

MATERIAL SAFETY DATA SHEET

NITROUS OXIDE

(Please ensure that this MSDS is received by an appropriate person)

Date: June 2017

Version1

Ref no.: MSNIG020

1 PRODUCT AND COMPANY IDENTIFICATION

Skin Contact

No known effect.

PRODUCT IDENTIFICATION

Product Name	Nitrous Oxide
Chemical Formula	N ₂ O
Trade Names	Medical Nitrous Oxide, Compressed Nitrous Oxide, Instrument Grade NitroBoost
Colour Coding	Medical Nitrous Oxide French Blue (F.09) body with White stencilling. Nitrous Oxide, Instrument Grade French Blue (F.09) body with the "Instrument Grade" logo affixed centrally to the body of the cylinder. Nitroboost French Blue (F.09) body with a yellow shoulder, and "Nitroboost" Label stating "Toxic not for Medical use"
Valves	Medical & Instrument Grades 3SN – Brass 11/16 inch × 20t.p.i. male. Nitroboost Neriki – Brass 5/8 inch left hand female, positive pressure.
Company Identification	BOC Gases Nigeria Plc Block H Plot 1-3 Apapa Oshodi Expressway Oshodi, Lagos, Nigeria Tel No: +234 (01) 3429178
Emergency No	+234(0)8076411479

2 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Nitrous Oxide
Chemical Family	Oxidant
CAS No.	10024-97-2
UN No.	1070
ERG No	122
Hazchem Warning	5 A Non-flammable Compressed Gas

3 HAZARDS IDENTIFICATION

Main Hazards	All cylinders are portable gas containers, and must be regarded as pressure vessels at all times. Nitrous oxide is non-flammable, but readily supports combustion. Never permit oil, grease or other readily combustible substance to come into contact with high concentrations of nitrous oxide.
Adverse Health Effects.	Nitrous oxide should not be used with any condition where air is entrapped within the body, and where its expansion might be dangerous such as : Head injuries with impairment of consciousness; Artificial, traumatic or spontaneous pneumothorax air embolism; Decompression sickness; Following a recent dive; Following air encephelography; Severe bullous emphysema; During myringoplasty; Gross abdominal distension; Intoxication; Maxillofacial injuries.
Chemical Hazards	Nitrous oxide is non-flammable, but strongly supports combustion (including some materials which do not normally burn in air). Since dry nitrous oxide is non-corrosive, most materials of construction are suitable. Avoid all combustible materials.
Biological Hazards	Administration of nitrous oxide, more frequently than every 4 days should be accompanied by routine blood cell counts for evidence of megaloblastic change in red cells and hypersegmentation of neutrophils
Vapour Inhalation	The use of nitrous oxide causes inactivation of vitamin B12 which is a co-factor of methionine synthase. Folate metabolism is consequently interfered with, and DNA synthesis is impaired following prolonged nitrous oxide administration. These disturbances result in megaloblastic bone marrow changes. Exceptionally heavy occupational exposure and addiction have resulted in myeloneuropathy and subacute combined degeneration.
Eye Contact	No known effect.

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Ingestion Depletion of methionine has been implicated in the neurological deficit seen in chronic abusers of nitrous oxide.

4 FIRST AID MEASURES

Prompt medical attention is mandatory in all cases of overexposure to nitrous oxide. Rescue personnel should be cognisant of extreme fire hazard associated with nitrous oxide-rich atmospheres. Inapplicable, unwitting or deliberate inhalation of nitrous oxide will result in unconsciousness, passing through stages of increasing light-headedness and intoxication, and, if the victim were to be within a confined space, death from anoxia could result. The treatment is removal to fresh air, and if necessary, the use of an oxygen resuscitator.

Eye Contact No known effect.

Skin Contact No known effect.

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5 FIRE FIGHTING MEASURES

Extinguishing media As nitrous oxide is non-flammable but strongly supports combustion, the correct type of extinguishing media should be used depending on the combustible material involved.

Specific Hazards Nitrous oxide vigorously accelerates combustion. Materials that would not normally burn in air could combust vigorously in atmospheres having high concentrations of nitrous oxide.

Emergency Actions If possible, shut off the source of escaping Nitrous oxide. Evacuate area. All cylinders should be removed from the vicinity of the fire. Cylinders that cannot be removed should be cooled with water from a safe distance. Cylinders which have been exposed to excessive heat should be clearly identified and

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Hazards. Scavenging of waste nitrous oxide gas should be used to reduce operating theatre and equivalent treatment room levels to a level below 200vpm of ambient nitrous oxide.

