Shipping Guidelines for Gas Samples in LP Tanks

You must be certified to ship hazardous goods to legally ship flammable or pressurized gas samples.

Stratum Reservoir and Isotech DO NOT do business or render services to the countries of Cuba, Iran, North Korea, Sudan, or Syria. Samples from these countries WILL BE REJECTED.

Samples of flammable and/or pressurized gas must be identified as hazardous materials. We have included the hazard labels you will need, and have listed below the information required by shipping companies who accept hazardous materials, like Federal Express. Please don't hesitate to ask your shipper for assistance attaching labels and filling out the required forms. Each shipper has its own forms and requirements for Dangerous Goods.

1. Check that the tank valve is tightly closed, return the tank to the cardboard shipping carton, and seal the carton with tape.
2. Attach the provided address and hazard identification labels to each carton as shown. One set of hazard labels should be affixed to the top of the box, and the second set may be affixed to the front side of the box. Labels must NOT be folded or affixed such that parts of the same label appear on different faces of the box.
3. Complete a SHIPPERS' DECLARATION OF DANGEROUS GOODS form, which can be obtained from your shipping company. The information that may be required is below. Note that air shipment of flammable gases must be in CARGO ONLY aircraft – Airborne Express and Federal Express will both accept compressed gases for transport. UPS will only accept hazardous materials from certified HAZMAT shippers who have a signed contract with them, and then only for ground shipment. If your company does not meet this requirement, we suggest using Airborne Express.

UN or ID Number	**UN1971**
Proper Shipping Name	**Methane, Compressed (Landfill gas, > 50% methane)**
Class or Division	**2.1**
Subsidiary Risk	**None (leave blank)**
Packaging Group	**None (leave blank)**
Type of Packaging	**U.S. Department of Transportation (DOT) approved gas cylinder(s) with fibreboard box as outer packaging**
Total Net Quantity	**< 1 kg**
Maximum Allowed Quantity Per Package	**150 kg**
Packing Instructions	**200**
Shipment Type	**Non-radioactive**
Transport Details	**Cargo Aircraft ONLY**
Prepared per	**ICAO/IATA**
Insurance Value	**$250 per cylinder**
Airport of Destination	**CMI (Willard Airport, Champaign, IL, USA)**
Additional Information	**(your company's emergency response phone number)**

4. As required by the Department of Transportation (49 CFR, Part 172, Subpart G, §172.604), a person who offers a hazardous material for transportation must provide an emergency response telephone number, including the area code or international access code, for use in the event of an emergency involving the hazardous material. You MUST use your company's emergency response telephone number. If one is not available to you, please contact us.

These instructions have been prepared to simplify the task of shipping samples, and are based on the current "IATA Dangerous Goods Regulations". However, it is YOU, the shipper, who is ultimately responsible for the safe and legal shipment of these samples in compliance with the most recent applicable, local, state, and international shipping regulations. Stratum Reservoir and Isotech assume no liability resulting from the improper packaging and/or shipment of samples and makes no guarantee regarding the validity of the information herein.

Safety Data Sheet (SDS)

For Transporting Natural Gas Samples in Gas Cylinders (UN1971)

Section I — Chemical Product and Company Identification

Trade Name: Natural Gas, Compressed UN1971
Chemical Name and Synonyms: Natural Gas, > 50% methane
Company Identification: Stratum Reservoir Isotech LLC, 1308 Parkland Court, Champaign, IL 61821; +1 217 398-3490

Section II — Composition/Information on Ingredients

Methane (CAS 74-82-8)	50-99%
Carbon dioxide (CAS 124-38-9)	0-50%
Nitrogen (CAS 124-38-9)	0-95%
Ethane (CAS 74-84-0)	0-10%
Propane (CAS 74-98-6)	0-5%
Butane (CAS 106-97-8)	0-2%
Hydrocarbons CxH2x+2 (x ≥ 5)	0-1%

Gas samples may also contain some air and trace quantities (< 0.1%) of various organic gases not listed above.

