1. Identification of Substance & Company

Product

Product name	Nonflammable Gas Mixture: Nitrogen / Oxygen / Sulfur Dioxide
Product code	012788
HSNO approval	HSR002535
Approval description	Gases Under Pressure Mixtures (Subsidiary Hazard) Group Standard 2020
UN number	1956
DG class	2.2
Proper Shipping Name	COMPRESSED GAS N.O.S. (contains air, sulphur dioxide)
Packaging group	NA
Hazchem code	2T
Uses	Synthetic/Analytical Chemistry

Company Details

Company	**Accurate Instruments NZ Ltd**
Address	P.O Box 25586 St Heliers Auckland New Zealand
Telephone	0800 500 380
Website	www.accurate.kiwi

Emergency Telephone Number: 0800 764 766 (NZ Poisons Centre)

2. Hazard Identification

Approval

This product is an approved substance under the Hazardous Substances and New Organisms Act (HSNO, Approval HSR002535, Gases Under Pressure Mixtures (Subsidiary Hazard) Group Standard 2020). The substance has been classified as hazardous according to the criteria in the Hazardous substances (Hazard Classification) Notice 2020. It is transported as a Dangerous Good – COMPRESSED GAS N.O.S. (contains air, sulphur dioxide)

GHS 7 Classes	Hazard Statements
Compressed Gas	H280 - Contains gas under pressure; may explode if heated.
Respiratory sensitiser category 1	H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Reproductive toxicity category 2	H361 - Suspected of damaging fertility or the unborn child.

SYMBOLS

DANGER

Other Classifications

OSHA-H01 - May displace oxygen and cause rapid suffocation

Precautionary Statements

Prevention	P103 - Read label before use. P261 - Avoid breathing dust/fume/gas/mist/vapours/spray*. P285 - In case of inadequate ventilation wear respiratory protection. P201 - Obtain special instructions before use. P202 - Do not handle until all safety precautions have been read and understood.
Response	P304+P341 - IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. P342+P311 - If experiencing respiratory symptoms: Call a POISON CENTRE or doctor/physician. P308+P313 - IF exposed or concerned: Get medical advice/ attention.

Storage	P410+P403 - Protect from sunlight. Store in a well-ventilated place. P405 - Store locked up.
Disposal	P501 - Dispose of contents/container in accordance with local/regional/national/international regulation.

3. Composition / Information on Ingredients

Component	CAS/ Identification	Concentration
nitrogen	7727-37-9	75.5-80.5%
oxygen	7782-44-7	19.5-23.5%
sulphur dioxide	7446-09-5	0.0000001-0.9999%

This is a commercial product whose exact ratio of components may vary. Trace quantities of impurities are also likely.

4. First Aid

General Information

You should call the National Poisons Centre if you feel that you may have been harmed, burned or irritated by this product. The number is 0800 764 766 (0800 POISON) (24 hr emergency service). IF exposed or concerned: Get medical advice/ attention.

Recommended first aid facilities Ready access to running water is recommended. Accessible eyewash is recommended.

Exposure

Swallowed The product is not considered toxic or harmful. Ingestion is unlikely as this is a gas. In case of persistent symptoms, contact the National Poisons Centre or a Doctor.

Eye contact Contact with eyes may result in cold burns. Immediately wash eyes with plenty of water, holding eyelids apart for 15 mins. Contact a doctor.

Skin contact This product is non-irritating to skin, however contact may result in cold burns. Remove contaminated clothing and wash affected area with water. Do not apply direct heat to affected area. For large burns immerse in water. Contact a doctor.

Inhaled IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTRE or doctor/physician.

Advice to Doctor

Treat symptomatically.

5. Firefighting Measures

Fire and explosion hazards: This gas is not classed as flammable or oxidising. The cylinders may rupture in a fire. Do not attempt to handle a cylinder that has been heated.

Suitable extinguishing substances: Carbon dioxide, extinguishing powder or water jet. Fight larger fires with water jet or alcohol resistant foam.

Firefighting instructions Evacuate the area. Cool cylinders with water from the maximum distance. Stop flow of gas if safe to do so. Remove cylinders from area of fire if safe to do so.

Products of combustion: oxides of carbon, oxides of sulphur.

Protective equipment: Use self contained breathing apparatus (SCBA) and protective clothing.

Hazchem code: 2T

6. Accidental Release Measures

Containment This substance is a compressed gas, no secondary containment is required. If greater than 1000kg is stored, emergency plans to manage any potential spills must be in place. In all cases design storage to prevent discharge to storm water.

Emergency procedures If a gas leak occurs:
Isolate area. Avoid breathing gas. Avoid contact with skin and eyes. Stop leak if safe to do so.

Clean-up method Gas will dissipate at normal air pressure. Increase ventilation.

Disposal Empty cylinders may be returned to the manufacturer.

Precautions No special protective clothing is normally necessary.

