SAFETY DATA SHEET
C2H6S 1000 PPM;CO2 3,4%;O2 96,5%

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

1.1 Product identifier

Product name: C2H6S 1000 PPM;CO2 3,4%;O2 96,5%

Trade name: ODOROX® MO2

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

Identified uses: Industrial and professional. Perform risk assessment prior to use.
Uses advised against Consumer use.

1.3 Details of the supplier of the safety data sheet

Supplier

Oy AGA Ab
Itsehallintokuja 6
FIN-02600 ESPOO Finland

Telephone: +358 10 2421

E-mail: info@fi.aga.com

1.4 Emergency telephone number: Poison Information Center: open 24 hours a day, tel. 09 471 977

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 as amended.

Physical Hazards

Oxidizing gases	Category 1	H270: May cause or intensify fire; oxidizer.
Gases under pressure	Compressed gas	H280: Contains gas under pressure; may explode if heated.

2.2 Label Elements

Signal Words: Danger

Hazard Statement(s):
H270: May cause or intensify fire; oxidizer.
H280: Contains gas under pressure; may explode if heated.

Precautionary Statements

Prevention:
P220: Keep/Store away from combustible materials.
P244: Keep valves and fittings free from oil and grease.

Response: P370+P376: In case of fire: Stop leak if safe to do so.

Storage: P403: Store in a well-ventilated place.

Disposal: None.

2.3 Other hazards: None.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical name	Chemical formula	Concentration	CAS-No.	EC No.	REACH Registration No.	Notes
Carbon dioxide	CO2	3,4000%	124-38-9	204-696-9	Listed in Annex IV/V of Regulation (EC) No 1907/2006 (REACH), exempted from registration.	#
Dimethyl sulphide	C2H6S	1.000PPM	75-18-3	200-846-2	01-2119487127-32	
Oxygen	O2	96,5000%	7782-44-7	231-956-9	Listed in Annex IV/V of Regulation (EC) No 1907/2006 (REACH), exempted from registration.	

The concentrations of the components in the SDS header, product name on page one and in section 3.2 are in mol due to regulatory requirements.
All concentrations are nominal.
This substance has workplace exposure limit(s).
PBT: persistent, bioaccumulative and toxic substance.
vPvB: very persistent and very bioaccumulative substance.

Classification

Chemical name	Classification		Notes
Carbon dioxide	CLP:	Press. Gas Liquef. Gas;H280	
Dimethyl sulphide	CLP:	Flam. Liq. 2;H225, Eye Irrit. 2;H319	
Oxygen	CLP:	Press. Gas Compr. Gas;H280, Oxid. Gas 1;H270	

CLP: Regulation No. 1272/2008.

The full text for all H-statements is displayed in section 16.

SECTION 4: First aid measures

General: Move the exposed person to fresh air at once.

4.1 Description of first aid measures

Inhalation: Low concentrations of CO2 cause increased respiration and headache. Move the exposed person to fresh air at once.

Eye contact: Adverse effects not expected from this product.

Skin Contact:	Adverse effects not expected from this product.
Ingestion:	Ingestion is not considered a potential route of exposure.
4.2 Most important symptoms and effects, both acute and delayed:	Continuous inhalation of concentrations higher than 75% may cause nausea, dizziness, respiratory difficulty and convulsion.

4.3 Indication of any immediate medical attention and special treatment needed

Hazards:	None.
Treatment:	None.

SECTION 5: Firefighting measures

General Fire Hazards:	Heat may cause the containers to explode.

5.1 Extinguishing media

Suitable extinguishing media:	Water. Dry powder. Foam. Carbon Dioxide.
Unsuitable extinguishing media:	None.
5.2 Special hazards arising from the substance or mixture:	Supports combustion.
Hazardous Combustion Products:	None.

