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Product Stewardship Summary
C_2 – C_4 Organosulfur Products

The product stewardship summary is intended to give general information about the chemical or categories of chemicals addressed. It is not intended to provide an in-depth discussion of all health and safety information. Additional information is available through the applicable Safety Data Sheet (SDS) which should be consulted before use of any chemical. This product stewardship summary does not supplant or replace required regulatory and/or legal communication documents.

Chemical Identity:

The products in the C_2-C_4 Organosulfur group are low molecular weight compounds with a carbon number of C_2 through C_4. They are colorless liquids with a strong repulsive or pungent odor. This group is comprised of pure substances or mixtures containing two or more of the pure substances from the following three classes of low molecular weight organosulfur compounds: 1) Mercaptans, which include: Ethyl Mercaptan, n-Propyl Mercaptan, Isopropyl Mercaptan, n-Butyl Mercaptan, Tertiary Butyl Mercaptan, and sec-Butyl Mercaptan; 2) Sulfides, which include: Dimethyl Sulfide, Methyl Ethyl Sulfide; and 3) Tetrahydrothiophene. The 23 products included in the C_2-C_4 Organosulfur Group are listed below.

- Ethyl Mercaptan
- Isopropyl Mercaptan
- n-Propyl Mercaptan
- n-Butyl Mercaptan
- s-Butyl Mercaptan
- t-Butyl Mercaptan
- Scentinel® A
- Scentinel® E
- Scentinel® F-20
- Scentinel® F-25
- Scentinel® F-35
- Scentinel® F-40
- Scentinel® F-50
- Scentinel® N
- Scentinel® N-4
- Scentinel® O-10
- Scentinel® P
- Scentinel® PT
- Scentinel® RB
- Scentinel® S-20
- Scentinel® T
- Scentinel® T-50
- Scentinel® TB

Product Uses:

The C_2-C_4 Organosulfur products are typically used as agricultural, chemical, and pharmaceutical intermediates and natural gas odorants. Products in this group are commercially available to industrial customers only, which typically include agricultural and chemical manufacturers, pharmaceutical, and utility companies.

Physical/Chemical Properties:

The C_2-C_4 Organosulfur products are highly flammable liquids and have a high potential to cause fires if they are exposed to an ignition source. The formation of hazardous combustible or decomposition byproducts, such as sulfur and carbon oxides, is possible. However, these products are typically stable under normal storage and handling conditions (ambient temperature and pressure). These products should be kept in a tightly sealed container, and stored in a cool and well-ventilated place, away from ignition sources such as heat, sparks, open flames, or hot surfaces.

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Health Information:

Overall, the C_2-C_4 Organosulfur products may cause low acute toxicity effects with the exception of Ethyl, Isopropyl, Normal Propyl Mercaptan and Tetrahydrothiophene that are described as harmful. Dermal contact with some of these products may cause skin sensitization (an allergic skin reaction), and varying degrees of irritation, ranging from slight to severe. Acute effects on the eye attributed to irritation may include mild to serious. Prolonged exposure to high vapor concentrations may cause respiratory irritation, central nervous system (CNS) effects, including dizziness, headache, nausea, and loss of coordination. Due to their low odor thresholds, prolonged inhalation exposure is not expected to occur frequently; however, continuous exposures to some of these compounds may increase olfactory thresholds (i.e., decrease sense of smell). If ingested, some of these products may cause an aspiration hazard, which can result in severe pulmonary damage (e.g., pneumonitis or inflammation) or may be fatal. These products exhibit a low potential for chronic toxicity; however, the kidney, liver, and blood (red blood cells) have been noted as potential target organs in repeated high dose inhalation and oral animal toxicity studies. Data are currently unavailable to characterize the potential of these products to cause cancer. However, genetic toxicity data were negative for these products, suggesting that they have a low potential to cause cancer. Additionally, available data suggest that these products are unlikely to result in reproductive or developmental toxicity.

Environmental Information:

The environmental hazard potential for the C_2-C_4 Organosulfur products is high. These products may cause acute and chronic toxicity to aquatic life, with effects ranging from harmful to highly toxic. Some of these products may persist in the environment (i.e., they are not expected to be readily biodegradable). However, their low octanol-water partition coefficients (log Kow) indicate that they have a low potential to accumulate in aquatic life. Due to the potential of these products to cause significant harm to aquatic environments, care should be taken to avoid releases of these products to sewage, drainage systems, and water bodies. Spillage shall be quickly collected in the event of an accidental release.

