



REPORT PB210201

Evaluation of Finish Line Hydraulic Fluid versus Shimano Fluid

PREPARED FOR:

Finish Line

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BACKGROUND:

Two samples of bicycle hydraulic oil were forwarded to TSE for physical property evaluation. Both fluids were tested for volatility, thermooxidative stability, and foaming tendency. In addition, the chemical makeup of the two oils was determined by FT-IR analysis.

Oils Evaluated:

Finish Line Brake Oil Lot# N/A

Shimano Hydraulic Oil Lot# N/A

Procedure:

The chemistry of each oil was determined by FT-IR.

The thermooxidative stability of the two samples was determined by pressure differential scanning calorimetry. This method used to test each oil consisted of heating the oil under test to 180°C under an atmosphere of pure dry oxygen maintained at 500 psi. Sample failure occurs when the test sample oxidizes thus liberating heat. The time required for the reaction to occur determines the stability of the oil. A short reaction time indicates less thermooxidative stability.

Volatility of each fluid was determined by thermogravimetric analysis, TGA. This technique consists of heating a small amount of test oil and measuring weight loss as a function of temperature. The temperature at which 5% weight loss occurred was the arbitrary failure point.

Results:

Property	Method	Finish Line	Shimano	Comments
Color	Visual	Green	Red	
Chemistry	FT-IR	Hydrocarbon	Hydrocarbon	Essentially Identical Spectra
Thermooxidative Stability	ASTM D5483 Modified	78.7 minutes	30.1 minutes	Superior Finish Line Result
Volatility t=5%	CTM	240°C	215°C	25°C advantage for Finish Line
Foaming Tendency	ASTM D892 Sequence I	30 ml of foam 0 at 37 seconds	30 ml of foam 0 at 37 seconds	Similar performance

Conclusions:

The finish line fluid has superior thermal and oxidative stability to the Japanese product. And has a 25°C advantage in terms of volatility.

And equivalent antifoaming behavior when tested at 25°C per ASTM D892.