Conforms to US OSHA Hazard Communication 29CFR1910.1200

SAFETY DATA SHEET

Agilent Technologies

Refinery Gas Test Sample

Section 1. Identification

GHS product identifier : Refinery Gas Test Sample

Part no. : 5080-8755

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

Identified uses : Reagents and Standards for Analytical Chemistry Laboratory Use
A pressurized gas cylinder containing 1 liter

Supplier/Manufacturer : Agilent Technologies, Inc.
5301 Stevens Creek Blvd
Santa Clara, CA 95051, USA
800-227-9770

Emergency telephone number (with hours of operation) : CHEMTREC®: 1-800-424-9300

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

H220	FLAMMABLE GASES - Category 1A
H280	GASES UNDER PRESSURE - Compressed gas
	SIMPLE ASPHYXIANTS
H332	ACUTE TOXICITY (inhalation) - Category 4
H360	TOXIC TO REPRODUCTION - Category 1A
H372	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
H412	AQUATIC HAZARD (LONG-TERM) - Category 3

Ingredients of unknown toxicity : Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 30 - 60%

Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 77%

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H220 - Extremely flammable gas.
H280 - Contains gas under pressure; may explode if heated.
H332 - Harmful if inhaled.
H360 - May damage fertility or the unborn child.
H372 - Causes damage to organs through prolonged or repeated exposure. (heart)
H412 - Harmful to aquatic life with long lasting effects.
May displace oxygen and cause rapid suffocation.

Precautionary statements

Section 2. Hazards identification

Prevention : P201 - Obtain special instructions before use.
P280 - Wear protective gloves, protective clothing and eye or face protection.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P273 - Avoid release to the environment.
P260 - Do not breathe gas.
P270 - Do not eat, drink or smoke when using this product.

Response : P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 - In case of leakage, eliminate all ignition sources.
P308 + P313 - IF exposed or concerned: Get medical advice or attention.
P304 + P312 - IF INHALED: Call a POISON CENTER or doctor if you feel unwell.

Storage : P403 - Store in a well-ventilated place.

Disposal : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Keep container tightly closed. Use only with adequate ventilation. Do not enter storage areas and confined spaces unless adequately ventilated.

Other hazards

Hazards not otherwise classified : None known.

Hazards identified when used : No known significant effects or critical hazards.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	Synonyms	%	Identifiers
Carbon monoxide	-	≥3 - ≤7	CAS: 630-08-0
Isopentane	-	≥1 - ≤5	CAS: 78-78-4
pentane	-	≥0.5 - ≤1.5	CAS: 109-66-0
Ethylene	-	≥0.5 - ≤1.5	CAS: 74-85-1

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Section 4. First aid measures

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.

Inhalation : Harmful if inhaled. At very high concentrations, can displace the normal air and cause suffocation from lack of oxygen.

Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.

Ingestion : As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Section 5. Fire-fighting measures

Specific hazards arising from the chemical : Contains gas under pressure. Extremely flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Remark : Dangerous fire and explosion risk.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Methods for cleaning up : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe gas. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container.

Section 7. Handling and storage

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Store locked up. Eliminate all ignition sources. Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Carbon monoxide	**NIOSH REL (United States, 10/2020)** TWA 10 hours: 35 ppm. TWA 10 hours: 40 mg/m³. CEIL: 200 ppm. CEIL: 229 mg/m³. **CAL OSHA PEL (United States, 1/2025)** C: 200 ppm. TWA 8 hours: 29 mg/m³. TWA 8 hours: 25 ppm. **OSHA PEL (United States, 5/2018)** TWA 8 hours: 50 ppm. TWA 8 hours: 55 mg/m³. **OSHA PEL 1989 (United States, 3/1989)** TWA 8 hours: 35 ppm. TWA 8 hours: 40 mg/m³. CEIL: 200 ppm. CEIL: 229 mg/m³. **ACGIH TLV (United States, 1/2024)** TWA 8 hours: 25 ppm. TWA 8 hours: 29 mg/m³.
Isopentane	**ACGIH TLV (United States, 1/2024)** **[Pentane]** TWA 8 hours: 1000 ppm.
pentane	**NIOSH REL (United States, 10/2020)** TWA 10 hours: 120 ppm. TWA 10 hours: 350 mg/m³. CEIL 15 minutes: 610 ppm. CEIL 15 minutes: 1800 mg/m³. **CAL OSHA PEL (United States, 1/2025)** TWA 8 hours: 1800 mg/m³. TWA 8 hours: 600 ppm. **OSHA PEL (United States, 5/2018)** TWA 8 hours: 1000 ppm. TWA 8 hours: 2950 mg/m³. **OSHA PEL 1989 (United States, 3/1989)** TWA 8 hours: 600 ppm. TWA 8 hours: 1800 mg/m³. STEL 15 minutes: 750 ppm. STEL 15 minutes: 2250 mg/m³. **ACGIH TLV (United States, 1/2024)**

Section 8. Exposure controls/personal protection

	[Pentane] TWA 8 hours: 1000 ppm.
Ethylene	**ACGIH TLV (United States, 1/2024)** A4. TWA 8 hours: 200 ppm.

