Chemical Safety Data Sheet MSDS / SDS

Furan SDS

Revision Date:2024-04-25 Revision Number:1

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SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name: Furan

CAS: 110-00-9

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.

Uses advised against: none

Company Identification

Company: Chemicalbook.in

Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090

Telephone: +91 9550333722

SECTION 2: Hazards identification

Classification of the substance or mixture

Flammable liquids, Category 1
Acute toxicity - Category 4, Oral

Skin irritation, Category 2
Acute toxicity - Category 4, Inhalation
Germ cell mutagenicity, Category 2
Carcinogenicity, Category 1B
Specific target organ toxicity – repeated exposure, Category 2
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 3

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H224 Extremely flammable liquid and vapour
H302 Harmful if swallowed
H315 Causes skin irritation
H332 Harmful if inhaled
H341 Suspected of causing genetic defects
H350 May cause cancer
H373 May cause damage to organs through prolonged or repeated exposure
H412 Harmful to aquatic life with long lasting effects

Precautionary statement(s)

Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 Keep container tightly closed.
P240 Ground and bond container and receiving equipment.
P241 Use explosion-proof [electrical/ventilating/lighting/...] equipment.
P242 Use non-sparking tools.
P243 Take action to prevent static discharges.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P264 Wash ... thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P203 Obtain, read and follow all safety instructions before use.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P273 Avoid release to the environment.

Response

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower].
P370+P378 In case of fire: Use ... to extinguish.
P301+P317 IF SWALLOWED: Get medical help.
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water/...
P321 Specific treatment (see ... on this label).
P332+P317 If skin irritation occurs: Get medical help.
P362+P364 Take off contaminated clothing and wash it before reuse.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P317 Get medical help.
P318 IF exposed or concerned, get medical advice.
P319 Get medical help if you feel unwell.

Storage

P403+P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

Disposal

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Furan
Common names and synonyms:	Furan
CAS number:	110-00-9

EC number:	203-727-3
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Half-upright position. Administration of oxygen may be needed. Refer immediately for medical attention.

Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention .

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth. Refer immediately for medical attention.

Most important symptoms/effects, acute and delayed

The vapors are narcotic. Acute exposure to furan by inhalation may involve both reversible and irreversible changes. Acute exposure by ingestion or skin absorption, as well as chronic exposure, are associated with high toxicity. (EPA, 1998)

Indication of immediate medical attention and special treatment needed, if necessary

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR if necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on the left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Aliphatic hydrocarbons and related compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

If material on fire or involved in fire: Do not extinguish fire unless flow can be stopped. Use water in flooding quantities as fog. Solid streams of water may spread fire. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use foam, dry chemical, or carbon dioxide.

Specific hazards arising from the chemical

Very dangerous, upon exposure to heat or flame. It may form unstable peroxides on exposure to air. Contact with acids can initiate a violent, heat producing reaction. Avoid acids, oxidizing agents. Upon standing in air, it may form unstable peroxides. (EPA, 1998)

Special protective actions for fire-fighters

Use water spray, powder, alcohol-resistant foam, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Remove all ignition sources. Evacuate danger area! Consult an expert! Personal protection: self-contained breathing apparatus. Do NOT wash away into sewer. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

Environmental precautions

Remove all ignition sources. Evacuate danger area! Consult an expert! Personal protection: self-contained breathing apparatus. Do NOT wash away into sewer. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

Evacuate and restrict persons not wearing protective equipment from area of spill or leak until cleanup is complete. Avoid breathing vapors. Keep upwind. Do not handle broken packages without protective equipment. Wash away any material which may have contacted the body with copious amounts of water or soap and water. Shut off ignition sources; no flares, smoking, or flames in hazard area. Stop leak if you can do so without risk. Use water spray to reduce vapors. Small spills: absorb with sand or other noncombustible absorbent material and place into containers for later disposal. Large spills: dike far ahead of spill for later disposal. The exposure concentration limit of 10 ppm together with the low boiling point of furan requires that adequate ventilation be provided in areas handling this chemical. Establish forced ventilation to keep levels below explosive limit. Contact with liquid must be avoided since this chemical can be absorbed through the skin. Keep furan out of a confined space, such as a sewer, because of the possibility of an explosion, unless the sewer is designed to prevent the build-up of explosive concentrations. Thorough washing with soap and water followed by prolonged rinsing should be done immediately after accidental contact. It may

be necessary to contain and dispose of this chemical as a hazardous waste. If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Contact your Department of Environmental Protection or your regional office of the federal EPA for specific recommendations.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames, NO sparks and NO smoking. Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling. Use non-sparking handtools. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

Fireproof. Well closed. Cool. Keep in the dark. Store only if stabilized. Separated from strong oxidants and acids. Provision to contain effluent from fire extinguishing. Store in an area without drain or sewer access.Before entering confined space where this chemical may be present, check to make sure that an explosive concentration does not exist. Store in an explosion-proof refrigerator. Keep in a tightly closed container under an inert atmosphere and protect from light for long-term storage. A regulated, marked area should be established where this chemical is handled, used, or stored ...

