

 **Biodegradable**

 **Foodgrade**

**MILITEC** EP-425

**PLATINUM**

HIGH PERFORMANCE DIESEL AND GASOLINE ADDITIVE

 **MILITEC  
LATAM**<sub>SAS</sub>

 **U.S. Patented**

**DOVER** Chemical  
Corporation  
A Subsidiary of ICC Industries Inc.



- EP-425
- HX-1 Approval
- Hydroperoxide Scavenging
- Phosphite Antioxidants
- Novel Antioxidant performance
- Reduces emissions
- Increases engine power

# EP-425

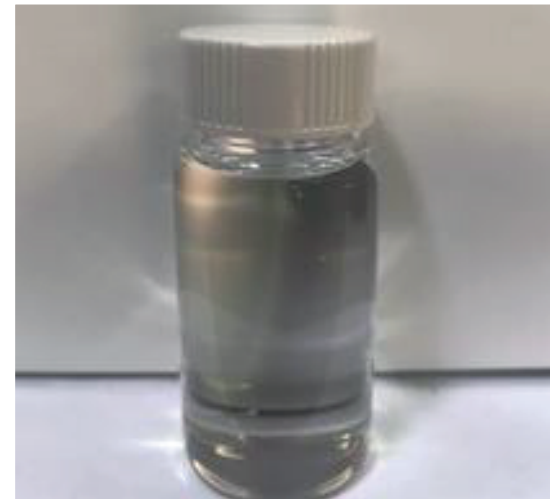
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- Light color and low odor
- Stable in a wide variety of mineral oils, synthetic oils, and esters
- Oil soluble, but it can be used in various semi-synthetic fluids
- Low acidity, thus reducing the possibility of staining to nonferrous alloys
- High Viscosity Index (VI) providing excellent boundary film at elevated temperatures
- Biodegradable
- Not a skin irritant, no significant toxicity concerns
- Low ash. Does not contain sulfur, zinc, heavy metals or SVHCs (substances of very high concern)
- High efficiency antioxidant, even at lower temperatures

# EP-425

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Viscosity (SUS 100F)	3400
Acid Value (mg KOH/g)	<0.5
Color (ASTM D1500)	<0.5
Viscosity Index	250+
Pour Point	-8°C
Flash (Closed Cup)	193°C
Percent Phosphorus	~4.7%



# HX-1 Approval

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- Granted – October 15, 2018
- NSF Registration Number 158156
- Additive is acceptable for use as an adjuvant in lubricants with incidental food contact at a level not to exceed 0.5% by weight



Nonfood Compounds  
HX-1

# EP-425 Hydroperoxide Scavenging

EP-425 protects the ester/oil from oxidation, but also removes hydroperoxides at low temperatures unlike other antioxidants

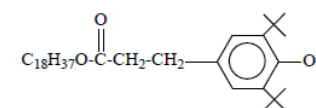
Peroxide values (meq/kg) of a soybean methyl ester before and after aging at 50°C

Samples initial mixed @ 50°C, 15 minutes

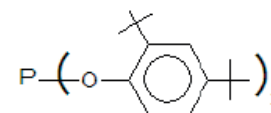
Before Heating	PV
Methyl Ester Control (no additives)	6.0
Methyl Ester + 0.25% Dovernox 76	6.0
Methyl Ester + 1% Doverphos S-480	5.9
Methyl Ester + 1% Doverphos EP-425	<0.5

After Aging @ 50°C in Air, 48 Hours	PV
Methyl Ester Control (no additives)	9.4
Methyl Ester + 0.25% Dovernox 76	8.9
Methyl Ester + 1% Doverphos S-480	7.1
Methyl Ester + 1% Doverphos EP-425	<0.5

Dovernox 76  
Common Hindered Phenolic AO



Doverphos S-480  
Common Phosphite AO



# Phosphite Antioxidants

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Hydroperoxides are formed during degradation of hydrocarbons and will further accelerate decomposition if they are not removed. Phosphites act as antioxidants by scavenging hydroperoxides, which results in the formation of the corresponding phosphate and innocuous alcohol.



# EP-425 Novel Antioxidant Performance

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- EP-425 is an antioxidant in addition to an EP/AW additive.
- Antioxidants are generally used to prevent oxidation. EP-425 is **an exceptionally “fast” phosphite. It not only prevents oxidation,** but it also scavenges and removes hydroperoxides at ambient conditions, thus improving the initial quality of the oil.
- The addition of EP-425 decreases the peroxide number with simple mixing and prevents further degradation when lubricant is in use. The product of hydroperoxide scavenging (phosphate) has the same EP and AW performance as the starting phosphite.





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