Biological exposure indices

Ingredient name	Exposure indices
Carbon monoxide	**ACGIH BEI (United States, 1/2024)** BEI: 3.5 % of hemoglobin, carboxyhemoglobin [in blood]. Sampling time: end of shift. BEI: 20 ppm, carbon monoxide [in end-exhaled air]. Sampling time: end of shift.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

Respiratory protection : The gas can cause asphyxiation without warning by replacing the oxygen in the air. Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. If operating conditions cause high gas concentrations to be produced or any recommended or statutory exposure limit is exceeded, use an air-fed respirator or self-contained breathing apparatus. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state : Gas.

Color : Colorless.

Odor : Odorless.

Odor threshold : Not available.

pH : Not applicable.

Melting point/freezing point : -259°C (-434.2°F)

Boiling point or initial boiling point and boiling range : -253°C (-423.4°F)

Flash point : Not applicable.

Evaporation rate : Not available.

Flammability : Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.
Dangerous fire and explosion risk.

Lower and upper explosion limit/flammability limit : Lower: 4%
Upper: 74.2%

Vapor pressure : Not available.

Relative vapor density : 0.07 [Air = 1]

Relative density : Not applicable.

Solubility(ies) : Not available.

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : 570°C (1058°F)

Decomposition temperature : Not available.

Viscosity : Dynamic (room temperature): Not available.
Kinematic (room temperature): Not available.
Kinematic (40°C (104°F)): Not available.

Particle characteristics

Median particle size : Not applicable.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow gas to accumulate in low or confined areas.

Incompatible materials : May react or be incompatible with oxidizing materials.
Reactive or incompatible with the following materials: acids and alkalis.

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

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	
Carbon monoxide	Rat - Inhalation - LC50 Gas.	1807 ppm [4 hours]
	Rat - Inhalation - LC50 Gas.	1900 mg/m³ [4 hours]
Isopentane	Rat - Inhalation - LC50 Vapor	280000 mg/m³ [4 hours]
pentane	Rat - Male, Female - Oral - LD50	>2000 mg/kg
	Rat - Inhalation - LC50 Vapor	364 g/m³ [4 hours]
Ethylene	Rat - Male - Inhalation - LC50 Gas.	>57000 ppm [4 hours]
	Rat - Male - Inhalation - LC50 Gas.	>65400 mg/m³ [4 hours]

Conclusion/Summary [Product] : Not available.

Skin corrosion/irritation

Conclusion/Summary [Product] : Not available.

Serious eye damage/eye irritation

Conclusion/Summary [Product] : Not available.

Respiratory corrosion/irritation

Conclusion/Summary [Product] : Not available.

Respiratory or skin sensitization

Skin

Conclusion/Summary [Product] : Not available.

Respiratory

Section 11. Toxicological information

Conclusion/Summary [Product] : Not available.

Germ cell mutagenicity

Conclusion/Summary [Product] : Not available.

Carcinogenicity

Not available.

Conclusion/Summary [Product] : Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
Ethylene	-	3	-

Reproductive toxicity

Conclusion/Summary [Product] : Not available.

Specific target organ toxicity (single exposure)

Product/ingredient name	Result
Isopentane	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
pentane	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
Ethylene	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Result
Carbon monoxide	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (heart) (inhalation) - Category 1

Aspiration hazard

Product/ingredient name	Result
Isopentane	ASPIRATION HAZARD - Category 1
pentane	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Inhalation.

Potential acute health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.

Inhalation : Harmful if inhaled. At very high concentrations, can displace the normal air and cause suffocation from lack of oxygen.

Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.

Ingestion : As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

Section 11. Toxicological information

Eye contact : No specific data.

Inhalation : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Conclusion/Summary [Product] : Not available.

General : Causes damage to organs through prolonged or repeated exposure.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Reproductive toxicity : May damage fertility or the unborn child.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
Refinery Gas Test Sample	180000	N/A	16263.0	N/A	N/A
Carbon monoxide	N/A	N/A	1807	N/A	N/A
Isopentane	N/A	N/A	N/A	280	N/A
pentane	2500	N/A	N/A	364	N/A

Section 12. Ecological information

Toxicity

Conclusion/Summary [Product] : Not available.

