Kao Corporation

Enriching lives,
in harmony with nature.

GLOBAL PRODUCT STRATEGY SAFETY SUMMARY

KALCOL 2098

This document is a high-level summary intended to provide the general public with an overview of product safety for this substance. It is not intended to replace the Safety Data Sheet, which is available from suppliers and should be referred to for full details of recommended safety procedures for each type of use. It is not intended to replace or supersede manufacturer's instructions and warnings for their consumer products containing this substance.

1. Substance Identity

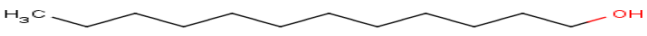
Brand Name: KALCOL 2098

Chemical Name: Dodecan-1-ol

CAS Number: 112-53-8

Molecular formula: $C_{12}H_{26}O$

Structure:



2. Uses and Applications

Dodecan-1-ol is a long chain aliphatic alcohol which has the following uses:

- Synthetic intermediate
- Coatings
- Metalworking fluids/rolling oils
- Mining chemical
- Process chemical in paper and textile industries
- Personal care
- Use in cleaning agents
- Pharmaceutical uses
- Plaster/cement – binder / release agent, also road and construction applications
- Plastic/rubber processing

- Agrochemicals

In an industrial setting the main use of dodecan-1-ol is in use as a synthetic intermediate, which is the single biggest use accounting for more than 50% of total manufactured volume. Dodecan-1-ol is present in an intermediate used in the manufacture of sodium lauryl sulfate, which is an active ingredient in the formulation of laundry detergent products and various industrial and consumer end products (dodecan-1-ol is consumed in this process and so is not present in these end products). Dodecan-1-ol is used in different processes such as cold rolling of metals, formulation of mining/offshore chemicals and it is also incorporated into paints. It is used as an anti-foaming agent in industrial processes used in the paper and textile industry. Dodecan-1-ol is also used in various construction and building preparations such as cement, plaster and concrete with various different applications within these preparations.

Consumer uses of dodecan-1-ol include personal care (ex. Shampoo, skin lotion) and household care products for solubilising and/or emulsifying.

3. Physical/chemical properties

The substance has no identified physicochemical hazards.

Property	**Value**
Mol weight	186.3
Form	Waxy
Physical state	Solid
Colour	Colourless
Odour	Characteristic (alcohol)
Density	0.9 at 20°C
Melting point	24°C
Boiling point	229°C
Flash point	134.8°C
Flammability	Not flammable
Explosive properties	Not explosive
Self – ignition temperature	275°C
Vapour pressure	3.8 Pa at 38°C
Water solubility	1 mg/L at 23°C
Octanol-water partition coefficient (log $K_{ow)}$	5.4

4. Health information

Consumer: Consumers should not come into contact with harmful levels of dodecan-1-ol. In view of the irritant properties, the substance should only be used in acceptable concentrations as a component of consumer products.

Worker: Dodecan-1-ol is irritating to eyes and respiratory irritation is a possibility if mists are inhaled. The overall toxicity of dodecan-1-ol is considered to be low.

Effect assessment	**Result**
Acute toxicity Oral / inhalation / dermal	Virtually not toxic after oral, inhalation or dermal exposure. Not identified to have specific target organ toxicity after single exposure.
Irritation / corrosion Skin / eye / respiratory tract	Causes serious eye irritation. May cause respiratory irritation.
Sensitisation	No sensitizer.
Toxicity after repeated exposure Oral / inhalation / dermal	Virtually not toxic after oral, inhalation or dermal exposure. Not identified to have specific target organ toxicity after repeated exposure.
Genotoxicity / Mutagenicity	Not mutagenic.
Carcinogenicity	Not considered carcinogenic based on data derived from studies on repeated exposure.
Toxicity for reproduction	Based on available data no developmental or reproductive toxicity is anticipated.

