01. Identification of the substance/mixture and of the company/undertaking

Trade name: SAFEX® FLOWMARKER NEBELFLUID AEROSOL DISPENSER

Designation of the mixture
Generating artificial fog for technical and scientific applications with SAFEX®-FOG-GENERATORS.

Manufacturer
GÜNTHER SCHAIDT SAFEX®-CHEMIE GMBH

Street / P.O. Box
Weidehofweg 24

Nat.-Code./ Postal code / City
D 25499 Tangstedt

Contact for technical information
info@safex.de and Management GÜNTHER SCHAIDT SAFEX® CHEMIE GMBH

Telephone / Telefax / E-Mail
+49 (4101) 8058600 - guenther.schaidt@safex.de

Emergency telephone number:
04101-8058622 (9:00 h - 16:30 h) or 040-83099560

02. Hazards identification

Hazard designation:
The aerosol dispenser / container is under pressure (N₂), improper handling or exposure to extreme heat may rupture the container.

The containing fog producing mixture is not classified as hazardous according to 1999/45/EC.

Additional hazard notes for man and environment:
The appropriate vaporized product bears no health hazards or other hazardous material effects. The user also does not get directly in contact with its constituents during a rule-oriented handling of the product, because the aerosol can has no usual extraction device (spray head).

However there is the possibility of a when fog condenses on the floor or if the non vaporized product is spilled on smooth surfaces. (Smooth plastic, marble, metallic surfaces, etc.)

Sensitive people can react to artificial fog with fright and fear and may develop psychosomatic reactions. Also asthmatics can react with substance independent fright and consequently with an asthmatic reaction.

03. Composition / information on ingredients

Chemical characterization
Propellant / pressure agent: Compressed nitrogen

Liquid content:
The fog fluid contained in the can is an aqueous solution (75 ml) of non-toxic, highly pure polyols.

Hazardous ingredients
Compressed nitrogen gas

Ratio: \( \leq 20\% \)
Classification: CAS-Nr.:7727-37-9 • EG-Nr. :231-783-9 - In Anhang VI CLP nicht genannt

Components with EU limits:
Ratio: Non
Classification: Not applicable

04. First aid measures

General information:
Due to decade-long experience with the product the occurrence of dangerous situations is not to expect. From 44 years of manufacturing experience and the (international) medical literature/casuistry no cases are known in which emergency action was required because of the ingredients of the aerosol can.

Following inhalation:
No measures required, if the fog is generated appropriated in suitable and designated devices (SAFEX\(^\text{®}-\)FlowMarker), because a hazard is not to be expected.

Following skin contact:
Not vaporized content: Simply wash off with water, nebulized / vaporized content: No action required!

Following eye contact:
Not vaporized content: slight irritation, rinse with water or eye rinsing solution with the eyelids open, nebulized / vaporized content: No action required!

Following ingestion:
Not likely due to aerosol container without spray actuator. Small amounts of fog fluid are practically non-toxic, only when the aerosol cartridge or its complete contend is swallowed (e.g. in a suicide attempt) get medical help.

Notes for the doctor:
When ingested relevant quantities of not vaporized, liquid preparation: Treatment as for multivalent, low-toxic alcohols (kidney function). Nebulized content: SAFEX\(^\text{®}\) Fog is practically nontoxic. Due to the strong psychosomatic effect of fog (based on decades-long experience also with completely non-toxic artificial fogs) disorders are sometimes to expect, especially with very sensitive people (possibly dramatized) but however, without serious illness value.

05. Fire fighting measures

Suitable extinguishing media:
Not vaporized and also the vaporized product as well as the propellant are not flammable! Surrounding fire can be extinguished with virtually any extinguishing agent. Fight larger fire with alcohol resistant foam or water spray.

Unsuitable extinguishing media:
Alcohol-sensitive foam
Special hazards arising from the product:
Aerosol containers are under pressure, they can burst in a fire.

Advice for fire-fighters:
When involving large amounts of aerosol containers in a major fire events provide self protection including breathing equipment.

Additional information:
The fog produced with the product is not flammable.

06. Accidental release measures:

Personal precautions, protective equipment and emergency procedures:
None required, if necessary wear household gloves when disposing fluid.

