

SCOTT SPECIALTY GASES

MATERIAL SAFETY DATA SHEETS

SUPPLIER ADDRESS: 6141 EASTON ROAD
 PO BOX 310
 PLUMSTEADVILLE, PA 18949-0310
 EMERGENCY PHONE: (215) 766-8861
 NUMBER

DATE: 11/19/97

Calibration gas

*quantity 1-2
small bottles cylinders*

1. CHEMICAL PRODUCT

PRODUCT NAME: CARBON MONOXIDE, HYDROGEN
 SULFIDE, METHANE AND OXYGEN IN NITROGEN
 SYNONYMS: None

2. COMPOSITION, INFORMATION ON INGREDIENTS

Ingredient Name	Formula	CAS#	Concentration	Exposure Limits (PPM)			
				ACGIH TLV	OSHA PEL	MAC	Other STEL
CARBON MONOXIDE	CO	630-08-0	.0026-.1 PCT	25	50	25	NE
HYDROGEN SULFIDE	H2S	7783-06-4	.0011-.1 PCT	10	20	10	15
METHANE	CH4	74-82-8	.0001-2.5 PCT	S/A	S/A	S/A	S/A
OXYGEN	O2	7782-44-7	.0001-19.49 PCT	NE	NE	NE	NE
NITROGEN	N2	7727-37-9	BALANCE	S/A	S/A	S/A	S/A

Note: NE = NONE ESTABLISHED
 S/A = SIMPLE ASPHYXIAN

3. HAZARD IDENTIFICATION

*** EMERGENCY OVERVIEW ***

- High pressure gas.
- Can cause rapid suffocation.
- Acts on blood causing damage to central nervous system.
- Can be fatal even with adequate oxygen.
- Can cause eye irritation.
- Gas deadens sense of smell.
- Symptoms of exposure may be delayed.

POTENTIAL HEALTH EFFECTS

ROUTES OF ENTRY: Inhalation

ACUTE EFFECTS: Mixture can act as a simple asphyxiant by displacing air necessary for life. Carbon monoxide is highly toxic by the reduction of blood's oxygen carrying capacity resulting in oxygen starvation of body cells. Symptoms include rapid respiration, muscular incoordination, fatigue, dizziness, nausea, vomiting, unconsciousness, and death. May cause pulmonary edema, headache, dizziness, bronchitis, and respiratory paralysis.

CHRONIC EFFECTS: Cardiovascular problems. May cause conjunctivitis, photophobic, corneal bullae, tearing, pain, and blurred vision.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: Persons with impaired pulmonary function or pre-existing eye problems may be at increased risk from exposure.

OTHER EFFECTS OF OVEREXPOSURE: None

3. HAZARD IDENTIFICATION

CARCINOGENICITY (US Only):

NTP - No

IARC MONOGRAPHS - No

OSHA REGULATED - No

4. FIRST AID MEASURES

INHALATION: Immediately remove victim to fresh air. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration.

EYE CONTACT: None

SKIN CONTACT: None

INGESTION: None

IN EVENT OF EXPOSURE, CONSULT A PHYSICIAN

NOTE TO PHYSICIAN: Symptoms of exposure may be delayed.

5. FIRE FIGHTING MEASURES

FLASH POINT: Nonflammable

AUTOIGNITION TEMPERATURE: N/Ap

FLAMMABLE LIMITS: Nonflammable

LOWER:

UPPER:

EXTINGUISHING MEDIA: Use what is appropriate for surrounding fire.

SPECIAL FIRE FIGHTING INSTRUCTION AND EQUIPMENT: Wear self-contained breathing apparatus and full protective clothing. Keep fire exposed cylinders cool with water spray. If possible, stop the product flow.

HAZARDOUS COMBUSTION PRODUCTS: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: Cylinder rupture may occur under fire conditions.

6. ACCIDENTAL RELEASE MEASURES

CLEAN UP PROCEDURES: Evacuate and ventilate area. Remove leaking cylinder to exhaust hood or safe outdoor area. Shut off source if possible and remove source of heat.

