



Product Stewardship Summary Mining Chemicals Products

This 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 Mining Chemicals Products are comprised primarily of sulfur- and petroleum hydrocarbon-based products. These products are categorized by their designated mining applications, which include: 1) Flotation Oils; 2) Frothers; 3) Depressants; 4) Collectors; and 5) Solvent Extraction Diluents. The Mining Product Line is currently comprised of 20 products that are listed below based on their designated application.

Flotation Oils

- Molyflo[®] Flotation Oil
- Orfom[®] MCO Flotation Oil
- Orfom[®] MCS Flotation Oil
- Orfom[®] MCX Flotation Oil
- Philflo[®] HV Flotation Oil
- Philflo[®] 50 Flotation Oil

Collectors

- Orfom[®] CO100 Collector
- Orfom[®] CO200 Collector
- Orfom[®] CO210 Collector
- Orfom[®] MC37 Collector
- Orfom[®] MC47 Collector
- Orfom[®] MC2 Collector
- Orfom[®] MC5 Collector
- Orfom[®] MC8 Collector
- Orfom[®] MC17 Collector

Category Justification

All of the products in this group are marketed for use in mining applications. These products are differentiated by their designated mining applications (e.g., flotation oils). They have diverse physical and chemical characteristics, and exhibit varied physical, human health, environmental hazards and fates.

Solvent Extraction Diluents

- Orfom[®] SX11 Solvent Extraction Diluent
- Orfom[®] SX12 Solvent Extraction Diluent
- Orfom[®] SX80 Solvent Extraction Diluent

Frothers

- Orfom[®] F8 Frother

Depressants

- Orfom[®] D8 Depressant

Product Uses

The Mining Chemicals Products are used in various mining applications as depressants, frothers, flotation oils, collectors, and solvent extraction diluents. Products in this group are commercially available to industrial customers only.

Physical/Chemical Properties

A number of these products are combustible liquids, which have the potential to cause fires if they are exposed to an ignitable source. In the event of a fire, the formation of decomposition by-products, such as sulfur and carbon oxides, is possible. These products should be kept in tightly closed containers, and stored in a cool and well ventilated environment, away from ignitable sources.

Health Information

Overall, the Mining Chemicals Products may cause varying degrees of acute and chronic toxicity effects in humans. Dermal contact with these products may cause mild to severe skin irritation and defatting of the skin; a few of these products may also cause caustic burns and skin sensitization (allergic reaction). Eye effects range from mild to severe irritation to corrosive and permanent (irreversible) damage. Some of the petroleum hydrocarbon-based products may be harmful following inhalation exposures to high vapor concentrations; symptoms of over exposure to high vapor concentrations may include respiratory irritation and central nervous system (CNS) effects such as dizziness, headache, nausea, and loss of coordination. If ingested, most of these products may be aspirated into the lungs, which can result in severe pulmonary damage (e.g., pneumonitis or inflammation).

Repeated exposure of laboratory animals to some of these products have shown effects in the liver and kidney at high vapor concentrations. The kidney toxicity effects (i.e., alpha-2u-nephropathy) observed are specific to the animal species tested and are considered not relevant to humans. The effects seen in these laboratory animal studies were at exposures that are not likely to occur in humans from anticipated use of the products.

A few of the Mining Chemicals Products contain petroleum hydrocarbon components that have shown target organ effects in the liver, blood, and thymus in laboratory animals when applied repeatedly to the skin. Repeated dermal application of petroleum hydrocarbons in some of the Mining Chemicals Products produced skin tumors in mice. Several of the Mining Chemicals Products contain a petroleum hydrocarbon component that has been shown to cause developmental toxicity (including teratogenicity) in laboratory animals following repeated dermal applications. The remaining components of the Mining Chemicals Products show either no developmental toxicity or developmental toxicity, but no teratogenicity, at doses that also caused maternal toxicity.

Some of these products contain ethylbenzene and naphthalene as constituents of the petroleum hydrocarbon component of the product. Ethylbenzene and naphthalene have been shown to be a carcinogen in laboratory animal studies. The relevance of these findings to human is uncertain.

Environmental Information

The environmental hazard potential for the Mining Chemicals Products is varied, ranging from low to high. Some of the products may persist in the environment (i.e., not expected

to be readily biodegradable). The sulfur-based component in the Mining Chemicals Products exhibit a low potential to bioaccumulate in aquatic life. However, for the petroleum hydrocarbon-based component, many of the constituents have the potential to bioaccumulate, which can be reduced due to their physical properties and biotransformation in aquatic organisms. Some of Mining Chemicals Products may cause acute and chronic toxicity to aquatic life, with effects ranging from harmful to highly toxic. Due to their potential 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 should be quickly collected and properly disposed of to minimize harm to the environment.

Exposure Potential

The most likely routes of exposure to the Mining Chemicals Products are skin and eye contact, and inhalation exposures. Approaches to preventing exposure include working in well-ventilated areas, wearing appropriate personal protective equipment (PPE), and following 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 manufacturing, quality assurance, and transportation workers is expected to be low because these products are manufactured and tested in controlled environments and are transported in tightly sealed containers. These products are sold to Mining industrial customers that are familiar with their intended applications, safe handling, storage, and disposal requirements. Manufacturing, quality assurance, and transportation workers should always 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 use, and to have risk mitigation measures in place to address potential accidental spills.

Consumer Use:

Potential exposure or impact to the general public is not anticipated for these products as they are not sold to the general population. If a large scale spill occurred in a residential setting, the potential for odor complaints is possible for some of the sulfur-based products. In the event of a fire, inhalation exposure to hazardous combustion byproducts could be a potential concern for nearby residents.

Potential Environmental Release:

There may be some potential for significant exposure to the environment from accidental releases during transportation of drums, truck trailers, and rail cars; however, the frequency of distribution incidents involving accidental release of these products has been low, and reported volumes spilled have been minimal. Chevron Phillips Chemical Company LP 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 Company LP 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 accompany each shipment from our manufacturing plant.

Before using these products, the user is advised and 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 Company LP 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 Mining Chemicals 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 <http://www.cpchem.com>.

European Chemical Agency (ECHA) Dissemination portal with information on chemical substances registered under REACH: <http://echa.europa.eu/information-on-chemicals>.

Conclusion

Mining Chemicals 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.

Contact Information:

<http://www.cpchem.com/>