

Safety Data Sheet 2926

Section 1: Product and Company Identification

Absolute Accuracy

4591 S Wayside Dr Houston, TX 77087 (832) 571-2387

Product Code: 2926 Part Number: 2926

Synonyms: Recommended Use: Usage Restrictions:

Section 2: Hazards Identification



Hazard Classification:

Aspiration Hazard (Category 1)
Gases Under Pressure
Specific target organ toxicity (Single Exposure) (Category 3)

Hazard Statements:

Contains gas under pressure; may explode if heated May be fatal if swallowed and enters airways May cause respiratory irritation; Toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention:

Use only outdoors or in a well-ventilated area. Avoid breathing dust/fume/gas/mist/ vapors/spray. [In case of inadequate ventilation] wear respiratory protection.

Response:

Do NOT induce vomiting.

If swallowed: Rinse mouth. Do NOT induce vomiting.

Immediately call a poison center or doctor.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

Storage

Store in a well-ventilated place. Keep container tightly closed.

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Protect from sunlight. Store locked up.

Disposal:

Dispose of contents and/or container in accordance with applicable regulations.

Section 3: Composition/Information on Ingredients

	CAS#	Concentration
Carbon Monoxide	630-08-0	200 ppm
n-Pentane	109-66-0	3500 ppm
Oxygen	7782-44-7	18%
Nitrogen	7727-37-9	Balance

	Chemical Substance	Chemical Family	Trade Names
Carbon Monoxide	CARBON MONOXIDE	Inorganic gases	CARBON OXIDE; CARBON OXIDE (CO); UN 1016; CO
n-Pentane	N-PENTANE	Hydrocarbons, Aliphatic, Saturated	PENTANE; AMYL HYDRIDE; UN 1265; C5H12
Oxygen	OXYGEN, COMPRESSED GAS	Inorganic gases	OXYGEN; DIOXYGEN; MOLECULAR OXYGEN; OXYGEN MOLECULE; PURE OXYGEN; UN 1072; O2
Nitrogen	NITROGEN, COMPRESSED GAS	Inorganic gases	DIATOMIC NITROGEN; DINITROGEN; NITROGEN; NITROGEN-14; NITROGEN GAS; UN 1066; N2

Section 4: First Aid Measures

	Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
Carbon Monoxid e	Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.	Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.
n- Pentane	Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes.	Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	Aspiration hazard. DO NOT induce vomiting. If vomiting occurs, keep head lower than hips to help prevent aspiration. Get immediate medical attention. Give artificial respiration if not breathing.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.	Not available
Oxygen	None expected	None expected	Not likely route of exposure	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.	None

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	Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
Nitrogen	Wash exposed skin with soap and water.	Flush eyes with plenty of water.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.

Section 5: Fire Fighting Measures

	Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
Carbon Monoxid e	Carbon dioxide, regular dry chemical Large fires: Use regular foam or flood with fine water spray.	Carbon dioxide	 Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
n- Pentane	Regular dry chemical, carbon dioxide, water, regular foam Large fires: Use regular foam or flood with fine water spray.	Carbon monoxide, carbon dioxide and toxic and irritating fumes	 Any self-contained breathing apparatus with a full facepiece. Any self-contained breathing apparatus with a full facepiece.
Oxygen	Non-flammable. Use extinguishing agent appropriate for the material which is burning. Use water in large quantities for fires involving oxygen.	Oxides of burning material	 Respiratory protection may be needed for frequent or heavy exposure. None
Nitrogen	Non-flammable. Use suitable extinguishing media for surrounding fire. Cylinders may rupture or explode if exposed to heat.	Non-flammable	Respiratory protection may be needed for frequent or heavy exposure.

Section 6: Accidental Release Measures

	Personal Precautions	Environmental Precautions	Methods for Containment
Carbon Monoxide	Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering.	Avoid heat, flames, sparks and other sources of ignition. Keep out of water supplies and sewers.	Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition.
n- Pentane	Keep unnecessary people away, isolate hazard area and deny entry.	Avoid heat, flames, sparks and other sources of ignition.	Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition.
Oxygen	Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering.	Avoid contact with combustible materials.	Stop leak if possible without personal risk.
Nitrogen	Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.	No significant effects from contamination expected.	Stop leak if possible without personal risk.