5.3 Advice for firefighters

Special fire fighting procedures:	In case of fire: Stop leak if safe to do so. Continue water spray from protected position until container stays cool. Use extinguishants to contain the fire. Isolate the source of the fire or let it burn out.
Special protective equipment for fire-fighters:	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Guideline: EN 469 Protective clothing for firefighters. Performance requirements for protective clothing for firefighting. EN 15090 Footwear for firefighters. EN 659 Protective gloves for firefighters. EN 443 Helmets for fire fighting in buildings and other structures. EN 137 Respiratory protective devices - Self-contained open-circuit compressed air breathing apparatus with full face mask - Requirements, testing, marking.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:	Evacuate area. In case of leakage, eliminate all ignition sources. Provide adequate ventilation. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Monitor the concentration of the released product.
6.2 Environmental Precautions:	Prevent further leakage or spillage if safe to do so.

6.3 Methods and material for containment and cleaning up: Provide adequate ventilation.

6.4 Reference to other sections: Refer to sections 8 and 13.

SECTION 7: Handling and storage:

7.1 Precautions for safe handling: Only experienced and properly instructed persons should handle gases under pressure. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Keep equipment free from oil and grease. Open valve slowly to avoid pressure shock. Use only oxygen approved lubricants and sealants. Use only with equipment cleaned for oxygen service and rated for the pressure. Refer to supplier's handling instructions. The substance must be handled in accordance with good industrial hygiene and safety procedures. Protect containers from physical damage; do not drag, roll, slide or drop. Do not remove or deface labels provided by the supplier for the identification of the container contents. When moving containers, even for short distances, use appropriate equipment eg. trolley, hand truck, fork truck etc. Secure cylinders in an upright position at all times, close all valves when not in use. Provide adequate ventilation. Suck back of water into the container must be prevented. Do not allow backfeed into the container. Avoid suckback of water, acid and alkalis. Keep container below 50°C in a well ventilated place. Observe all regulations and local requirements regarding storage of containers. When using do not eat, drink or smoke. Store in accordance with. Never use direct flame or electrical heating devices to raise the pressure of a container. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. Damaged valves should be reported immediately to the supplier Close container valve after each use and when empty, even if still connected to equipment. Never attempt to repair or modify container valves or safety relief devices. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Keep container valve outlets clean and free from contaminates particularly oil and water. If user experiences any difficulty operating container valve discontinue use and contact supplier. Never attempt to transfer gases from one container to another. Container valve guards or caps should be in place.

7.2 Conditions for safe storage, including any incompatibilities: Containers should not be stored in conditions likely to encourage corrosion. Stored containers should be periodically checked for general conditions and leakage. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible material. Avoid asphalted locations for storage, transfer and use (ignition risk if spilt). Segregate from flammable gases and other flammable materials being stored.

7.3 Specific end use(s): None.

SECTION 8: Exposure controls/personal protection

8.1 Control Parameters

Occupational Exposure Limits

Chemical name	Type	Exposure Limit Values	Source
Carbon dioxide	TWA	5.000 ppm 9.000 mg/m3	EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU (12 2009)
	HTP 8H	5.000 ppm 9.100 mg/m3	Finland. Workplace Exposure Limits (2009)

PNEC-Values

Critical component	Type	Value	Remarks
Dimethyl sulphide	Aquatic (freshwater)	0,029 mg/l	-
	Sewage treatment plant	0,2 mg/l	-
	Sediment (marine water)	0,012 mg/kg	-
	Soil	0,0072 mg/kg	-
	Sediment (freshwater)	0,12 mg/kg	-
	Aquatic (intermit. releases)	0,29 mg/l	-
	Aquatic (marine water)	0,0029 mg/l	-

8.2 Exposure controls

Appropriate engineering controls: Consider a work permit system e.g. for maintenance activities. Ensure adequate air ventilation. Avoid oxygen rich (>23,5%) atmospheres. Gas detectors should be used when quantities of oxidizing gases may be released. Provide adequate ventilation, including appropriate local extraction, to ensure that the defined occupational exposure limit is not exceeded. Systems under pressure should be regularly checked for leakages. Preferably use permanent leak tight connections (eg. welded pipes). Do not eat, drink or smoke when using the product.

