

Formaldehyde

This Product Safety Summary is intended to provide a general overview of the chemical substance in the context of ICCA Global Product Strategy (GPS). The information on the Summary is basic information and is not intended to provide an emergency response information, medical information or treatment information. The Summary should not be used to provide in-depth safety and health information. In-depth safety and health information can be found on the Safety Data Sheet for the products.

General

Formaldehyde is a colourless, flammable gas with a pungent odour. It is produced by the oxidation of methanol with air in the presence of a catalyst. It is used in the production of a wide range of everyday products for home, school and work. Consumer products contain normally only traces of formaldehyde. Formaldehyde is formed when organic material is incompletely combusted. It is therefore also found in combustion gases from trucks, cars, gas cookers and open fireplaces and tobacco products. Formaldehyde is also naturally produced by plants, animals and humans where it is used in the biosynthesis.

Chemical identity

EC name	Formaldehyde
EC number (EINECS)	200-001-8
CAS number	50-00-0
IUPAC name	Formaldehyde
Molecular formula	CH ₂ O
Structure	
Other commonly used names	Formalin, methanal, methyl aldehyde
Perstorp brand names	Formalin – all qualities

Uses and applications

Formaldehyde is a very reactive chemical and a main use is as a chemical intermediate and building block in the chemical industry. It is used in the production of bonded particulates for abrasives, fertilizers, firelighters, foams, glue, inks, leather, paper and impregnated paper, plywood, resins, rubber. Glue for example is used in a large number of household products like kitchen and other cabinets, furniture and flooring. Other applications are aircraft and car components, cosmetics and healthcare products, impregnation of clothing.

Physical and chemical properties

Physical and chemical safety assessment

Formaldehyde is a colourless gas with a characteristic pungent odour also at low levels. Formaldehyde is highly soluble in water and is most often delivered as an aqueous solution.

Property	Value
Physical state	Liquid at 20oC and 101.3 kPa
Colour	Colourless
Odour	Pungent
Density	1.1 g/cm ³ at 18°C
Boiling point	99°C at 101.3 kPa
Flammability	Not applicable
Explosive properties (Lower / Upper limit)	No explosion hazards. (7 Vol% / 73 Vol%, 100% formaldehyde)
Self-ignition temperature	Not self-igniting
Vapour pressure	Ca 0.2 kPa at 20°C
Water solubility	Fully miscible
Flash point	61-86°C (ASTM D 7094-04)
Partition coefficient (n-octanol/water)	-1 LogPow

The physical data apply to 37 % concentration, aqueous solution.

Health effects

Human health safety assessment

Effect assessment	Result
Acute toxicity Oral / inhalation / dermal	Toxic after single ingestion, short-term inhalation and skin contact.
Irritation / corrosion Skin / eye / inhalation	Corrosive causes severe skin burns and eye damage. May cause respiratory irritation.
Sensitisation	May cause an allergic skin reaction.
Toxicity after repeated exposure Oral / inhalation / dermal	After repeated exposure the prominent effect is local irritation.
Mutagenicity	Reliable studies did not give evidence for genotoxicity in experimental animals or in humans.
Carcinogenicity	After lifelong inhalation exposure to concentrations that were severely damaging the nasal epithelium, nasal tumors were induced in rats; in other species these findings were not found or were considerably less pronounced. No adverse health effects are anticipated if recommended personal protective equipment and industrial hygiene practises are used.
Toxicity for reproduction	No evidence for effects on fertility and gonads in laboratory animals after long-term oral or inhalation exposure.

Environmental effects

Environmental safety assessment

Effect assessment	Result
Aquatic toxicity	Toxic to aquatic organisms.
Biodegradation	Readily biodegradable.
Bioaccumulation potential	Due to the distribution coefficient n-octanol/water an accumulation in organisms is not expected.
Persistence	Not persistent in the environment.

Exposure

Consumer

The general public may be exposed to trace amounts of formaldehyde in consumer products like textiles, paper, furniture, detergents, coatings, adhesives, panel boards, plywood etc. The use of them is therefore considered safe. Always read and follow the instructions on product labels for proper use. Exposure can also occur when breathing air containing vehicle exhaust and tobacco smoke or by eating foods. Low levels of formaldehyde occur naturally in fruits, vegetables, meats and fish. You are not likely to be exposed to formaldehyde in drinking water as it does not last long in water.

Workplace

The main route of formaldehyde exposure is by breathing air containing formaldehyde. Workers may also come in skin contact with formaldehyde during testing, sampling or maintenance. Symptoms of exposure may include watery eyes, nausea, coughing, chest tightness, wheezing, skin rashes, allergenic reactions, and burning sensations in the eyes, nose and throat. Subsequent exposures can produce symptoms more quickly and at lower concentrations.