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	Methods for Cleanup	Other Information
Carbon Monoxide	Stop leak, evacuate area. Wear protective equipment.	Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).
n-Pentane	Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal.	Not available
Oxygen	Stop leak and ventilate	None
Nitrogen	N/A	N/A

Section 7: Handling and Storage

	Handling	Storage
Carbon Monoxide	Keep separated from incompatible substances.	Store and handle in accordance with all current regulations and standards. Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.
n-Pentane	Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 125F (52C). Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.	Do not get liquid in eyes, on skin, or clothing. Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Open valve slowly. Close cylinder valve after each use; keep closed even when empty. If valve is hard to open, discontinue use and contact your supplier.
Oxygen	Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.	Keep separated from incompatible substances.
Nitrogen	Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.	Keep separated from incompatible substances.

Section 8: Exposure Controls/Personal Protection

	Exposure Guidelines
Carbon Monoxide	CARBON MONOXIDE: 50 ppm (55 mg/m3) OSHA TWA 35 ppm (40 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 200 ppm (229 mg/m3) OSHA ceiling (vacated by 58 FR 35338, June 30, 1993) 25 ppm ACGIH TWA 35 ppm (40 mg/m3) NIOSH recommended TWA 10 hour(s) 200 ppm (229 mg/m3) NIOSH recommended ceiling
n-Pentane	PENTANE: 1000 ppm (2950 mg/m3) OSHA TWA 600 ppm (1770 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 750 ppm (2210 mg/m3) OSHA STEL (vacated by 58 FR 35338, June 30, 1993) 600 ppm ACGIH TWA 120 ppm (350 mg/m3) NIOSH recommended TWA 10 hour(s) 610 ppm (1800 mg/m3) NIOSH recommended ceiling 15 minute(s)
Oxygen	OXYGEN, COMPRESSED GAS: No occupational exposure limits established.
Nitrogen	NITROGEN, COMPRESSED GAS: NITROGEN: ACGIH (simple asphyxiant)

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Engineering Controls

Handle only in fully enclosed systems.

	Eye Protection	Skin Protection	Respiratory Protection
Carbon Monoxide	Eye protection not required, but recommended.	Protective clothing is not required.	Any supplied-air respirator with full facepiece and operated in a pressuredemand or other positive-pressure mode in combination with a separate escape supply.
n-Pentane	Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	Wear appropriate chemical resistant clothing.	Any self-contained breathing apparatus with a full facepiece.
Oxygen	Eye protection not required, but recommended.	Protective clothing is not required.	Respiratory protection may be needed for frequent or heavy exposure.
Nitrogen	Eye protection not required, but recommended.	Protective clothing is not required.	Respiratory protection may be needed for frequent or heavy exposure.

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

	Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
Carbo n Monox ide	Gas	Colorless	Colorless	N/A	Gas	Odorless	Tasteless
n- Pentan e	Liquid	Clear	Colorless	N/A	Liquid	Gasoline odor	N/A
Oxyge n	Gas	Clear	Colorless	N/A	Gas	Odorless	Tasteless
Nitrog en	Gas	Clear	Colorless	N/A	Gas	Odorless	Tasteless

	Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
Carbo n Monox ide	Flammable	Not available	1479.11 (log = 3.17) (estimated from water solubility)	1128-1202 F (609-650 C)	0.74	12.0-12.5%
n- Penta ne	<-40 F (<-40 C) (CC)	IA	Not available	500 F (260 C)	0.078	0.014
Oxyge n	Not flammable	Not available	Not available	Nonflammable	Nonflammable	Nonflammable
Nitrog en	Not flammable	Not available	Not available	Nonflammable	Nonflammable	Nonflammable

	Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	рН	Odor Threshold	Evaporation Rate	Viscosit y
Car bon Mon oxid e	-312.7 F (- 191.5 C)	-326 F (- 199 C)	760 mmHg @ -191 C gas; cannot be liquefied at room temperature	0.968 (Air=1)	Not applicable	2.3% @ 20 C	Not applic able	Not available	Not applicable	0.01657 cP @ 0 C
n- Pen tane	96.93 F (36.07 C)	-201.5 F (- 129.7 C)	400 mmHg @ 18.5 C	2.5 (Air=1)	0.626	0.0004	Not availa ble	2.2-5000 ppm	28.6 (butyl acetate=1)	<32 SUS

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	Boiling Point	Freezing Point	Vapor Pressure	Vapor Densitv	Specific Gravity	Water Solubility	рН	Odor Threshold	Evaporation Rate	Viscosit v
Oxy gen	-297 F (- 183 C)	-360 F (- 218 C)	760 mmHg @ -183 C	1.1 (Air=1)	Not applicable	3.2% @ 25 C	Not applic able	Not available	Not applicable	0.02075 cP @ 25 C
Nitr oge n	-321 F (- 196 C)	-346 F (- 210 C)	760 mmHg @ -196 C	0.967 (Air=1)	Not applicable	1.6% @ 20 C	Not applic able	Not available	Not applicable	0.01787 cP @ 27 C

	Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
Carbo n Mono xide	28.01	C-0	1.250 g/L @ 0 C	Not available	100%	Not applicable	Soluble: Alcohol, benzene, acetic acid, ethyl acetate, chloroform, cuprous chloride solutions
n- Penta ne	72.15g/mol	C5-H12	Not available	Not available	Not available	Not available	Soluble: Alcohol, ether, acetone, benzene, chloroform
Oxyg en	31.9988	O2	1.309 g/L @ 25 C	Not available	Not applicable	Not applicable	Soluble: Alcohol
Nitrog en	28.0134	N2	1.2506 g/L	Not available	100%	1	Soluble: Liquid ammonia

Section 10: Stability and Reactivity

	Stability	Conditions to Avoid	Incompatible Materials
Carbon	Stable at normal temperatures and	Stable at normal temperatures and	Oxidizing materials, halogens, metal oxides,
Monoxide	pressure.	pressure.	metals, combustible materials, lithium
n-Pentane	Stable at normal temperatures and	Stable at normal temperatures and	Oxidizing materials, combustible materials,
	pressure.	pressure.	halogen compounds
Oxygen	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Combustible materials, halo carbons, metals, bases, reducing agents, amines, metal salts, oxidizing materials, alkaline earth and alkali metals
Nitrogen	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Metals, oxidizing materials

	Hazardous Decomposition Products	Possibility of Hazardous Reactions
Carbon Monoxide	Oxides of carbon	Will not polymerize.
n-Pentane	Oxides of carbon	Will not polymerize.
Oxygen	Miscellaneous decomposition products	Will not polymerize.
Nitrogen	Oxides of nitrogen	Will not polymerize.

Section 11: Toxicology Information

Acute Effects

	Oral LD50	Dermal LD50	Inhalation
Carbon Monoxide	LC50 Inhalation Gas. Rat 1807 ppm 4 hours	Not available	Changes in body temperature, changes in blood pressure, nausea, vomiting, chest pain, difficulty breathing, irregular heartbeat, headache, drowsiness, dizziness, disorientation, hallucinations, pain in extremities, tremors, loss of coordination, hearing loss, visual disturbances, eye damage, suffocation, blood disorders, convulsions, coma
n-Pentane	>2000 mg/kg oral-rat LD50	Not available	Irritation, nausea, difficulty breathing, headache, drowsiness, dizziness, disorientation, mood swings, loss of coordination, central nervous system depression, asphyxiant

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	Oral LD50	Dermal LD50	Inhalation
Oxygen	Not established	Not established	Irritation, changes in body temperature, nausea, difficulty breathing, irregular heartbeat, dizziness, disorientation, hallucinations, mood swings, pain in extremities, tremors, lung congestion, convulsions
Nitrogen	Not available	Not available	Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, loss of coordination, convulsions, coma

	Eye Irritation	Skin Irritation	Sensitization
Carbon Monoxi de	No information on significant adverse effects	No information on significant adverse effects	Acute toxicity, Category 3, inhalation; H331: Toxic if inhaled. Reproductive toxicity, Category 1A; H360D: May damage the unborn child. Specific Target Organ Toxicity (repeated exposure), Category 1; H372: Causes damage to organs through prolonged or repeated exposure.
n- Pentane	Irritation	Irritation	Specific Target Organ Toxicity (single exposure), Category 3; H336: May cause drowsiness or dizziness. Aspiration hazard, Category 1; H304: May be fatal if swallowed and enters airways.
Oxygen	No information on significant adverse effects	No information on significant adverse effects	No significant target effects reported.
Nitroge n	Contact with rapidly expanding gas may cause burns or frostbite	No information on significant adverse effects	Difficulty breathing

Chronic Effects

	Carcinogenicity	Mutagenicity	Reproductive Effects	Develop mental Effects
Carbon Monoxid e	Not available	Available.	Available.	No data
n- Pentane	Not available	Not available	Not available	No data
Oxygen	Not known.	Available.	Available.	No data
Nitrogen	Not hazardous	Not available	Not available	No data

