

PRODUCT STEWARDSHIP SUMMARY

**ENGINE OILS – PASSENGER CAR MOTOR OIL (PCMO) ADDITIVES
[INCLUDING DISPERSANTS, DETERGENTS AND VISCOSITY INDEX IMPROVERS]****Introduction**

Afton aims to deliver a technology platform that allows Afton customers to achieve a competitive, cost effective finished oil formulation, compatible with any future OEM specifications and offering a wide range of base oil coverage, competitive viscosity improvement and pour point depressants, and performance differentiation. Afton values our customers and strives to find solutions. Our engine oils will enable efficient running of the engine under the continuing industry and consumer trends of increased operational stress, longer application life, reduced emissions as well as aiding in more efficient fuel economy.

Uses and Advantages

Engine oil formulations aspire to achieve reduced emissions, efficient fuel economy and longer lasting engines. Afton can meet these expectations and continue to be passionate about finding solutions for our customers. Advantages of using these additives include the following:

- Higher Fuel Economy
- Emissions reduction
- Wear protection/Antiwear Additives
- Sludge reduction
- Prevents deposit and contaminant build-up
- Reduce friction
- Prevent rust and corrosion

Health Effects

Engine Oil fluids can have skin, eye and/or respiratory tract irritancy concerns. These effects occur through skin contact and/or inhalation of oil mists or vapors at elevated temperatures. Dependent on the specified hazardous components and concentration, the health effects will vary.

Environmental Effects

Engine Oil fluids typically are not hazardous to the environment due to the low concentrations of hazardous components. However, in instances where Zinc Dialkyl Dithiophosphate (ZDDP) exists at a higher concentration, the product can be a marine pollutant. This means it can be considered harmful or toxic to aquatic organisms and may cause long term adverse effects in the aquatic environment.

Exposure

Typically, worker exposure is managed with the following:

Industrial Use Exposure:

- Exhaust ventilation or other engineering controls to keep the airborne concentrations of mists below their respective threshold limit value
- Safety glasses with side shields
- Appropriate respiratory protection
- Chemical resistant gloves (Nitrile gloves of minimum thickness 0.4 mm)
- Disposable outer garments when there is a risk of contact with the material
- Training is provided to workers to ensure they are adequately informed of the need to minimize exposure and how to prevent exposure based on treat rate usage.

Consumer or Commercial Use Exposure:

Engine Oil Fluids can cause adverse health effects through skin contact with fluid or mist and through inhalation. Health problems including irritation of the skin, eyes or respiratory tract can be associated with excessive exposure.

SDS, treat rate, usage and training are provided to workers to ensure they are adequately informed of the need to minimize exposure and how to prevent exposure. Methods of avoiding direct contact with engine oil fluids include wearing chemical resistant gloves, safety goggles and protective outer garments. Appropriate respiratory protection may also be required. Consumers are typically exposed to engine oils when changing and checking oil levels.

Risk Management

Engine Oil additives may contain hazardous components at various concentration limits across the portfolio. The primary hazards relate to ZDDP. Depending on the product, there may be physical, health, or environmental hazards. The supply chain manages these risks to ensure proper protection for our employees, customers, consumers and the environment. The Safety Data Sheet (SDS) provides instruction on safe handling practices of Afton products. Engineering controls, work practices and personal precautions and protective equipment (PPE) are required during manufacturing and use.

Conclusion

The life of your engine depends in no small part on the quality of the oil you put in it, oil is its lifeblood. Your engine oil performs many functions. It stops metal surfaces in your engine from grinding together and tearing themselves apart from friction, and it transfers heat away from the combustion cycle. Engine oil must also be able to hold in suspension all the negative by-products of combustion such as silica and acids. Engine oil minimizes the exposure to oxygen and thus oxidation at higher temperatures. This all can happen under the tremendous heat and pressure in today's engines. Afton is committed to providing its customers with the information they need to responsibly manage any health and environmental risks associated with the intended use of Afton products.

For additional information, contact us at:

Afton Chemical Corporation • 500 Spring Street • Richmond VA 23219 • 804-788-5800



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