WINTER DIESEL PERFORMANCE ADDITIVE

PERFORMANCE FEATURES:

• PROVIDES EXCELLENT LOW TEMPERATURE FUEL OPERABILITY
• SUBSTANTIALLY REDUCES COLD FILTER PLUG POINT (CFPP)
• REDUCES OR ELIMINATES THE USE OF COSTLY KEROSENE BLENDING
• CONTAINS AN EFFECTIVE LEVEL OF DETERGENT ADDITIVE
• IMPROVES FUEL ECONOMY
• HELPS REDUCE SMOKE AND PARTICULATE EMISSIONS
• HELPS REDUCE HYDROCARBON AND CARBON MONOXIDE EMISSIONS
• IMPROVES FUEL LUBRICITY FOR ADDED INJECTOR PUMP PROTECTION
• ENHANCES FUEL STABILITY DURING STORAGE
• HELPS PREVENT FUEL SYSTEM CORROSION
WINTER DIESEL PERFORMANCE ADDITIVE

POUR POINT REDUCTION:  ASTM D97

<table>
<thead>
<tr>
<th>FUEL TESTED</th>
<th>TREAT RATE</th>
<th>POUR POINT (°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Fuel</td>
<td>0</td>
<td>-15</td>
</tr>
<tr>
<td>Base Fuel + 20310</td>
<td>8 oz/300 gallons</td>
<td>-30</td>
</tr>
<tr>
<td>Base Fuel + 20310</td>
<td>8 oz/150 gallons</td>
<td>-32</td>
</tr>
<tr>
<td>Base Fuel + 20310</td>
<td>8 oz/75 gallons</td>
<td>-30</td>
</tr>
</tbody>
</table>

![Diesel Pour Point vs Additive Treat Rate Chart]
WINTER DIESEL PERFORMANCE ADDITIVE

POUR POINT AND CFPP COMPARISON:

[Graph showing pour point and cold filter plugging point (CFPP) comparison for diesel fuel with different additive concentrations.]
PETRON PLUS™ FORMULA 7 PREMIUM
ALL-SEASON MULTI-PURPOSE
DIESEL FUEL CONDITIONER w/LUBRICITY
PART NO. 20310

WINTER DIESEL PERFORMANCE ADDITIVE

CFPP DATA:

![Graph showing CFPP data for diesel fuel additives](image-url)
WINTER DIESEL PERFORMANCE ADDITIVE

LUBRICITY DATA: ASTM D-5001

The results shown below were obtained on the Ball-on-Cylinder-Lubricant-Evaluator (BOCLE) test with the lubricity agent used in 20310. The treatment rate was equivalent to 8 ounces of 20310 per 300 gallons of diesel fuel. The test was designed to measure the lubricity characteristics of low sulfur diesel fuels. Test conditions were 1 kg load at 25° C, and the results are reported as the Wear Scar Diameter (WSD), measured in millimeters.

<table>
<thead>
<tr>
<th>FUEL TESTED</th>
<th>WSD (MM)</th>
<th>% REDUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Fuel</td>
<td>0.79</td>
<td></td>
</tr>
<tr>
<td>Base Fuel + Lubricity Agent</td>
<td>0.60</td>
<td>24%</td>
</tr>
</tbody>
</table>

![Lubricity Test Data Chart](image)
PETRON PLUS™ FORMULA 7 PREMIUM
ALL-SEASON MULTI-PURPOSE
DIESEL FUEL CONDITIONER w/LUBRICITY
PART NO. 20310

PREMIUM DIESEL
DETERGENT INHIBITOR CONCENTRATE

PERFORMANCE FEATURES

• KEEPS INJECTORS CLEAN

• SUPERIOR PERFORMANCE IN THE CUMMINS L-10 INJECTOR DEPOSIT TEST. CRC RATING <10

• REMOVES AND PREVENTS DEPOSITS WHICH CAN DETERIORATE FUEL ECONOMY AND EMISSIONS

• PASSES CLASS 8 TRUCK FUEL FILTER PLUGGING TEST

• ENHANCES THERMAL STABILITY

• ENHANCES FUEL STABILITY DURING STORAGE

• CONTAINS DEMULSIFIERS FOR WATER INTERACTION CONTROL

• MEETS OR EXCEEDS THE JOINT EMA/TMC PUMP GRADE SPECIFICATION FOR DETERGENCY AND ACCELERATED THERMAL STABILITY

• MEETS OR EXCEEDS THE NCWM PREMIUM DIESEL FUEL SPECIFICATION FOR INJECTOR CLEANLINESS AND THERMAL STABILITY

• MEETS OR EXCEEDS CUMMINS CES 60032 REQUIREMENTS
CUMMINS L-10 PROCEDURE:

