

ARCHOIL AR6500 DIESEL TREATMENT

Technical Information, Test Results & Additional Benefits

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DIESEL

archoil AR6500 DIESEL TREATMENT

Why Do Diesel Fuel Systems Fail?

Over time, every vehicle's fuel economy will deteriorate. A major factor in the decline is clogged, worn or faulty fuel system components. Understanding why these components fail is key to restoring and maximizing fuel system performance.

The quality of diesel fuel is often to blame with cetane and lubricity levels commonly failing to meet the standards set by the automotive industry. When the cetane number is below that which your engine was designed for, the combustion of fuel will be incomplete, leaving soot and carbon in your fuel system. As diesel at the pump also lacks the detergents needed to keep the fuel system clean, this leads to a progressive decline for fuel efficiency with heavy carbon build-up clogging and negatively affecting the performance of the injectors, turbo and



Dirty diesel

injector

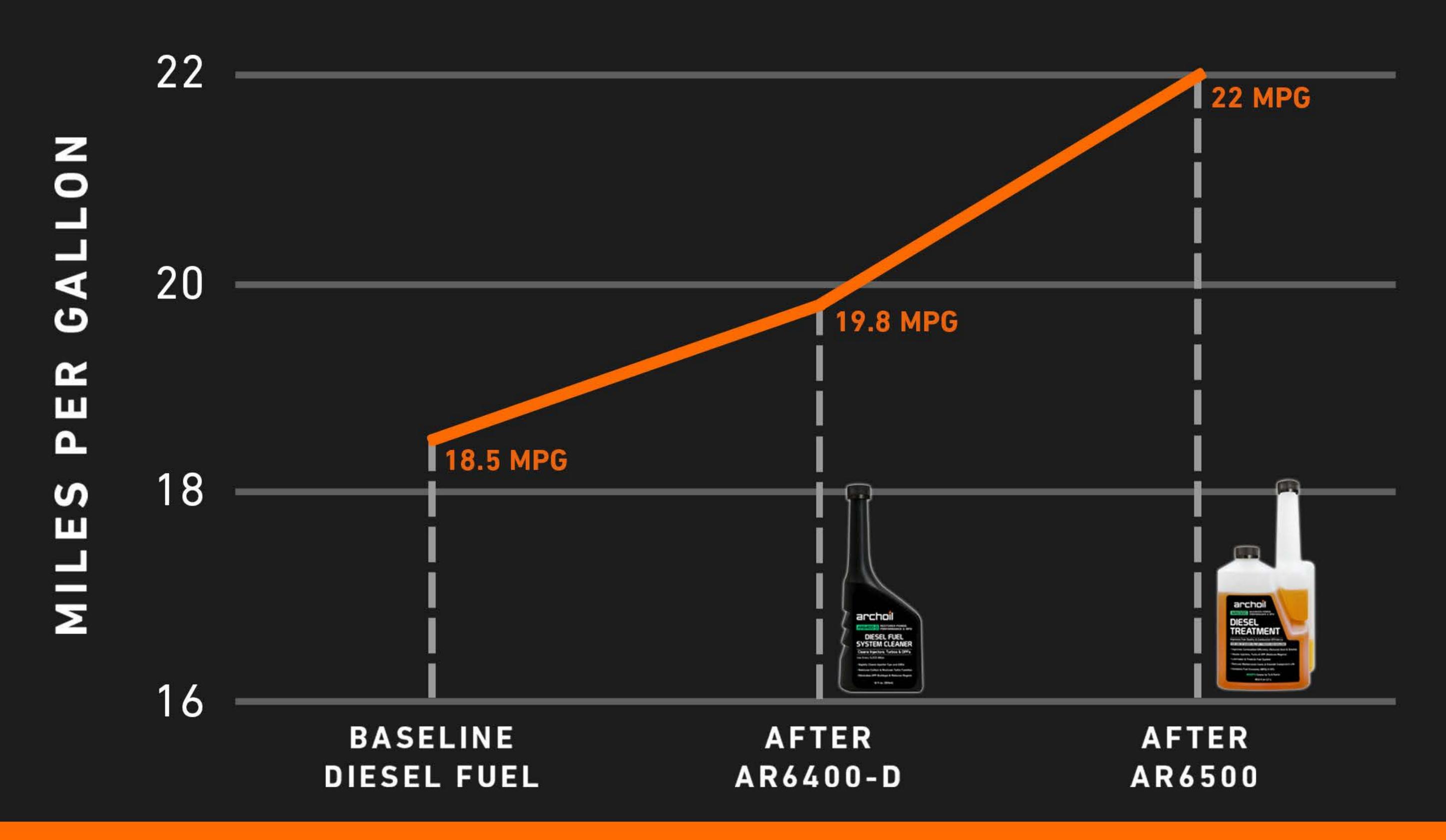
Clogged Diesel Particulate Filter (DPF) Archoil AR6500 Diesel Treatment was developed to combat problems caused by poor quality diesel and ensure fuel quality to maintain a clean engine which functions as intended by the manufacturer. AR6500 raises the cetane number for a complete combustion, enhances lubricity to prevent excessive wear and cleans the fuel system to keep it free from performance-robbing deposits. By addressing these issues which cause the most problems for the fuel system over time, using AR6500 at every fill-up maximizes power, performance and MPG.