Environmental precautions:
Do not let the liquid content get into drink water sources.

Methods and material for containment and cleaning up:
Take up spilled contend with absorbent material and dispose as household waste.

Other information:
Due to the viscosity of the liquid content is given a slip hazard on smooth surfaces if the aerosol container is ruptured. The liquid content can be easily removed or diluted to ineffectiveness with water (if necessary with detergent additive).

07. Handling and storage

Precautions for safe handling:
Use aerosol dispenser only in designated equipment (SAFEX® FlowMarker). Avoid any rupture or damaged of it (slip hazard). In rare cases a slip hazard is also possible direct in front of the fog outlet of the fog generators on smooth surfaces, particular in case of faulty operation.

Fire preventions:
There is no specific fire or explosion risk associated with storage and use of both, the vaporized and the not vaporized, content but the aerosol container can burst in fire. Keep container away from heat radiation.

Other information:
This mixture is not classified as hazardous according to 1999/45/EC.

Conditions for safe storage:
Always store aerosol containers at a cool place, away from heat sources and inaccessible to unauthorized access (children).

Requirements for storage rooms and containers
No specific, aerosol container is no inflammable aerosol device.

Storage class VCI: 2B

Intended use:
Use only for the generation of fog with special devices. Do not use in other ways.
08. Exposure controls / Personal protection

Occupational exposure limits and/or biological limit values:

OEL (AGW) Germany:

- Specification: Not determined
- Value: Not determined
- Peak limitation: Not applicable
- Embryotoxic: By no means expected according to current literature

Indicative occupational exposure limit values of the EU:

- Specification: Not determined
- Short-term value (STEL): Not determined
- Long-term value (8 h TWA): Not determined
- Note "skin": Not determined

Exposure limit and control:

A limit is not defined, a fog overdosing should be avoided for worker protection reasons, (obstructed view etc.). Common indoor air concentrations in the field of technical applications are usually between 25 - 250 mg/m³. They will normally not be reached with the foreseen fog generator.

Personal protective equipment:

Under normal conditions not required.

- Respiratory protection: Not required

- Hand protection:
  - Glove material: Normally not required, if necessary household rubber gloves are sufficient
  - Layer thickness (mm): Not applicable
  - Penetration time (min): Not applicable

- Eye / Face protection:
  - When handling the aerosol container: Not necessarily required. Vaporized content: Not required, but a small safety distance to the active fogging device - described in its instruction manual - has to be observed.

- Body protection:
  - When handling the aerosol container: Not necessarily required. Vaporized content: Not required, but a small safety distance to the active fogging device - described in its instruction manual - has to be applied.

- Hygiene measures:
  - Observance of standard work hygiene when working with chemical agents. (Do not eat, drink, etc.)

- Environmental protection measures: Not required.
09. Physical and chemical properties:

Appearance:
- Physical state: Aerosol container, containing 75 ml of a liquid
- Color: Not applicable
- Odour: Not applicable

Safety relevant basic data:
- Explosion risk: No-specific, but the container is under nitrogen pressure
- Lower explosion limit: Not applicable
- Upper explosion limit: Not applicable
- Vapor pressure: Not applicable
- Density: Varies, approximately 1.05
- Flow time: Not applicable
- Water solubility: Containing fluid: completely
- pH-value: Containing fluid: neutral, not determinable / approx. 100 – 280 °C
- Flash point: Containing fluid is a aqueous solution and not flammable
- Ignition temperature: Not applicable

10. Stability and reactivity:

Conditions to avoid:
- Hot surrounding, direct heat or strong sun radiation.

Incompatible materials:
- Not applicable

Hazardous decomposition products:
- Not to expect under normal, regular use. In case of surrounding fire the usual combustion gases, possibly aldehydes.

11. Toxicological information

Containing liquid is an aqueous solution of high purity, very low toxic polyols (see below).

Information on toxicological effects of the non-vaporized product:

The oral LD50 value is for all ingredients ≥ 20 000 mg/kg BW lab animal (rat). An inhalation toxicity of all components was in several animal tests not observed, even after 8 hours in a saturated atmosphere (tested as individual components and combinations).

