

Safety Data Sheet



Division of Fresno Oxygen

Barnes Welding Supply/Barnes Specialty Gases

Division of Fresno Oxygen

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Section 1: Product and Company Identification

Barnes Welding Supply / Barnes Specialty Gases - Division of Fresno Oxygen

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FOR CHEMICAL EMERGENCIES DURING TRANSPORTATION ONLY CALL INFOTRAC 1-800-535-5053

Product Name: GC Calibration
Gas Part Number: CS 3500U05F

Synonyms: Non-Flammable Gas Mixture Multigas Hydrocarbon Blend/Balance Nitrogen CS Mixes
Recommended Use: For general analytical/synthetic chemical gas mixture
Usage Restrictions:

Section 2: Hazards Identification



Danger

Hazard Classification:

Acute Dermal Toxicity (Category 3)
Acute Oral Toxicity (Category 3)
Eye Effects (Category 1)
Gases Under Pressure
Specific target organ toxicity (Single Exposure) (Category 1)

Hazard Statements:

Causes damage to organs
Causes serious eye damage
Contains gas under pressure; may explode if heated
Toxic if swallowed
Toxic in contact with skin

Precautionary Statements

Prevention:
Wash thoroughly after handling.
Wear eye protection/face protection.
Do not breathe dust/fume/gas/mist/ vapors/spray..
Do not eat, drink or smoke when using this product.

Response:

If swallowed: Immediately call a poison center or doctor.
If exposed: Get medical advice/attention.
Take off immediately all contaminated clothing and wash it before reuse.
Wash with plenty of water
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage:

Protect from sunlight.
Store in well-ventilated place.
Store locked up.

Disposal:

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

Section 3: Composition/Information on Ingredients

	CAS #	Concentration
Methyl Alcohol	67-56-1	1 ppm
Acetic Acid	64-19-7	1 ppm
Ethanol	64-17-5	1 ppm
Ethyl Acetate	141-78-6	1 ppm
Acetone	67-64-1	1 ppm
Methane	74-82-8	1 ppm
Nitrogen	7727-37-9	Balance

	Chemical Substance	Chemical Family	Trade Names
Methyl Alcohol	METHYL ALCOHOL	Alcohols	METHANOL; WOOD ALCOHOL; METHYL HYDROXIDE; CARBINOL; MONOHYDROXYMETHANE; WOOD SPIRIT; WOOD NAPHTHA; METHYLOL; COLONIAL SPIRIT; COLUMBIAN SPIRIT; PYROXYLIC SPIRIT; STCC 4909230; UN 1230; RCRA U154; CH4O
Acetic Acid	Acetic Acid	Acids	Acetic acid (aqueous), Ethanoic acid, Glacial acetic acid (pure compound), Methanecarboxylic acid