Individual protection measures, such as personal protective equipment

General information: A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered. Keep self contained breathing apparatus readily available for emergency use. Personal protective equipment for the body should be selected based on the task being performed and the risks involved.

Eye/face protection: Wear eye protection to EN 166 when using gases.
Guideline: EN 166 Personal Eye Protection.

Skin protection

Hand Protection: Wear working gloves while handling containers
Guideline: EN 388 Protective gloves against mechanical risks.

Body protection: No special precautions.

Other:	Wear safety shoes while handling containers Guideline: ISO 20345 Personal protective equipment - Safety footwear.
Respiratory Protection:	Not required.
Thermal hazards:	No precautionary measures are necessary.
Hygiene measures:	Specific risk management measures are not required beyond good industrial hygiene and safety procedures. Do not eat, drink or smoke when using the product.
Environmental exposure controls:	For waste disposal, see section 13 of the SDS.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	
Physical state:	Gas
Form:	Compressed gas
Color:	CO2: Colorless C2H6S: Colorless O2: Colorless
Odor:	CO2: Odorless C2H6S: Unpleasant odor of wild radish, cabbage-like O2: Odorless
Odor Threshold:	Odor threshold is subjective and is inadequate to warn of over exposure.
pH:	not applicable.
Melting Point:	No data available.
Boiling Point:	No data available.
Sublimation Point:	not applicable.
Critical Temp. (°C):	No data available.
Flash Point:	Not applicable to gases and gas mixtures.
Evaporation Rate:	Not applicable to gases and gas mixtures.
Flammability (solid, gas):	This product is not flammable.
Flammability Limit - Upper (%):	not applicable.
Flammability Limit - Lower (%):	not applicable.
Vapor pressure:	No reliable data available.
Vapor density (air=1):	1,14 (calculated) (15 °C)
Relative density:	No data available.
Solubility(ies)	
Solubility in Water:	No data available.
Partition coefficient (n-octanol/water):	Not known.
Autoignition Temperature:	not applicable.
Decomposition Temperature:	Not known.
Viscosity	

Kinematic viscosity:	No data available.
Dynamic viscosity:	No data available.
Explosive properties:	Not applicable.
Oxidizing properties:	Oxidizing

9.2 Other information: Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10: Stability and reactivity

10.1 Reactivity: No reactivity hazard other than the effects described in sub-section below.

10.2 Chemical Stability: Stable under normal conditions.

10.3 Possibility of hazardous reactions: Violently oxidises organic material. May react violently with combustible materials. May react violently with reducing agents.

10.4 Conditions to avoid: None.

10.5 Incompatible Materials: Combustible materials Reducing agents. Keep equipment free from oil and grease. For material compatibility see latest version of ISO-11114. Consider the potential toxicity hazard due to the presence of chlorinated or fluorinated polymers in high pressure (>30 bar) oxygen lines and equipment in case of combustion.

10.6 Hazardous Decomposition Products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

General information: None.

11.1 Information on toxicological effects

Acute toxicity - Oral
Product Based on available data, the classification criteria are not met.

Component Information
Dimethyl sulphide: LD 50 (Rat): > 5.000 mg/kg Remarks: Read-across from supporting substance (structural analogue or surrogate), Key study

Acute toxicity - Dermal
Product Based on available data, the classification criteria are not met.

Acute toxicity - Inhalation
Product Based on available data, the classification criteria are not met.

Component Information
Dimethyl sulphide: LC 50 (Rat, 4 h): 40250 ppm Remarks: Inhalation Experimental result, Key study

Repeated dose toxicity

Component Information

Dimethyl sulphide	NOAEL (Rat(Female, Male), Oral, 78 Weeks): 1.100 mg/kg Oral Read-across from supporting substance (structural analogue or surrogate), Key study NOAEL (Rat(Female, Male), Inhalation): 0,964 mg/l Inhalation Read-across from supporting substance (structural analogue or surrogate), Key study NOAEL (Rat(Female, Male), Dermal, 26 Weeks): 40 %(m) Dermal Read-across from supporting substance (structural analogue or surrogate), Supporting study

Skin Corrosion/Irritation

Product	Based on available data, the classification criteria are not met.

