



Product Stewardship Summary

AQUEOUS SOLUTIONS GROUP

This product stewardship summary is intended to give general information about the chemical or categories of chemicals addressed in this summary. 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 Aqueous Solutions Group currently includes the following six (6) products:

- Diacel[®] HTR 100 Liquid
- Diacel[®] LTR 100 Liquid
- Diacel[®] RPM Liquid Cement Additive
- Diacel[®] ATF-S Antifoam
- Diacel[®] FL (Winterized) Cement Additive

Category Justification:

The Aqueous Solutions Products all contain 50% or more water and are easily diluted with additional water. The high water concentration significantly affects the physical properties of the mixtures. Although they do have a variety of chemical characteristics, the general health and environmental hazards are similar with small differences in severity of 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., drilling fluids and cementing).

Physical/Chemical Properties:

The Aqueous Solutions Group is comprised of low volatility liquids which are non-combustible. These products are considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure; however, they can decompose at elevated temperatures. Avoid contact with heat, sparks, and oxidizing agents.

Health Information:

Overall, the products in the Aqueous Solutions Group exhibit low acute and chronic toxicity effects via the oral, inhalation, and dermal routes, except for Diacel[®] FL Winterized Cement Additive. Diacel[®] FL (Winterized) Cement Additive may be harmful via the oral route. The products in this group are also not expected to cause eye and skin irritation. These products are not likely to cause an aspiration or skin sensitization hazard. Currently available information suggests the components of the Aqueous Solutions Products are not expected to cause carcinogenic, reproductive, teratogenic or developmental toxicity health effects.

Environmental Information:

The environmental hazard potential of the Aqueous Solutions Group is expected to be low (i.e., they are not expected to be harmful to aquatic life). Based on the individual components in these products, the bioaccumulative potential of these products ranges from low to high. They have a low to moderate potential to biodegrade if released to the environment. Given their potential to be persistent, if released to the environment, care should be taken to avoid releases 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 Aqueous Solution Group 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 represent themselves as being 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 Chevron Phillips Chemical Company LP market them to such. In the event of a fire, inhalation of hazardous combustion byproducts could be a potential concern for nearby residents.

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 Phillips 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 contains 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 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 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 Sheets (SDS) at <http://www.cpchem.com>

European Chemical Agency (ECHA). 2013. Sodium Sulfate. Available online at: <http://www.echa.europa.eu/>

ECHA. 2013. Ethylene Glycol. Available online at: <http://www.echa.europa.eu>

ECHA. 2013. Polypropylene Glycol. Available online at: <http://www.echa.europa.eu/>

ECHA. 2013. Potassium Chloride. Available online at: <http://www.echa.europa.eu/>

European Center for Ecotoxicology and Toxicology of Chemicals (ECETOC). 2011. JACC 55: Linear Polydimethylsiloxanes, CAS No. 63148-62-9 Available online at: http://www.ecetoc.org/index.php?mact=MCSOap,cntnt01,details,0&cntnt01by_category=3&cntnt01order_by=Reference%20Desc&cntnt01template=display_list_v2&cntnt01display_template=display_details_v2&cntnt01document_id=5338&cntnt01returnid=91

European Food Safety Authority (EFSA). 2010. Scientific Opinion on the Use of Calcium Lignosulphonate (40-65) as a Carrier for Vitamins and Carotenoids. EFSA Journal 2010; 8(3):1525 Available online at: <http://www.efsa.europa.eu/en/efsajournal/doc/1525.pdf>

Federal Register. 2005. Proposed Rule by the United States Environmental Protection Agency (US EPA): Lignosulfonates; Exemptions from the Requirement of a Tolerance. Available online at: <https://www.federalregister.gov/articles/2005/02/16/05-2986/lignosulfonates-exemptions-from-the-requirement-of-a-tolerance>

Hazardous Substances Data Bank (HSDB). 2013. Ethylene Glycol. Available online at: <http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>

HSDB. 2013. Sodium Lignosulfonate. Available online at: <http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>

International Programme on Chemical Safety. (IPCS). 2009. World Health Organization (WHO) Food Additive Series 60: Safety Evaluation of Certain Food Additives – Calcium Lignosulfonate. Available online: <http://www.inchem.org/documents/jecfa/jecmono/v60je01.pdf>

Organization for Economic Co-operation and Development (OECD). 2001. SIDS Initial Assessment Report. Potassium Chloride. Available online at: <http://www.chem.unep.ch/irptc/sids/OECD/SIDS/KCHLORIDE.pdf>

OECD. 2004. SIDS Initial Assessment Report. Gluconic Acid and Derivatives. Available online at: <http://www.chem.unep.ch/irptc/sids/OECD/SIDS/gluconates.pdf>

OECD. 2004. SIDS Initial Assessment Report. Synthetic Amorphous Silica and Silicates. Available online at: <http://www.chem.unep.ch/irptc/sids/OECD/SIDS/Silicates.pdf>

OECD. 2004. SIDS Initial Assessment Report. Sodium Sulfate. Available online at: <http://www.inchem.org/documents/sids/sids/7757826.pdf>

National Library of Medicine (NLM). 2013. Chem ID Plus Database. Sodium Lignosulfonate. Available online at: <http://chem.sis.nlm.nih.gov/chemidplus/rn/8061-51-6#toxicity>

NLM. 2013. Chemical Carcinogenesis Research Information System (CCRIS) Database. Sodium Lignosulfonate Available online at: <http://toxnet.nlm.nih.gov/cgi-bin/sis/search>

Conclusion:

The Aqueous Solutions Group 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/>

October 31, 2014