Safety data sheet

According to Regulation (EC) No. 1907/2006

Ozone gas

Version : 2
Revision date : 2014-09-20

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Trade name : Ozone

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

Use of the Substance/Mixture

Specific use(s): : Oxidant

1.3 Details of the supplier of the safety data sheet

Company : Ozone Tech Systems OTS AB
Telephone : +46 8 714 07 00
Address : Elektravägen 53
Country : Sweden
E-mail : info@ozonetech.com

1.4 Emergency telephone number

Emergency telephone number : +46 209 960 00 (Kemiakuten, SE)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Oxidizing gas, 1, H270
Acute toxicity, 1, H330
Eye irritation, 2, H315
Skin irritation, 2, H319
STOT SE, 3, H335
Acute aquatic toxicity, 1, H400

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Symbols :

Signal word : Danger

Hazard statements : H270, May cause or intensify fire; oxidizer
H330, Fatal if inhaled
H315, Causes skin irritation
H319, Causes serious eye irritation
H335, May cause respiratory irritation
H400, Very toxic to aquatic life

Precautionary statements : P220, Keep away from reducing agents
P370+P376, In case of fire: Stop leak if safe to do so
P261, Avoid breathing dust/fume/gas/mist/vapours/spray
P304+P340, IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P309+P311, IF exposed or you feel unwell: Call a POISON CENTER or doctor/physician
P273, Avoid release to the environment

Additional Labelling:

2.3 Other hazards

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Hazardous substance

Chemical name	PBT/vPvB/OEL	CAS no.	Classification	Concentration
Ozone	OEL	10029-15-6	Ox. gas 1; H270 Acute tox. 1; H330 Eye irrit. 2; H315 Skin irrit. 2; H319 STOT SE 3; H335 Acute aq. tox. 1; H400	>18 % w/w

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice :

If inhaled : Remove to fresh air

In case of skin contact	:	Not an expected route of exposure
In case of eye contact	:	Rinse with water, remove contact lenses
If swallowed	:	Not an expected route of exposure

4.2 Most important symptoms and effects, both acute and delayed

Symptoms	:	Headache, cough, dry throat, heavy chest, shortness of breath
Risk	:	Continuous exposure to high concentrations (> 2 ppm) can lead to lung congestion. This effect is reduced when the exposure is reduced. Very high exposure (> 10 ppm) can be fatal.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment	:	Administer oxygen if necessary

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media	:	Use suitable media for surrounding fire
Unsuitable extinguishing media	:	None

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting / Specific hazards arising from the chemical	:	May accelerate existing fire. May initiate fire/explosion in combustible materials. May react explosively with alkenes, aromatic compounds, bromine, combustible gases, diethyl ether, hydrogen bromide, hydrogen iodide, isopropylidene compounds, and other oxidizable materials.

5.3 Advice for firefighters

Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus and protective clothing
Further information	:	No information available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Immediately turn off ozone generator, and ventilate the area. Leak should be repaired before further use of the generator. Use appropriate breathing apparatus during evacuation.

6.2 Environmental precautions

Environmental precautions	:	Try to prevent high concentrations of ozone to be released to surrounding air.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up / Methods for containment	:	Use general ventilation to dilute small amounts of ozone before released to the outside atmosphere

6.4 Reference to other sections

Additional advice	:	For personal protection see section 8.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling	:	Use general ventilation systems capable of maintaining ozone to concentrations below exposure limit. Use ozone monitors that shut down ozone generation if concentrations are greater than exposure levels. Use ozone-resistant tubing, pipes and fittings from the generator to the point of application.
Advice on protection against fire and explosion	:	At elevated temperatures and in the presence of certain catalysts as hydrogen, iron, copper and chromium may decomposition to oxygen may be explosive.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Not applicable, ozone gas cannot be stored or transported
Further information on storage conditions	:	Not applicable, ozone gas cannot be stored or transported
Advice on common storage	:	Not applicable, ozone gas cannot be stored or transported
Minimum storage temperature:	:	Not applicable, ozone gas cannot be stored or transported
Maximum storage temperature:	:	Not applicable, ozone gas cannot be stored or transported
Other data	:	No data available

7.3 Specific end uses

Specific use(s)	:	No uses beyond what is specified in section 1.2

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Components	CAS no.	Value	Control parameters	Update	Type of exposure
Ozone	10029-15-6	0,1 ppm	NGV	AFS 2011:18	Inhalation
Ozone	10029-15-6	0,3 ppm	TGV	AFS 2011:18	Inhalation

8.2 Exposure controls

Engineering Controls

General advice : Use ozone destructor (thermal or catalytic) for off gassing ozone.

