Chlorine (5.00 % - 5.85 %) in Nitrogen

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 11/18/2014 Version: 1.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture

Product name : Chlorine (5.00 % - 5.85 %) in Nitrogen

Product code : SG-2002-01387

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Test gas/Calibration gas.

1.3. Details of the supplier of the safety data sheet

Air Liquide America Specialty Gases
6141 Easton Rd
Plumsteadville, PA 18949 - USA
T 1.800.217.2688
www.airliquide.com

1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Compressed gas	H280
Acute Tox. 4 (Inhalation)	H332
Skin Corr. 1A	H314
Eye Dam. 1	H318
STOT SE 3	H335

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :

GHS04 GHS05 GHS07

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) :
H280 - Contains gas under pressure; may explode if heated
H332 - Harmful if inhaled
CGA-HG22 - Corrosive to the respiratory tract.
H318 - Causes serious eye damage
H314 - Causes severe skin burns and eye damage

Precautionary statements (GHS-US) :
P202 - Do not handle until all safety precautions have been read and understood
P280 - Wear eye protection, face protection, protective clothing, protective gloves
P284 - Wear respiratory protection. Consult respirator supplier´s product information for the selection of the appropriate respiratory protection.
P264 - Wash hands, forearms and face thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P260 - Do not breathe gas, vapors
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P321 - Specific treatment (see see Sect. 4.1 and 4.3 on this label)
P313 - Get medical advice/attention
P302+P352 - If on skin: Wash with plenty of water
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P332+P313 - If skin irritation occurs: Get medical advice/attention
P337+P313 - If eye irritation persists: Get medical advice/attention
CGA-PG20 - Use only with equipment of compatible materials of construction
CGA-PG10 - Use only with equipment rated for cylinder pressure
CGA-PG05 - Use a back flow preventive device in the piping

CGA-PG21 - Open valve slowly
CGA-PG06 - Close valve after each use and when empty
CGA-PG14 - Approach suspected leak area with caution
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F)
P403 - Store in a well-ventilated place
P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	Product identifier	%	Classification (GHS-US)
Nitrogen	(CAS No) 7727-37-9	94.15 - 95	Compressed gas, H280
Chlorine	(CAS No) 7782-50-5	5 - 5.85	Ox. Gas 1, H270 Liquefied gas, H280 Acute Tox. 2 (Inhalation:gas), H330 Skin Corr. 1A, H314 Eye Dam. 1, H318 STOT SE 3, H335

Full text of H-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. Apply artificial respiration with bag or mask if breathing stopped. DO NOT apply mouth-to-mouth resuscitation to avoid exposing responder to toxic gas from victim. Get immediate medical advice/attention.

First-aid measures after skin contact : Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Get immediate medical advice/attention.

First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.

First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

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

Symptoms/injuries : Symptoms similar to those listed under inhalation, skin and eye contact.

Symptoms/injuries after inhalation : Harmful if inhaled. Corrosive to the respiratory tract.

Symptoms/injuries after skin contact : Causes severe skin burns and eye damage.

Symptoms/injuries after eye contact : Causes serious eye damage.

Symptoms/injuries after ingestion : Ingestion is not considered a potential route of exposure.

Symptoms/injuries upon intravenous administration : Not known.

Chronic symptoms : Progressive lung dysfunction, pulmonary edema and pneumonitis.

4.3. Indication of any immediate medical attention and special treatment needed

If you feel unwell, seek medical advice. If breathing is difficult, give oxygen. Get immediate medical attention if breathing difficulty continues or other symptoms such as irritation or inflammation persist!.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media : Do not use water jet.

5.2. Special hazards arising from the substance or mixture

Fire hazard : The product is not flammable.

Explosion hazard : Product is not explosive. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.

Reactivity : Reacts with water to form corrosive acids. Corrosive vapors.

5.3. Advice for firefighters

Firefighting instructions : In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire.

Protection during firefighting : Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire fighters. Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Ensure adequate ventilation.

6.1.1. For non-emergency personnel

Protective equipment : Wear protective equipment consistent with the site emergency plan.

Emergency procedures : Escape the danger area by the closest safe route. Close doors and windows of adjacent premises. Keep containers closed. Mark the danger area. Seal off low-lying areas. Keep upwind.

6.1.2. For emergency responders

Protective equipment : Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire fighters. Equip cleanup crew with proper protection.

Emergency procedures : Evacuate and limit access. Ventilate area.

6.2. Environmental precautions

Try to stop release if safe to do so.

6.3. Methods and material for containment and cleaning up

For containment : Try to stop release if safe to do so.

Methods for cleaning up : Carefully collect the spill/leftovers. Clean contaminated surfaces with an excess of water. Scoop absorbed substance into closing containers. Dispose of this material and its container in accordance with local regulations.

6.4. Reference to other sections

See also Sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Pressurized container: Do not pierce or burn, even after use. Use equipment rated for cylinder pressure.

Precautions for safe handling : Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area.

Hygiene measures : Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Comply with applicable regulations.

