before baseline tests were conducted:

1. A gravimetric fuel measurement system has been connected to the fuel system to permit operation from a gravimetric fuel source.
2. All segments of the test were conducted using a precisely measured, commercially available #2 diesel fuel.
3. A digital timer was connected to the engine to record the precise running time, and the engine was run until the fuel was depleted during each test.
4. A single, complete Type II fuel economy test consists of a baseline segment and a test segment.
5. Each Type II segment consists of five test runs having a spread in test/control fuel consumption ratios not greater than two percent of the highest test/control fuel consumption ratio (T/C ratio).
6. The engine oil used in the test was 12 gallons of Delo 400.
7. After the baseline segment has been completed, 3 quarts of SMT2 was added into the engine oil, and five additional runs were performed.

IV. TEST PROCEDURE ACCURACY

The J1321 Recommended Practice states in section 6.1 that the procedure, based on experience, has an overall accuracy of $\pm 1\%$. This accuracy is achieved by sorting the T/C ratio values within a 2% band as described in J1321 Appendix I, Sample Calculations.

V. TEST PROGRAM REPORTING

The percentage improvements of the tests with these data points over the baseline tests were recorded and are shown in this document.