► Using a 1990 Cummins L-10 engine, the procedure was designed to simulate the severe injector carbonizing problems that were first experienced in 1988 L-10 and NT engines. This field problem caused engines to lose as much as 15% of their maximum power in as little as 40,000 miles. The test cycle is as follows:

<table>
<thead>
<tr>
<th>Step</th>
<th>Time</th>
<th>RPM</th>
<th>Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15 sec.</td>
<td>2300</td>
<td>55-65 FHP</td>
</tr>
<tr>
<td>2</td>
<td>15 sec.</td>
<td>2300</td>
<td>Closed throttle motoring</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>Repeat steps 1 and 2 for a total of 125 hours</td>
</tr>
</tbody>
</table>

► To pass the L-10 test requires a CRC rating of the plunger of less than 10 and an average injector flow loss of less than 6%.

L-10 TEST ENGINE
PETRON PLUS™ FORMULA 7 PREMIUM
ALL-SEASON MULTI-PURPOSE
DIESEL FUEL CONDITIONER w/LUBRICITY
PART NO. 20310

PREMIUM DIESEL
DETERGENT INHIBITOR CONCENTRATE

CUMMINS L-10 TEST RESULTS:

- BASE FUEL WAS CAT 1K
- CASE 1: FRONT ENGINE: ADDITIVE CONCENTRATE WAS 126 PPMV
- CASE 2: FRONT ENGINE: ADDITIVE CONCENTRATE WAS 113 PPMV
- CASE 3: REAR ENGINE: ADDITIVE CONCENTRATE WAS 333 PPMV
- A PLUNGER RATING OF LESS THAN 10 IS A “PASS”
CUMMINS L-10 RESPONSE TO TREAT RATE:

THE FUEL USED IN THESE TESTS WAS CATERPILLER IK
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ALL-SEASON MULTI-PURPOSE
DIESEL FUEL CONDITIONER w/LUBRICITY
PART NO. 20310

PREMIUM DIESEL
DETERGENT INHIBITOR CONCENTRATE

CUMMINS L-10 INJECTOR PLUNGER

Fail
Rating = 20.8

Pass
Rating = 2.7
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ALL-SEASON MULTI-PURPOSE
DIESEL FUEL CONDITIONER w/LUBRICITY
PART NO. 20310

PREMIUM DIESEL
DETERGENT INHIBITOR CONCENTRATE

CUMMINS L-10 DETERGENCY - 125 HOUR CLEAN UP RESULTS

► TREATMENT RATE FOR 20310 IN ABOVE TEST WAS 303 PPM BY VOLUME
PETRON PLUS™ FORMULA 7 PREMIUM ALL-SEASON MULTI-PURPOSE DIESEL FUEL CONDITIONER w/LUBRICITY PART NO. 20310

PREMIUM DIESEL DETERGENT INHIBITOR CONCENTRATE

LONG TERM DETERGENT EFFECTS

► A THREE-YEAR PROGRAM INVOLVING NINE DIESEL VEHICLES WAS CONDUCTED TO QUANTIFY VEHICLE EMISSION PERFORMANCE.

► THE OBJECTIVE WAS TO EVALUATE ABILITY OF 20310 TREATED FUEL TO:
  ▶ CONTROL EXHAUST EMISSION
  ▶ FUEL CONSUMPTION

► A FLEET OF FOUR SMALL DIESEL PASSENGER CARS AND FOUR HEAVY DUTY TRUCKS WAS SELECTED.

