

Amines, C12-14 (even numbered) -alkyldimethyl, N-oxides

This Product Safety Summary is intended to provide a general overview of the chemical substance in the context of ICCA Global Product Strategy. The information in the Summary is basic information and is not intended to provide emergency response, medical or treatment information.

1. Chemical Identity

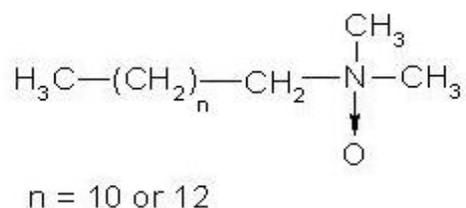
Name: C12-14 Alkyldimethylamine oxide (C12-14 AO)

Chemical name (IUPAC): Amines, C12-14 (even numbered)-alkyldimethyl, N-oxides

CAS number(s): 308062-28-4

Molecular formula: $C_nH_{(2n+3)}NO$, where $n=14/16$

Structure:



2. Use and Applications

Amine oxides, such as C12-14 AO, are surface-active agents and can be found in a wide range of products for use by workers in both industrial and professional settings as well as by consumers. Typical uses of products containing amine oxides are detergents for laundry and dishwashing, hard surface cleaning products, car and boat washing products. In addition they may be used in specialised products for metal-working, cosmetic or personal care and water treatment applications. Amine oxides are typically present in products at concentrations of 1-5 % but may reach up to 15%, depending on the application. In most applications these products are further diluted prior to use.



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3. Physical/Chemical Properties

Phys/Chem Safety Assessment:

Amines, C12-14 (even numbered) -alkyldimethyl, N-oxides (C12-14 AO) is a highly hygroscopic white solid. It is always manufactured and supplied as an aqueous solution containing up to 30 %w/w amine oxide

Property	Value
Physical state	Solid Pure C12-14 AO is a white powder. However it is always manufactured and supplied as an aqueous solution (containing up to 30 % w/w amine oxide).
Colour	Pure: white Solution: clear colourless
Odour	None specified
Relative Density	0.716
Melting / boiling point	125 – 136°C
Flammability (optional)	Non flammable
Explosive properties	Not explosive
Vapour pressure	1.7E-06 Pa to 7.5E-05 Pa at 25°C
Mol weight	ca. 229.4 – ca. 257.6 g/mol
Water solubility	409.5 g/L
Flash point	Not applicable
Octanol-water partition coefficient (Log Kow)	< 2.7

Regarding Physico-chemical hazards, C12-14 AO is not classified according to EC 1272/2008 regulation.

4. Human Health Safety Assessment

➤ Consumer

Exposure can occur resulting from the use of laundry, dishwashing, household cleaning and cosmetic and personal care products containing C12-14 AO. However, consumers will not come into contact with harmful levels of the substance as it is generally supplied in end products at concentrations of 1-5%, depending on the application, and in most applications these products are further diluted prior to use.

➤ Worker

Exposure can occur either in a facility manufacturing C12-14 AO or in the various industrial or manufacturing facilities that use C12-14 AO. Those working with C12-14 AO in manufacturing and formulation operations could be exposed to solutions containing up to 30% amine oxide during maintenance, sampling, testing or other procedures. Each manufacturing facility at P&G offers a thorough training program for employees and appropriate work processes and safety equipment in place to limit unnecessary exposure. Workers follow the recommended safety measures in the Extended Safety Data Sheet (eSDS). Contact with skin and eyes should be avoided.



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Effect Assessment	Result
Acute Toxicity Oral / dermal	Oral route ¹ : Pure substance: Harmful if swallowed (H302) Commercial product: not classified for acute toxicity Dermal route: not classified for acute toxicity
Irritation / corrosion Skin / eye	Pure substance: Causes skin irritation (H315) Pure substance: Causes serious eye damage (H318)
Sensitisation	Not classified for sensitisation
Toxicity after repeated exposure	Oral route: not classified for repeated toxicity Dermal route: not classified for repeated toxicity
Genotoxicity / Mutagenicity	Not classified for either mutagenicity or genotoxicity
Carcinogenicity	Not classified for carcinogenicity
Toxicity for reproduction	Not classified: no effect on fertility and no teratogenic effect

¹ In acute oral toxicity studies performed using commercial grades of C12-14 AO (typically an approximately 30 % aqueous solution of the amine oxide) the LD50 of the test substance was > 2000 mg/kg bw, indicating that the commercial product as supplied should not be classified for acute oral toxicity.