For the ingredients is very little systemic effect known to man (under non-extreme conditions) and also not to expect. A permanent injury is not to expect under normal conditions.

Ingestion: possible gastrointestinal disorders; resorptive effects only to be expected from doses, whose accidental ingestion under commercial conditions is irrelevant.
Slightly irritating to the eyes and the corneal epithelium: permanent damage is virtually to exclude. (Rating results on testing of single substances on the rabbit eye).

Also on the skin (human and rabbit) the components and their concentrated solutions themselves act - even under occlusive conditions - only weak; usually not even irritating.

In a sensitization test with 20 % pure active ingredient in Vaseline on 25 subjects was a corresponding potential not detectable.

A resorptive-toxic effect is likely to be excluded even after massive dermal contact. Longer-term maceration after repeated contact is possible. In several tests on rabbits LD50 values of > 20 g / BW were found.

Even with exceptional professional exposure or accidental ingestion of small quantities, should such effects be ruled out for people.

For all of the ingredients a carcinogenic or mutagenic potential is not known in the scientific literature, they are also not classified as carcinogenic, mutagenic or toxic for reproduction in accordance with the notice of the BMAS according to § 21 section 4 GefStoffV.

Information on toxicological effects of the vaporized content:

Several years of inhalation exposure of employees to active ingredient-vapor concentrations from 0.3 to 0.6 ppm (in exceptional cases up to 2 ppm) have not resulted in diagnosable impairments.

Inhalation studies in humans with active ingredient-related vapors in ambient air in connection with sterilizing effects have also showed no evidence of damaging potential.

Inhalation: Vapors are likely tolerated - even when they reach the saturation concentration - without symptoms; through aerosols in the event of massive inhalation (according to findings from animal studies) possibly mild respiratory irritations, blepharospasms and mild resorptive effects.

The 4-hour LC50 value in rats was about 835 ppm.

Aerosols of 10 % aqueous solutions were largely precipitated in the nasopharynx and swallowed.

Toxicological tests:
The ingredients have been extensively studied for decades and for various applications in the fields of pharmacy, food technology and cosmetics expressly authorized. By the U.S. FDA, they are Generally Recognized As Safe (GRAS).

None of the ingredients is classified as toxic or very toxic or harmful or sensitizing. Also, no hazardous substances are contained in quantities < 1%; or CMR- and REACH-SVHC substances, not even in traces.

They are also in no other respect products of classification and labeling requirements.

Experience in practice:

Due to 44 years of experience and constant observation of the medical (international) technical literature as well as statement of the SAFEX® advisory toxicologist professor Dr. Holm Bleyer the vaporized content can be regarded, and thus the produced fog, as practically nontoxic.

A persistent irritation to the eyes or on the skin or an allergization of the skin, which came in contact with that non-vaporized and vaporized content has not been observed over a period of 40 years.

The usually applied concentrations of the vaporized content are harmless also with repetitive, longer lasting application due to the very low toxicity, the particularly high purity and the small effect of the ingredients for healthy young people and adults.
Information on Ingredients:

All containing substances of the SAFEX® FLOWMARKER NEBELFLUID AEROSOL DISPENSER are high-purity, considered to be practically non-toxic substances, examined toxicologically for decades and are classified as far-reaching safe.

Exclusively low-toxic representatives of the Group of the Polyoxyalkane (and gaseous nitrogen as propellant) are used, which are listed in the German food, Commodities and Feedstuff Code (LFBG) as well as in the cosmetics regulations and described in respect of purity for certain applications and are conform to the stipulated purity requirements and also not classified as dangerous substances as defined in Directive 1999/45/EC.

With these purity requirements the ingredients also correspond, insofar as they are listed, to the requirements of European and U.S. pharmacopoeias (DAB, EuPharm, USP).

All components have an LD 50 value Rat, oral > 30 000 mg.

12. Ecological information:

Ecotoxicity

According to the criteria of the European classification and labeling system, the content has not to be labeled as “dangerous for the environment”.

On the basis of existing data about the elimination/degradation and bioaccumulation potential longer term damage to the environment is unlikely.

