ETHANOX® Lubricant Antioxidants

Introduction
SI Group currently has eight ETHANOX® lubricant antioxidants: ETHANOX 4701, ETHANOX 4702, ETHANOX 4710, ETHANOX 4703, ETHANOX 4716, ETHANOX 4727J, ETHANOX 4783 and ETHANOX 4782J.

ETHANOX antioxidants are compounds used as stabilizers for a variety of lubricant products. They enhance thermal stability, improve lubricant performance and reduce sludge formation, extending the useful life of lubricants in virtually any application. They reduce thickening and inhibit acid formation in a variety of applications, including engine oils, automatic transmission fluids, industrial oils, as well as compressor oil and gear and hydraulic fluids. Formulators and lubricant marketers worldwide rely on ETHANOX antioxidants to meet the most demanding government specifications and OEM requirements.

Description and Properties
ETHANOX lubricant antioxidants are stable materials in either liquid or solid form. They vary in color from white through yellow, amber and dark brown. These products are organic based, characterized by the presence of a phenolic component. All ETHANOX products have a low solubility in water.

Uses
SI Group’s ETHANOX lubricant antioxidants play an important role
in many engine oils and industrial lubricants. They suppress the formation of harmful acidic and insoluble by-products resulting from the oxidation of the oil. They have been performance tested and proven to reduce deposits and sludge formation. This extends the useful life of the oils and lubricants, thus helping to reduce dependence on these non-renewable petroleum based products.

Engine applications include passenger car motor oil, diesel engine oil, natural gas engines, aviation fluid, two-stroke oil, marine motor oil and automatic transmission fluids. Industrial uses include turbines and transformer oils for power generation. They also are used as lubricants in diesel, gasoline and marine engines as well as circulating and quench oils for cooling. Compressor oil, hydraulic fluids, slideway, R&O oils, gear oils, metalworking fluids and greases are also protected by ETHANOX lubricant antioxidants.

**Health Information**

The ETHANOX lubricant antioxidants have a fairly low toxicity as a group. At worst some of the products are irritants, showing effects to the skin and/or eyes. Despite this, it is recommended to exercise good personal hygiene when handling these materials.

Please consult the product Safety Data Sheet for recommended personal protective equipment and further information.

**Exposure Potential**

None of the ETHANOX lubricant antioxidants have exposures limits established by OSHA or other organizations. We highly recommend that for the powdered ETHANOX products the OSHA personal exposure limit for particles not otherwise classified be used. This limit is listed on our Safety Data Sheet. Good industrial hygiene practices and normal industrial precautionary measures to prevent contact and/or dusting should minimize the health risk when handling these products. In addition to eye protection, workers should use protective gloves and protective clothing when skin contact or clothing contamination is possible. The use of a NIOSH approved respirator is also recommended when handling powder or crystalline materials. It is recommended that the product be handled in a well ventilated area.

The treatment level for ETHANOX lubricant antioxidants depends upon the specific application but usually varies from 0.1 to 1.0 wt.%. So exposure to the antioxidants from using lubricant and other petroleum products is minimal.

Please consult the product Safety Data Sheet for recommended personal protective equipment and further information.
Environmental Information

Four of the ETHANOX lubricant antioxidants are toxic to aquatic organisms and are considered to be marine pollutants. They are ETHANOX 4701, ETHANOX 4727J, ETHANOX 4782J and ETHANOX 4783. These materials must be handled properly in transportation, storage and use, preventing release to public waters such as lakes, streams ponds and oceans.

Physical Hazards

The ETHANOX lubricant antioxidants are all stable materials, either solids or liquids. High temperatures, sparks, and open flames, as well as oxidizing and reducing agents should be avoided.

Derivation/manufacturing

SI Group manufactures the ETHANOX lubricant antioxidants at several different locations such as Orangeburg, South Carolina and Jinshan, China.

Regulatory Information

Two of the ETHANOX lubricant antioxidants are regulated for transport purposes by Sea (IMO), Road/Rail (ADR/RID) and Air (IATA/ICAO) as environmentally hazardous substances and are marine pollutants. These are ETHANOX 4701 and ETHANOX 4783. The remaining ETHANOX lubricant antioxidants are not regulated for transport purposes.

All of the ETHANOX lubricant antioxidants are in compliance with TSCA and some are also in compliance with other international countries’ chemical inventories.

Product Stewardship

SI Group is committed to manage the ETHANOX lubricant antioxidants so they are used safely by our customers. Our relationships with our customers encourage communication about safety and environmental stewardship, and we work with them to minimize the risks of personnel exposure and spills.

SI Group is staffed and organized to investigate and provide advice regarding appropriate corrective actions if such incidents occur.
**Conclusion**

ETHANOX lubricant antioxidants are non-corrosive and have a low volatility that ensures optimum lubricant performance at high temperatures. They extend the useful life of oils, lubricants and other petroleum products, thus helping to reduce dependence on these non-renewable products. Preventing sludge and gum formation in engines protects the engine and can maintain good engine performance.

**Note**

This document provides general information about ETHANOX lubricant antioxidants and does not supplant or replace required regulatory and/or legal communication documents, nor is it intended to provide an in-depth discussion of health and safety information. Always consult the products’ Safety Data Sheet, product labels and Technical Data Sheets before using these chemicals.

**References**

SI Group Technical Data Sheets and MSDS/SDS:

- Ethanox® 4702 & 4710
- Ethanox® 4703
- Ethanox® 4716
- Ethanox® 4701
- Ethanox® 4727J
- Ethanox® 4782J
- Ethanox® 4783