



MATERIAL SAFETY DATA SHEET

This Material Safety Data Sheet complies with the Canadian Controlled Product Regulations

1. Product and Supplier Identification

Product: Sherlock Gasleak Detector

Product Use: Metalworking Product

Manufacturer: Bison International
Dr. A.F. Philipsstraat 9,
NL-4462 EW Goes
Netherlands

Supplier: JSA Sales,
75A Clipper Street,
Coquitlam, B.C.
Canada, V3K 6X2

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2. Hazards Identification

Primary Routes of Entry:

Skin Contact:	No
Skin Absorption:	No
Eye Contact:	No
Ingestion:	No
Inhalation:	Yes

Emergency Overview: Colourless gas with a slightly sweet odour. Oxidizer! Contact with combustible materials may cause fire or explosion. Explosive when mixed with fuels. Compressed gas! Confined space hazard. Gas can replace oxygen in the air. Reproductive hazard! Can cause embryotoxic, fetotoxic and teratogenic effects, based on human information.

Effects of Short-Term (Acute) Exposure:

Inhalation: Occupational exposure to nitrous oxide usually ranges between 400 and 3000 ppm. Exposure to concentrations of 100,000 ppm and higher can affect behavior and the ability to carry out mental tasks. This effect has also been demonstrated in volunteers exposed to a very low concentration (50 ppm for 3-4 hours) At levels of 330,000 ppm, volunteers have shown reduced sensitivity to pain At levels of 400,000 to 700,000 ppm reversible blood system changes occur including suppressed bone marrow activity. Exposure to higher concentrations may result in numbness or a drunkenness feeling.

Skin Contact: No ill affects expected except if spray directed at skin, frostbite may occur.

Eye Contact: See skin contact.

Ingestion: Not a route of entry for gases.

Effects of Long-Term (Chronic) Exposure: Repeated exposure to nitrous oxide can damage the peripheral nervous system. A condition called polyneuropathy has been observed. While this condition may improve over time, it is not completely reversible. Symptoms may include: numbness, a burning or prickling sensation on the skin, poor muscle coordination and clumsiness. If exposure continues, weakness, disturbances in walking, impotence and signs of degeneration of the spinal cord can occur.

Exposure to high concentrations of nitrous oxide can suppress bone marrow activity decreasing the number of circulating blood cells.

Based on human information, prolonged exposure to nitrous oxide can cause embryotoxic, fetotoxic and teratogenic effects.

Medical Conditions Aggravated By Exposure: None known.

3. Composition

Component	% (w/w)	Exposure Limits (ACGIH)*	LD ₅₀	LC ₅₀
Nitrous Oxide CAS No. 10024-97-2 (propellant)	50 - 70	TLV-TWA: 50 ppm	Not applicable	160 mg/m ³ (inhalation/rat, 6 hour)
1,2-Propylene glycol CAS No 57-55-6	10 - 20	WEELS- TWA: 10mg/m ³ (8 hour)	21800 mg/kg (oral/rat) 20800 mg/kg (dermal/rabbit)	Not determined
Non-hazardous ingredients and ingredients below disclosure requirements	10 - 40	Not applicable	Not applicable	Not applicable

* Exposure limits may vary from time to time and from one jurisdiction to another. Check with local regulatory agency for the exposure limits in your area.

ACGIH , American Conference of Governmental Industrial Hygienists.

4. First Aid Measures

Overview: The main route of entry is by inhalation.

Eye Contact: If sprayed directly into the eye causing frostbite, quickly remove victim from source of contamination. Immediately and briefly flush with lukewarm, gently flowing water until the chemical is removed. DO NOT attempt to re-warm the eye(s). Cover both eyes with a sterile dressing. DO NOT allow victim to drink alcohol or smoke. Quickly transport victim to an emergency care facility.

Skin Contact: If sprayed directly on skin causing frostbite, quickly remove victim from source of contamination and briefly flush with lukewarm, gently flowing water until the chemical is removed. DO NOT attempt to re-warm the affected area on site. DO NOT rub area or apply dry heat. Transport to a medical facility if the frostbite is severe.

