Product stewardship summary: Succinimide Dispersants

Introduction

At Chevron Oronite, we foster a culture grounded in operational excellence and are committed to protecting people and the environment. This product summary is one example of that commitment.

For engines to perform their everyday functions as well as expected, all their moving parts must be powered and protected with fuels and lubricants enhanced by some of the most technologically advanced additives. The products we produce help fuels and lubricants push the boundaries of speed, strength, cleanliness, and durability.

Succinimides are polymeric chemicals used as additives in engine oils to keep sludge, soot, oxidation products, and other deposit precursors dispersed in engine oil so that these by-products of heat and combustion do not deposit onto and harm key engine parts. Because their function is to disperse these by-products of heat and combustion, succinimides are commonly referred to as succinimide dispersants.

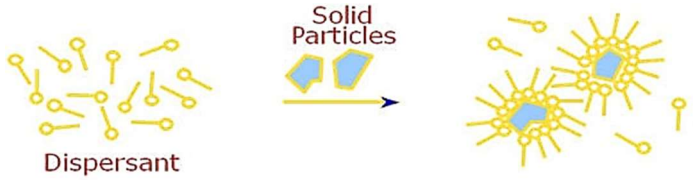

Figure 1. Conceptual diagram of a succinimide dispersant function

Description and Properties

Succinimide dispersants appear as dark or brown-colored liquids with a thickness of a heavy syrup. They have little or no solubility in water and have higher density than water. They are readily soluble in oil and lighter than hydrocarbons. Succinimide dispersants have very low vapor pressure and are odorless at ambient temperatures.

Succinimide dispersants consist of a polar head attached by a linking group to a very long hydrocarbon tail that keeps the dispersant dissolved in oil. The polar group can bind to the fine carbonaceous particles and keep them dispersed in the oil, preventing aggregates formation and deposits. Therefore, these additives help keep vital engine parts clean, prolong engine life and reduce emissions. Figure 2 shows photos of engine oil pans after a normal oil drain interval. The contrast is notable between deposits from lubricating oil formulated with dispersant and deposits from lubricating oil formulated without dispersant.

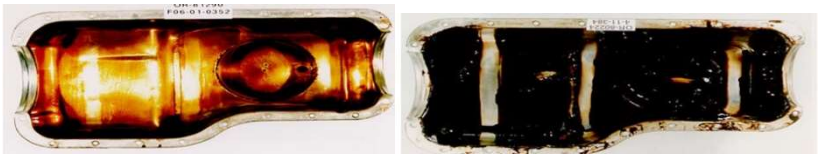

Figure 2. Comparison of oil pans with (left) and without (right) succinimide dispersant.

Health Information

Studies indicate that succinimide dispersants are low in toxicity following acute exposure by oral, dermal and inhalation routes. Sub chronic exposures to these substances via dermal or oral exposure demonstrate low toxicity. Minor effects are observed only at very high doses that are much greater than human exposures related to typical uses.

Studies demonstrate that these substances have low potential to be toxic to genetic material in cells and do not present a significant risk for mutagenicity or carcinogenicity in humans. Studies provide no evidence of direct effects of repeated doses on reproductive systems or indices.

Environmental Information

Succinimide dispersants are not expected to undergo hydrolysis, photolysis or microbial degradation based on their chemistry, available test data or predictive modeling. Additionally, due to their low vapor pressure and low water solubility, modeling has indicated that succinimide dispersants are more likely to partition into soil and sediment rather than air and water. Based on current data, succinimide dispersants are unlikely to bioaccumulate in the environment.

Succinimide dispersants exhibit little or no toxicity in aquatic species, but spills should be prevented and managed. In the event of a spill of a product containing succinimide dispersants, stop the source of the release if it can be done safely. Refer to Safety Data Sheet for spill response and clean-up procedures. Report spills to local authorities. For USA, call National Response Center at 1-800-424-8802.

Regulatory Information

Requirements may exist that govern the manufacture, importation, sale, transportation, use and/or disposal of succinimide dispersants or products containing them. These requirements may vary by jurisdiction. For more information, consult the Safety Data Sheet.

Exposure Potential

Manufacturing of succinimide dispersants generally occurs in dedicated closed systems with proper engineering controls, thereby minimizing exposure. Solid waste is either incinerated or recycled. Therefore, there is no significant release to the environment. Wastewater is treated before it is released. Workers in manufacturing plants, including those who conduct sample analysis, blending, maintenance and cleaning are well trained in their operations and wear appropriate personal protection equipment. Professional mechanics, service station attendants, and other skilled workers wear personal protective equipment and use hygiene practices that reduce exposure to the oil. Consumer exposure may occur while working around engines, but this is likely to be infrequent. In summary, there is minimal potential for exposure succinimide dispersants to the consumer.

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This summary is based on information as of June 2020

Chevron Oronite