DPF. This will eventually lead to premature failure and expensive trips to the mechanic.

♣ The test results and charts on the following pages demonstrate the benefits of regular AR6500 use.

Archoil AR6400-D & AR6500 MPG Test Results

Average MPG results were taken from controlled highway driving in a 2011 F-350 6.7L. AR6400-D increased the baseline fuel economy by 7%. Use of AR6500 Diesel Treatment after AR6400-D increased MPG by a further 11.1%. Overall, this represents a 19% increase in fuel economy as a result of using Archoil's diesel treatments (the Diesel Fuel System Kit).



Improve Fuel Economy & Save Money on Diesel

By using Archoil diesel treatments to maximize your fuel system's power, performance and MPG, you'll visit the gas station less frequently and save money on fuel.

The chart below shows the savings that can be made over the lifetime of one 40 oz bottle of AR6500 Diesel Treatment which treats 400 gallons, depending on the MPG gain your vehicle experiences.

(Calculations based on U.S. national average diesel price of \$5.33, November 2022)

MPG INCREASE	2%	4%	6%	8%	10%	12%
FUEL COST SAVINGS (40 oz BOTTLE)	\$4264	\$85 ²⁸	\$127 ⁹²	\$170 ⁵⁶	\$213 ²⁰	\$25584



AR6500 DIESEL TREATMENT

One 40 oz bottle (MSRP \$44.95) treats 400 gallons at the standard treat rate

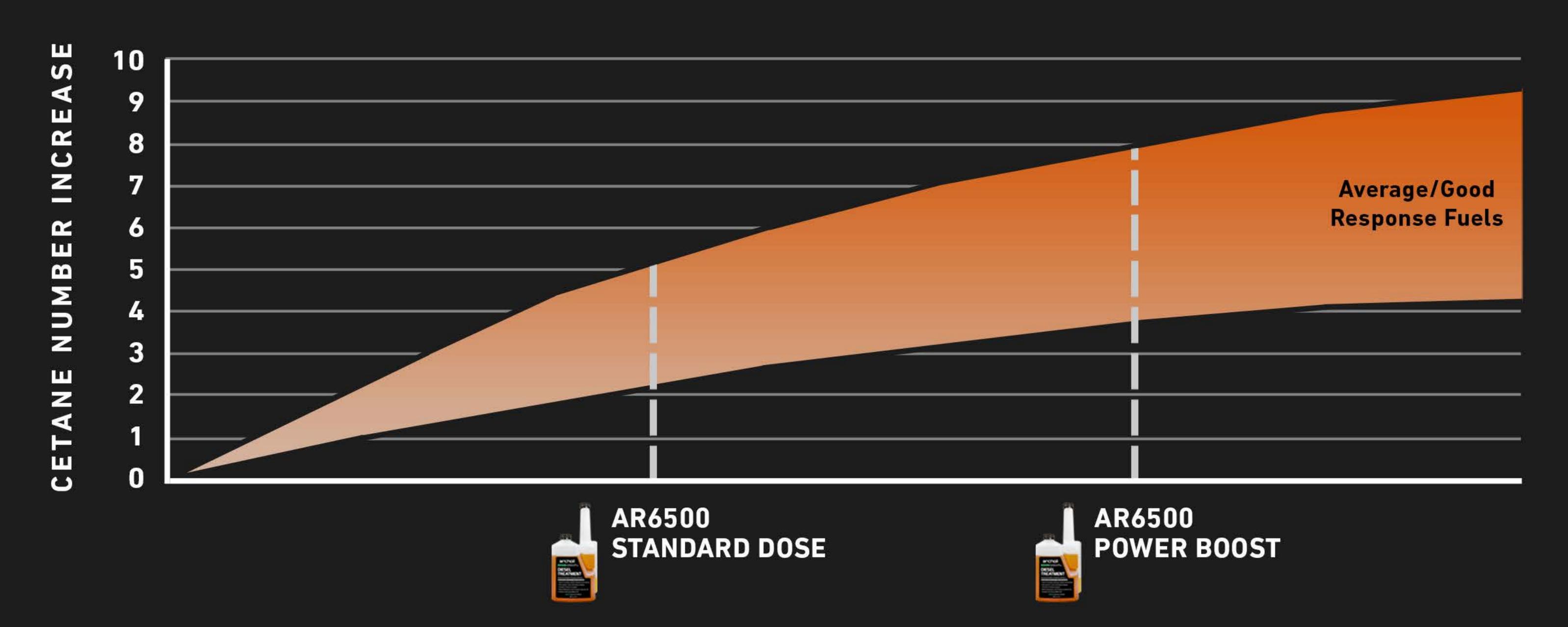
Raise Diesel Fuel Cetane Number

AR6500 provides a cetane boost at every fill-up to increase power and response. The higher the cetane number (CN) of fuel, the faster the fuel ignites for a complete and cleaner fuel burn.