	Chemical Substance	Chemical Family	Trade Names
Ethanol	ETHYL ALCOHOL, 100%	Alcohols	ETHANOL; ETHYL ALCOHOL; /4; ALCOHOL; ALCOHOL ANHYDROUS; ALGRAIN; ANHYDROL; Absolute alcohol; Anhydrous ethanol; Ethanol denatured; Fermentation alcohol; Grain alcohol; 1-Hydroxyethane; Methyl carbinol; Ethyl alcohol anhydrous; Absolute ethanol; Denatured ethanol; ETHYL HYDRATE; ETHYL HYDROXIDE; JAYSOL; TECSOL; STCC 4909159; UN 1170; C2H6O
Ethyl Acetate	Ethyl Acetate	Esters	Acetic ester, Acetic ether, Ethyl ester of acetic acid, Ethyl ethanoate
Acetone	ACETONE	Ketones	DIMETHYL FORMALDEHYDE; DIMETHYL KETAL; DIMETHYL KETONE; BETAKETOPROPANE; PROPANONE; 2-PROPANONE; PYROACETIC ETHER; B-KETOPROPANE; Dimethyl formaldehyde; Ketone propane; beta-Ketopropane; Methyl ketone; Pyroacetic acid; A-18; A-18-S; A-18-SK; A-11; A-11-S; A-16-P; A-16-S; 1-949; A-40; A-20; A-19; A-946; RCRA U002; UN1090; C3H6O
Methane	METHANE, COMPRESSED GAS	Hydrocarbons, Aliphatic, Saturated	FIRE DAMP; MARSH GAS; METHYL HYDRIDE; NATURAL GAS; METHANE; UN 1971; R50; CH4
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
Methyl Alcohol	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 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.	Antidote: ethanol, oral; calcium gluconate/glucose, intravenous. 4-methylpyrazole, oral, intravenous.
Acetic Acid	If it is safe to do so, remove victim to an uncontaminated area, and place them in a comfortable position to wait for medical attention. Immediately remove contaminated clothes and shoes. Cleanse the affected skin areas thoroughly with soap under running water for 15 minutes. Seek medical treatment.	Rinse the affected eye thoroughly for 10 minutes under running water. Seek immediate medical treatment.	Seek medical treatment. Do not induce vomiting.	If it is safe to do so, remove victim to fresh air, and place them in a comfortable position to wait for medical attention. Administer oxygen or artificial respiration if breathing is difficult. Seek immediate medical treatment.	
Ethanol	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 medical attention.	Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.	For ingestion, consider gastric lavage.
Ethyl Acetate	Remove contaminated clothing and wash exposed area thoroughly with soap and water. A physician may need to examine the area if irritation or pain persists.	Irrigate exposed eyes with copious amounts of room temperature water for at least 15 minutes.	Activated charcoal is unlikely to be necessary due to the low toxicity of these compounds.	Move patient to fresh air. Monitor for respiratory distress. If cough or difficulty breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis. Administer oxygen and assist ventilation as required.	Treat bronchospasm with inhaled beta2 agonist and oral or parenteral corticosteroids.
Acetone	If it is safe to do so, remove victim to an uncontaminated area, and place them in a comfortable position to wait for medical attention. Immediately remove contaminated clothes and shoes. Cleanse the affected skin areas thoroughly with soap under running water for 15 minutes. Seek medical treatment.	Rinse the affected eye thoroughly for 10 minutes under running water. Seek immediate medical treatment.	Seek medical treatment. Do not induce vomiting.	If it is safe to do so, remove victim to fresh air, and place them in a comfortable position to wait for medical attention. Administer oxygen or artificial respiration if breathing is difficult. Seek immediate medical treatment.	For ingestion, consider gastric lavage and activated charcoal slurry.
Methane	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.

	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
Methyl Alcohol	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 that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. - Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Acetic Acid	Powder, alcohol-resistant foam, water spray, carbon dioxide.	Irritating vapor	Full-face self contained breathing apparatus. LARGE FIRE: Water spray, fog or alcohol-resistant foam. Move containers from fire area if you can do it without risk. Dike fire-control water for later disposal; do not scatter the material. Do not get water inside containers. FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
Ethanol	Alcohol resistant foam, carbon dioxide, regular dry chemical, water, alcohol resistant foam. Large fires: Use alcohol-resistant foam or flood with fine water spray.	Carbon monoxide, carbon dioxide, and toxic and irritating fumes	- 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.
Ethyl Acetate	CARBON DIOXIDE, DRY CHEM, OR ALCOHOL FOAM	Acrid smoke and fumes	Any self-contained breathing apparatus with a full facepiece.
Acetone	Alcohol resistant foam, carbon dioxide, regular dry chemical, water, alcohol resistant foam. Large fires: Use alcohol-resistant 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. - Use protective gear, including self-contained breathing apparatus.
Methane	Carbon dioxide, regular dry chemical. Large fires: Use regular foam or flood with fine water spray.	Carbon monoxide, carbon dioxide, water	- Respiratory protection may be needed for frequent or heavy exposure. Any self-contained breathing apparatus with a full facepiece. - Respiratory protection may be needed for frequent or heavy exposure. Any self-contained breathing apparatus with a full facepiece.
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
Methyl Alcohol	Keep unnecessary people away, isolate hazard area and deny entry. Ventilate area.	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.
Acetic Acid	Personal protection: chemical protection suit including self-contained breathing apparatus.	Do NOT let this chemical enter the environment.	Remove all ignition sources.
Ethanol	Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.	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.
Ethyl Acetate	Wear appropriate clothing to prevent repeated or prolonged skin contact.	If released into water, ethyl acetate is not expected to adsorb to suspended solids and sediment in water.	ETHYL ACETATE SHOULD NOT BE ALLOWED TO ENTER A CONFINED SPACE, SUCH AS A SEWER, BECAUSE OF THE POSSIBILITY OF AN EXPLOSION.
Acetone	Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.	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.
Methane	Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering.	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.
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.