Serious Eye Damage/Eye Irritation

Product	Based on available data, the classification criteria are not met.

Component Information

Dimethyl sulphide	in vivo (Rabbit, 24 - 72 hrs): Category 2AGHS Regulation EC No 1272/2008

Respiratory or Skin Sensitization

Product	Based on available data, the classification criteria are not met.

Component Information

Germ Cell Mutagenicity

Product	Based on available data, the classification criteria are not met.

Carcinogenicity

Product	Based on available data, the classification criteria are not met.

Reproductive toxicity

Product	Based on available data, the classification criteria are not met.

Specific Target Organ Toxicity - Single Exposure

Product	Based on available data, the classification criteria are not met.

Specific Target Organ Toxicity - Repeated Exposure

Product	Based on available data, the classification criteria are not met.

Aspiration Hazard

Product	Not applicable to gases and gas mixtures..

SECTION 12: Ecological information

12.1 Toxicity

Acute toxicity

Product	No ecological damage caused by this product.

Acute toxicity - Fish

Component Information

Dimethyl sulphide	LC 50 (Oncorhynchus mykiss, 96 h): 213 mg/l (semi-static) Remarks: Experimental result, Key study

Acute toxicity - Aquatic Invertebrates

Component Information

Dimethyl sulphide	EC 50 (Daphnia magna, 48 h): 29 mg/l (Static) Remarks: Experimental result, Key study

12.2 Persistence and Degradability

Product Not applicable to gases and gas mixtures..

12.3 Bioaccumulative potential

Product The subject product is expected to biodegrade and is not expected to persist for long periods in an aquatic environment.

12.4 Mobility in soil

Product Because of its high volatility, the product is unlikely to cause ground or water pollution.

Component Information

Dimethyl sulphide	Henry's Law Constant: 9,028 MPa (25 °C)

12.5 Results of PBT and vPvB assessment

Product Not classified as PBT or vPvB.

12.6 Other adverse effects:

Global Warming Potential

Global warming potential: 0
Contains greenhouse gas(es) not covered by 517/2014/EU. When discharged in large quantities may contribute to the greenhouse effect.

Component Information

Carbon dioxide	UN / IPCC. Greenhouse Gas Global Warming Potentials (IPCC Fourth Assessment Report, Climate Change, Table TS.2 - Global warming potential: 1 100-yr

SECTION 13: Disposal considerations

13.1 Waste treatment methods

General information: Do not discharge into any place where its accumulation could be dangerous. Vent to atmosphere in a well ventilated place.

Disposal methods: Refer to the EIGA code of practice (Doc.30 "Disposal of Gases", downloadable at http://www.eiga.org) for more guidance on suitable disposal methods. Dispose of container via supplier only. Discharge, treatment, or disposal may be subject to national, state, or local laws.

European Waste Codes
Container: 16 05 04*: Gases in pressure containers (including halons) containing dangerous substances.

SECTION 14: Transport information

ADR

14.1 UN Number:	UN 3156
14.2 UN Proper Shipping Name:	COMPRESSED GAS, OXIDIZING, N.O.S.(Oxygen, Dimethylsulfide)
14.3 Transport Hazard Class(es)	
Class:	2
Label(s):	2.2, 5.1
Hazard No. (ADR):	25
Tunnel restriction code:	(E)
14.4 Packing Group:	–
14.5 Environmental hazards:	not applicable
14.6 Special precautions for user:	–

RID

14.1 UN Number:	UN 3156
14.2 UN Proper Shipping Name	COMPRESSED GAS, OXIDIZING, N.O.S.(Oxygen, Dimethylsulfide)
14.3 Transport Hazard Class(es)	
Class:	2
Label(s):	2.2, 5.1
14.4 Packing Group:	–
14.5 Environmental hazards:	not applicable
14.6 Special precautions for user:	–