Your vehicle typically requires a CN of 47-50 to run as intended by the manufacturer but the vast majority of the United States is being served by diesel with a CN of 40-45.

Increasing the cetane rating of diesel improves combustion efficiency, fuel economy and ensures fewer deposits are left behind in the fuel system.

The chart below shows the cetane boost you can expect to receive with a standard (up to 5 points) and Power Boost dose (up to 8 points) with AR6500 Diesel Treatment.



Diesel Lubricity Rarely Meets Requirements

Lack of lubrication in the fuel system can lead to catastrophic failure. Increased friction in vulnerable components (pumps and injectors) will result in excess wear and the risk of metal and other debris being forced into the fuel system.

Insufficient lubricity levels in diesel fuel can lead to:

- Excessive wear
- Premature failure
- Costly repairs

The introduction of Ultra-Low Sulfur Diesel has increased the need for diesel owners to improve fuel lubricity as the process of removing sulfur also extracts organic elements which helped to lubricate the fuel system.

The chemistry in AR6500's lubricity improver reduces fuel system wear and protects all diesel fuel system injection systems, extending component life and preventing premature visits to the mechanic. Modern injection pump systems require higher levels of lubricity due to tight tolerances and failure of the injection pump is a highly expensive repair.



The ASTM D6079 wear scar test is used to determine fuel lubricity levels by bringing a steel ball held by a vibrator arm into contact with a disk completely submerged in fuel. The independent reports (Pages 6 & 7) show test results before and after fuel was treated with AR6500 Diesel Treatment.

AR6500 improved diesel fuel lubricity by 43% (from a 615 micron scar width to a 348 micron scar width) to above the standard recommended by the Engine Manufacturers' Association.

Lubricity ASTM Test (Base Fuel - Before AR6500)