	Methods for Cleanup	Other Information
Methyl Alcohol	Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal.	Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

	Methods for Cleanup	Other Information
Acetic Acid	Collect leaking liquid in sealable containers. Cautiously neutralize spilled liquid with sodium carbonate only under the responsibility of an expert.	
Ethanol	Small spills: Absorb with sand or other noncombustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal.	Not available
Ethyl Acetate	1. REMOVE ALL IGNITION SOURCES. 2. VENTILATE AREA OF SPILL OR LEAK. 3. FOR SMALL QUANTITIES, ABSORB ON PAPER TOWELS. EVAPORATE IN A SAFE PLACE (SUCH AS A FUME HOOD). ALLOW SUFFICIENT TIME FOR EVAPORATING VAPORS TO COMPLETELY CLEAR THE HOOD DUCTWORK. BURN THE PAPER IN A SUITABLE LOCATION AWAY FROM COMBUSTIBLE MATERIALS. LARGE QUANTITIES CAN BE COLLECTED AND ATOMIZED IN A SUITABLE COMBUSTION CHAMBER.	
Acetone	Small spills: Absorb with sand or other noncombustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal.	Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).
Methane	Not available	Not available
Nitrogen	N/A	N/A

Section 7: Handling and Storage

	Handling	Storage
Methyl Alcohol	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.
Acetic Acid	Keep container tightly closed in a locked area. Protect from sunlight. Protect from ignition sources. Secure cylinders upright to keep them from falling or being knocked over. Store only where temperature will not exceed 125F (52C).	Always handle in a well ventilated area. Use only in closed systems. Open valve slowly. Close cylinder valve after each use; keep closed even when empty. Avoid contact with skin and eyes. Keep away from heat and ignition sources.
Ethanol	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.
Ethyl Acetate	KEEP TIGHTLY CLOSED IN COOL PLACE & AWAY FROM FIRE.	
Acetone	Keep container tightly closed in a locked area. Protect from sunlight. Protect from ignition sources. Secure cylinders upright to keep them from falling or being knocked over. Store only where temperature will not exceed 125F (52C).	Always handle in a well ventilated area. Use only in closed systems. Open valve slowly. Close cylinder valve after each use; keep closed even when empty. Avoid contact with skin and eyes. Keep away from heat and ignition sources.
Methane	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.	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
Methyl Alcohol	TLV-TWA: 200 ppm skin (ACGIH)
Acetic Acid	TLV: 10 ppm as TWA; 15 ppm as STEL (ACGIH 2010). EU OEL: 10 ppm; 25 mg/m3 as TWA (EU 1991). OSHA PEL: TWA 10 ppm (25 mg/m3) NIOSH REL: TWA 10 ppm (25 mg/m3) ST 15 ppm (37 mg/m3) NIOSH IDLH: 50 ppm
Ethanol	ETHYL ALCOHOL, 100%: ETHYL ALCOHOL (ETHANOL): 1000 ppm (1900 mg/m3) OSHA TWA 1000 ppm ACGIH TWA 1000 ppm (1900 mg/m3) NIOSH recommended TWA 10 hour(s)
Ethyl Acetate	NIOSH REL: TWA 400 ppm (1400 mg/m3) OSHA PEL: TWA 400 ppm (1400 mg/m3)
Acetone	ACETONE: 1000 ppm (2400 mg/m3) OSHA TWA 750 ppm (1780 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 1000 ppm (2375 mg/m3) OSHA STEL (vacated by 58 FR 35338, June 30, 1993) 500 ppm ACGIH TWA 750 ppm ACGIH STEL 250 ppm (590 mg/m3) NIOSH recommended TWA 10 hour(s)
Methane	METHANE, COMPRESSED GAS, ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4): 1000 ppm ACGIH TWA METHANE: No occupational exposure limits established. ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4): 1000 ppm ACGIH TWA
Nitrogen	NITROGEN, COMPRESSED GAS: NITROGEN: ACGIH (simple asphyxiant)

Engineering Controls
Handle only in fully enclosed systems.