► TEST PROTOCOL:

A. HEAVY DUTY DI VEHICLES: FOUR TRUCKS WITH CUMMINS ENGINES WERE DRIVEN ON ROAD. TWO OF THEM WERE OPERATED WITH EUROPEAN COMMERCIAL DIESEL FUEL AND OTHERS WITH SAME FUEL BUT INCLUDING ADDITIVE 20310 AT THE SELECTED CONCENTRATION. TYPE ONE TRUCKS WERE BRAND NEW TYPE-II TRUCKS WERE TWO YEARS OLD WITH NEW REPLACEMENT INJECTORS. THE TRUCKS TRAVELED A COMBINED DISTANCE OF 279,630 MILES (450,000 KM).

B. LIGHT DUTY PEUGEOT: TWO NEW MATCHED PEUGEOT 306 1.9 LITRE IDI DIESEL PASSENGER VEHICLES WERE RUN 621 MILES (1000 KM) USING A STANDARD DIESEL FUEL. THE CARS WERE THEN TRACK TESTED TO ENABLE A ROA LOAD POWER CURVE TO BE OBTAINED FROM THE COAST-DOWN TIME TO ENSURE ACCURATE SETTING OF THE DYNAMOMETERS. THIS PROCEDURE WAS REPEATED WITH THE VEHICLES FULLY LADEN. NEW FLOWED AND MATCHED INJECTORS WERE INTRODUCED TO BOTH ENGINES AND THESE REMAINED WITH THE SAME VEHICLE THROUGH ALL TESTING. FROM THIS POINT THE VEHICLES WERE DESIGNATED AS A BASE OR AN ADDITIZED CAR AND A STRICT FUELLING REGIME WAS FOLLOWED DURING TESTING.
PETRON PLUS™ FORMULA 7 PREMIUM
ALL-SEASON MULTI-PURPOSE
DIESEL FUEL CONDITIONER w/LUBRICITY
PART NO. 20310

PREMIUM DIESEL
DETERGENT INHIBITOR CONCENTRATE

HEAVY DUTY DI VEHICLES - HYDROCARBON EMISSIONS

HEAVY DUTY DI VEHICLES - CARBON MONOXIDE EMISSIONS
**PETRON PLUS™ FORMULA 7 PREMIUM**
**ALL-SEASON MULTI-PURPOSE**
**DIESEL FUEL CONDITIONER w/LUBRICITY**
**PART NO. 20310**

**PREMIUM DIESEL**
**DETERGENT INHIBITOR CONCENTRATE**

HEAVY DUTY DI VEHICLES - \( \text{NO}_x \) EMISSIONS

![Graph showing \( \text{NO}_x \) emissions over time](image)

HEAVY DUTY DI VEHICLES - PARTICULATES EMISSIONS

![Graph showing particulate emissions over time](image)
HEAVY DUTY DI VEHICLES - FUEL CONSUMPTION

![Graph showing fuel consumption over time with and without additive.](image-url)
PASSENGER VEHICLES - HYDROCARBON EMISSIONS (PEUGEOT 306)

PASSENGER VEHICLES - CARBON MONOXIDE EMISSIONS (PEUGEOT 306)
PREMIUM DIESEL DETERGENT INHIBITOR CONCENTRATE

PASSENGER VEHICLES - NOx EMISSIONS (PEUGEOT 306)

![Graph showing NOx emissions over distance for base and additized fuel.]

PASSENGER VEHICLES - PARTICULATE EMISSIONS (PEUGEOT 306)

![Graph showing particulate emissions over distance for base and additized fuel.]

PETRON PLUS™ FORMULA 7 PREMIUM  
ALL-SEASON MULTI-PURPOSE  
DIESEL FUEL CONDITIONER w/LUBRICITY  
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PREMIUM DIESEL  
DETERGENT INHIBITOR CONCENTRATE

PASSENGER VEHICLES - FUEL CONSUMPTION (PEUGEOT 306)

PASSENGER VEHICLES - NOZZLE FOULING (PEUGEOT 306)
PETRON PLUS™ FORMULA 7 PREMIUM ALL-SEASON MULTI-PURPOSE DIESEL FUEL CONDITIONER w/LUBRICITY PART NO. 20310

PREMIUM DIESEL DETERGENT INHIBITOR CONCENTRATE

SHORT TERM NO HARM EFFECTS - HEAVY DUTY DI ENGINES

► A CUMMINS L-10 TEST BED ENGINE WAS USED TO DETERMINE THE POTENTIAL FOR INJECTOR DEPOSIT CLEAN-UP USING 20310 AND TO ASSESS WHETHER A CHANGE IN ENGINE OUT EMISSIONS OCCURRED AS A CONSEQUENCE OF THE CLEAN UP.