PCS Instruments

TEST - BASEFUEL FUEL - BaseFuel

PCS Instruments - HFRPC v2.11, Instrument D1047

UNIQUE TEST ID D1047-202105101257

619 um

610 um

614.5 um

Wear Scar Information

Wear Scar X

Wear Scar Y

Wear Scar Avg

Fuel Information

Fuel Type Diesel **Fuel Name** BaseFuel Fuel S/N BaseFuel

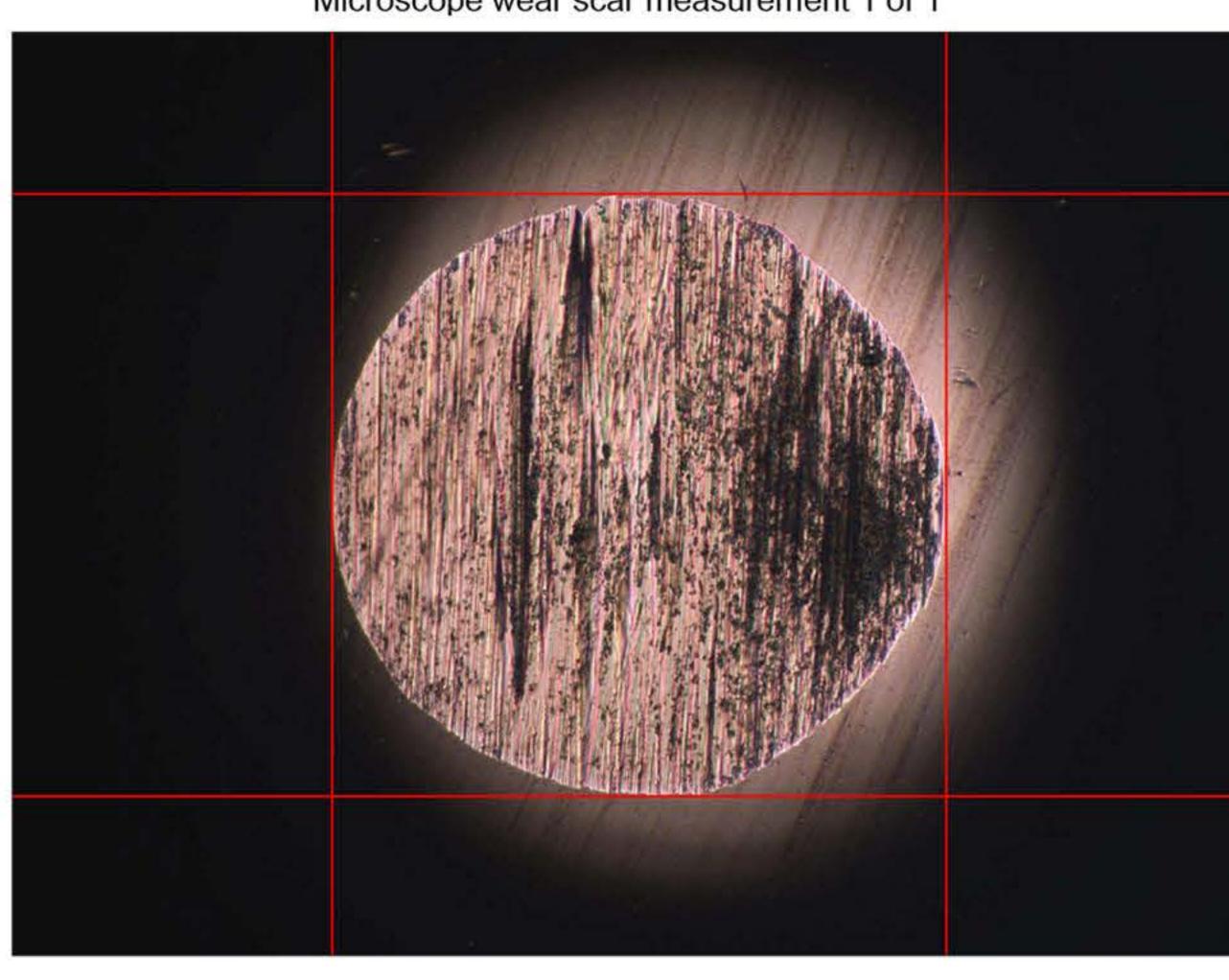
Test Information

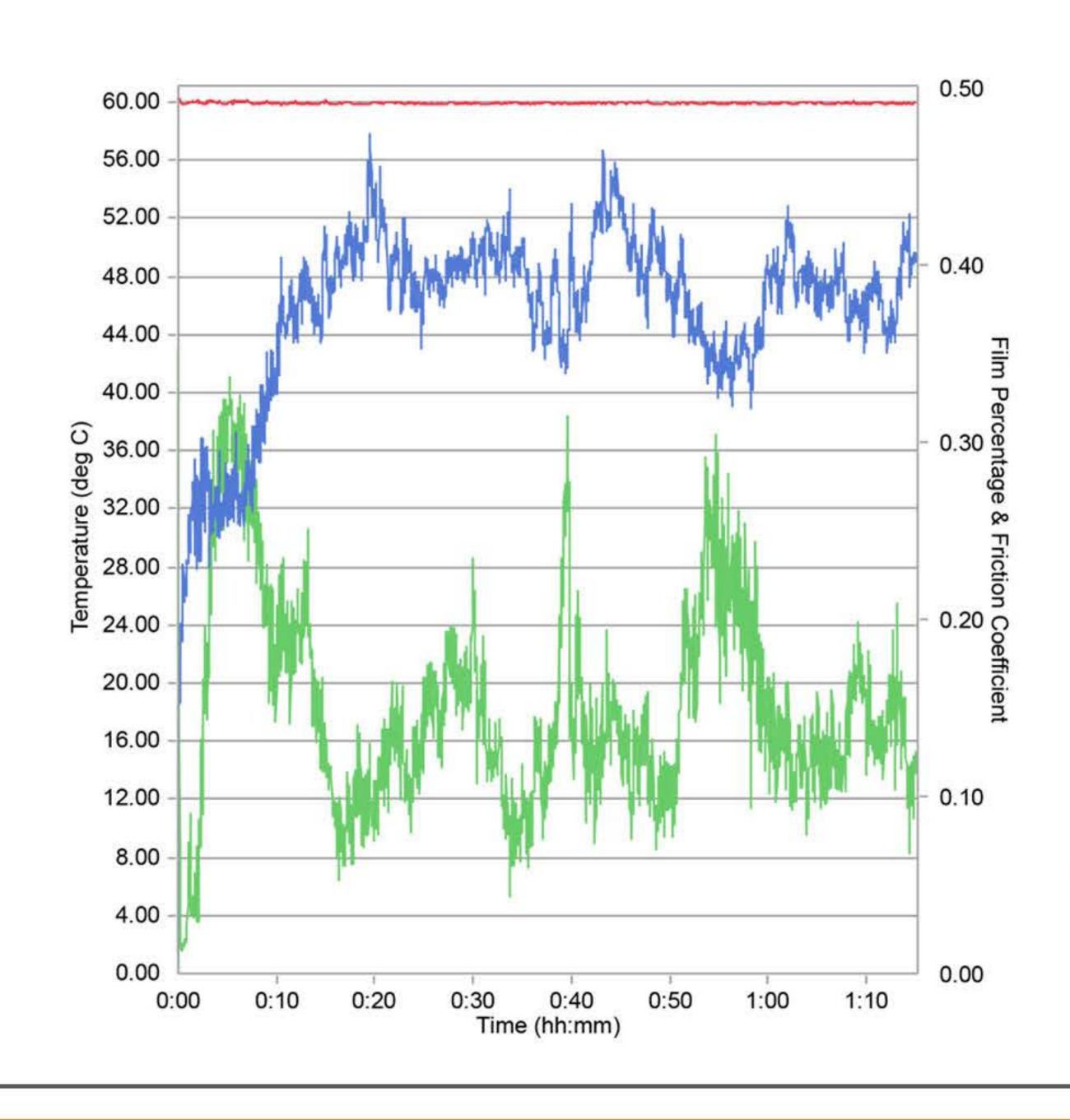
Test Type ASTM D6079 (60degC) Temp 60.0degC Film 15% Fric 0.374 Test Avgs

