



## *Performance Summary of SWEPCO 501 Premium Diesel Fuel Improver*

SWEPCO 501 is a multi-function diesel fuel additive engineered to correct the weaknesses of modern ultra-low sulfur diesel (ULSD) and bio-diesel blends. Its core performance advantage comes from **raising cetane**, **improving lubricity**, and **controlling injector deposits** — the three biggest drivers of diesel efficiency, reliability, and emissions.

### 1. Combustion Improvement

- **Raises cetane number** → quicker, smoother, more complete combustion
- **Restores lost power** (Peugeot DW10 test: full recovery)
- **Reduces smoking, misfiring, and knocking**
- **Up to 42% cleaner exhaust opacity**

This directly translates to better drivability, easier cold starts, and quieter operation.

### *Fuel System & Engine Protection*

#### 2. Injector Deposit Control

Removes and prevents **conventional deposits** and **internal diesel injector deposits (IDID)**

- Superior performance in Cummins L-10 and Peugeot XUD9 tests
- Maintains proper spray pattern → better atomization → more power and lower emissions

#### 3. Lubricity Enhancement

- 26% improvement in BOCLE (Ball-on-Cylinder Lubricity Evaluator) wear test
- Protects injectors and high-pressure pumps from ULSD's abrasive nature
- Extends component life and reduces maintenance costs

#### 4. Corrosion & Sludge Protection

- NACE rust test: **no corrosion** vs. 50–75% in untreated fuel
- 80% reduction in fuel oxidation insolubles
- Keeps tanks, lines, and injectors cleaner over time





### *Cold Weather & Storage Performance*

#### 5. Cold Weather Benefits

- Higher cetane reduces cold-start misfiring
- Winter formula prevents gelling
- Faster warm-up and reduced white smoke

#### 6. Storage Stability

- Improves fuel color and stability
- Reduces sludge, gum, and varnish formation
- Enhances water separation and reduces foaming for faster fill-ups

### *Operational & Economic Benefits*

#### 7. Fuel Economy Improvement

- Documented **4% to 13.5%** improvement depending on engine and duty cycle
- Cleaner combustion + restored injector performance = measurable savings

#### 8. Lower Emissions

FTP emissions reductions:

- Hydrocarbons: >24%
- Carbon monoxide: >15%
- Particulates: >1%

Supports compliance and reduces visible smoke.

#### 9. Compatibility & Safety

- Safe for all diesel and bio-diesel fuels
- Will not harm EGR, DEF, SCR, DPF, or catalytic converters
- Treats any diesel equipment or bulk storage

### *The Value Proposition in One Line*

**SWEPCO 501 restores lost power, improves fuel economy, protects injectors, reduces emissions, and stabilizes fuel — all in one additive.**



## Application of SWEPCO 501 to Major Philippine Diesel Brands

Shell • Caltex • Petron • SEAOIL • Phoenix • PTT • Unioil

### ***Why SWEPCO 501 Works With All Diesel Brands***

All Philippine diesel suppliers — whether multinational (Shell, Caltex, Petron) or independent (SEAOIL, Phoenix, PTT, Unioil) — sell **Ultra-Low Sulfur Diesel (ULSD)**. ULSD has universal weaknesses:

- Lower cetane than ideal
- Poor lubricity due to sulfur removal
- High tendency for injector fouling (especially IDID)
- Water contamination and corrosion risks
- Oxidation instability, especially in tropical storage
- Foaming during refueling

These issues occur **regardless of brand**, because they come from the fuel specification, not the supplier. **SWEPCO 501 directly corrects these weaknesses**, making it compatible and beneficial for any diesel fuel.

## Brand-Specific Application and Positioning

### ***Shell Diesel / Shell V-Power Diesel***

Shell markets detergency and premium combustion, but SWEPCO 501 adds:

- Higher cetane boost than retail additives
- Industrial-grade lubricity improvement (>26% BOCLE load increase)
- IDID control beyond retail detergent packages
- Better storage stability for fleet tanks

#### **Positioning:**

*“Shell provides a strong base fuel. SWEPCO 501 elevates it to fleet-grade performance with stronger cetane, lubricity, and injector protection.”*

### ***Caltex Diesel / Caltex Techron D***

Techron focuses on external injector cleanliness. SWEPCO 501 adds:

- IDID removal and prevention
- Fuel economy gains up to 13.5%
- Anti-foam and water separation
- Corrosion protection not included in retail fuels

#### **Positioning:**

*“Caltex is excellent for retail engines. SWEPCO 501 adds the industrial-level protection needed for high-pressure common-rail fleets.”*



### ***Petron Turbo Diesel / Diesel Max***

Petron's supply varies by station and batch. SWEPCO 501:

- Normalizes cetane performance
- Ensures consistent injector cleanliness
- Reduces sludge and gum in bulk tanks
- Improves storage stability in humid environments

### **Positioning:**

*"Petron is widely available, but quality varies. SWEPCO 501 ensures consistent performance and injector protection across all deliveries."*

### ***SEAOIL Diesel / SEOIL Exceed***

SEAOIL uses imported fuel and higher bio-diesel blends. SWEPCO 501:

- Stabilizes bio-diesel oxidation
- Improves water tolerance
- Prevents corrosion accelerated by bio-diesel moisture absorption
- Reduces sludge formation in storage

