Propylene glycol methyl ether (PGME) and Propylene glycol methyl ether acetate (PGMEA) [MethylPROXITOL and MethylPROXITOL acetate] Product Stewardship Summary

CAS numbers:	MethylPROXITOL: 107-98-2
	MethylPROXITOL acetate: 108-65-6
Chemical formula:	MethylPROXITOL: $C_4H_{10}O_2$,
	MethylPROXITOL acetate: $C_6H_{12}O_3$

What are PGME and PGMEA?

PGME and PGMEA are both glycol ethers based on propylene oxide. They are solvents having a bi-functional nature (ether-alcohol and the respective acetate). They are both clear liquids, with PGMEA having a pleasant, fruity odour.

The Shell Chemicals range of propylene oxide-based glycol ethers are sold under the trade name PROXITOL.

How are PGME and PGMEA used?

They are used as intermediates and in formulations in industrial, professional or consumer applications, mainly in surface coatings, printing inks, cleaners, agrochemical or de-icing/anti-icing formulations. They are also used as extractants, and as coalescing agents and flow improvers in water-based paints.

Health, Safety and Environmental considerations

PGME and PGMEA are flammable liquids with flashpoints of 30 and 45 °C. PGME and PGMEA are an isomer mix, of which typically 99.8 % are 1-Methoxypropanol-2 (or respective acetate) and typically 0.12 % are 2-Methoxypropanol-1(or respective acetate), a component which in its pure form has some serious health effects. These have, however, not been shown for PGME and PGMEA.

If large quantities are ingested or high vapour concentrations inhaled, PGME may cause central nervous system depression including headaches, nausea, dizziness, drowsiness, and

coma; the effect of PGMEA is less severe. To a certain extent, both substances can cause slight irritations of eyes, skin and respiratory tract, but these effects do not trigger classification according to GHS criteria. Shell PROXITOLs are not classified as carcinogens or mutagens, are not expected to cause cancer in humans, nor do they impair fertility or damage the developing foetus.

The occupational exposure limits set by various regulatory authorities applicable to PGME are 0-100 ppm and 50 ppm for PGMEA.

PGME and PGMEA are of low toxicity towards aquatic organisms. They are completely miscible with water, biodegradable and not expected to bio-accumulate. In air they rapidly oxidise by a photochemical reaction.

Storing and transporting PGME and PGMEA

These glycol ethers are transported by marine, road and rail, primarily in bulk quantities, but also as packed products. Due to their flammability, they are classified as hazardous for transport under transport regulations.

Glycol ethers should be stored at ambient temperatures away from sources of ignition and substances with oxidising or corrosive properties. PROXITOLs are stabilised with a certain amount of inhibitor to prevent the formation of peroxides.

Risk Characterization Summary

Risks associated with exposure to these products have been evaluated for the following "chain-of-commerce" activities: manufacture, storage, product transfer, transportation, and customers/markets. They are manufactured, stored and transported to customers in closed systems. Depending on the customer, end uses may vary from use as an intermediate for the manufacture of other chemicals, commercial products, or certain formulated consumer products. Proper equipment design and handling procedures maintain low risk from exposure to these products where the product is used as a chemical intermediate. Exposures may be higher in commercial and consumer applications. To minimise risk, additional controls, such as special handling procedures and protective packaging, are implemented.

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October 2011

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 health and safety information. Additional information is available through the chemical's applicable Material Safety Data Sheet, which should be consulted before use of the chemical. This product stewardship summary does not supplant or replace required regulatory and/or legal communication documents.

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