Upper Spec Batch **Unnamed Batch Unnamed Batch** Lower Spec Batch

Comments BaseFuel







Lubricity ASTM Test (After AR6500 Standard Dose)

PCS Instruments

TEST - K00174787002 FUEL - K00174787002

PCS Instruments - HFRPC v2.11, Instrument D862

UNIQUE TEST ID D862-202105100859

Fuel Information

Fuel Type Unknown fuel sample K00174787002 Fuel S/N K00174787002

Comments K00174787002

Test Information

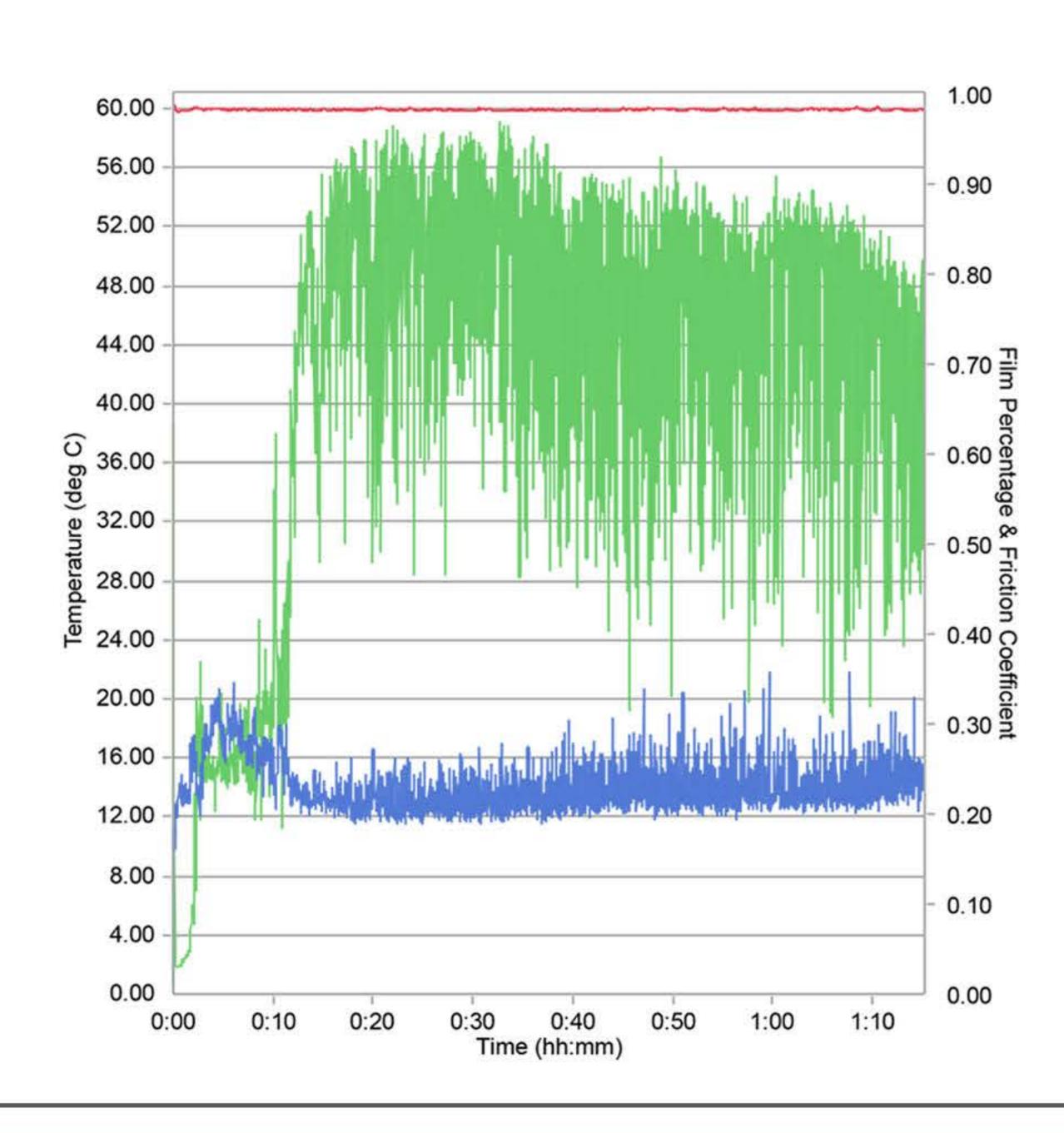
Test Type ASTM D6079 (60degC)
Test Avgs Temp 59.9degC Film 70% Fric 0.230