Personal protective equipment

Respiratory protection : Respirator or self-contained breathing apparatus for concentrations greater than 0.3ppm.
Hand protection : Use appropriate gloves for the work
Eye protection : Gas tight goggles when working in high ozone concentrations
Skin and body protection : Use appropriate protective gear in case of risk of direct contact.
Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls

General advice : Try to prevent high concentrations of ozone to be released to surrounding air.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance

Form : Gas
Colour : Colorless to blue in higher concentrations
Odour : Very pungent
Odour Threshold : Not available

Safety data

pH : Not applicable
Melting point/range : -193°C

Boiling point/boiling range	:	-112°C
Flash point	:	Not applicable
Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	Not flammable
Lower explosion limit	:	Not applicable
Upper explosion limit	:	Not applicable
Vapour pressure	:	Not applicable
Relative vapour density	:	1.6 (air =1)
Relative density	:	Not applicable
Water solubility	:	570 mg/L at 20°C
Solubility in other solvents	:	Not available
Partition coefficient n-octanol/water	:	Not available
Autoignition temperature	:	Not applicable
Decomposition temperature	:	Decomposes at ambient temperature
Viscosity, dynamic	:	Not applicable
Viscosity, kinematic	:	Not applicable
Explosive properties	:	Not explosive
Oxidizing properties	:	Strong oxidizer

9.2 Other information

10. STABILITY AND REACTIVITY

10.1 Reactivity

Ozone is a strong oxidizer

10.2 Chemical stability

Decomposes rapidly to oxygen (O_2)

10.3 Possibility of hazardous reactions

Chemical stability	:	Unstable.
Hazardous reactions	:	Reactions with unsaturated compounds such as alkenes can form peroxides which are unstable and explosive.

10.4 Conditions to avoid

Conditions to avoid	:	Do not concentrate to high levels (>17%/wt.). The decomposition of ozone at high concentrations can become explosive.

10.5 Incompatible materials

Materials to avoid	:	Avoid contact with materials that can oxidize

10.6 Hazardous decomposition products

Hazardous decomposition products	:	None, decomposes to oxygen gas (O_2)
Thermal decomposition	:	Decomposes at ambient temperature

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute oral toxicity	:	Not an expected route of exposure
Acute inhalation toxicity	:	No data available
Acute dermal toxicity	:	Not an expected route of exposure
Skin irritation	:	Irritating to skin
Eye irritation	:	Irritating to eyes
Sensitisation	:	Not a sensitizer
Genotoxicity in vitro	:	No data available
Genotoxicity in vivo	:	No data available
Carcinogenicity	:	No data available
Reproductive toxicity	:	No data available

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	:	No data available
Toxicity to daphnia	:	No data available
Toxicity to algae	:	No data available
Toxicity to bacteria	:	No data available
Toxicity to fish (Chronic toxicity)	:	No data available
Toxicity to daphnia (Chronic toxicity)	:	No data available

12.2 Persistence and degradability

Biodegradability	:	Not readily biodegradable but eliminated from environment by conversion to oxygen

12.3 Bioaccumulative potential

Bioaccumulation	:	Will not bioaccumulate

12.4 Mobility in soil

Mobility	:	Does not migrate in soil
Distribution among environmental compartments	:	Evaporates into the air

12.5 Results of PBT and vPvB assessment

PBT and vPvB assessment	:	Substance is not considered to be a PBT nor vPvB

12.6 Other adverse effects

Biochemical Oxygen Demand (BOD)	:	No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product	:	Use ozone destructor (thermal or catalytic) for off gassing ozone.
Contaminated packaging	:	Drain and degas the packaging. Dispose of as ordinary waste.

14. TRANSPORT INFORMATION

Transport not applicable substance is generated in-situ.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Major Accident Hazard Legislation	:	No information available
Water contaminating class (Germany)	:	No information available

Notification status

CH INV	:	No information available
US.TSCA	:	No information available
DSL	:	No information available
AICS	:	No information available
NZIoC	:	No information available
ENCS	:	No information available
ISHL	:	No information available
KECI	:	No information available
PICCS	:	No information available

IECSC : No information available

Further information

15.2 Chemical Safety Assessment

16. OTHER INFORMATION

Explanations for possible abbreviations mentioned in section 2

PBT : Persistent, bioaccumulative and toxic.
vPvB : Very persistent and very bioaccumulative.
OEL : Occupational exposure limit.

Notification status explanation

CH INV : Switzerland. New notified substances and declared preparations
US.TSCA : United States TSCA Inventory
DSL : Canadian Domestic Substances List
AICS : Australia Inventory of Chemical Substances
NZIoC : New Zealand. Inventory of Chemical Substances
ENCS : Japan. Existing and New Chemical Substances Inventory
ISHL : Japan. ISHL - Inventory of Chemical Substances
KECI : Korea. Korean Existing Chemicals Inventory
PICCS : Philippines Inventory of Chemicals and Chemical Substances
IECSC : China. Inventory of Existing Chemical Substances in China