

NAUGALUBE® 810/812

Alkyl Citrate Esters for Automotive Applications

Naugalube® 810 and Naugalube 812 are organic anti-wear additives specially developed for use in automotive engine oils to prolong engine life. Free from metals, sulfur and phosphorus these additives assist in sustaining the integrity of an engine's catalytic converter.

Naugalube® 812 molecular structure gives it an advantage for applications where operating temperatures may exceed 120°C.

In comparison to glycerol monooleate (GMO) and other organic friction modifier which are sometimes use as anti-wear additives, Naugalube® 810 and 812 demonstrates superior anti-wear performance and retention, impart no friction increase and are non corrosive. In addition Naugalube® 810 and 812 show synergistic benefits when used in conjunction with Zinc dialkyldithiophosphate (ZDDP), allowing the formulator to boost anti-wear performance or reduced the amount of ZDDP to maintain performance.

Features	Benefits
Metal, Phosphorus & Sulfur free	Increase anti-wear performance without increasing levels of Sulfur or Phosphorus in the formulation
Synergistic with ZDDP	Booster to ZDDP and other phosphate anti-wear additives, extending its durability to deliver improved anti-wear protection in the boundary region
No friction increase	Does not impact fuel efficiency
Anti-wear retention	Does not break down, provides anti-wear protection for longer
Liquid additive	Provides easy handing and blending

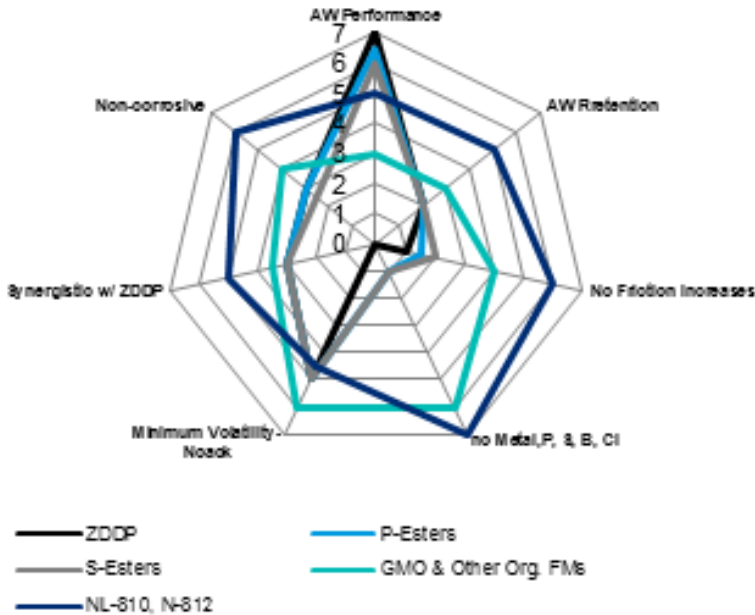


Key Automotive Applications

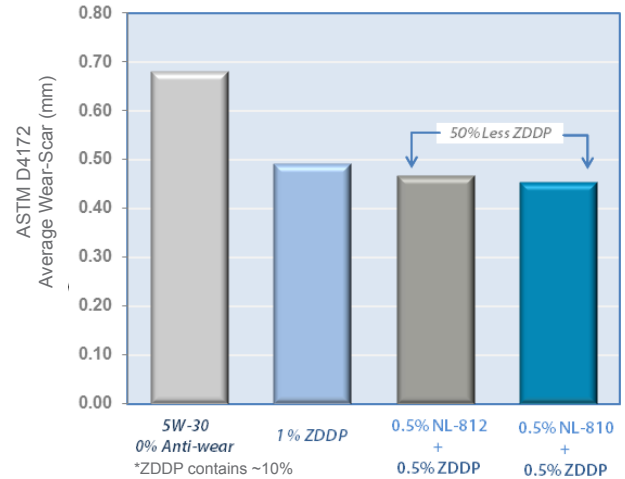
Gasoline Engine Oil
Diesel Engine Oil

Auto Transmission Fluid (ATF)
Transmission Fluid

Key Attributes for an Anti-wear Additive (0= Zero Performance, 7= Maximum Performance)



Naugalube® 810/812 - Additive (ZDDP*) Synergy



Four-Ball Wear Test ASTM D4172 can be used to determine the relative wear preventive properties of lubricants used in sliding contact applications. ASTM D4172 testing shows Naugalube® 810 & 812 to have synergy with ZDDP and therefore provides an anti-wear credit which allows for the reduction of phosphorus levels down to 0.05% in the SAE 5W-30 PCMO group III based oil tested.

Shipping Information: Tank cars, tank trucks, and non-returnable drums.

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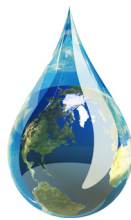
more information on this

product and to locate

the Product Data Sheet

(PDS) and Safety Data

Sheet (SDS).



Storage and Handling

Please read the Safety Data Sheet (SDS) and container label before using any product. The SDS contains important information regarding the safety, handling and storage of this product. The information contained herein is correct to the best of our knowledge. Your attention is directed to the pertinent Safety Data Sheets for the products mentioned herein.

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