Section III — Hazards Identification

United States (U.S.) According to OSHA 29 CFR 1910.1200 HCS
Classification of the Substance or Mixture: OSHA HCS 2012: Flammable Gases 1 – H220; Compressed Gas – H280; simple asphyxiate
Label Elements: OSHA HCS 2012

DANGER

Hazard Statements: Extremely flammable gas – H220; Contains gas under pressure; may explode if heated – H280; May displace oxygen and cause rapid suffocation.
Precautionary Statements

- Prevention: Keep away from heat, sparks, open flames, and hot surfaces. No smoking. – P210
- Response: Do not extinguish a leaking gas fire unless the leak can be stopped safely. – P377; Eliminate all ignition sources if safe to do so. – P381
- Storage and Disposal: Protect from sunlight. Store in a well-ventilated area. – P410, P403

Other Hazards: OSHA HCS 2012: Under U.S. regulations (29 CFR 1910.1200 – Hazard Communication Standard), this product is considered hazardous.

Section IV — First Aid Measures

Eye Contact: First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. If irritation develops and persists, seek medical attention.
Skin Contact: Although exposure is unlikely, in case of contact, immediately flush skin with running water. If skin irritation develops, seek medical attention.
Inhalation: Remove victim to fresh air and keep at rest in a comfortable position for breathing. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. If signs or symptoms continue, seek medical attention.
Ingestion: Not applicable.
Most important symptoms and effects, both acute and delayed: Refer to Section XI – Toxicological Information
Notes to Physician: All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred. A potential health hazard associated with this gas is anoxia.

Section V — Fire Fighting Measures and Explosion Hazard Data

NFPA 704 Hazard Class
Health: 1
Flammability: 4
Instability: 0
(0 – Minimal, 1 – Slight, 2 – Moderate, 3 – Serious, 4 – Severe)

Gas samples can present a fire hazard. Being a mixture, the gas can explode violently on contact with any source of ignition.
Flash Point: -306°F to -305°F
Autoignition Temperature: 930°F to 1000°F
Flammability Limits: LEL 5%; UEL 15%
Extinguishing Media: Dry Chemical (Potassium Bicarbonate based “Purple K” is most effective), Carbon dioxide, water

Unusual Fire and Explosion Hazards: EXTREMELY FLAMMABLE. Will form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Cylinders exposed to fire may vent and release flammable gas through pressure relief devices. Containers may explode when heated. Ruptured cylinders may rocket.
Special Fire Fighting Procedures: Gas fires should not be extinguished unless the flow of gas can be stopped. Only authorized personnel should turn off valves or attempt repairs. Fire crews should wear self-contained breathing apparatus (SCBA). Natural gas is lighter than air and will vent upward, but special consideration should be given to areas what may trap or contain explosive concentrations, including areas of potential migration underground or through structures. Water mist may be used to cool surrounding structures including gas cylinders or tanks.

SECTION VI ACCIDENTAL RELEASE MEASURES

Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Do not touch or walk through spilled material. Ventilate the area before entry.
Eliminate all sources of ignition in the vicinity of released gas (no smoking, flares, sparks, or open flame). As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (300 feet) in all directions. Stop gas flow if it can be done without risk. Keep unauthorized personnel away. Keep out of low areas. Stay upwind. For a large release, consider an initial downwind evacuation of at least 800 meters (0.5 miles).
Environmental Precautions: Prevent spreading of flammable vapors through sewers, ventilation systems, and confined areas.
Containment/Cleanup Measures: All equipment used when handling the product must be grounded. Stop gas flow if it can be done without risk. If possible, turn leaking containers so that gas escapes rather than liquid. Use water spray to reduce vapors; do not put water directly on leak, spill area, or inside container. Isolate the area until gas has dispersed.

SECTION VII HANDLING AND STORAGE

Keep away from heat and ignition sources – no smoking. Take precautionaly measures against static charges – all equipment used when handling the product must be grounded. Use only non-sparking tools. Use only with adequate ventilation. Ventilate closed spaces before entering. Be aware of any signs of dizziness or fatigue, especially if work is done in a poorly ventilated area. Exposures of fatal concentrations of this gas mixture could occur without any significant warning symptoms due to olfactory fatigue or oxygen deficienty. Cylinders should be firmly secured to prevent falling or being knocked over. Use explosion-proof electrical, ventilating, and/or lighting equipment. Do not attempt to repair, adjust, or otherwise modify cylinders. If there is a malfunction or another type of operational problem, contact the nearest distributor immediately. Empty cylinders retain product residue and can be hazardous. Do not cut, weld, puncture, or incinerate container.
Store in a cool, well-ventilated, dry area away from heat and ignition sources. Protect cylinders against physical damage. Cylinders should be firmly secured to prevent falling or being knocked over.

