

PRODUCT STEWARDSHIP SUMMARY

GASOLINE FUEL ADDITIVES

Introduction

Gasoline fuel additives are made up of many functional components for improving performance. Products are formulated to give each customer the performance benefits for their unique offering, while also covering needed performance for the ever changing engine hardware, regulatory requirements and fuel property changes.

Uses and Advantages

Gasoline Fuel Additives are used to help marketers meet changing regulatory requirements and to provide enhanced vehicle performance. The primary types of functional components can include detergents, dispersants, aromatic solvents, carriers, demulsifiers, and corrosion inhibitors. Specifically, these additives can provide the following benefits:

- **Detergents:** Over time, incomplete fuel combustion, and the presence of certain impurities in the fuel, can lead to deposit build up on valves, injectors and combustion chamber areas. These deposits can result in lost power and reduced fuel economy. Detergents work to both clean up these deposits, and with continued use, keep them from coming back, restoring lost power and fuel economy.
- **Dispersants:** As an engine accumulates more mileage and use, the likelihood of unwanted particles from engine wear and fuel contaminants occurs. The added dispersant works with the detergents to keep these particulates dispersed in the fuel, and also specifically reduces injector deposit.
- **Carriers and Solvents:** These specifically chosen solvents and carrier system work to keep all components soluble and maintain uniformity. There is a benefit in temperature qualities and enhancement of package performance in cold temperature regions.
- **Demulsifiers:** These are important in non-ethanol fuels, and act to help drop out water that may accumulate in fueling station storage tanks.
- **Corrosion Inhibitor:** Reduce rust/corrosion to help increase longevity and proper function of the engine.
- **Physical and Chemical Properties:** The properties of Gasoline Fuel Additives vary depending mostly on the amount of solvent that is needed for different applications. Appearance, viscosity, flashpoint and density are important characteristics that are taken into consideration when developing formulations for safe handling in the work environment, and for professional customers, all the way to the end user customers.

Health Effects

Gasoline Fuel Additives can cause adverse health effects through skin contact with sprays or mists and through inhalation from breathing GPA mists or aerosols. Health effects vary depending on the specific components in the GPA package. These effects may include irritation of the skin, eyes, or respiratory tract, as well as narcotic effects. The irritation can be associated with skin and airborne exposures to GPA's. Some of the components of the solvents are toxic or carcinogenic at higher concentrations, but these warnings are accurately listed on the SDS's and other hazard communication documents. All employees and downstream users of GPA products have access to all SDS's and receive appropriate training to warn of the health hazards and are provided the appropriate PPE to ensure their safety. As stated previously, the exposure to GPA's by consumers is so low, given the ppm concentrations, that they are not at risk to the health hazards associated with the components themselves, only the fuel.

Environmental Effects

Many of the Gasoline Fuel Additive packages are considered toxic to aquatic organisms and they may cause long-term adverse effects in the aquatic environment. The aquatic toxicity is primarily due to the solvents that are used in most GPA additives. Some of Afton's GPA products may contain components which may also be persistent in the environment.

Exposure

Industrial or Commercial Use Exposure:

Workers exposed to the hazards of GPA products are protected both through wearing of appropriate PPE and the careful handling of the materials. Many of the products within the GPA portfolio are either flammable or combustible and may require extra steps when handling (loading, transfer, etc.) to avoid static, sparks, etc.

Consumer Use Exposure:

The majority of consumers exposed to GPA components are those who purchase gasoline fuel. While there are a few aftermarket packages that are available to the public, whereby all hazards and warnings are clearly listed on the label, the bulk of the consumer use is from treated fuel. As such, consumers are generally only exposed to ppm levels of the hazardous components in the GPA packages. As with commercial workers who are only exposed to the GPA treated fuel, the extremely low exposure mitigates any risks associated with the GPA components; whereby the primary hazards and risks are a result from exposure to the actual fuel.

Risk Management

Gasoline Performance Additives (GPA) contain many hazardous components which are present at different concentrations across the product portfolio. Many of the primary hazards are associated with the solvent used. The hazards are physical, human health and environmental in nature and risks are managed up and down the supply chain to ensure adequate protection for our employees, customers, consumers and the environment. Methods of avoiding direct contact with diesel fuel additives include wearing appropriate personal protective equipment (PPE) which can include chemical resistant gloves, chemical resistant suits, boots, safety goggles with face shield when appropriate, and appropriate respiratory protection. In addition, it is important that there be adequate exhaust ventilation or other engineering controls to keep the airborne concentrations of specific components of the GPA's below their respective threshold exposure limit values.

Conclusion

GPAs provide many benefits to both the fuel marketer and the vehicle operator, including helping to more efficiently burn fuel. This can lead to improved fuel economy and reduced emissions to the environment. 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:

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