Operator Name SMG

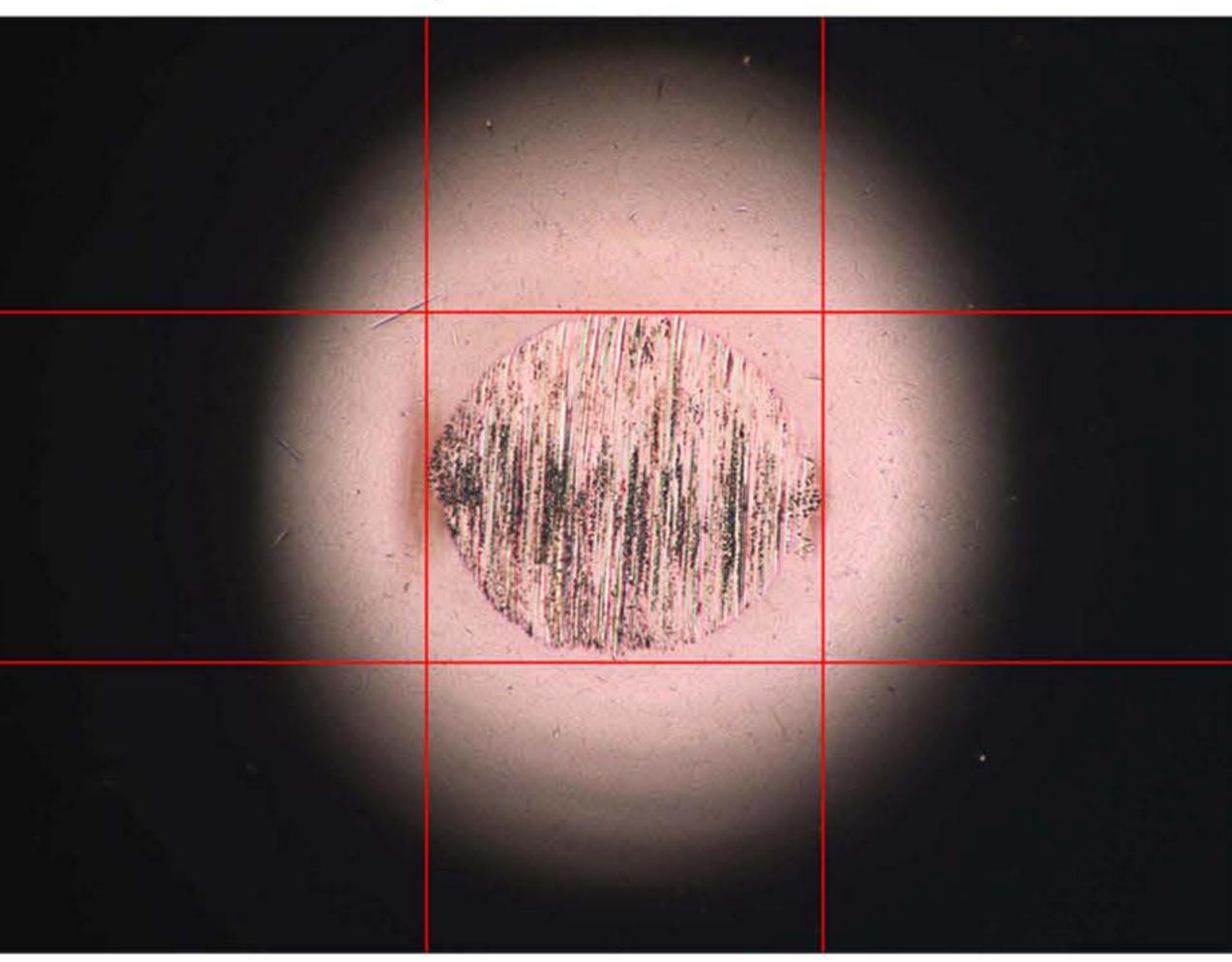
Upper Spec Batch
Lower Spec Batch
Unnamed Batch
Unnamed Batch

Wear Scar Information

Wear Scar X 394 um
Wear Scar Y 349 um
Wear Scar Avg 371.5 um



Microscope wear scar measurement 1 of 1



Lubricity ASTM Test (After AR6500 Power Boost Dose)

