Product Stewardship Summary

Surfactants Group

The Product Safety Summary (PSS) 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 which should be consulted before use of any chemical. This PSS does not supplant or replace required regulatory and/or legal communication documents.

Chemical Identity:

The Surfactants Group currently includes the following three (3) products:

- Diacel® SF-1 Surfactant
- Diacel® SF-2 Surfactant
- Diacel® LX 200 Cement Fluid Loss Additive

Category Justification:

The Surfactant Products contain various concentrations of non-ionic surfactants. In general, the health and environmental hazards are due to the surfactants with small differences in the severity of their effects.

Product Uses:

These products are commercially available to oil or gas service industry customers, and are typically used in down-hole drilling applications (i.e., cementing).

Physical/Chemical Properties:

The Surfactant Products are low volatility liquids and non-combustible. These products are considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure, but can decompose at elevated temperatures. Avoid contact with heat, sparks, and oxidizing agents. Do not store in copper, copper alloys, zinc, or galvanized containers.

Health Information:

The products in the Surfactant Group exhibit low acute and chronic toxicity effects via the oral, inhalation, and dermal routes. No adverse health effects are indicated for Diacel® LX200 Cement Fluid Loss Additive following short- or long-term exposures, and it is classified as non-hazardous. Diacel® SF-1 and SF-2 Surfactants may cause moderate skin irritation, serious eye damage (including corneal burns and injury which could result in permanent impairment of vision and blindness), and severe upper respiratory tract (nose and throat) irritation. Prolonged and/or repeated dermal contact with Diacel® SF-1 Surfactant may cause local redness and defatting, resulting in drying and cracking of the skin. If accidentally ingested, Diacel® SF-1 and SF-2 Surfactants may cause an aspiration hazard. Currently available information suggests the components of the Surfactant Products are not expected to cause carcinogenic, reproductive, teratogenic or developmental toxicity health effects.

Environmental Information:

The environmental hazard potential of the Surfactant Products is expected to be low (practically non-toxic), except for Diacel® SF-1 Surfactant which may cause harm to aquatic life. These products have a low potential to biodegrade if released to the environment, but are not expected to

bioaccumulate in aquatic life. 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.

Exposure Potential:

The most likely routes of exposure to the Surfactant Products are skin and eye contact, and inhalation exposures.

Workplace Use:

The potentially exposed populations include: (1) workers who manufacture these products; (2) quality assurance workers who sample and analyze the products to ensure they meet specifications; (3) workers involved in distribution and storage of these products; and (4) industrial consumers in occupational settings that use these products in intended applications. The probability of exposure to these workers is expected to be low because these products are manufactured and tested in controlled environments and are stored and transported in tightly sealed containers. These products are sold to industrial customers that 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.

Consumer Use:

Potential exposure to the general public is not anticipated for these products as they are not typically sought out for purchase by the general population, nor does CPChem market them to such. In the event of a fire, inhalation of hazardous combustion byproducts could be a potential concern for nearby residents. Spilled surfactants can be a slip hazard.

Potential Environmental Release:

The potential for accidental releases of these products to the environment is possible during transportation over long distances via truck trailers, railcars or container ships; however, available data indicate that the frequency of distribution incidents involving significant releases of these products has been minimal. Furthermore, pallet containers are stretched wrapped to minimize the potential for product loss. Small quantities are shipped for laboratory quality and performance testing, typically one (1) pound or less. Those performing the tests should understand the hazards and adhere to the safe handling practices as explained above. The current and anticipated use of these products in designated off-shore/on-shore rig applications is not expected to result in significant loss to the environment because containers are handled one-at-a time. Chevron Philips Chemical Company LP is committed to operating in an environmentally responsible manner and has adopted the American Chemical Council's Responsible Care® initiative.

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 accompanies each shipment from our manufacturing plants and distribution centers.

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 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 product Safety Data Sheets.

Sources of Additional Information:

Safety Data Sheet (SDS) at http://www.cpchem.com

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

- http://apps.echa.europa.eu/registered/registered-sub.aspx

IPCS INCHEM. 1998. International Agency for Research and Cancer (IARC) – Summaries and Evaluations: Styrene, Polystyrene and Styrene-Butadiene Copolymers. Last updated 3/30. Available online at: http://www.inchem.org/documents/iarc/vol19/styrene&polymers.html

United States Environmental Protection Agency (U.S. EPA). 2013. Aggregated Computational Toxicology Resource (ACToR). Toxicology Data. Polyethylene Glycol Trimethylphenylnonyl Ether (CAS# 60828-78-6). Accessed 12/23. Available online at: http://actor.epa.gov/actor/GenericChemical?casrn=60828-78-6

U.S. EPA. 2013. Aggregated Computational Toxicology Resource (ACToR). Toxicology Data. Styrene, 1,3-Butadiene Polymer (CAS# 9003-55-8). Accessed 12/23. Available online at: http://actor.epa.gov/actor/GenericChemical?casrn=9003-55-8

Conclusion:

Diacel® SF-1 and SF-2 Surfactants are classified as hazardous chemicals. Efforts should be taken to minimize eye, dermal, and inhalation exposures to these products by adhering to safe handling procedures, designated applications and uses, appropriate personal protective equipment practices, and labeling, storage, and transportation procedures and requirements. The relevant product Safety Data Sheets 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/

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