

## **GASEOUS AND LIQUID NITROGEN**

Revised: 30 Jan 2015

Version No. 1

Revision No. 5

Created: 31 Dec 2010

### **1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING**

#### **1.1 Product identifier**

Commercial substance name – Gaseous and Liquid Nitrogen

Chemical substance name – Nitrogen (Gaseous and Liquid)

Identification number – Not applicable

EC No. – 231-787-9

CAS No. – 7727-37-9

REACH Registration No. – Not registered due to the fact that is classified as an exclusion according to Annex V to Regulation (EC) No. 1907/2006

#### **1.2 Relevant identified uses of the substance or mixture and used advised against**

**1.2.1** Relevant identified uses: *Gaseous nitrogen is used for formation of inert atmosphere to produce and transport easily oxidising substances, for treatment of high-temperature metal having no reaction with nitrogen, for conservation of metal vessels and pipelines and for other technical objectives. Liquid nitrogen is used as a refrigerating agent*

**1.2.2** Uses advised against: *None*

#### **1.3 Details of the Supplier of the Safety Data Sheet:**

Manufacturer/Supplier: Gaschema Branch of AB Achema

Address: Jonalaukio k., Ruklos sen., LT55550

Country: Republic of Lithuania

Telephone: +370 349 56259

Website of the Manufacturer/Supplier: [www.gaschema.lt](http://www.gaschema.lt).

Competent person: Z. Andriulaitienė, [z.andriulaitiene@gaschema.lt](mailto:z.andriulaitiene@gaschema.lt)

#### **1.4 Emergency telephone number**

Please contact: Poison Control and Information Service opened 24 hours-a-day by telephone: +370 (5) 2362052, General Emergency Service by telephone 112

### **2. HAZARDS IDENTIFICATION**

#### **2.1 Classification of the substance or mixture**

##### **2.1.1 Classification according to Regulation (EC) No. 1272/2008:**

Gas under pressure, H280 (only for cylinders, cylinder bunches)

Refrigerated liquid gas, H281 (only for isothermal, cryogenic tanks and containers)

**2.1.2 Classification according to Directive 67/548/EEC:** Not classified as dangerous

##### **2.1.3 Additional information:**

Full text of hazard and precautionary statements is listed in Section 16

#### **2.2 Label elements**

## **GASEOUS AND LIQUID NITROGEN**

### **2.1.1 Labelling according to Regulation (EC) No. 1272/2008:**



Signal word **Warning**

Hazard statements:

H280 – Contains gas under pressure; may explode if heated (only for cylinders, cylinder bunches)

H281 – Contains refrigerated gas; may cause cryogenic burns or injury (only for isothermal, cryogenic tanks and containers)

Precautionary statements:

P282 – Wear cold insulating gloves/face shield/eye protection (only for isothermal, cryogenic tanks and containers)

P336 – Thaw frosted parts with lukewarm water. Do not rub affected area (only for isothermal, cryogenic tanks and containers)

P315 – Get immediate medical advice/attention (only for isothermal, cryogenic tanks and containers)

P410+P403 – Protect from sunlight. Store in a well-ventilated place (only for isothermal, cryogenic tanks and containers)

P403 – Store in a well-ventilated place (only for isothermal, cryogenic tanks and containers)

P250 – Do not subject to shock

### **2.3 Other hazards**

As nitrogen is inorganic substance, neither PBT nor vPvB assessment has been carried out according to Annex XIII to Regulation (EC) No.1907/2006

## **3. COMPOSITION/INFORMATION ON INGREDIENTS**

### **3.1 Substances**

The product is considered an elementary substance according to Regulation (EC) No. 1907/2006.

Identification of hazardous components

CAS No.	EC No.	REACH Registration No.	Percentage by Weight %	Substance Name	Classification according to Regulation (EC) No. 1272/2008: [CLP / GHS] requirements
7727-37-9	231-787-9	Not registered due to the fact that is classified as an exclusion according to Annex V to Regulation (EC) No. 1907/2006	99.0- 99.996	Nitrogen	Gas under pressure, H280 (only for cylinders, cylinder bunches); refrigerated liquid gas, H281 (only for isothermal, cryogenic tanks and containers)

CAS No.	EC No.	REACH Registration No.	Percentage by Weight	Substance Name	Classification according to Directive 67/548/EEC
---------	--------	---------------------------	-------------------------	-------------------	---