PCS Instruments

TEST - K00174787001 FUEL - K00174787001

PCS Instruments - HFRPC v2.11, Instrument D845

UNIQUE TEST ID D845-202105100858

Fuel Information

Fuel Type Basefuel w/ Additive **Fuel Name** Fuel S/N

Base + AR6500 double dose K00174787001

Comments K00174787001

Test Information

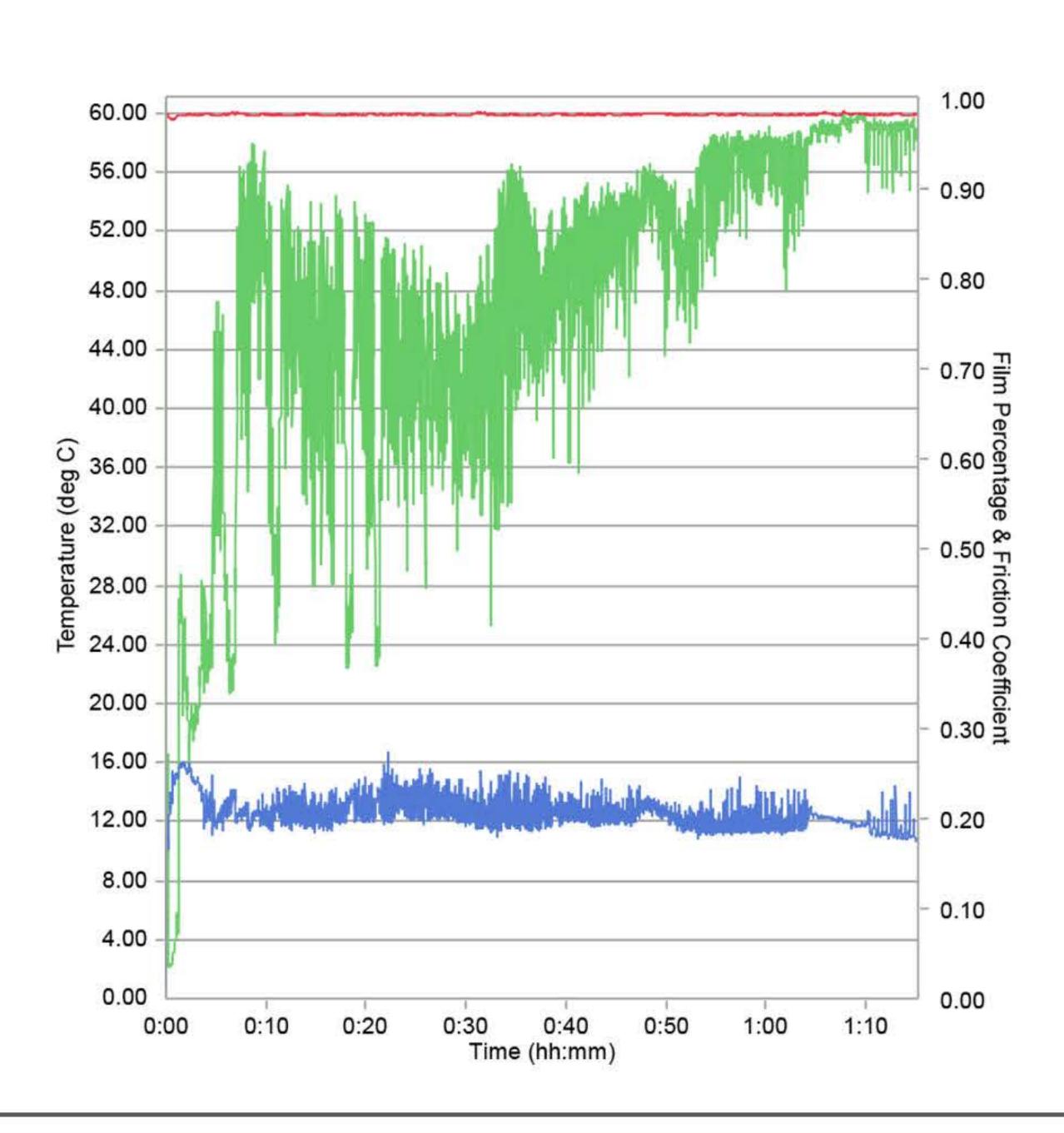
Test Type ASTM D6079 (60degC) Temp 59.9degC Fric 0.206 Test Avgs