Inhalation: This gas is a teratogen/embryotoxin. Take proper precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment). Remove the source of contamination or move victim to fresh air and obtain medical advice

Ingestion: Not a route of entry.

First Aid Comments: Provide general supportive measures (comfort, warmth, rest). Consult a doctor and/or the nearest Poison Control Centre for all serious exposures. All first aid procedures should be periodically reviewed by a doctor familiar with the material and its conditions of use in the workplace.

5. Fire Fighting Measures

Flash point: Does not burn.

Autoignition temperature: 371 °C

Lower Explosive Limit: 2.6% (1,2-propylene glycol)

Upper Explosion Limit: 12.6% (1,2-propylene glycol)

Sensitivity to Impact: No

Sensitivity to Static Discharge: No

Hazardous Combustion Products: High temperatures (greater than 649 deg C) may cause decomposition to nitrogen and oxygen. Nitric oxide or nitrogen dioxide gases may also form.

Extinguishing Media: Use extinguishing media appropriate to surrounding fire conditions, such as dry chemical powder, carbon dioxide, or foam. Use water in large quantities for fires involving nitrous oxide.

Fire Fighting Instructions: Evacuate area and fight fire from a safe distance or protected location. Approach the fire from upwind to avoid contact with hazardous vapours and decomposition products. Do not enter fire area without proper protection. Containers, when heated, may explode. Use of water to cool none fire exposed containers. Isolate material not yet involved in the fire and protect personnel. Move containers away from fire, if safe to do so.

HMIS HAZARD INDEX:

HEALTH: 2

FLAMMABILITY: 0

REACTIVITY: 0

PROTECTION: None required

6. Accidental Release Measures

Overview: Restrict access to release area until completion of cleanup. Ventilate area well to dilute and eliminate nitrous oxide concentration.

Personal Protection: See Section 8

Environmental Precautions: No specific requirements.

Remedial Measures: Stop leak, if safe to do so.

7. Handling and Storage

Handling Procedures: This material is very toxic, an oxidizer, and a compressed gas. Before handling, it is extremely important that proper ventilation systems are in place and person handling this material are properly trained regarding its hazards and safe use.

This material cannot be used where it may come in contact with materials that burn. Eliminate all ignition sources. Post "No Smoking" signs in use area. Do not use near welding operations, flames, or hot surfaces.

Storage: Store the product in a cool, dry, well ventilated area away from flammable materials and corrosive atmospheres, in a fireproof area. Store away from heat and ignition sources and out of direct sunlight. The storage area should be posted with "No Smoking" signs.

8. Exposure Controls, Personal Protection

Engineering Controls: When using indoors, ensure adequate ventilation by using local exhaust.

Respiratory Protection:

No specific recommendation

Skin protection: Depending upon the conditions of use, protective gloves made from chemical resistant nitrile rubber, PVC, PE or neoprene. Neoprene aprons or suitable clothing to prevent skin contact.

Eye and Face Protection: Tightly sealed goggles and/or face shield must be worn when a possibility exists for eye contact. Contact lenses should not be worn.

Footwear: No specific recommendation.

Other: Emergency eyes wash fountains should be available in vicinity of use.

9. Physical and Chemical Properties

Appearance: Aerosol

Odour: Slightly sweet

Odour Threshold: Not available

pH: Not applicable

Vapour Pressure: Not determined

Solubility: Fully miscible

Vapour Density: >1 (air =1),

Evaporation Rate: Not determined

Freezing Point: Not determined

Critical Temperature: Not determined

Relative Density: 1.04 @ 20°C

Partition Coefficient: Not determined

Solvent Solubility: Not determined

Percent Solids: 10

Viscosity: Not determined

Boiling Point: 100°C

10. Stability and Reactivity

Chemical Stability: Stable at normal temperatures. At elevated temperatures (above 649°C) decomposes into nitrogen and oxygen. This decomposition may become explosive at high temperatures. Decomposition will occur at lower temperatures in the presence of catalytic surfaces such as silver, platinum, cobalt, copper oxides or nickel oxides.