## GASEOUS AND LIQUID NITROGEN

			%		
7727-37-9	231-787-9	Not registered due to the fact that is classified as an exclusion according to Annex V to Regulation (EC) No. 1907/2006	99.0-99.996	Nitrogen	Not classified as hazardous substance

### 4. FIRST AID MEASURES

#### 4.1 Description of first aid measures

The substance may enter the body through the following ways:

**After inhalation:** Remove casualty from the dangerous area, seek medical advice

**After skin contact:** Dress the frostbitten parts with a sterile bandage. Seek medical advice

**After eye contact:** Rinse thoroughly with water. Seek medical advice

**After ingestion:** Not required

#### 4.2 Most important symptoms and effects, both acute and delayed

No data on delayed effect available

#### 4.3 Indications of any immediate medical attention and special treatment needed

Medical attention due to impaired respiratory function, frostbite

### 5. FIREFIGHTING MEASURES

#### 5.1 Extinguishing media

**Suitable extinguishing media:** Non-flammable

**Extinguishing media not to be used for safety reasons:** None

**Unsuitable extinguishing media:** None

#### 5.2 Special hazards arising from the substance of mixture

None

#### 5.3 Advice for fire-fighters

Use insulating gas-masks

### 6. ACCIDENTAL RELEASE MEASURES

#### 6.1 Personal precautions, protective equipment and emergency procedures

**For non-emergency personnel:**

Avoid contact with the substance. Use personal protective equipment, see Section 8

Environmental measures: Make sure spills of liquid nitrogen are contained. Do not allow to enter into drains, cellars, mines or other places where accumulation thereof would be dangerous. Ventilate the place of accident. Liquid nitrogen shall be discharged in a special place having no asphalt, timber or other organic substance coating

**For emergency responders:** Avoid contact with the substance. Use personal protective equipment, see Section 8

## **GASEOUS AND LIQUID NITROGEN**

### **6.2 Environmental precautions**

*Not required*

### **6.3 Methods and materials for containment and cleaning up**

*None*

### **6.4 Reference to other sections**

*Personal protection equipment: see Section 8. Disposal considerations: see Section 13*

## **7. HANDLING AND STORAGE**

### **7.1 Precautions for safe handling**

Usage requirements and recommendations: *premises wherein nitrogen is produced and stored shall be equipped with an inlet and exhaust ventilation system in compliance with the requirements of STR 2.09.02 Heating, Ventilation, Air Conditioning and with an emergency ventilation system*

**Storage requirements:** *Release the valve of a nitrogen cylinder slowly to avoid pressure shock. When handling liquid nitrogen use personal protective equipment. Gas cylinders, cryogenic tanks shall be stored indoors to protect them against considerable temperature fluctuation. Storage premises shall be clean, dry and well-ventilated. Empty and full gas cylinders as well as cryogenic tanks shall be stored separately, rotation of cryogenic tanks shall be ensured*

*Instructions on the limit quantity of the substance/preparation to be stored under the conditions specified. When oxygen content in liquid nitrogen increases up to 30% (e.g. in the case of liquid nitrogen evaporation), explosive and combustible mixtures with organic compounds may be formed. Therefore, containers and other closed tanks that are used to carry out works in the liquid nitrogen medium shall contain no grease, organic solvents and other combustible or explosive liquids. Before starting works, oxygen content in nitrogen shall be checked*

### **7.2 Conditions for safe storage, including any incompatibilities**

**Unsuitable (incompatible) substances to be stored separately:** *None*

**Requirements for containers of the substance/preparation:** *Cylinders, isothermal tanks shall be in compliance with the requirements of the Pressure Vessel Code*

### **7.3 Specific end use(s)**

*Gaseous nitrogen is used for formation of inert atmosphere to produce and transport easily oxidising substances, for treatment of high-temperature metal having no reaction with nitrogen, for conservation of metal vessels and pipelines and for other technical objectives. Liquid nitrogen is used as a freezing agent*

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

### **8.1 Control parameters**

*Occupational exposure limit values: Long-term occupational exposure limit (LTEL) value, short-term occupational exposure limit (STEL) value not specified in HN 23*