Section 12: Ecological Information

Fate and Transport

	Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
Carbo n Monox ide	Fish toxicity: 75000 ug/L 1 day(s) LC100 (Mortality) Orangespotted sunfish (Lepomis humilis) Invertibrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Relatively non-persistent in the environment. Highly volatile from water.	Not available	Not expected to leach through the soil or the sediment.
n- Pentan e	Fish toxicity: Not available Invertibrate toxicity: 3000000 ug/L 48 week(s) (Mortality) Pacific oyster (Crassostrea gigas)	Not available	Not available	Not available

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	Algal toxicity: 1000 ug/L 8 year(s) EC50 (Photosynthesis) Algae,phytoplankton, algal mat (Algae) Phyto toxicity: Not available Other toxicity: Not available			
Oxyge n	Fish toxicity: Not available Invertibrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Low bioaccumulation	Not available
Nitrog en	Fish toxicity: Not available Invertibrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available

Section 13: Disposal Considerations

Carbon Monoxide	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
n-Pentane	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
Oxygen	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
Nitrogen	Dispose in accordance with all applicable regulations.

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

DOT Information For This Mixture

Shipping Name	Compressed gas, n.o.s. (Nitrogen, Oxygen)	
UN Number	UN1956	
Hazard Class	2.2	
Hazard Information	Non-Flammable Gas	

Individual Component Information

	Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
C ar b o n M o n o xi de	Carbon monoxide, compressed	UN1016	2.3	Not applicable	2.3; 2.1	Forbidden	25 kg	Toxic- Inhalation Hazard Zone D
n-Pentane	Pentanes	UN1265	3	II	3	N/A	N/A	N/A
O xy g en	Oxygen, compressed	UN1072	2.2	Not available	2.2; 5.1	75 kg or L	150 kg	N/A
Ni tr o g en	Nitrogen, compressed	UN1066	2.2	Not applicable	2.2	75 kg or L	150 kg	N/A

Canadian Transportation of Dangerous Goods

	Shipping Name	UN Number	Class	Packing Group / Risk Group
Car bon Mon oxid e	Carbon monoxide, compressed	UN1016	2.3; 2.1	Not applicable
n- Pen tane	Pentanes	UN1265	3	II
Oxy gen	Oxygen, compressed	UN1072	2.2; 5.1	Not applicable
Nitr oge n	Nitrogen, compressed	UN1066	2.2	Not applicable

Section 15: Regulatory Information

U.S. Regulations

	CERCLA Sections	SARA 355.30	SARA 355.40
Carbon Monoxi de	Not regulated.	Not regulated.	Not regulated.
n- Pentane	Not regulated.	Not regulated.	Not regulated.
Oxygen	Not regulated.	Not regulated.	Not regulated.
Nitroge n	Not regulated.	Not regulated.	Not regulated.

SARA 370.21

			Acute	Chronic	Fire	Reactive	Sudden Release
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Carb on Mono xide	Yes	No	Yes	No	Yes
n- Penta ne	Yes	No	Yes	No	No
Oxyg en	No	No	Yes	No	Yes
Nitro gen	Yes	No	No	No	Yes

SARA 372.65

Carbon Monoxide	Not regulated.
n-Pentane	Not regulated.
Oxygen	Not regulated.
Nitrogen	Not regulated.

OSHA Process Safety

Carbon Monoxide	Not regulated.
n-Pentane	Not regulated.
Oxygen	Not regulated.
Nitrogen	Not regulated.

State Regulations

	CA Proposition 65	
Carbon Monoxide	WARNING: This product can expose you to chemicals including 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.	
n-Pentane	Not regulated.	
Oxygen	Not regulated.	
Nitrogen	Not regulated.	

Canadian Regulations

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	WHMIS Classification		
Carbon Monoxide	A, B1, D1A, D2A.		
n-Pentane	B2		
Oxygen	A,C		
Nitrogen	A		

National Inventory Status

	US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
Carbo	Listed on inventory.	Not listed.	Listed on inventory.
n Mono xide			
n- Penta ne	Listed on inventory.	PENTANE CAS NUMBER: 109-66-0 SECTION 4	Listed on inventory.
Oxyge n	Listed on inventory.	Not listed.	Not determined.
Nitrog en	Listed on inventory.	Not listed.	Listed on inventory.

Section 16: Other Information

	NFPA Rating
Carbon Monoxide	HEALTH=2 FIRE=4 REACTIVITY=0
n-Pentane	HEALTH=2 FIRE=4 REACTIVITY=0
Oxygen	HEALTH=0 FIRE=0 REACTIVITY=0 SPECIAL=OX
Nitrogen	HEALTH=0 FIRE=0 REACTIVITY=0 SPECIAL=SA

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

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