Storage conditions : Do not expose to temperatures exceeding 52°C (125°F). Keep container closed when not in use. Protect cylinder from physical damage. Store in well ventilated area.

Incompatible products : None known.

Incompatible materials : Bases or caustic materials. Reducing agents.

7.3. Specific end use(s)

Test gas/Calibration gas.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Chlorine (5.00 % - 5.85 %) in Nitrogen	
ACGIH	Not applicable
OSHA	Not applicable

Nitrogen (7727-37-9)	
ACGIH	Not applicable
OSHA	Not applicable

Chlorine (7782-50-5)		
ACGIH	ACGIH TWA (ppm)	0.5 ppm
ACGIH	ACGIH STEL (ppm)	1 ppm
OSHA	OSHA PEL (Ceiling) (mg/m³)	3 mg/m³
OSHA	OSHA PEL (Ceiling) (ppm)	1 ppm

8.2. Exposure controls

Appropriate engineering controls : Ensure exposure is below occupational exposure limits. Provide adequate general and local exhaust ventilation. Systems under pressure should be regularly checked for leakages. Oxygen detectors should be used when asphyxiating gases may be released. Consider work permit system e.g. for maintenance activities.

Hand protection : Wear working gloves when handling gas containers. 29CFR 1910.138: Hand Protection. In addition wear chemically resistant protective gloves when making or breaking process connections.

Eye protection : Wear safety glasses with side shields. Wear goggles and a face shield when transfilling or breaking transfer connections. 29 CFR 1910.133: Eye and Face Protection.

Skin and body protection : Wear suitable protective clothing, e.g. - lab coats, coveralls or flame resistant clothing.

Respiratory protection : Wear a respirator when performing non-routine tasks not limited to line breaking or sampling. Wear a respirator during routine operations if determined to be necessary during a process-specific review. Consult respirator suppliers' product information or their representatives for the selection of the appropriate respirator.

Thermal hazard protection : None necessary during normal and routine operations.

Environmental exposure controls : Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

Other information : Wear safety shoes while handling containers. 29 CFR 1910.136: Foot Protection.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Gas

Appearance : colorless to slightly yellow. Gas.

Molecular mass : Not applicable for gas-mixtures.

Color : colorless to slightly yellow

Odor : Pungent.

Odor threshold : No data available

pH : No data available

Relative evaporation rate (butyl acetate=1) : No data available

Relative evaporation rate (ether=1) : Not applicable for gas-mixtures.

Melting point : No data available

Freezing point : No data available

Boiling point : No data available

Flash point : No data available

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Flammability (solid, gas) : Not flammble - not combustible

Vapor pressure : Not applicable.

Relative vapor density at 20 °C : No data available

Relative density : No data available

Relative gas density : Similar to air

Solubility : Water: Solubility in water of component(s) of the mixture :
• : 20 mg/l • : 8620 mg/l

Log Pow : Not applicable for gas-mixtures.

Log Kow : Not applicable for gas-mixtures.

Viscosity, kinematic : Not applicable.

Viscosity, dynamic : Not applicable.

Explosive properties : Not applicable - not flammable.

Oxidizing properties : None.

Explosive limits : Not applicable - not flammable

9.2. Other information

Additional information : None.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reacts with water to form corrosive acids. Corrosive vapors.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

None known.

10.4. Conditions to avoid

Moisture.

10.5. Incompatible materials

Reducing agents. Bases or caustic materials.

10.6. Hazardous decomposition products

Under normal conditions of storage and use hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Inhalation: Harmful if inhaled.

Chlorine (5.00 % - 5.85 %) in Nitrogen	
ATE US (gases)	4500.000 ppmV/4h
ATE US (vapors)	11.000 mg/l/4h
ATE US (dust, mist)	1.500 mg/l/4h

Nitrogen (7727-37-9)	
LC50 inhalation rat (ppm)	820000 ppm/4h

Chlorine (7782-50-5)	
LC50 inhalation rat (mg/l)	0.86 mg/l (Exposure time: 1 h)
LC50 inhalation rat (ppm)	146.5 ppm/4h
ATE US (gases)	100.000 ppmV/4h

Skin corrosion/irritation : Causes severe skin burns and eye damage.

Serious eye damage/irritation : Causes serious eye damage.

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : May cause respiratory irritation.

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

Symptoms/injuries after inhalation : Harmful if inhaled. Corrosive to the respiratory tract.

Symptoms/injuries after skin contact : Causes severe skin burns and eye damage.

Symptoms/injuries after eye contact : Causes serious eye damage.

Symptoms/injuries after ingestion : Ingestion is not considered a potential route of exposure.

Symptoms/injuries upon intravenous administration : Not known.

Chronic symptoms : Progressive lung dysfunction, pulmonary edema and pneumonitis.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Classification criteria are not met.

Chlorine (7782-50-5)	
LC50 fish 1	0.44 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [flow-through])
EC50 Daphnia 1	0.017 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 fish 2	0.014 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])

12.2. Persistence and degradability

Chlorine (5.00 % - 5.85 %) in Nitrogen	
Persistence and degradability	No data available.