### **8.2 Exposure controls**

**8.2.1 Appropriate engineering controls:** *Inlet and exhaust ventilation*

**8.2.2 Personal protective equipment:**

## **GASEOUS AND LIQUID NITROGEN**

**Eye/face protection:** *Safety goggles, perspex visors*  
**Skin protection:** *Work clothing*  
**Hands protection:** *Felt gloves (for liquid nitrogen), gloves*  
**Other protection:** *Dense cotton suit (jacket, trousers), special footwear*  
**Respiratory protection:** *Avoid environment wherein oxygen content is less than 21 %, insulating gas-masks*  
**Protection against thermal hazards:** *Not required*

**8.2.3 Environmental exposure controls:** *Not required*

### **9. PHYSICAL AND CHEMICAL PROPERTIES**

#### **9.1 Information on basic physical and chemical properties**

<b>Appearance:</b>	<i>Odourless gas (for gaseous nitrogen), colourless</i>
<b>Odour:</b>	<i>Odourless liquid (for liquid nitrogen), colourless gas (for gaseous nitrogen)</i>
<b>pH:</b>	<i>Not applicable for liquid gas</i>
<b>Melting point / freezing point:</b>	<i>-210 °C/ -195.8 °C</i>
<b>Initial boiling point and boiling range:</b>	<i>-195.8°C</i>
<b>Flash point:</b>	<i>Non-flammable</i>
<b>Flammability (gas):</b>	<i>Non-flammable</i>
<b>Vapour pressure:</b>	<i>No data available</i>
<b>Relative density:</b>	<i>1.25 kg/ m<sup>3</sup> gaseous nitrogen, 790 kg/m<sup>3</sup></i>
<b>Solubility in water:</b>	<i>No data available</i>
<b>Partition coefficient n-octanol/water:</b>	<i>Does not apply to inorganic gaseous substances</i>
<b>Viscosity:</b>	<i>Does not apply</i>
<b>Explosive properties:</b>	<i>Non-explosive</i>
<b>Oxidising properties:</b>	<i>Non-oxidizing</i>

#### **9.2 Other information**

*None*

### **10. STABILITY AND REACTIVITY**

#### **10.1 Reactivity**

*Stable under normal conditions. Liquid nitrogen converts to gaseous nitrogen*

#### **10.2 Chemical stability**

*Stable under normal conditions. Liquid nitrogen converts to gaseous nitrogen*

**Need for stabilisers:** *Not required*

#### **10.3 Possibility of hazardous reactions**

*None*

#### **10.4 Conditions to avoid**

*Protect from sunlight, store in a well-ventilated place, do not subject to shock*

#### **10.5 Incompatible materials**

## GASEOUS AND LIQUID NITROGEN

<i>None</i>
<b>10.6 Hazardous decomposition products</b> <i>None</i>
<b>11. TOXICOLOGICAL INFORMATION</b>
<b>11.1. Information on toxicological effects (of the substance):</b> Non-toxic <b>11.1.1. Acute toxicity:</b> Non-toxic <b>11.1.2. Skin corrosion / irritation:</b> Non-irritating <b>11.1.3. Respiratory or skin sensitisation:</b> Non-sensitising <b>11.1.4. Germ cell mutagenicity:</b> None <b>11.1.5. Carcinogenicity:</b> None <b>11.1.6. Reproductive toxicity:</b> Non-toxic <b>11.1.7. Specific target organ toxicity (STOT) (single exposure):</b> Non-toxic <b>11.1.8. Specific target organ toxicity (STOT) (repeated exposure):</b> Non-toxic <b>11.1.9. Aspiration hazard:</b> None
<b>12. ECOLOGICAL INFORMATION</b>
<b>12.1 Toxicity</b> <i>Non-toxic</i> <b>12.2 Persistence and degradability</b> <b>12.3 Bioaccumulative potential.</b> <i>No bioaccumulative properties</i> <b>12.4 Mobility in the soil.</b> <i>No data available</i> <b>12.5 PBT and vPvB assesement results</b> Neither PBT nor vPvB assessment has been carried out according to Annex XIII to Regulation (EC) No.1907/2006 <b>12.6 Other adverse effects</b> <i>None</i>
<b>13. DISPOSAL CONSIDERATIONS</b>
Requirements: <i>Do not dispose waste into environment</i> <b>13.1 Waste treatment methods</b> Disposal methods of waste and contaminated packages of the substance/preparation (incineration, recycling, disposal at a dumping site, etc.): <i>Not required</i>
<b>14. TRANSPORT INFORMATION</b>
<b>14. Transport information</b> <b>14.1 UN number</b> 1066 (only for cylinders, cylinder bunches) 1977 (only for isothermal, cryogenic tanks and containers) <b>14.2 UN proper shipping name</b>