7. Storage & Handling

Storage	Cylinders should be stored securely at room temperature (~20°C). Prevent cylinders from falling by using restraints.
Handling	Keep exposure to a minimum, and minimise the quantities kept in work areas. See section 8 with regard to personal protective equipment requirements.

8. Exposure Controls / Personal Protective Equipment

Workplace Exposure Standards

A workplace exposure standard (WES) has not been established by WorkSafe NZ for this product. There is a general limit of 3mg/m^3 for respirable particulates and 10mg/m^3 for inhalable particulates when limits have not otherwise been established.

NZ Workplace Exposure Stds	Ingredient	WES-TWA	Ceiling	WES-STEL
	Nitrogen	Simple asphyxiant	-	-
	oxygen	Not established	-	Not established
	sulphur dioxide	Not established		0.25ppm, 0.66mg/m^3

Engineering Controls

In industrial situations, it is expected that employee exposure to hazardous substances will be controlled to a level as far below the WES as practicable by applying the hierarchy of control required by the Health and Safety at Work Act (2015) and the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016. Exposure can be reduced by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods. If you believe air borne concentrations of mists, dusts or vapours are high, you are advised to modify processes or increase ventilation.

Personal Protective Equipment

General	Personal Protective Equipment (PPE) should not be used as the primary means of exposure protection, except in the event of an accident or emergency situation or where all other means of protection have proven to inadequate. Clean PPE after use or dispose of as appropriate. Store PPE for re-use in a clean place. Regular training on the correct use of PPE should be provided. In particular the correct fitting and use of respirators and where applicable the cleaning of respirators should be undertaken.
Eyes	Protective eyewear is not normally necessary when using this product. However, it always prudent to use protective eyewear if leaks are likely especially when handling valves and cylinders.
Skin	Wear gloves when handling cylinders and valves.
Respiratory	Wear an Air-line respirator or self-contained Breathing Apparatus (SCBA), where a risk of inhalation exists.

WES Additional Information

Not applicable

9. Physical & Chemical Properties

Appearance	compressed gas, clear colourless
Odour	sulphur dioxide odour (rotten eggs)
Odour threshold	odour threshold of 0.67-4.75 ppm (sulphur dioxide)
pH	not applicable
Freezing / melting point	-210°C (nitrogen)
Boiling point	no data
Flash point	no data for the mixture – non flammable gas mixture
Flammability	non flammable
Upper & lower flammable limits	no data
Vapour pressure	not applicable
Vapour density	highest known value: -146.95°C (nitrogen)
Specific gravity / density	gas density: 1.12kg/m^3
Solubility	not specified
Partition Coefficient:	no data
Auto-ignition temperature	no data
Decomposition temperature	no data
Viscosity	not applicable – compressed gas
Particle characteristics	not applicable

10. Stability & Reactivity

Stability	Stable
Conditions to be avoided	none known
Incompatible groups	none known
Substance Specific Incompatibility	none known
Hazardous decomposition products	none known
Hazardous reactions	none known

11. Toxicological Information

Summary

IF IN EYES: contact with gas may result in cold burns.
IF ON SKIN: may cause cold burns.
IF INHALED: this gas may be an asphyxiant (cause oxygen deficient atmospheres) and may cause respiratory difficulties, ringing in the ears, headaches, shortness of breath, wheezing, dizziness, indigestion, nausea, unconsciousness and death.
CHRONIC EXPOSURE: oxygen deficient atmospheres may affect the heart and the nervous system. Sulphur dioxide may cause respiratory sensitisation and reproductive effects.

Supporting Data

Acute	**Oral**	Using LD_{50}'s for ingredients, the Acute Toxicity Estimate (ATE) (oral) for the mixture is >2,000 mg/kg.
	Aspiration	This mixture is not considered an aspiration hazard.
	Dermal	No evidence of acute dermal toxicity.
	Inhaled	Using LD_{50}'s for ingredients, the Acute Toxicity Estimate (ATE) (inhalation) for the mixture is >5mg/L/4h. Data considered includes: sulphur dioxide LC_{50} (inhalation): 2520ppm/1H (rat), 3000ppm/30min (mouse). Nitrogen is a simple asphyxiant.
	Eye	The mixture is not considered to be an eye irritant. Discharge of the gas may cause cold burns.
	Skin	The mixture is not considered to be a skin irritant. Discharge of the gas may cause cold burns.
Chronic	**Sensitisation**	The mixture is considered to be a respiratory sensitizer, because sulphur dioxide present in greater than 0.1% is known to be a respiratory sensitizer.
	Mutagenicity	No ingredient present at concentrations > 0.1% is considered a mutagen.
	Carcinogenicity	No ingredient present at concentrations > 0.1% is considered a carcinogen.
	Reproductive / Developmental	The mixture is considered to be a suspected reproductive or developmental toxicant, because sulphur dioxide present in greater than 0.1% is suspected to be a reproductive or developmental toxicant.
	Systemic	No ingredient present at concentrations > 1% is considered a target organ toxicant.
	Aggravation of existing conditions	None known.