Persistence and degradability

Product/ingredient name	Result		
Isopentane	OECD [Ready Biodegradability - Manometric Respirometry Test]	71.43% [28 days] - Readily	Aerobic - 25 to 33 mg/l
pentane	OECD [Ready Biodegradability - Manometric Respirometry Test]	87% [28 days] - Readily	Aerobic

Conclusion/Summary [Product] : Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Isopentane	-	-	Readily
pentane	-	-	Readily

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Isopentane	3	171	Low
pentane	3.45	171	Low
Ethylene	1.13	-	Low

Mobility in soil

Soil/Water partition coefficient : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification	IMDG	IATA
UN number	UN1954	UN1954	UN1954	UN1954	UN1954
UN proper shipping name	Compressed gas, flammable, n.o.s. (Hydrogen, Ethane, Isobutane)	COMPRESSED GAS, FLAMMABLE, N. O.S. (Hydrogen, Ethane, Isobutane)	GAS COMPRIMIDO INFLAMABLE, N. E.P. (Hydrogen, Ethane, Isobutane)	COMPRESSED GAS, FLAMMABLE, N.O.S. (Hydrogen, Ethane, Isobutane)	Compressed gas, flammable, n.o.s. (Hydrogen, Ethane, Isobutane)
Transport hazard class(es)	2.1 	2.1 	2.1 	2.1 	2.1 
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

Additional information

DOT Classification : **Limited quantity** Yes.
Packaging instruction Exceptions: 306. Non-bulk: 302, 305. Bulk: 314, 315.
Quantity limitation Passenger aircraft/rail: Forbidden. Cargo aircraft: 150 kg.

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2).
Explosive Limit and Limited Quantity Index 0.125
ERAP Index 3000
Passenger Carrying Vessel Index Forbidden
Passenger Carrying Road or Rail Index Forbidden
Special provisions 16

Mexico Classification : **Special provisions** 274, 392

IMDG : **Emergency schedules** F-D, S-U
Special provisions 274, 392

IATA : **Quantity limitation** Passenger and Cargo Aircraft: Forbidden. Packaging instructions: Forbidden. Cargo Aircraft Only: 150 kg. Packaging instructions: 200. Limited Quantities - Passenger Aircraft: Forbidden. Packaging instructions: Forbidden.
Special provisions A1, A807

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

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

U.S. Federal regulations : **Clean Air Act (CAA) 112 regulated flammable substances**: Hydrogen; Ethane; Isobutane; But-1-ene; Propane; Methane; (E)-But-2-ene; (Z)-But-2-ene; Butane; Isopentane; Propylene; pentane; Ethylene

TSCA 12(b) - Chemical export notification

Not applicable.

Section 15. Regulatory information

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : FLAMMABLE GASES - Category 1A
GASES UNDER PRESSURE - Compressed gas
SIMPLE ASPHYXIANTS
ACUTE TOXICITY (inhalation) - Category 4
TOXIC TO REPRODUCTION - Category 1A
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

Composition/information on ingredients

Name	%	Classification
Nitrogen	≥10 - ≤30	GASES UNDER PRESSURE - Compressed gas SIMPLE ASPHYXIANTS
Hydrogen	≥10 - ≤30	FLAMMABLE GASES - Category 1A GASES UNDER PRESSURE - Compressed gas SIMPLE ASPHYXIANTS
Ethane	≥7 - ≤13	FLAMMABLE GASES - Category 1A GASES UNDER PRESSURE - Compressed gas SIMPLE ASPHYXIANTS
Isobutane	≥7 - ≤13	FLAMMABLE GASES - Category 1A GASES UNDER PRESSURE - Compressed gas SIMPLE ASPHYXIANTS
But-1-ene	≥7 - ≤13	FLAMMABLE GASES - Category 1A GASES UNDER PRESSURE - Compressed gas SIMPLE ASPHYXIANTS
Propane	≥3 - ≤7	FLAMMABLE GASES - Category 1A GASES UNDER PRESSURE - Compressed gas SIMPLE ASPHYXIANTS
Methane	≥3 - ≤7	FLAMMABLE GASES - Category 1A GASES UNDER PRESSURE - Compressed gas SIMPLE ASPHYXIANTS
Carbon monoxide	≥3 - ≤7	FLAMMABLE GASES - Category 1A GASES UNDER PRESSURE - Compressed gas SIMPLE ASPHYXIANTS ACUTE TOXICITY (inhalation) - Category 3 TOXIC TO REPRODUCTION - Category 1A SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
Carbon dioxide	≥3 - ≤7	GASES UNDER PRESSURE - Compressed gas SIMPLE ASPHYXIANTS
(E)-But-2-ene	≥3 - ≤7	FLAMMABLE GASES - Category 1A GASES UNDER PRESSURE - Compressed gas SIMPLE ASPHYXIANTS
(Z)-But-2-ene	≥3 - ≤7	FLAMMABLE GASES - Category 1A GASES UNDER PRESSURE - Compressed gas SIMPLE ASPHYXIANTS
Butane	≥3 - ≤7	FLAMMABLE GASES - Category 1A GASES UNDER PRESSURE - Compressed gas
Isopentane	≥1 - ≤5	FLAMMABLE LIQUIDS - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) -