## **GASEOUS AND LIQUID NITROGEN**

Nitrogen compressed  
Nitrogen refrigerated, liquid

### **14.3 Transport hazard class(es)**

2

### **14.4 Packing group**

Not applicable

### **14.5 Environmental hazards:**

20 Nitrogen compressed

22 Nitrogen refrigerated, liquid

### **14.6 Special precautions for user**

*Gaseous nitrogen shall be transported in cylinders with covers. The cylinders shall be transported in horizontal position with partitions between cylinders or in special containers in vertical position (necessarily with a guard protecting against possible falling over).*

*Liquid oxygen shall be transported by motor transport in cryogenic tanks and containers (tankers) that are in compliance with the requirements of ADR*

### **14.7 Transport in bulk according to Annex II of MARPOL 73/78 II and IBC Code**

Not applicable

## **15. REGULATORY INFORMATION**

### **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

Legal acts regulating the classification and labelling of the substance/preparation, restriction on its usage, requirements on personnel safety and health, limit values in work area, waste handling, etc.:

- Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 published in Official Journal of the European Union No. L353, Vol. 51, 31 Dec 2008

- Regulation (EC) No. 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

- Commission Regulation (EU) No. 453/2010 amending Regulation (EC) No. 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

- Hygiene Norm HN 23 Limit Values of Impact of Chemical Substances on Occupation. General Requirements for Impact Measurement and Assessment

- Applicable Regulations on Protection of Workers from Exposure of Chemical Substances at Work and Regulations on Protection of Workers from the Risks Related to Exposure to Carcinogens or Mutagens at Work

- Hygiene Norm HN 36 Banned and Restricted Substances

- Applicable Law on Waste Management of the Republic of Lithuania

- Applicable Waste Management Rules

- Applicable Rules on Labelling of Items (Goods) Sold in the Republic of Lithuania and Indication of Prices

- Applicable Company Standard IST 156667399-61, Technological Regulation TR796-06

- Applicable Provisional Usage Rules of Seamless Cylinders

- European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR)

- Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID)

- International Maritime Dangerous Goods Code (IMDG)

Additional information indicated on the label of the substance/preparation package (container):



## **GASEOUS AND LIQUID NITROGEN**

*Manipulation sign No.4 as per LST EN ISO 780*



### **15.2 Chemical safety assessment**

Chemical assessment of nitrogen has been not carried out as it is classified as an exclusion according to Annex V to Regulation (EC) No. 1907/2006 and is not registered

### **16. OTHER INFORMATION**

*Abbreviations and acronyms:*

*H280 – Contains gas under pressure; may explode if heated*

*H281 – Contains refrigerated gas; may cause cryogenic burns or injury*

*P282 – Wear cold insulating gloves/face shield/eye protection*

*P336 – Thaw frosted parts with lukewarm water. Do no rub affected area*

*P315 – Get immediate medical advice/attention*

*P410+P403 – Protect from sunlight. Store in a well-ventilated place*

*P403 – Store in a well-ventilated place*

*P250 – Do not subject to shock*

*ADR – European Agreement Concerning the International Carriage of Dangerous Goods by Road*

*RID – Regulations Concerning the International Carriage of Dangerous Goods by Rail*

*SMGS – Agreement on the International Goods Transport by Rail*

Information contained in this Material Safety Data Sheet shall be available for all persons work whereof is relevant to the substance/preparation. Data provided herein is in line with knowledge available for us and is intended to define the substance/preparation in terms of safety and health protection at work as well as in terms of environmental issues. Information contained in this Material Safety Data Sheet will be supplemented in case new data about the effect of the substance/preparation on health and environment as well as new data about prevention measures in order to decrease risk or to eliminate risk completely become available. Information contained herein reveals no other features of the substance/preparation.

Revised: 30 Jan 2015

Version No. 1

Revision No. 5

Created: 31 Dec 2010

End of the Safety Data Sheet

Director, Gaschema Branch of AB Achema

J. Kaminskas

Approved by:

Leading Engineer, Experimental Research Laboratory

L. Tatariškinaite