12. Ecological Data

Summary

This mixture does not trigger ecotoxic classification.

Supporting Data

Aquatic	No evidence of aquatic ecotoxicity for the mixture.
Bioaccumulation	Not relevant.
Degradability	Not relevant.
Soil	No evidence of soil toxicity.
Terrestrial vertebrate	This mixture is not considered harmful towards terrestrial vertebrates.
Terrestrial invertebrate	No evidence of toxicity towards terrestrial invertebrates.
Biocidal	no data
Environmental effect levels	No EELs are available for this mixture or ingredients

13. Disposal Considerations

Restrictions	There are no product-specific restrictions, however, local council and resource consent conditions may apply.
Disposal method	Cylinders should be returned to the supplier or manufacturer for disposal.

14. Transport Information

Land Transport Rule: Dangerous Goods 2005 - NZS 5433:2007
Transport according to NZS 5433 (Transport of Hazardous Substances on Land). Considered a hazardous substance for transport.

UN number:	1956	**Proper shipping name:**	COMPRESSED GAS N.O.S. (contains air, sulphur dioxide)
Class(es)	2.2	**Packing group:**	NA
Precautions:	non flammable, non toxic gas	**Hazchem code:**	2T

IMDG

UN number:	1956	**Proper shipping name:**	COMPRESSED GAS N.O.S. (contains air, sulphur dioxide)
Class(es)	2.2	**Packing group:**	NA
Precautions:	non flammable, non toxic gas		

IATA

UN number:	1956	**Proper shipping name:**	COMPRESSED GAS N.O.S. (contains air, sulphur dioxide)
Class(es)	2.2	**Packing group:**	NA
Precautions:	non flammable, non toxic gas		

15. Regulatory Information

This substance is not considered to be hazardous under HSNO. All ingredients appear on the New Zealand Inventory of Chemicals.

Specific Controls

Key workplace requirements are:	
SDS	To be available within 10 minutes in workplaces storing any quantity.
Inventory	An inventory of all hazardous substances must be prepared and maintained.
Packaging	All hazardous substances should be appropriately packaged including substances that have been decanted, transferred or manufactured for own use or have been supplied
Labelling	Must comply with the Hazardous Substances (Labelling) Notice 2017.
Emergency plan	Required if > 1000kg is stored.
Certified handler	Not required.
Tracking	Not required.
Bunding & secondary containment	Not required.
Signage	Not required.
Location compliance certificate	Not required.
Flammable zone	Not required.
Fire extinguisher	Not required.

Other Legislation

In New Zealand, the use of this product may come under the Resource Management Act and Regulations, the Health and Safety at Work Act 2015 and the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, local Council Rules and Regional Council Plans.

16. Other Information

Abbreviations

Approval Code	Approval HSR002535, Gases Under Pressure Mixtures (Subsidiary Hazard) Group Standard 2020 Controls, EPA. www.epa.govt.nz
CAS Number	Unique Chemical Abstracts Service Registry Number
EC_{50}	Ecotoxic Concentration 50% – concentration in water which is fatal to 50% of a test population (e.g. daphnia, fish species)
EPA	Environmental Protection Authority (New Zealand)
GHS	Globally Harmonised System of Classification and Labelling of Chemicals, 7th revised edition, 2017, published by the United Nations.
HAZCHEM Code	Emergency action code of numbers and letters that provide information to emergency services, especially fire fighters
HSNO	Hazardous Substances and New Organisms (Act and Regulations)
IARC	International Agency for Research on Cancer
LEL	Lower Explosive Limit
LD_{50}	Lethal Dose 50% – dose which is fatal to 50% of a test population (usually rats).
LC_{50}	Lethal Concentration 50% – concentration in air which is fatal to 50% of a test population (usually rats)
NZIoC	New Zealand Inventory of Chemicals
STEL	Short Term Exposure Limit - The maximum airborne concentration of a chemical or biological agent to which a worker may be exposed in any 15 minute period, provided the TWA is not exceeded
TWA	Time Weighted Average – generally referred to WES averaged over typical work day (usually 8 hours)
UEL	Upper Explosive Limit
UN Number	United Nations Number
WES	Workplace Exposure Standard - The airborne concentration of a biological or chemical agent to which a worker may be exposed during work hours (usually 8 hours, 5 days a week). The WES relates to exposure that has been measured by personal monitoring using procedures that gather air samples in the worker's breathing zone.

References

Data	Unless otherwise stated comes from the EPA HSNO chemical classification information database (CCID).
Controls	EPA notices, www.epa.govt.nz, Health and Safety at Work (Hazardous Substances) Regulations 2017, www.legislation.govt.nz
WES	The latest NZ Workplace Exposure Standards, published by WorkSafe NZ and available on their web site – www.worksafe.govt.nz.
Other References:	Suppliers SDS

Review

Date	**Reason for review**
February 2024	NA – new SDS

Disclaimer