This document supersedes the MSDS revision 02 dated 17th June, 2021

Requirements	Description
1. IDENTIFICATION AND COMPANY NAME	Product details: NITROUS OXIDE, COMPRESSED & LIQUEFIED Supplier Name: National Industrial Gas Plants Address: Salwa Industrial Area Street 45, Gate 75 - Doha Qatar P.O. Box: 1391 Telephone: : Head Office + 974 4468-9083, Sales: 4442-8844, Plant: 4450-00-08 Fax : Head Office +974 4458-3333, Sales: 4450-00-33, Plant: 4460-35-32 E-mail: nigp@qatar.net.qa , sales45@nigpqatar.com Emergency HOT LINE Tel.: + 974-7776-6277 Web Site: https://www.almanaholding.com.qa
2. HAZARD IDENTIFICATION	Hazard pictograms:  GHS03 – oxidising GHS04 – gases under pressure Signal word : Danger Hazard statements : H270-May cause or intensify fire; oxidizer. H280-Containsgasunderpressure; may explode if heated. Hazard Class and Category Code Regulation EC 1272/2008 (CLP) R Phrase(s) : R8: Contact with combustible material may cause fire. • Physical hazards : Oxidizing gases-Category 1-Danger-(CLP:Ox.Gas1)-H270 Gases under pressure-Liquefied gas-Warning-(CLP: Press. Gas)-H280 • Precautionary statements - Prevention : P244- Keep valves and fittings free from oil and grease P220- Keep away from combustible materials. -Response : P370+P376- In case of fire: Stop leak if safe to do so. • Storage : Store in a well-ventilated place.
3. COMPOSITION / INGREDIENT IDENTIFICATION	Substance/Preparation : Substance UN Number : 1070 Chemical Formula : N_2O Substance Name : Nitrous Oxide Contents : 100% CAS No. : 10024-97-2 EC No. : 233-032-0 Contains no other components or impurities which will influence the classification of the product.
4. FIRST AID MEASURES	Inhalation: In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. In low concentrations may cause narcotic effects. Symptoms may include dizziness, head ache,

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	nausea and loss of co-ordination. Remove victim to un contaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped. Skin/eye contact: • Immediately flush eyes thoroughly with water foratleast15minutes. In case of frostbite spray with water foratleast15minutes.Apply a sterile dressing. Obtain medical assistance • Adverse effects not expected from this product. Ingestion: • Ingestion is not considered a potential route of exposure.
5. FIRE-FIGHTING MEASURES	Suitable extinguishing media: • All known extinguishants can be used. Specific hazards: • Exposure to fire may cause containers to rupture/explode. Support combustion. Hazardous combustion products: • If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition. • Nitric oxide/nitrogen dioxide. Specific methods: • Nitric oxide/nitrogen dioxide. • Coordinate fire measure to the surrounding fire. Cool endangered containers with water spray jet from a protected position. Do not empty contaminated fire water into drains. • If possible, stop flow of product. • Move away from the container and cool with water from a protected position. • If leaking do not spray water on to container. Water surrounding area (from protected position) to contain fire. Special protective equipment for fire fighters: • Use self-contained breathing apparatus and chemically protective clothing.
6. ACCIDENTAL RELEASE MEASURES	Personal Precautions: • Try to stop release. • Evacuate area. • Ensure adequate air ventilation. • Eliminate ignition sources. • Use protective clothing. • Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Environmental Precautions: • Try to stop release. • Prevent from entering sewers, basements, and work pits, or any place where its accumulation can be dangerous. Clean Up Methods: • Ventilate area. • Keep area evacuated and free from ignition sources until any spilled liquid has evaporated. (Ground free from frost).
7. STORAGE AND HANDLING	Safe use of the product: • Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. • Only experienced and properly instructed persons should handle gases under pressure. The product must be handled in accordance with good industrial hygiene and safety procedures. • Do not smoke while handling product. • Ensure the complete gas system was (or is regularly) checked for leaks before use. Safe Handling of the gas receptacle: • Refer to supplier's container handling instructions. • Do not allow back feed into the container. • Protect cylinders from physical damage; do not drag, roll, slide or drop.