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

MAK: 0.056 mg/m3, 0.02 ppm; peak limitation category: II(1); skin absorption (H); carcinogen category: 4; pregnancy risk group: D

Biological limit values

no data available

Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear safety goggles or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use closed system or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Furan is a clear colorless liquid with a strong odor. Flash point below 32°F. Less dense than water and insoluble in water. Vapors heavier than air.
Colour:	Colorless liquid, turns brown upon standing; color change is retarded if a small amount of water is added
Odour:	Ethereal
Melting point/freezing point:	226°C(lit.)
Boiling point or initial boiling point and boiling range:	31°C
Flammability:	Extremely flammable.
Lower and upper explosion limit/flammability limit:	Lower 2.3%, upper 14.3% (% by vol)
Flash point:	-35°C(lit.)
Auto-ignition temperature:	390°C

Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	0.38 cP at 20 deg C
Solubility:	less than 1 mg/mL at 72° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Kow = 1.34
Vapour pressure:	1672 mm Hg (55 °C)
Density and/or relative density:	0.936
Relative vapour density:	2.35 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Contact with air generates explosive peroxides. Reacts with oxidants and acids. This generates fire and explosion hazard.

Chemical stability

no data available

Possibility of hazardous reactions

A very dangerous fire hazard when exposed to heat or flame.The vapour is heavier than air and may travel along the ground; distant ignition possible.FURAN is sensitive to heat and may turn brown upon standing. This compound may be light sensitive. When uninhibited, this compound forms explosive peroxides on exposure to air. This chemical may react with oxidizers, acids, peroxides and oxygen. It resinifies on evaporation or when in contact with mineral acids, but it is stable in alkalis. (NTP, 1992).

Conditions to avoid

no data available

Incompatible materials

Violent reaction with acids, oxidizers. Unless stablized with an inhibitor, air exposure forms unstable peroxides.

Hazardous decomposition products

When heated to decomposition it emits acrid smoke and irritating fumes.

SECTION 11: Toxicological information

Acute toxicity

Oral: no data available

Inhalation: LC50 Rat inhalation 3398 ppm/1 hr

Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

Evaluation: There is inadequate evidence in humans for the carcinogenicity of furan. There is sufficient evidence in experimental animals for the carcinogenicity of furan. Overall evaluation: Furan is possibly carcinogenic to humans (Group 2B).

Reproductive toxicity

no data available

STOT-single exposure

The substance may be irritating to the skin, eyes and respiratory tract. Exposure could cause severe lung damage. See Notes.

STOT-repeated exposure

The substance may have effects on the liver and kidneys. This may result in impaired functions. This substance is possibly carcinogenic to humans. May cause genetic damage in humans.

Aspiration hazard

A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: EC50; Species: Pimephales promelas (Fathead minnow, age 29-31 days, length 18 mm, weight 0.100 g); Conditions: freshwater, flow through, 23.2 (22.0-24.6) deg C, pH 8.00, hardness 44.5 mg/L CaCO3, alkalinity 41.5 mg/L CaCO3, dissolved oxygen 80.0% (65.5-87.4%); Concentration: 99000 ug/L for 24 hr; Effect: behavior change, equilibrium /> or = 99% pure

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

AEROBIC: Furan, present at 100 mg/L, reached 4% of its theoretical BOD in 8 weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test(1). Adaptation (time to reach 5% reduction) and degradation (total time to reach <1 ug/L) times for aerobic degradation of furan (initial concentrations 150-250 ug/L and 50 times dilution) in a mixture of aromatic hydrocarbons and nitrogen, sulfur, oxygen containing compounds were 390 and 160 hours, and 530 and 340 hours, for the two concentrations, respectively(2).

Bioaccumulative potential

BCFs of 0.9-1.5 and <3.2-13 were measured in carp (Cyprinus carpio) at furan concentrations of 1 and 0.1 mg/L, respectively(1). According to a classification scheme(2), these BCFs suggest the potential for bioconcentration in aquatic organisms is low(SRC).

Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc of furan can be estimated to be 80(SRC). According to a classification scheme(2), this estimated Koc value suggests that furan is expected to have high mobility in soil.

Other adverse effects

no data available

SECTION 13: Disposal considerations

Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

UN Number

ADR/RID: UN2389 (For reference only, please check.)
IMDG: UN2389 (For reference only, please check.)
IATA: UN2389 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: FURAN (For reference only, please check.)
IMDG: FURAN (For reference only, please check.)
IATA: FURAN (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 3 (For reference only, please check.)
IMDG: 3 (For reference only, please check.)
IATA: 3 (For reference only, please check.)

Packing group, if applicable

ADR/RID: I (For reference only, please check.)
IMDG: I (For reference only, please check.)
IATA: I (For reference only, please check.)

Environmental hazards

ADR/RID: No
IMDG: No
IATA: No

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Listed.

China Catalog of Hazardous chemicals 2015

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple

ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.An added stabilizer or inhibitor can influence the toxicological properties of this substance; consult an expert.Check for peroxides prior to distillation; eliminate if found.