IMDG

14.1 UN Number:	UN 3156
14.2 UN Proper Shipping Name:	COMPRESSED GAS, OXIDIZING, N.O.S.(Oxygen, Dimethylsulfide)
14.3 Transport Hazard Class(es)	
Class:	2.2
Label(s):	2.2, 5.1
EmS No.:	F-C, S-W
14.3 Packing Group:	–
14.5 Environmental hazards:	not applicable
14.6 Special precautions for user:	–

IATA

14.1 UN Number:	UN 3156
14.2 Proper Shipping Name:	Compressed gas, oxidizing, n.o.s.(Oxygen, Dimethylsulfide)
14.3 Transport Hazard Class(es):	
Class:	2.2
Label(s):	2.2, 5.1
14.4 Packing Group:	–
14.5 Environmental hazards:	not applicable
14.6 Special precautions for user:	–
Other information	
Passenger and cargo aircraft:	Allowed.
Cargo aircraft only:	Allowed.

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code: not applicable

Additional identification: Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers ensure that they are firmly secured. Ensure that the container valve is closed and not leaking. Container valve guards or caps should be in place. Ensure adequate air ventilation.

SECTION 15: Regulatory information

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

EU Regulations

Directive 96/61/EC: concerning integrated pollution prevention and control (IPPC): Article 15, European Pollution Emission Registry (EPER):

Chemical name	CAS-No.	Concentration
Carbon dioxide	124-38-9	1,0 - 10%

Directive 96/82/EC (Seveso III): on the control of major accident hazards involving dangerous substances:

Chemical name	CAS-No.	Concentration
Oxygen	7782-44-7	90 - 100%

Directive 98/24/EC on the protection of workers from the risks related to chemical agents at work:

Chemical name	CAS-No.	Concentration
Oxygen	7782-44-7	90 - 100%

National Regulations

Council Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work Directive 89/686/EEC on personal protective equipment Only products that comply with the food regulations (EC) No. 1333/2008 and (EU) No. 231/2012 and are labelled as such may be used as food additives.
This Safety Data Sheet has been produced to comply with Regulation (EU) 2015/830.

15.2 Chemical safety assessment: No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

Revision Information: Not relevant.

Key literature references and sources for data: Various sources of data have been used in the compilation of this SDS, they include but are not exclusive to:
Agency for Toxic Substances and Diseases Registry (ATSDR) (http://www.atsdr.cdc.gov/).
European Chemical Agency: Guidance on the Compilation of Safety Data Sheets.
European Chemical Agency: Information on Registered Substances http://apps.echa.europa.eu/registered/registered-sub.aspx#search
European Industrial Gases Association (EIGA) Doc. 169 Classification and Labelling guide.
International Programme on Chemical Safety (http://www.inchem.org/)
ISO 10156:2010 Gases and gas mixtures - Determination of fire potential and oxidizing ability for the selection of cylinder valve outlets.
Matheson Gas Data Book, 7th Edition.
National Institute for Standards and Technology (NIST) Standard Reference Database Number 69.
The ESIS (European chemical Substances 5 Information System) platform of the former European Chemicals Bureau (ECB) ESIS (http://ecb.jrc.ec.europa.eu/esis/).
The European Chemical Industry Council (CEFIC) ERICards.
United States of America's National Library of Medicine's toxicology data network TOXNET (http://toxnet.nlm.nih.gov/index.html)
Threshold Limit Values (TLV) from the American Conference of Governmental Industrial Hygienists (ACGIH).
Substance specific information from suppliers.
Details given in this document are believed to be correct at the time of publication.

Wording of the H-statements in section 2 and 3

H225	Highly flammable liquid and vapor.
H270	May cause or intensify fire; oxidizer.
H280	Contains gas under pressure; may explode if heated.
H319	Causes serious eye irritation.

Training information: Users of breathing apparatus must be trained. Ensure operators understand the hazard of oxygen enrichment. Ensure operators understand the hazards.

Classification according to Regulation (EC) No 1272/2008 as amended.

Ox. Gas 1, H270

Press. Gas Compr. Gas, H280

Other information: Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out. Ensure adequate air ventilation. Ensure all national/local regulations are observed. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

Last revised date: 10.10.2017

Disclaimer: This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.