► THE ENGINE WAS RATED AT 225 KW @ 2100 RPM. THE TEST CYCLE WAS DIVIDED INTO FOUR PHASES:

■ PHASE 1 COMPRISED THE STANDARD 125-HOUR INJECTOR CUMMINS L-10 DEPOSITING TEST PROTOCOL 14183. CAT 1-K FUEL WAS USED DURING THIS DIRTY UP PHASE.

■ PHASE 2 WERE EMISSION TESTS PERFORMED ACCORDING TO THE EPA PROCEDURE FOR CERTIFICATION FOR HEAVY-DUTY DIESEL ENGINES, AS FOUND IN CODE OF FEDERAL REGULATIONS. A BASELINE USING AN UNTREATED CAT-1K FUEL WAS ESTABLISHED.

■ PHASE 3 WAS A CLEAN-UP CYCLE USING APPROXIMATELY 1140 LITERS OF COMMERCIAL AVAILABLE DIESEL FUEL EQUIVALENT TO ONE TANK FULL. THE ENGINE WAS OPERATED OVER A CYCLE OF 20 MINUTES EPA TRANSIENT CYCLE; 15 MINUTES RATED CONDITIONS AND 25 MINUTES AT A SPEED AND LOAD EQUIVALENT TO 60 MPH OPERATION, FOR A TOTAL OF 35 HOURS.

■ PHASE 4 WAS A FURTHER SET OF EMISSIONS TESTS USING UNTREATED CAT-1K TO ESTABLISH ANY CLEAN UP BENEFITS COMPARED TO THE INITIAL TEST MEASUREMENTS.
PETRON PLUS™ FORMULA 7 PREMIUM
ALL-SEASON MULTI-PURPOSE
DIESEL FUEL CONDITIONER w/LUBRICITY
PART NO. 20310

PREMIUM DIESEL
DETERGENT INHIBITOR CONCENTRATE

SHORT TERM NO HARM EFFECTS - CUMMINS L-10 ENGINE
A 1.9 LITER NORMALLY ASPIRATED INDI PEUGEOT 306 AND A 1.8 LITER CATALYSED INDI FORD MONDEO TUTBO WERE CHOSEN TO QUANTIFY THE EMISSIONS IMPACT OF DETERGENT AFTER TWO TANK FULLS.

THREE ECE URBAN AND EXTRA URBAN EMISSION TESTS WERE COMPLETED ON EACH VEHICLE AT THEIR ‘AS FOUND’ CONDITION USING COMMERCIAL FUEL ADDITIZED WITH THE DETERGENT PACKAGE.

A CLEAN UP DISTANCE OF 435 MILES (700 KM) WAS THEN ACCUMULATED ON BOTH VEHICLES AT A FULLY LADEN ROAD LOAD USING THE ADDITIZED FUEL TO ESTABLISH THE EFFECTS OF APPROXIMATELY ONE “TANK FULL”.

THREE ECE URBAN AND EXTRA URBAN EMISSION TESTS WERE CARRIED OUT TO ASSESS EMISSION CHANGES. THE CLEAN UP PHASE WAS EXTENDED TO INCLUDE ANOTHER 435 MILES (700 KM) USING FUEL ADDITIZED WITH DETERGENT AND EMISSION TESTS WERE REPEATED.
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ALL-SEASON MULTI-PURPOSE
DIESEL FUEL CONDITIONER w/LUBRICITY
PART NO. 20310