5. Environmental information

Based on the available data, dodecan-1-ol causes toxicity to aquatic organisms under test conditions. However, the amount of substance released into the aquatic environment is low and it is also found to occur naturally in the environment. Furthermore, biodegradation by micro-organisms in municipal waste-water treatment plants and in the wider environment is demonstrated to be extremely rapid and efficient. An environmental exposure assessment sets limits to safe release of the substance during all steps of manufacture and industrial use, and defines appropriate risk management measures. Furthermore, dodecan-1-ol does not bioaccumulate, is rapidly biodegradable and will not persist in the environment.

Effect assessment	**Result**
Aquatic toxicity	Toxic to aquatic organisms under test conditions.

Effect assessment	Result
Biodegradation	Readily biodegradable
Bioaccumulation potential	Not bioaccumulative
PBT /vPvB	Not considered to be PBT or vPvB.

6. Exposure potential

Human health

The exposure of consumers to dodecan-1-ol in end products is at safe levels. However, workers who may come into contact with the undiluted substance should follow the safety measures recommended in the Extended Safety Data Sheet, as the undiluted substance causes irritation. It is expected that facilities using formulations containing dodecan-1-ol would have standard engineering controls and procedures in place, to ensure safe handling and use of a wide variety of chemicals, whether process aids or reagents. In addition, standard personal protective equipment must be worn to prevent direct skin and eye contact with chemicals handled during routine operations, such as goggles or safety glasses, gloves, safety boots and helmets. . There is evidence that a number of types of chemical-resistant gloves offer good protection against dodecan-1-ol and related substances. Indirect exposure of humans via the environment is dominated by regional background. However, due to the widespread use of the substance in consumer products this background exposure is less relevant

Environment

Losses to air of dodecan-1-ol in aqueous-based products are expected to be minimal. Releases to waste water may be assumed to be up to 100%, since in many personal care and household products, as well as some of the industrial processes, the substance is discharged to waste water. However, details of treatment of aqueous waste vary at different sites and processes and in general aqueous waste streams would be subjected to secondary biological treatment either on- or off-site. Solid waste disposal is typically disposed via landfill or incineration.

7. Risk management recommendations

For detailed risk management recommendations, please refer to the Extended Safety Data Sheet.

When using chemicals, make sure that there is adequate ventilation. 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 to your eyes, rinse thoroughly for at least 15 minutes with tap water and seek medical attention.

All effluent releases that may include 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. State agency review

This substance has been registered under REACH.

This substance (as part of a Category of similar alcohols) was assessed by the ICCA / OECD HPV programme (SIAM 22, April 2006).

9. Regulatory information / Classification and labelling

Under GHS (as implemented within EU through Regulation (EC) No 1272/2008 and its amendments ("CLP regulation")), substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the Extended Safety Data Sheet. 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.

Dodecan-1-ol classification and labelling:

Eye irritation hazard - Category 2. H319: Causes serious eye irritation.

Hazardous to the aquatic environment - Acute Category 1. H400: Very toxic to aquatic life.

10. Conclusion

Dodecan-1-ol is used under controlled conditions at industrial sites and found in various consumer and household products at low concentrations. The manufacturing and use of dodecan-1-ol does not pose a risk to humans or the environment if instructions in the Extended Safety Data Sheet are followed.

11. Contact information within company

For further information on this substance or product safety summaries in general, please contact:

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Additional information can be found at the International Council of Chemical Associations portal, found at http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/.

12. Glossary

Acute toxicity	Harmful effects after single exposure
Biodegradation	Loss or transformation of a chemical by microorganisms
Bioaccumulation	Accumulation of substances in the aquatic organisms
Carcinogenicity	Effects causing cancer
Chronic toxicity	Harmful effects after repeated exposures
GHS	Global Harmonized System
Hazard	Danger or causing damage to human health or environment
Mutagenicity	Effect that changes genes
Reprotoxicity	Combining teratogenicity, embryotoxicity and harmful effects on fertility
Sensitising	Allergenic

13. Date of issue

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