Engineering control measures. Engineering control measures are preferred to reduce exposure to nitrous oxide-enriched atmospheres. General methods include forced-draught ventilation, separate from other exhaust ventilation systems. Ensure that sufficient fresh air enters at, or near, floor level.

Personal protection Safety goggles, gloves and shoes should be worn when handling cylinders.

Skin No known effect.

9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DATA

Chemical Symbol	N ₂ O
Molecular Weight	44,01
Specific Volume @ 20°C & 101,325 kPa	543,1 ml/g
Boiling point @ 101,325 kPa	-88,5°C
Density, gas @ 101,325 kPa and 20°C	1,8432 kg/m ³
Relative density (Air = 1) @ 101,325 kPa	1,5297
Colour	None
Taste	Sweet
Odour	Sweet

10 STABILITY AND REACTIVITY

Conditions to avoid The build up of nitrous oxide-enriched atmospheres. Never use cylinders as rollers or supports, or for any other purpose than the storage of Nitrous oxide. Never expose cylinders to excessive heat, as this

returned to supplier. CONTACT THE NEAREST BOC BRANCH.

Protective Clothing Safety goggles, gloves and safety shoes should be worn when handling cylinders.

Environmental precautions. As the gas is heavier than air, pockets of nitrous oxide-enriched air could occur. These could lead to the fire spreading rapidly. If possible, ventilate the affected area.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions Although nitrous oxide is not itself combustible, it supports and accelerates combustion. Clothes and other materials, not normally considered flammable, will burn fiercely in the presence of nitrous oxide, and can be set alight by a single spark, or even hot cigarette ash.

Environmental precautions. Nitrous oxide is known to have an ozone depleting potential. It is a "greenhouse gas" and may contribute to global warming. Beware of nitrous oxide-enriched atmospheres coming into contact with readily combustible materials.

Small spills Shut off the source of escaping nitrous oxide. Ventilate the area.

Large spills Evacuate the area. Shut off the source of the spill if this can be done without risk. Ventilate the area using forced-draught if necessary.

7 HANDLING AND STORAGE

Do not allow cylinders to slide or come into contact with sharp edges. Cylinders of nitrous oxide should not be stored near cylinders of acetylene or other combustible gases. Nitrous oxide cylinders should only be stacked vertically and be firmly secured. Prevent dirt, grit of any sort, oil or any other lubricant from entering the cylinder valves, and store cylinders well clear of any corrosive influence, e.g. battery acid. Compliance with all relevant legislation is essential. Use a "first in - first out" inventory system to prevent full cylinders from being stored for excessive periods of time. Keep out of reach of children.

may cause sufficient build-up of pressure to rupture the cylinders.

Incompatible Materials. Since dry nitrous oxide is non-corrosive, most materials of construction are suitable. Avoid all flammable materials.

Hazardous Decomposition Products. When involved in a fire the higher oxides of nitrogen can be formed. Both nitric oxide and nitrogen dioxide are highly toxic.

11 TOXICOLOGICAL INFORMATION

Acute Toxicity	See section 3
Skin & eye contact	No known effect.
Chronic Toxicity	See section 3
Carcinogenicity	No known effect.
Mutagenicity	No known effect.
Reproductive Hazards	See section 3

(For further information see Section 3. Adverse Health Effects).

12 ECOLOGICAL INFORMATION

Nitrous oxide is heavier than air and care should be taken to avoid the formation of nitrous oxide-enriched pockets. It does not pose a hazard to the ecology.

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13 DISPOSAL CONSIDERATIONS

Disposal Methods Small amounts may be blown to the atmosphere under controlled conditions. Large amounts should only be handled by the gas supplier.

Disposal of packaging The disposal of cylinders must only be handled by the gas supplier.

14 TRANSPORT INFORMATION

ROAD TRANSPORTATION

UN No. 1070
ERG No 122
Hazchem warning 5A Non-flammable gas

SEA TRANSPORTATION

IMDG 1070
Label Non-flammable gas

AIR TRANSPORTATION

ICAO/IATA Code 1070
Class 2.2
Packaging group
Packaging instructions

- Cargo 200
- Passenger 200
Maximum quantity allowed
- Cargo 150kg
- Passenger 75kg

15 REGULATORY INFORMATION

Reference standard: SANS 10234 and supplement
National legislation: OHSAct and Regulation (85 of 1993)

16 OTHER INFORMATION

Bibliography

SANS 10234-Globally Harmonized System of Classification and Labelling of Chemicals and Matheson Gas data book

EXCLUSION OF LIABILITY

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