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	• When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. • 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. • If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. • Never attempt to repair or modify container valves or safety relief devices. • Damaged valves should be reported immediately to the supplier. • Keep container valve outlets clean and free from contaminates particularly oil and water. • Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. • Close container valve after each use and when empty, even if still connected to equipment. Never attempt to transfer gases from one cylinder/container to another. • Never use direct flame or electrical heating devices to raise the pressure of a container. • Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. Handling: • Use no oil or grease. • Open valve slowly to avoid pressure shock. • Suck back of water into the container must be prevented. Do not allow back feed into the container. • Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. • Keep away from ignition sources (including static discharges). Refer to supplier's container handling instructions. Storage: • Keep away from combustible materials. • Keep containerbelow50℃ in a well ventilated place. • Observe all regulations and local requirements regarding storage of containers. Containers should not be stored in conditions likely to encourage corrosion. • Containers should be stored in the vertical position and properly secured to prevent toppling. • Stored containers should be periodically checked for general condition 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 • Segregate from flammable gases and other flammable materials in store.
8. EXPOSURE CONTROLS/ PERSONAL PROTECTION	Appropriate engineering Controls: • Systems under pressure should be regularity checked for leakages. • Provide adequate general and local exhaust ventilation. • Consider work permit system e.g. for maintenance activities. Personal Protection / Protective equipment: • Ensure adequate ventilation. • 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. • Wear safety glasses with side shields. • Wear leather safety gloves and safety shoes when handling cylinders. • Do not smoke while handling product. • Ensure adequate ventilation. • Protect eyes, face and skin from liquid splashes. Other Environmental exposure controls: • Refer to local regulations for restriction of emissions to the atmosphere. See section13 for specific methods for waste gas treatment.

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9. PHYSICAL AND CHEMICAL PROPERTIES	Information on basic physical and chemical properties Appearance Physical state at 20℃ /101.3kPa : Liquefied gas. Colour : Colourless liquid. Odour : Sweetish. Poor warning properties at high concentrations. Odour threshold : Odour threshold is subjective and in adequate to warn for over exposure. pH value : Not applicable for gas-mixtures. Molar mass [g/mol] : Not applicable for gases and gas-mixtures. Melting point [℃] : -90.81 Boiling point [℃] : -88.5 Critical temperature[℃] : 36.4 Flash point [℃] : Not applicable for gas-mixtures. Evaporation rate (ether=1) : Not applicable for gas-mixtures. Flammability range[vol% in air] : Oxidiser. Vapour pressure [20℃] : Not applicable (50.8 bar) Relative density, gas (air=1) : 1.5 Relative density, liquid (water=1) : 1.2 Solubility in water [mg/l] : 2.2 Partition co efficient n-octanol / water : Not applicable for gas-mixtures. Auto-ignition temperature [℃] : Not applicable. Viscosity at 20℃ [mPa.s] : Not applicable. Explosive Properties : Not applicable. Molecular weight : 44 Dew Point °F [℃] : - 33 (-36) Specific Volume of gas : 0.533 m^3/kg @ 59°F (15 ^{O}C) : 0.5447 m^3/kg @ 70°F (21 ^{O}C) <u>Other information</u> Other data: Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.
10. STABILITY AND REACTIVITY	Reactivity: • No reactivity hazard other than the effects described in sub-sections below. Chemical stability • May react violently with combustible materials. • May react violently with reducing agents. • Violently oxidizes organic material. • Thermal decomposition yields toxic products which can be corrosive in the presence of moisture. At temperatures over 575℃ and at atmospheric pressure, nitrous oxide decomposes into nitrogen and oxygen. Pressurized nitrous oxide can also decompose at temperatures equal or greater than300℃. In the presence of catalysts (e.g. halogen products, mercury, nickel, platinum) the rate of decomposition increases and decomposition can occur at even lower temperatures. Nitrous oxide dissociation is irreversible and exothermic, leading to a considerable rise in pressure. • Liquid spillages can cause embitterment of structural materials. Possibility of hazardous reactions • Stable under normal conditions. Possibility of hazardous reactions • Oxygen will accelerate burning of combustible materials. • At temperatures over 575℃ and at atmospheric pressure, nitrous oxide decomposes into nitrogen and oxygen. • May react violently with combustible materials. • May react violently with reducing agents.