SECTION VIII SPECIAL PROTECTIVE INFORMATION

Exposure Controls: Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Use explosion-proof electrical, ventilation, and/or lighting equipment.
Eye/Face Protection: Safety glasses.
Skin/Body Protection: Wear leather gloves when handling cylinders.
Respiratory Protection: In case of insufficient ventilation, wear suitable respiratory equipment. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.
Environmental Exposure Controls: Follow best practice for site management and disposal of waste. Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release, and release to waterways.

SECTION IX PHYSICAL AND CHEMICAL DATA

Solubility: Appreciable
Appearance (Color, odor, etc): colorless, tasteless, and normally odorless gas; however, may have a characteristic organic odor
Boiling Point: < -258°F (est)
Specific Gravity: 0.6 to 1.2 (air = 1.0)
Vapor Pressure: not established
Percent Volatile (volume %): 100%
Evaporation: Not applicable.

SECTION X STABILITY AND REACTIVITY DATA

Stability (Thermal, Light, etc.): Stable. Avoid heat, sparks, and open flame.
Incompatibility (Materials to avoid): Oxidizers
Hazardous Decomposition Products: Combustion may produce carbon monoxide, carbon dioxide, ethylene, and acetylene.
Hazardous Polymerization: Will not occur.

SECTION XI TOXICOLOGICAL INFORMATION

Potential Health Effects by Route of Exposure

Inhalation

Acute: If this material is released in a small, poorly ventilated area (enclosed or confined space), an oxygen-deficient environment can occur. Individuals breathing in such an environment may experience symptoms which include headaches, ringing in the ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. Under some circumstances of over-exposure, death can occur. The following effects are associated with decreased levels of oxygen: increase in breathing and pulse rate, emotional upset, abnormal fatigue, nausea, vomiting, collapse, loss of consciousness, convulsive movements, respiratory collapse, and death.

Chronic: No data available.

Skin

Acute: Under normal conditions of use, no health effects are expected.

Chronic: Under normal conditions of use, no health effects are expected.

Eye

Acute: Under normal conditions of use, no health effects are expected.

Chronic: Under normal conditions of use, no health effects are expected.

Ingestion is not anticipated to be a likely route of exposure to the product.

SECTION XII ECOLOGICAL INFORMATION

No data is available on the adverse effects of this material on the environment. Neither COD nor BOD data are available.

SECTION XIII DISPOSAL CONSIDERATIONS

Dispose of the container and unused contents in accordance with federal, state, and local requirements.

SECTION XIV TRANSPORT INFORMATION

UN or ID Number: UN1971
Proper Shipping Name: Methane, compress or Natural gas, compressed (with high methane content)
Class or Division: 2.1
Subsidiary Risk: None
Packaging Group: None
Shipment Type: Non-radioactive
Prepared per ICAO/IATA

SECTION XV REGULATORY INFORMATION

CERCLA/SARA Section 302 Extremely Hazardous Substances and TPQs (in pounds): This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.
CERCLA/SARA Section 311/312 (Title III Hazard Categories):
Acute Health: YES
Chronic Health: NO
Fire Hazard: YES
Pressure Hazard: YES
Reactive Hazard: NO
CERCLA/SARA Section 313 and 40 CFR 372: This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372.
EPA (CERCLA) Reportable Quantity (in pounds): EPA's Petroleum Exclusion applies to this material – CERCLA 101(14).
California Proposition 65: This material does NOT contain any chemicals which are known to the State of California to cause cancer, birth defects, or other reproductive harm that trigger the warning requirements of California Proposition 65.
Internation Hazard Classification Canada: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the Regulations.
WHMIS Hazard Class: A – Compressed gas; B1 – Flammable gas
National Chemical Inventories: All components are listed on the U.S. TSCA Inventory, or are not regulated under TSCA. All components are either on the DSL, or are exempt from DSL listing requirements.