PREMIUM DIESEL
DETERGENT INHIBITOR CONCENTRATE

SHORT TERM NO HARM EFFECT - HYDROCARBON EMISSIONS

SHORT TERM NO HARM EFFECT - CARBON MONOXIDE EMISSIONS
PETRON PLUS™ FORMULA 7 PREMIUM
ALL-SEASON MULTI-PURPOSE
DIESEL FUEL CONDITIONER w/LUBRICITY
PART NO. 20310

PREMIUM DIESEL
DETERGENT INHIBITOR CONCENTRATE

SHORT TERM NO HARM EFFECTS - NO\textsubscript{x} EMISSIONS

![Graph showing NO\textsubscript{x} emissions over distance]

SHORT TERM NO HARM EFFECTS - PARTICULATE EMISSIONS

![Graph showing particulate emissions over distance]
PREMIUM DIESEL DETERGENT INHIBITOR CONCENTRATE

SHORT TERM NO HARM EFFECTS - FUEL CONSUMPTION

![Graph showing fuel consumption for Mondeo and Peugeot over mileage.

- Mondeo: Fuel consumption remains relatively constant with minor fluctuations.
- Peugeot: Similar pattern to Mondeo, with slight differences in fuel consumption levels.

The graph indicates that both vehicles maintain fuel efficiency throughout the tested range, with no significant short-term harm effects on fuel consumption seen with the application of the diesel fuel conditioner.]
PETRON PLUS™ FORMULA 7 PREMIUM
ALL-SEASON MULTI-PURPOSE
DIESEL FUEL CONDITIONER w/LUBRICITY
PART NO. 20310

PREMIUM DIESEL
DETERGENT INHIBITOR CONCENTRATE

PERCENTAGE EMISSION IMPROVEMENT - TRUCKS

PERCENTAGE EMISSION IMPROVEMENT - CARS
PETRON PLUS™ FORMULA 7 PREMIUM
ALL-SEASON MULTI-PURPOSE
DIESEL FUEL CONDITIONER w/LUBRICITY
PART NO. 20310

PREMIUM DIESEL
DETERGENT INHIBITOR CONCENTRATE

CARBON MONOXIDE EMISSIONS DATA

► DIRTY-UP FUEL FOR FUEL “A” DATA WAS COMMERCIAL LOW SULFUR
► DIRTY-UP FUEL FOR FUEL “B” DATA WAS CAT-1K (0.4% S)
► TREATMENT RATE FOR FUEL “A” WAS 110 PPMV OF 20310
► TREATMENT RATE FOR FUEL “B” WAS 123 PPMV OF 20310
PETRON PLUS™ FORMULA 7 PREMIUM
ALL-SEASON MULTI-PURPOSE
DIESEL FUEL CONDITIONER w/LUBRICITY
PART NO. 20310

PREMIUM DIESEL
DETERGENT INHIBITOR CONCENTRATE

HYDROCARBON EMISSIONS DATA

► DIRTY-UP FUEL FOR FUEL “A” DATA WAS COMMERCIAL LOW SULFUR
► DIRTY-UP FUEL FOR FUEL “B” DATA WAS CAT-1K (0.4% S)
► TREATMENT RATE FOR FUEL “A” WAS 110 PPMV OF 20310
► TREATMENT RATE FOR FUEL “B” WAS 123 PPMV OF 20310
PARTICULATE MATTER EMISSIONS DATA

- DIRTY-UP FUEL FOR FUEL “A” DATA WAS COMMERCIAL LOW SULFUR
- DIRTY-UP FUEL FOR FUEL “B” DATA WAS CAT-1K (0.4% S)
- TREATMENT RATE FOR FUEL “A” WAS 110 PPMV OF 20310
- TREATMENT RATE FOR FUEL “B” WAS 123 PPMV OF 20310
PETRON PLUS™ FORMULA 7 PREMIUM
ALL-SEASON MULTI-PURPOSE
DIESEL FUEL CONDITIONER w/LUBRICITY
PART NO. 20310