Nitrogen (7727-37-9)	
Persistence and degradability	No ecological damage caused by this product.

Chlorine (7782-50-5)	
Persistence and degradability	Not applicable for inorganic gases.

12.3. Bioaccumulative potential

Chlorine (5.00 % - 5.85 %) in Nitrogen	
Log Pow	Not applicable for gas-mixtures.
Log Kow	Not applicable for gas-mixtures.
Bioaccumulative potential	No data available.

Nitrogen (7727-37-9)	
Log Pow	Not applicable for inorganic gases.
Bioaccumulative potential	No ecological damage caused by this product.

Chlorine (7782-50-5)	
BCF fish 1	(no bioaccumulation expected)
Log Pow	Not applicable for inorganic gases.
Bioaccumulative potential	No data available.

12.4. Mobility in soil

Chlorine (5.00 % - 5.85 %) in Nitrogen	
Mobility in soil	No data available.

Nitrogen (7727-37-9)	
Ecology - soil	No ecological damage caused by this product.

Chlorine (7782-50-5)	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.

12.5. Other adverse effects

Effect on ozone layer : None.

Effect on the global warming : No known ecological damage caused by this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Contact supplier if guidance is required. Do not discharge into any place where its accumulation could be dangerous. Ensure that the emission levels from local regulations or operating permits are not exceeded.

Waste disposal recommendations : Refer to the CGA Pamphlet P-63 "Disposal of Gases" available at www.cganet.com for more guidance on suitable disposal methods.

SECTION 14: Transport information

In accordance with DOT

Transport document description : UN1956 Compressed gas, n.o.s. (Chlorine, Nitrogen)

UN-No.(DOT) : UN1956

Proper Shipping Name (DOT) : Compressed gas, n.o.s.

Hazard labels (DOT)	:	2.2 - Non-flammable gas

DOT Symbols	:	G - Identifies PSN requiring a technical name
DOT Packaging Exceptions (49 CFR 173.xxx)	:	306;307
DOT Packaging Non Bulk (49 CFR 173.xxx)	:	302;305
DOT Packaging Bulk (49 CFR 173.xxx)	:	314;315
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	:	75 kg
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	:	150 kg
DOT Vessel Stowage Location	:	A - The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel.

Additional information

Other information	:	No supplementary information available.
Special transport precautions	:	Avoid transport on 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.

ADR

No additional information available

Transport by sea

UN-No. (IMDG)	:	1956
Proper Shipping Name (IMDG)	:	COMPRESSED GAS, N.O.S.
Class (IMDG)	:	2.2 - Non-flammable, non-toxic gases

Air transport

UN-No.(IATA)	:	1956
Proper Shipping Name (IATA)	:	COMPRESSED GAS, N.O.S.
Class (IATA)	:	2

SECTION 15: Regulatory information

15.1. US Federal regulations

Nitrogen (7727-37-9)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Chlorine (7782-50-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on the United States SARA Section 302 Listed on United States SARA Section 313	
SARA Section 302 Threshold Planning Quantity (TPQ)	100
SARA Section 313 - Emission Reporting	1.0 %

15.2. International regulations

CANADA

Nitrogen (7727-37-9)	
Listed on the Canadian DSL (Domestic Sustances List)	
WHMIS Classification	Class A - Compressed Gas

Chlorine (7782-50-5)	
Listed on the Canadian DSL (Domestic Sustances List)	
WHMIS Classification	Class A - Compressed Gas Class D Division 1 Subdivision A - Very toxic material causing immediate and serious toxic effects Class E - Corrosive Material

EU-Regulations

Nitrogen (7727-37-9)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Chlorine (7782-50-5)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Classification according to Regulation (EC) No. 1272/2008 [CLP]
Not classified

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

15.2.2. National regulations

Nitrogen (7727-37-9)
Listed on the AICS (Australian Inventory of Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the Korean ECL (Existing Chemicals List) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Chlorine (7782-50-5)
Listed on the AICS (Australian Inventory of Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the Korean ECL (Existing Chemicals List) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Japanese Poisonous and Deleterious Substances Control Law Listed on the Canadian IDL (Ingredient Disclosure List)

15.3. US State regulations

Nitrogen (7727-37-9)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

Chlorine (7782-50-5)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

Indication of changes : Revised safety data sheet in accordance with OSHA final rule on GHS implementation promulgated March 26, 2012.

Other information : This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product.

Full text of H-phrases:

Acute Tox. 2 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 2
Acute Tox. 4 (Inhalation)	Acute toxicity (inhalation) Category 4
Compressed gas	Gases under pressure Compressed gas
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Liquefied gas	Gases under pressure Liquefied gas
Ox. Gas 1	Oxidizing gases Category 1
Skin Corr. 1A	Skin corrosion/irritation Category 1A
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H270	May cause or intensify fire; oxidizer
H280	Contains gas under pressure; may explode if heated
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H330	Fatal if inhaled
H332	Harmful if inhaled
H335	May cause respiratory irritation

SDS US (GHS HazCom 2012)

This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of Air Liquide America Corporation's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this product is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.