Exposure Potential:

The most likely routes of exposure to the C_2-C_4 Organosulfur products are skin and eye contact, and inhalation exposures. The best way to prevent exposure is to work in well-ventilated areas, wear appropriate personal protective equipment (PPE), and follow good personal hygiene practices.

Workplace use:

Potentially exposed populations include: (1) workers who manufacture these products; (2) quality assurance workers who sample and analyze the products to ensure that they meet specifications; (3) workers involved in distribution and storage of these products; and (4) commercial consumers, in occupational settings, that use these products in intended applications. The probability of exposure to workers is expected to be low because these products are manufactured in enclosed, controlled environments, and are transported in tightly sealed containers. These products are sold to industrial customers who are familiar with their intended applications, safe handling, storage, and disposal requirements. Manufacturing, quality assurance and transportation workers should adhere to safe handling practices and wear appropriate personal protective equipment (PPE), and have access to exposure prevention measures (e.g., engineering controls). Customers should also use appropriate PPE during handling and have risk mitigation measures in place to address potential physical hazards or accidental releases. Contaminated surfaces will be extremely slippery.

Consumer use:

Potential exposure or health impacts to the general public is not anticipated. These products are sold by Chevron Phillips Chemical to industry users knowledgeable in the safe handling and use of these products. In the event of a fire, inhalation of hazardous combustion byproducts could be a potential concern for nearby residents. The potential for odor complaints from the public is possible if releases during transportation or elsewhere are significant.

Potential Environmental Release:
There may be some potential for significant exposure to the environment from accidental releases during transportation of drums, truck trailers, rail cars, or container ships; however, the frequency of distribution incidents involving accidental release of these products has been low, and reported volumes spilled have been minimal. Small quantities are shipped for laboratory quality and performance testing. Those performing the tests understand the hazards and adhere to the safe handling practices as explained above. Chevron Phillips Chemical is committed to operating in an environmentally responsible manner and participates in the American Chemistry Council's Responsible Care® program.

Risk Management

Chevron Phillips Chemical is committed to Product Stewardship and doing business responsibly. We endeavor to provide sufficient information for the safe use and handling of all our products. We make product information available to all of our customers, distributors, carriers, and users of these products which contain detail about the properties of each product. To that end, a Safety Data Sheet and a certificate of analysis accompanies each shipment from our manufacturing plant or warehouse.

Before using these products, the user is cautioned to make its own determination and assessment of the safety and suitability of the product for the specific use in question. It is the ultimate responsibility of the user to ensure suitability for use and determine if this information is applicable to the user's specific application. Chevron Phillips Chemical does not make, and expressly disclaims, all warranties, including warranties of merchantability or fitness for a particular purpose, regardless of whether oral or written, express or implied, or allegedly arising from any usage of any trade or from any course of dealing in connection with the use of the information contained herein or any product itself. The user expressly assumes all risk and liability, whether based in contract, tort or otherwise, in connection with the use of the information contained herein or any product itself.

Regulatory Information:

Regulations exist that govern the manufacture, sale, transportation, use, and disposal of these products. These regulations may vary by city, state, country or geographic region. Additional relevant information may be found by consulting the applicable SDS.

Sources of Additional Information:

Safety Data Sheets (SDS) at https://www.cpchem.com or available upon request at SDS@CPChem.com

European Chemical Agency (ECHA) Dissemination portal with information on chemical substances registered under REACH

- https://echa.europa.eu/information-on-chemicals

Organization for Economic Cooperation and Development (OECD): eChemPortal web-based search tool

- https://www.echemportal.org/echemportal/

Conclusion:

C_2-C_4 Organosulfur products are classified as hazardous chemicals. Efforts should be taken to minimize exposure to these products by adhering to safe-handling procedures, designated applications and uses, appropriate personal-protective equipment practices, and appropriate labeling, storage, and transportation procedures and requirements. The relevant SDS and applicable regulatory guidelines and requirements, including but not limited to Occupational Health and Safety Administration (OSHA) guidelines, should be consulted prior to the use or handling of these products.

November 7, 2022

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Contact Information:
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