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	Conditions to avoid: High temperature. Incompatible materials • Reducing agents. • Combustible material. Hazardous decomposition products • Under normal conditions of storage and use, hazardous decomposition products should not be produced.
11. TOXICOLOGICAL INFORMATION	Skin corrosion/irritation : No known effects from this product. Serious eye damage/irritation : No known effects from this product. Respiratory or skin Sensitization : No known effects from this product. Toxicity information : No known toxicological effects from this product. Acute toxicity : No known toxicological effects from this product. Toxic for reproduction: Fertility : No known effects from this product. Toxic for reproduction: unborn child: No known effects from this product. STOT-single exposure : No known effects from this product. STOT-repeated exposure : No known effects from this product. Aspiration Hazard : Not applicable for gases and gas-mixtures Carcinogenicity : No known effects from this product. Germ cell mutagenicity : No known effects from this product.
12.ECOLOGICAL INFORMATION	Ecological Effects Information: • When discharged in large quantities may contribute to the green house effect. • Can cause frost damage to vegetation. Effects on the global Information: • Contains greenhouse gas (is) not covered by 842/2006/EC. Global Warming Potential (CO_2=1): 296
13. DISPOSAL CONSIDERATIONS	Waste treatment methods • May be vented to atmosphere in a well ventilated place. • Do not discharge into any place where its accumulation could be dangerous. • Refer to the code of practice of EIGA (Doc. 30/10"Disposal of Gases, down loadable at http://www.eiga.org) for more guidance on suitable disposal methods. • Contact supplier if guidance is required. General • May be vented to atmosphere in a well ventilated place. • Do not discharge into any place where its accumulation could be dangerous. • Contact supplier if guidance is required. • Discharge to atmosphere in large quantities should be avoided.
14. TRANSPORT INFORMATION	UN Number : 1070 HS Code : 28112930 Labeling  : 2.2 : Non Flammable, non toxic gas. : 5.1 : Oxidizing substances. <u>Land transport</u> Proper shipping name : Nitrous Oxide, 2.2 (5.1) Transportation hazard class(es) : 2 Classification code : 2 O Packing group : O Packing Instruction(s) : P200 Tunnel Restriction : C/E Tank carriage: Passage forbidden through tunnels of category C, D

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	and E: Other carriage: Passage forbidden through tunnels category E. HAZCHEM – Emergency Action Code: 2P 2 = Fine water spray. P =Risk of violent reaction or explosion. Recommended personal protective equipment: Liquid-tight chemical protective clothing and breathing apparatus. Appropriate measures: dilute. <u>Sea transport</u> Proper shipping name : NITROUS OXIDE Hazard class(es) : 2.2 Emergency Schedule (EmS) - Fire : F-C-S-W Emergency Schedule (EmS) - Spillage : S-W Packing Instruction(s) : P200 IMDG-Marine pollution: NO <u>Air transport</u> Proper shipping name : NITROUS OXIDE Hazard class(es) : 2, 2.2 Passenger and Cargo Aircraft : Allowed Packing instruction – Passenger and Cargo Aircraft : 200 <u>Special precautions for user</u> • Avoid transportation 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 there is adequate ventilation. • Ensure that containers are firmly secured. • Ensure cylinder valve is closed and not leaking. • Ensure valve outlet cap nut or plug (where provided) is correctly fitted. • Ensure valve protection device (where provided) is correctly fitted. <u>Incase of spillage and/or leakage</u> • Clean up even minor leaks or spills if possible without unnecessary risk. <u>Personal precautions</u> • The driver shall not at tempt to deal with any fire of the load. <u>Emergency action incase of accident</u> • Stop the engine • No naked lights. No smoking. • Mark roads and warns other road users. • Keep public away from danger area. • NOTIFYPOLICEAND FIREBRIGADEIMMEDIATELY.
15. REGULATORY INFORMATION	<u>Safety, health and environmental regulations/legislation specific for the substance or mixture</u> • EU Legislation / Seveso directive 96/82/EC : Not covered • National legislation: Ensure all national/local regulations are observed. • Chemical safety Assessment: A CSA does not need to be carried out for this product.
16. OTHER INFORMATION	Indication of changes / Training Advice • Revised safety data sheet in accordance with commission regulation (EU) No 453/2010. • Asphyxiant in high concentrations. • May cause frostbite. • The hazard of asphyxiation is often overlooked and must be stressed during operator training.

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	• Ensure all national/local regulations are observed. • Receptacle under pressure. List of full text of R-phrases in section 3. • R8: Contact with combustible material may cause fire. • H270-May cause or intensify fire; oxidizer. • H280-Containsgasunderpressure; may explode if heated. Further information • Classification in accordance with calculation methods of regulation (EC) 1272/2008CLP / (EC) 1999/45DPD. This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

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