### **Positioning:**

*"SEAOIL's bio-diesel blends benefit greatly from SWEPCO 501's oxidation control, corrosion protection, and water separation."*

### ***Phoenix Petroleum Diesel***

Phoenix is cost-competitive but often has:

- Lower cetane
- Higher variability in lubricity
- More injector fouling reports in fleets

SWEPCO 501:

- Raises cetane for smoother combustion
- Restores lost power
- Protects injectors from abrasive ULSD

### **Positioning:**

*"Phoenix is economical. SWEPCO 501 upgrades it to premium performance without changing suppliers."*



### ***PTT Blue Innovation Diesel***

PTT uses Thai-sourced ULSD with moderate cetane. SWEPCO 501:

- Boosts cetane for quieter, smoother operation
- Enhances lubricity for long-haul engines
- Improves storage stability for fleet tanks

#### **Positioning:**

*“PTT diesel is clean and reliable. SWEPCO 501 enhances it for heavy-duty, long-haul, and common-rail applications.”*

### ***Unioil Euro 5 / Euro 5+ Diesel***

Unioil markets high-spec Euro 5 diesel with low sulfur and cleaner emissions. However:

- Cetane still varies by batch
- ULSD still lacks lubricity
- Injector fouling still occurs in common-rail systems
- Storage stability remains a challenge in tropical climates

SWEPCO 501:

- Raises cetane for better combustion
- Provides industrial-grade lubricity improvement
- Controls IDID and external deposits
- Enhances oxidation stability and water separation

#### **Positioning:**

*“Unioil’s Euro 5 diesel is clean, but still ULSD. SWEPCO 501 adds the lubricity, cetane boost, and injector protection needed for fleet reliability.”*

## *Diesel Fuel + SWEPCO 501 Application Matrix*

Fuel Brand	Base Fuel Strength	Common Weaknesses (ULSD)	What SWEPCO 501 Fixes	Resulting Benefit
<b>Shell / V-Power</b>	Good detergency, premium retail additive	Still ULSD: low lubricity, IDID risk, variable cetane	+ Cetane boost, +26% lubricity, IDID control, storage stability	Fleet-grade performance, smoother combustion, longer injector life
<b>Caltex / Techron D</b>	Strong external injector cleaning	Weak IDID control, no lubricity boost, no anti-foam	+ IDID removal, + fuel economy, + anti-foam, + corrosion protection	Cleaner injectors, lower fuel use, faster fill-ups
<b>Petron Turbo Diesel / Diesel Max</b>	Widely available, strong distribution	Batch variability, sludge in storage, inconsistent cetane	+ Cetane normalization, + oxidation stability, + sludge reduction	Consistent performance across deliveries
<b>SEAOIL / Exceed</b>	High bio-diesel content, clean emissions	Bio-diesel oxidation, water absorption, corrosion	+ Oxidation stability, + water separation, + corrosion protection	More stable bio-diesel blends, cleaner tanks
<b>Phoenix Diesel</b>	Cost-competitive, accessible	Lower cetane, variable lubricity, injector fouling	+ Cetane boost, + lubricity, + deposit control	Upgrades economy fuel to premium performance
<b>PTT Blue Innovation Diesel</b>	Clean Thai ULSD, Euro-aligned	Moderate cetane, storage instability	+ Cetane boost, + stability, + lubricity	Better long-haul reliability
<b>Unioil Euro 5 / Euro 5+</b>	Low sulfur, clean emissions	Still ULSD: low lubricity, IDID risk, oxidation	+ Lubricity, + cetane, + IDID control, + oxidation stability	Euro-5 fuel with industrial-grade protection

All major Philippine diesel brands supply Ultra-Low Sulfur Diesel (ULSD). While ULSD reduces emissions, it introduces operational problems: low lubricity, injector fouling, poor cetane quality, water contamination, oxidation instability, and sludge formation. These issues increase fuel consumption, maintenance costs, and downtime.

SWEPCO 501 directly corrects these weaknesses, delivering measurable improvements in fuel economy, injector life, emissions, and engine performance.

### ***Key Technical Advantages***

#### **1. Fuel Economy Improvement (4%–13.5%)**

Cleaner injectors + higher cetane = more complete combustion and lower fuel use.

#### **2. Injector & Pump Protection**

- 26% improvement in lubricity (ASTM D6078 BOCLE)
- Prevents both external deposits and internal diesel injector deposits (IDID)

#### **3. Emission Reduction**

- Up to 42% lower exhaust opacity
- FTP reductions: HC >24%, CO >15%, PM >1%



#### 4. Fuel Stability & Storage Protection

- 80% reduction in oxidation insolubles
- No corrosion in NACE rust test
- Improved water separation and anti-foam performance

#### 5. Cold Weather & Start-Up Performance

- Higher cetane reduces misfiring
- Winter formula prevents gelling

#### ***Operational Impact***

Area	Impact
Fuel Consumption	Lower by 4–13.5%
Injector Life	Extended due to lubricity & deposit control
Downtime	Reduced due to cleaner combustion & fewer failures
Emissions	Cleaner exhaust, fewer DPF regenerations
Storage Tanks	Less sludge, better water control

#### ***Financial Impact***

- Lower fuel cost per kilometer
- Lower injector and pump replacement frequency
- Lower maintenance labor and downtime
- Lower emissions-related penalties or compliance issues