Section 15. Regulatory information

		Category 3 ASPIRATION HAZARD - Category 1 HNOC - Static-accumulating flammable liquid HNOC - Defatting irritant
Propylene	≥0.5 - ≤1.5	FLAMMABLE GASES - Category 1A GASES UNDER PRESSURE - Compressed gas SIMPLE ASPHYXIANTS
pentane	≥0.5 - ≤1.5	FLAMMABLE LIQUIDS - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 ASPIRATION HAZARD - Category 1 HNOC - Static-accumulating flammable liquid HNOC - Defatting irritant
Ethylene	≥0.5 - ≤1.5	FLAMMABLE GASES - Category 1A GASES UNDER PRESSURE - Liquefied gas SIMPLE ASPHYXIANTS SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Propylene Ethylene	115-07-1 74-85-1	≥0.5 - ≤1.5 ≥0.5 - ≤1.5
Supplier notification	Propylene Ethylene	115-07-1 74-85-1	≥0.5 - ≤1.5 ≥0.5 - ≤1.5

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: NITROGEN; HYDROGEN; ETHANE; ISOBUTANE; 1-BUTENE; PROPANE; METHANE; CARBON MONOXIDE; CARBON DIOXIDE; 2-BUTENE-TRANS; 2-BUTENE-CIS; BUTANE; ISOPENTANE; PROPYLENE; PENTANE; ETHYLENE

New York : None of the components are listed.

New Jersey : The following components are listed: NITROGEN; HYDROGEN; ETHANE; Isobutane; 1-BUTENE; PROPANE; METHANE; CARBON MONOXIDE; CARBON DIOXIDE; 2-BUTENE-trans; 2-BUTENE-cis; BUTANE; ISOPENTANE; PROPYLENE; PENTANE; ETHYLENE

Pennsylvania : The following components are listed: NITROGEN; HYDROGEN; ETHANE; PROPANE, 2-METHYL-; 1-BUTENE; PROPANE; METHANE; CARBON MONOXIDE; CARBON DIOXIDE; 2-BUTENE, (E)-; 2-BUTENE, (Z)-; BUTANE; BUTANE, 2-METHYL-; 1-PROPENE; PENTANE; ETHENE

California Prop. 65

⚠ **WARNING**: This product can expose you to Carbon monoxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Ingredient name	No significant risk level	Maximum acceptable dosage level
Carbon monoxide	-	-

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Section 15. Regulatory information

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : All components are listed or exempted.

Canada : All components are listed or exempted.

China : All components are listed or exempted.

Japan : **Japan inventory (CSCL)**: All components are listed or exempted.
Japan inventory (ISHL): All components are listed or exempted.

New Zealand : All components are listed or exempted.

Philippines : All components are listed or exempted.

Republic of Korea : All components are listed or exempted.

Taiwan : All components are listed or exempted.

Thailand : All components are listed or exempted.

Turkey : Not determined.

United States : All components are active or exempted.

Viet Nam : All components are listed or exempted.

Section 16. Other information

Procedure used to derive the classification

Classification	Justification
FLAMMABLE GASES - Category 1A	On basis of test data
GASES UNDER PRESSURE - Compressed gas	On basis of test data
SIMPLE ASPHYXIANTS	Expert judgment
ACUTE TOXICITY (inhalation) - Category 4	Calculation method
TOXIC TO REPRODUCTION - Category 1A	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1	Calculation method
AQUATIC HAZARD (LONG-TERM) - Category 3	Calculation method

History

Date of issue/Date of revision : 10/23/2025

Date of previous issue : 11/14/2024

Version : 10

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
DOT = Department of Transportation
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
IMO = International Maritime Organization
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
SGG = Segregation Group
TDG = Transportation of Dangerous Goods
UN = United Nations

Section 16. Other information

Indicates information that has changed from previously issued version.

Notice to reader

Disclaimer: The information contained in this document is based on Agilent's state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.