Toxicity to fish: Not determined
Aquatic invertebrates: Not determined
Water plants: Not determined

Mobility

Not determined

Persistence and degradability

Rapid degradation

Bioaccumulative potential

Not to expect

Results of PBT and vPvB assessment

Not applicable

Other adverse effects

Not known

13. Information to disposal

Substance / Preparation

Dispose containing substances equally to household-type waste

Recommendation: Dispose only empty containers

Waste code according to the Waste Catalogue Ordinance (AVV)
14. Transport information

Land transport ADR/RID

Classification: Aerosol container according 2.2.2.1.6 ADR Group A
Class: 2
Risk No.: 20
UN-Number: 1950
Classification Code: 5A
Description of good: AEROSOLS, asphyxiant

Hazardous components

Compressed nitrogen

Packing: Aluminum aerosol cartridge
Packing Group: Not applicable
Hazard label: 2.2

Limited Quantity: Transport of the aerosol cartridge as limited quantity (LQ) is permitted, because the content of the can with 110 ml does not exceed the maximum quantity of 1 liter per inner packaging / item!

According ADR 3.4.6: maximum can contend 1 Ltr., Gross weight of the package max: 30 Kilo. (LQ - label is required)

See transport IMDG/GGVSee

Classification: Aerosol according 2.2.2.2 Class 2.2
IMDG-Code: 2.2
UN-Number: 1950
Description of good: AEROSOLS

Hazardous components

Compressed nitrogen

Packing: Aluminum aerosol container
Packing Group: Not applicable
Hazard label: 2.2

Limited Quantity: Transport of the aerosol cartridge as limited quantity (LQ) is permitted, because the content of the can with 110 ml does not exceed the maximum quantity of 1 liter per inner packaging / item!

According IMDG 3.4.2.1: maximum can contend 1 Ltr., Gross weight of the package max: 30 Kilo. (LQ - label is required)

Air transport ICAO-TI / IATA-DGR

Classification: Aerosol
Class: 2.2
UN-Number: 1950
Description of good: AEROSOLS, non flammable

Hazardous components: Nitrogenium (compressed gas)

Packing: Instr. 203 (UN-4G/Y fibreboard boxes required) Aerosol can 110 ml of Aluminium

Packing Group: II

Hazard label: Non-flammable Gas (Green label)

15. Regulatory information

Chemical Safety Assessment:
Containing liquid content is not classified as dangerous according to Directive 1999/45/EC as amended. No subject to a declaration obligation in the sense of the guideline 1999/45/EG. No classification and declaration obligated product.

Labeling according to EC directive

Code letter/s and hazard description/s of the product
Not applicable

Hazardous determining components for labeling
Contains: Not applicable
R- sentences Not applicable
S- sentences Not applicable

EU-Legislation

Pressurized container: Protect from sunlight and do not expose to temperatures exceeding 50º C. Do not pierce or burn, even after use.

National regulations
Aerosol cartridge corresponds to the aerosol packaging regulations (13 GPSGV ) and TRG 300

Water hazard class
Class: Liquid content is WK 1

Technical Instructions on Air Quality (TA-Luft)
Mass flow: 0.50 kg/h or Mass concentration: 50 mg/m3

Störfallverordnung (12. BImSchV) Not subject to StörfallVO

Solvent regulation (31. BImSchV) Not applicable

Employment restrictions Not applicable
16. Other information

Applicable EC Directives

Manufacturer's recommended use restrictions
Use aerosol cartridge only for intended purpose, do not open it, dispose only if completely empty.

R-phrases referred to in sections 2 and 3
Not applicable

Other notes:
The instruction for the foreseen fog generator must be observed, especially the safety instructions and the safety- and privacy distances to objects to be nebulized and to persons.

A direct nebulization onto sensitive objects and into the face of persons has to be avoided! The fog ejected from the fog machines without the prescribed fog application tube will be hot in a very short distance and could cause small scalding and eye injuries.

A further detailed, binding manufacturer's declaration of no objection is available on request.

Changes since the last version
This version of this safety data sheet has been made because of a company removal.

Department issuing MSDS
Company Management: GÜNTHER SCHAIDT–SAFEX® CHEMIE GMBH