SPECIALIZED EQUIPMENT: None

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING: Secure cylinder when using to protect from falling. Use suitable hand truck to move cylinders. No part of cylinder should be exposed to temperatures above 52 degrees celsius.

PRECAUTIONS TO BE TAKEN IN STORAGE: Store in well ventilated areas. Keep valve protection cap on cylinders when not in use.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide adequate general and local exhaust ventilation to maintain concentrations below exposure limits and to avoid asphyxiation.

PERSONAL PROTECTION

EYE/FACE PROTECTION: Safety glasses

SKIN PROTECTION: None

RESPIRATORY PROTECTION: In case of leakage, use self-contained breathing apparatus.

OTHER PROTECTIVE EQUIPMENT: Safety shoes when handling cylinders.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless
ODOR: Rotten egg smell.
PHYSICAL STATE: Gas
VAPOR PRESSURE: N/Ap
VAPOR DENSITY (AIR=1): .9876
BOILING POINT (C): Gas
SOLUBILITY IN WATER: cm³/100cm³ H₂O
1.485
SPECIFIC GRAVITY (H₂O=1): Gas
EVAPORATION RATE: Gas
ODOR THRESHOLD: 0.06 to 1.0 ppm

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal storage conditions.

CONDITIONS TO AVOID: Storage in poorly ventilated areas. Storage near a heat source.

MATERIALS TO AVOID: Nitrogen reacts with Li, Nd, and Ti at high temperatures. Reacts violently with phosphine, hydrazine, ethers, alcohol's, hydrogen sulfide, and hydrocarbons.

HAZARDOUS POLYMERIZATION: Will not occur.

HAZARDOUS DECOMPOSITION: None

11. TOXICOLOGICAL INFORMATION

LETHAL CONCENTRATION (LC₅₀): 712 ppm, Rat 1 hour. (H₂S)
LETHAL DOSE 50 (LD₅₀): N/Ap
TERATOGENICITY: N/Ap
REPRODUCTIVE EFFECTS: N/Ap
MUTAGENICITY: N/Ap

12. ECOLOGICAL INFORMATION

No adverse ecological effects are expected.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Dispose of non-refillable cylinders in accordance with federal, state and local regulations. Allow gas to vent slowly to atmosphere in an unconfined area or exhaust hood. If the cylinders are the

refillable type, return cylinders to supplier with any valve outlet plugs or caps secured and valve protection caps in place.

14. TRANSPORT INFORMATION

CONCENTRATION: .0001-19.49%
DOT DESCRIPTION (US ONLY):
PROPER SHIPPING NAME: Compressed gases, n.o.s.
HAZARD CLASS: 2.2 (nonflammable)
IDENTIFICATION NUMBER: UN1956
REPORTABLE QUANTITIES: None
LABELING: NONFLAMMABLE GAS

ADR/RID (EU Only): Class 2, 1A

SPECIAL PRECAUTIONS: Cylinders should be transported in a secure upright position in a well ventilated truck.

15. REGULATORY INFORMATION

OSHA: Process Safety Management: The minor component that is listed in appendix A of 29 CFR 1910.119 as a highly hazardous chemical is: Hydrogen sulfide.

TSCA: Materials are listed in TSCA inventory.

SARA: The threshold planning quantity for this mixture is 10,000 lbs.

EU NUMBER: N/Av

NUMBER IN ANNEX 1 OF DIR 67/548: Minor components are listed in annex 1.

EU CLASSIFICATION: N/Av

R: As

S: 7/9-23-45

16. OTHER INFORMATION

OTHER PRECAUTIONS: Protect containers from physical damage. Do not deface cylinders or labels. Cylinders should be refilled by qualified producers of compressed gas. Shipment of a compressed gas cylinder which has not been filled by the owner or with his written consent is a violation of federal law (49 CFR)

Continued ...

ABBREVIATIONS:

N/Ap - Not Applicable
N/Av - Not Available
SA - Simple Asphyxiant
NE - None Established

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