Environment

Formaldehyde can be emitted into the environment during the manufacturing process and its use in industrial and consumer applications. Formaldehyde is readily biodegradable and is not expected to persist in the environment. Formaldehyde in the air is expected to photolyze and has a half-life of a few hours. Formaldehyde has shown to have low to moderate toxicity to aquatic organisms. Formaldehyde's potential impact on aquatic and soil environments is significantly reduced by the rapid rate which it biodegrades.

Risk management recommendations

The recommended safety measures generally apply in contact with the concentrated substance. It is NOT intended to replace the comprehensive guidance found in the (M)SDS, only supplement it. Please refer to the (M)SDS for specific safety and first aid measures.

Human health measures

Always use appropriate chemical resistant gloves to protect hands and skin. Always wear tightly sealed goggles to protect eyes. When using concentrated chemicals always make sure that there is adequate ventilation. Use gas filter for gases/vapours of organic compounds or self-contained breathing apparatus. Do not eat, drink or smoke where chemicals are handled, processed or stored. Wash hands and skin following contact. If the substance gets into eyes, rinse the eyes for at least 15 minutes with tap water and seek medical attention. Ensure that eyewash stations and safety showers are within reach. Wash hands before breaks and at the end of work. For specific advice, consult the (M)SDS.

Environment protective measures

Do not allow undiluted or unneutralized formalin to reach sewage water or drainage ditch. All effluent releases that may contain formalin must be directed to a waste water treatment plant.

Regulatory information / Classification and labelling

Under GHS substances are classified according to their physical, health and environmental hazards. The hazards are communicated via specific labels and the (M)SDS. 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 chemical in use.

The hazard statements and symbols presented here refer to the hazard properties of the concentrated substance and are meant to provide a brief overview of the substance's labelling. It is not intended to be comprehensive or to replace information found in the (M)SDS.

UN GHS is the basis for country specific GHS labelling.

Labelling according to UN GHS

Pictogram and signal word			
Pictogram			
Signal word	Danger		

Hazard statement	Precautionary statement
Toxic if swallowed	Obtain special instructions before use.
Toxic in contact with skin.	Store locked up.
Causes severe skin burns and eye damage	Do not handle until all safety precautions have been read and understood.
May cause an allergic skin reaction	Do not breathe dust/fume/gas/mist/vapours/spray.
Toxic if inhaled	<u>If swallowed</u> : Immediately call a poison centre or doctor/physician.
Suspected of causing cancer	<u>If on skin or hair</u> : Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
Toxic to aquatic life	<u>If inhaled</u> : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison centre or doctor/physician if feeling unwell. Remove/take off immediately all contaminated clothing.
	<u>If in eyes</u> : Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison centre or doctor/physician.

Additional information

Formacare website

<http://www.formacare.org/>

formaldehydefacts website

<http://www.formaldehydefacts.org/>

IFA GESTIS database on hazardous substances

<http://www.dguv.de/ifa/en/gestis/stoffdb/index.jsp>

ECHA information on registered substances

<http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances>

OECD eChemPortal

http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

IARC (WHO)

<http://www.iarc.fr/index.php>

OSHA

<http://www.osha.gov/>

Contact information within company

For further information on this substance or GPS Safety Summaries in general, please contact:

Perstorp group:

productinfo@perstorp.com

ICCA portal for additional information:

<http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/>

Glossary

Acute toxicity	Harmful effect resulting from a single or short term exposure to a substance
Biodegradation	Decomposition or breakdown of a substance under natural conditions (actions of micro organisms etc)
Bioaccumulation	Progressive accumulation in living organisms of a chemical substance present in the environment
Carcinogenicity	Substance effects causing cancer
Chronic toxicity	Harmful effect after repeated exposures or long term exposure to a substance
Clastogenicity	Substance effect that causes breaks in chromosomes
Embryotoxicity	Harmful effect on foetal health
Flash point	The lowest temperature at which vapour of the substance may form an ignitable mixture with air
Genotoxicity	Substance effect that causes damage to genes, including mutagenicity and clastogenicity

GHS	Global Harmonized System of chemicals classification
Hazard	Inherent substance property bearing a threat to health or environment
Mutagenicity	Substance effect that cause mutation on genes
PBT	Persistent, Bio accumulative and Toxic
Persistence	Refers to the length of time a compound stays in the environment, once introduced
Reprotoxicity	Including teratogenicity, embryotoxicity and harmful effects on fertility
Sensitising	Allergenic
Sediment	Topsoil, sand and minerals washed from land into water forming in the end a layer at the bottom of rivers and sea
Teratogenic	Substance effect on foetal morphology
vPvB	very Persistent and very Bio accumulative
Vapour pressure	A measure of a substance's property to evaporate
Volatile	Any substance that evaporates readily

Disclaimer

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