PREMIUM DIESEL
DETERGENT INHIBITOR CONCENTRATE

NITROGEN OXIDES EMISSIONS DATA

► DIRTY-UP FUEL FOR FUEL “A” DATA WAS COMMERCIAL LOW SULFUR
► DIRTY-UP FUEL FOR FUEL “B” DATA WAS CAT-1K (0.4% S)
► TREATMENT RATE FOR FUEL “A” WAS 110 PPMV OF 20310
► TREATMENT RATE FOR FUEL “B” WAS 123 PPMV OF 20310
PETRON PLUS™ FORMULA 7 PREMIUM
ALL-SEASON MULTI-PURPOSE
DIESEL FUEL CONDITIONER w/LUBRICITY
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PREMIUM DIESEL
DETERGENT INHIBITOR CONCENTRATE

FUEL ECONOMY - INJECTOR FLOW LOSS IN CUMMINS L-10 ENGINE TEST

FUEL ECONOMY - BRAKE SPECIFIC FUEL CONSUMPTION
PREMIUM DIESEL DETERGENT INHIBITOR CONCENTRATE

FUEL ECONOMY - PERCENTAGE FUEL CONSUMPTION CHANGES
PETRON PLUS™ FORMULA 7 PREMIUM
ALL-SEASON MULTI-PURPOSE
DIESEL FUEL CONDITIONER w/LUBRICITY
PART NO. 20310

PREMIUM DIESEL
DETERGENT INHIBITOR CONCENTRATE

FUEL STABILITY - F-21 HIGH TEMPERATURE TEST

![F-21 High Temperature Test Graph]

FUEL STABILITY - D6864 THERMAL STABILITY

![D6864 Thermal Stability Graph]

A - Dallas, TX;  B - Atlanta, GA;  C – Nashville, TN;  D— Lowell, AR;  E—Baton Rouge, LA;
F—Springfield, MO;  G—Columbia, MO;  H—Harrison, AR;  I—Jackson, MS;  J - Memphis, TN;
K—Tulsa, OK;  L—Ft. Smith, AR;  M—Chicago, IL;  N—Wichita, KS;  O—Oklahoma City, OK.
PETRON PLUS™ FORMULA 7 PREMIUM ALL-SEASON MULTI-PURPOSE DIESEL FUEL CONDITIONER w/LUBRICITY PART NO. 20310

PREMIUM DIESEL DETERGENT INHIBITOR CONCENTRATE

FUEL STABILITY - OXIDATION STABILITY

<table>
<thead>
<tr>
<th>Additive Treated Rate</th>
<th>Total Insolubles, mg/100 ml</th>
<th>Improvement, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero</td>
<td>0.757</td>
<td>-</td>
</tr>
<tr>
<td>Moderate</td>
<td>0.599</td>
<td>21</td>
</tr>
</tbody>
</table>

FUEL STABILITY - CORROSION RESISTANCE

<table>
<thead>
<tr>
<th>Additive Treated Rate</th>
<th>NACE Scale Rating</th>
<th>Pass/Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero</td>
<td>E</td>
<td>Fail</td>
</tr>
<tr>
<td>Moderate</td>
<td>A</td>
<td>Pass</td>
</tr>
</tbody>
</table>
PETRON PLUS™ FORMULA 7 PREMIUM ALL-SEASON MULTI-PURPOSE DIESEL FUEL CONDITIONER w/LUBRICITY
PART NO. 20310

PREMIUM DIESEL DETERGENT INHIBITOR CONCENTRATE

20310 TREAT RATE vs CETANE No. INCREASE

![Graph showing 20310 treat rate vs. cetane number increase](graph.png)
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ALL-SEASON MULTI-PURPOSE
DIESEL FUEL CONDITIONER w/LUBRICITY
PART NO. 20310

PREMIUM DIESEL
DETERGENT INHIBITOR CONCENTRATE

Scuffing Load Ball-on-Cylinder Lubricity Evaluator (SLBOCLE) (ASTM D6078-04) Test

20310 Treat Rate (mg/lit)
PETRON PLUS™ FORMULA 7 PREMIUM
ALL-SEASON MULTI-PURPOSE
DIESEL FUEL CONDITIONER w/LUBRICITY
PART NO. 20310

PREMIUM DIESEL
DETERGENT INHIBITOR CONCENTRATE

High Frequency Reciprocating Rig (HFRR) Lubricity Test (ASTM D-6079-99)

20310 Treat Rate (mg/lit)