Upper Spec Batch Unnamed Batch Lower Spec Batch Unnamed Batch

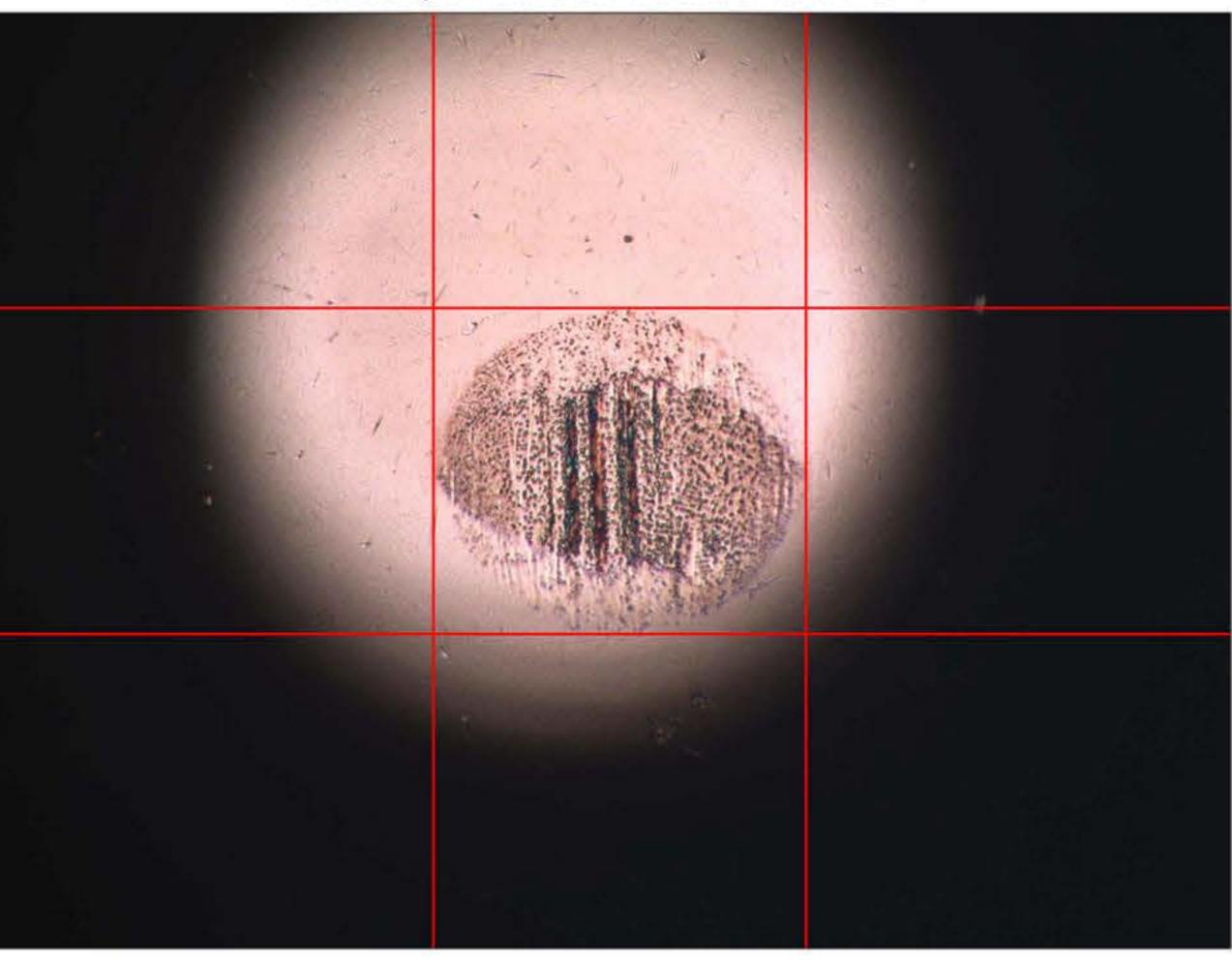
Wear Scar Information

Wear Scar X 371 um Wear Scar Y 324 um Wear Scar Avg 347.5 um

18.3 / 48.1 Start Temp/RH Finish Temp/RH 20.2 / 43.1



Microscope wear scar measurement 1 of 1



Powerful Detergent Package

Fuel at the pump contains little to no detergents which is insufficient for proactive fuel system maintenance. As a result, deposits build up over time, negatively affecting key components, performance and fuel economy.

AR6500 includes a maintenance dose of the powerful detergents present in AR6400-D Diesel Fuel System Cleaner to provide continuous cleaning benefits. AR6500 is suitable for use in all diesel vehicles, including High Pressure Common Rail systems where higher pressures and temperatures cause diesel fuel to break down and create internal diesel injector deposits (IDIDs). AR6500 provides thermal stability and will remove IDIDs.

AR6500 will also prevent the formation of fuel sludge, leading to extended fuel filter life.



The detergents in AR6500's formulation provide the following benefits:

- Test proven in common rail
- Keeps clean against zinc deposits (DW10B)
- Keeps clean against metal carboxylates (DW10C)
- Cleans up injector tips
- Cleans up internal injector parts
- Preserves Total Base Number to extend oil cycle

- Longer filter and engine life
- Restores and maintains lost power
- Provides corrosion protection
- Prevents sludge build-up in fuel tank
- Provides thermal stability

Post-Combustion Cleaning (Turbo, DPF & EGR)

AR6500 contains chemistry which survives the combustion chamber and utilizes heat from the combustion to clean out deposits from the turbo, DPF and EGR. If you are experiencing symptoms of post-combustion problems, including turbo lag, increased regen frequency or engine codes, use AR6400-D Diesel Fuel System Cleaner before AR6500 to rapidly remove heavy deposits.



Disperse Moisture & Prevent Corrosion

AR6500 disperses moisture in fuel, preventing water in the fuel tank that could lead to harmful corrosion and protects the system from excessive wear caused by water in the fuel.

Alcohol-Free

AR6500 is safe for use in all diesel fuels, including biodiesel.

If you have any questions about AR6500 Diesel Treatment or other Archoil products, please email tech@archoil.com