All these results are based on available data.

Classification is in accordance with EC 1272/2008 regulation criteria

5. Environmental Safety Assessment

Based on available data for the pure substance, C12-14 AO is very toxic to aquatic organisms and is classified. Products containing the substance are generally used for applications where release to the aquatic environment is possible. However an environmental exposure assessment shows that the substance can be handled safely during all steps of manufacture and subsequent use in industrial, professional and consumer settings. Furthermore, it does not bioaccumulate, is readily biodegradable and will not persist in the environment.

Effect Assessment	Result
Aquatic Toxicity	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment (H400; H411)
Fate and Behaviour	Result
Biodegradation	Readily biodegradable
Bioaccumulation potential	Not bioaccumulative
PBT/vPvB conclusion	Not considered to be either PBT or vPvB.



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6. Exposure

Consumer

During manufacture of C12-14 AO and formulation of products containing the substance workers may be exposed via the dermal route. Protective gloves are worn to minimise exposure since the substance is a skin irritant. Eye protection is also worn as the 30% solution as manufactured is corrosive to eyes.

Industrial workers, professionals and consumers of the end products are exposed to the substance mainly by the dermal route, although inhalation exposure may occur from applications involving spraying.

Environment

In industrial, professional and consumer uses, releases to the environment occur mostly to the water compartment. In the environmental risk assessment C12-14 AO was assessed as safe for the environment during all stages of manufacture, industrial, professional and consumer uses at current total production volumes.

The substance is readily biodegradable and is rapidly degraded in aerobic and anaerobic conditions. The Log Kow is less than 3 and there is no indication of a concern for bioaccumulation. Wastes from use are typically sent to Sewage Treatment Plants. There is no concern for indirect exposure to humans via the environment.

7. Risk Management Recommendations (for manufacturing plant workers)

Always use appropriate chemical resistant gloves to protect your hands and skin and always wear eye protection such as chemical goggles. Do not eat, drink, or smoke where chemicals are handled, processed, or stored. Wash hands and skin following contact. If the substance gets into your eyes, rinse eyes thoroughly for at least 15 minutes with tap water and seek medical attention.

In case of accidental release do not allow the substance to enter sewers, surface or ground water. All effluent releases that may contain the substance must be directed to a waste water treatment plant that removes the substance from the final releases to the receiving water. Releases to air are not expected and therefore no specific recommendations are required.

8. EU REACH Status

Substance has been registered under the European REACH Regulation EC/1907/2006 and under EU Biocidal Products Directive 98/8/EC

9. Classification and Labeling

Under GHS, substances are classified according to their physical, health and environmental hazards. The hazards are communicated via specific labels and the eSDS. GHS attempts to standardize hazard

communication so that the intended audience (workers, consumers, transport workers and emergency responders) can better understand the hazards of the chemicals in use.

Classification and labeling according to EU CLP/GHS:

Acute Tox. 4 (Hazard statement: H302: Harmful if swallowed.)

Skin Irrit. 2 (Hazard statement: H315: Causes skin irritation.)

Eye Damage 1 (Hazard statement: H318: Causes serious eye damage.)

Aquatic Acute 1, M=1 (Hazard statement: H400: Very toxic to aquatic life.)

Aquatic Chronic 2 (Hazard statement: H411: Toxic to aquatic life with long lasting effects.)

Signal word: Danger

Hazard Pictogram:

GHS05: corrosion



GHS07: exclamation mark



GHS09: environment



10. Conclusion

This substance is safe for use for the proposed use as a surface active agent

11. Contact Information

For further information on this substance or product safety summaries in general, please contact us via email at reachfhc.im@pg.com or visit our website at

<http://www.pgproductsafety.com/productsafety/icca-gps.shtml>

Additional information on the ICCA global product strategy can be found here: <http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/>



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12. Date of Issue

Date of issue: 30/07/2012

Revision #: 1

13. Disclaimer

The information contained in this Safety Summary is provided in utmost good faith and has been based on the best information currently available (i.e. the EU REACH Registration dossier). All endpoint data presented in this paper refer to the active ingredient (i.e. concentrated/undiluted substance), unless otherwise noted. This document is NOT intended to be comprehensive or to replace information found in the corresponding Material Safety Data Sheet (SDS). When handling the material in plants, SDS should be used and not this summary. This document may be subject to additional legal terms and conditions set out in the internet disclaimer, http://www.pg.com/en_US/terms_conditions/index.shtml.