Incompatibility: Yes. COMBUSTIBLE MATERIALS (e.g. wood, paper, oil, grease) - may ignite. COMBUSTIBLE GASES (e.g. ammonia, carbon monoxide, hydrogen, hydrogen sulfide and phosphine) or DIETHYL ETHER - form explosive mixtures.
POWDERED ALUMINUM, HYDRAZINE or LITHIUM HYDRIDE - form flammable mixtures, some of which may ignite spontaneously.
AMORPHOUS BORON, GASEOUS SODIUM, TIN(II)OXIDE or TUNGSTEN CARBIDE - ignite when heated in nitrous oxide.
HYDROGEN - lowers the ignition temperature.
PHENYL LITHIUM - forms unstable lithium phenylazoxide.
PLASTIC TUBES (e.g. polyvinyl chloride, silicone rubber or red rubber) - surgical tubes have been ignited by surgical lasers or electrocautery in atmospheres enriched by nitrous oxide.
SILANE - detonates very easily.

Hazardous Decomposition Products: At elevated temperatures (above 649°C) decomposes into nitrogen and oxygen.

Hazardous Polymerization: Will not occur.

11. Toxicological Information

Acute Exposure:	See Section 3
Chronic Exposure:	See Section 3.
Exposure Limits:	See Section 2.
Irritancy:	See Section 3.
Sensitization:	See Section 3.
Carcinogenicity:	No human or animal data is available. IARC has designated this material A4, not classifiable as a human carcinogen.
Teratogenicity:	Yes, see Section 3
Reproductive toxicity:	Yes, see Section 3
Mutagenicity:	No human information available.
Synergistic products:	None known

12. Ecological Information

Overview: None

Environmental toxicity: For 1,2 Propylene glycol:

- LC50 Carassius auratus (Goldfish) >5,000 mg/L/24 hr /Conditions of bioassay not specified
- LC50 Lebistes reticulatus (Guppy) >10,000 mg/L/48 hr /Conditions of bioassay not specified
- LC50 Artemia salina (Brine shrimp) >10,000 mg/L/24 hr /Conditions of bioassay not specified/
- LC50 Salmo gardneri (Rainbow trout) 50,000 mg/L/24 hr /Conditions of bioassay not specified
- LC50 Pimephales promelas (Fathead minnow) 54,900 mg/L/96 hr /Conditions of bioassay not specified
- LC50 Rainbow trout 44 mL/L/96 hr (95% confidence interval: 41-47 mL/L); static, 12 deg C, pH 7.4, Hardness 44

Biodegradability: Biodegrades readily in terrestrial and aquatic environments.

13. Disposal Considerations

Review federal, provincial or state, and local government requirements prior to disposal. Store material for disposal as indicated in Storage Conditions. Disposal by controlled incineration may be acceptable.

14. Transport Information

Transport of Dangerous Goods (TDG and CLR): UN 1950, AEROSOLS, Class 2.2

United States Department of Transport (49CFR): UN 1950, AEROSOLS, Class 2.2

International Air Transport Association (IATA): UN 1950, AEROSOLS, Class 2.2

International Maritime Organization (IMO): UN 1950, AEROSOLS, Class 2.2, EmS No. F-D, S-U, For AEROSOLS with a maximum capacity of 1 litre: Stowage category "A", segregate as for Class 9 but "away from" sources of heat and "Separated from" Class 1 except division 1.4. For AEROSOLS with a capacity above 1 litre: Stowage Category "B", segregate as for the appropriate division of Class 2.

15. Regulatory Information

CANADIAN FEDERAL REGULATIONS:

CEPA, DOMESTIC SUBSTANCES LIST: Listed

WHMIS CLASSIFICATION: A, C, D2A

16. Other Information

Original Preparation Date: September 3, 2008

Prepared by: Upward Packaging Inc., 180 – 3771 Jacombs Road, Richmond, B.C., Canada, V6V 2L9

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