	Eye Protection	Skin Protection	Respiratory Protection
Methyl Alcohol	Wear safety goggles. Provide eye wash fountain and quick drench shower.	Wear chemical resistant clothing.	Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Acetic Acid	Wear splash resistant safety goggles with a face shield. Provide an emergency eye wash fountain and shower in work area.	Wear appropriate chemical resistant clothing.	Full-face self contained breathing apparatus. LARGE FIRE: Water spray, fog or alcohol-resistant foam. Move containers from fire area if you can do it without risk. Dike fire-control water for later disposal; do not scatter the material. Do not get water inside containers. FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
Ethanol	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 supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
Ethyl Acetate	Splash resistant goggles	Wear appropriate clothing to prevent repeated or prolonged skin contact.	Any self-contained breathing apparatus with a full facepiece.

	Eye Protection	Skin Protection	Respiratory Protection
Acetone	Wear splash resistant safety goggles with a face shield. Provide an emergency eye wash fountain and shower in work area.	Wear appropriate chemical resistant clothing.	Any self-contained breathing apparatus with a full facepiece.
Methane	Eye protection not required, but recommended.	Protective clothing is not required.	Respiratory protection may be needed for frequent or heavy exposure. Any self-contained breathing apparatus with a full facepiece.
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
Methyl Alcohol	Liquid	Clear	Colorless	N/A	Liquid	Mild alcohol odor	N/A
Acetic Acid	Liquid	Colorless	Colorless	N/A	Liquid	Pungent, vinegar-like odor	N/A
Ethanol	Liquid	Clear	Colorless	N/A	Volatile liquid	Pleasant odor	Burning taste
Ethyl Acetate	Liquid	Clear	Colorless	N/A	Liquid	ETHER-LIKE ODOR REMINISCENT OF PINEAPPLE	Sweet taste
Acetone	Liquid	Clear	Colorless	N/A	Liquid	Sweet odor, minty odor, pungent odor, pleasant odor	Sweet taste
Methane	Gas	Colorless	Colorless	N/A	Gas	Odorless	Tasteless
Nitrogen	Gas	Clear	Colorless	N/A	Gas	Odorless	Tasteless

	Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
Methyl Alcohol	52 F (11 C) (CC); also reported as 54 F (12.2 C) (CC)	Not available	Not available	725 F (385 C)	36%	5.5%
Acetic Acid	39C	Not available	Not available	485C	17	6.0
Ethanol	55 F (13 C) (CC)	IB	Not available	685 F (363 C)	0.19	0.033
Ethyl Acetate	7.2 DEG C (OPEN CUP)	Not available	Not available	800F	9	2.2
Acetone	-4 F (-20 C) (CC)	IB		869 F (465 C)	0.13	0.025
Methane	-369 F (-223 C)	Not available	724.44 (log = 2.87) (estimated from water solubility)	999 F (537 C)	15%	5%
Nitrogen	Not flammable	Not available	Not available	Nonflammable	Nonflammable	Nonflammable

	Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
Methyl Alcohol	148.5 F	-143.9 F	96 mmHg at 20C	1.1 (air = 1) (calculated)	(Air = 1) at 70F (21.1C) and 1 atm: 1.11	Soluble in all proportions	Not available	4.2-5960 ppm (geometric mean: 160 ppm) (detection); 53-8940 ppm (geometric mean: 690 ppm) (recognition)	2.1	Dynamic - 0.59 mPa.s (0.59 centipoises) at 20 deg C
Acetic Acid	118C	16.7C	kPa at 20C: 1.5	2.1 (Air=1)	1.051 at 20.0 F	greater than or equal to 100 mg/mL at 73 F	Acidic	Not available	Not available	Not available
Ethanol	172 F (78 C)	-179 F (-117 C)	40 mmHg @ 19 C	1.59 (Air=1)	0.7893	Soluble	Not available	5-10 ppm	1.4 (carbon tetrachloride=1)	1.17 mPa.s (1.17 centipoises) @ 20 C; 1.074 mPa.s (1.074 centipoises) @ 25 C
Ethyl Acetate	77C	-83C	93.2 mm Hg at 25 deg C	3.04 (AIR=1)	0.902 AT 20 DEG C/4 DEG C	8.01X10+4 mg/l at 25 deg C	Acidic	Air: 3.6-1.120 mg cu/m	Not available	0.44 CP at 25 deg C
Acetone	133 F (56 C)	-139 F (-95 C)	180 mmHg @ 20 C	2 (Air=1)	0.7899	Soluble	Neutral in solution	20 ppm	14.4 (butyl acetate=1)	0.32 mPa.s (0.32 centipoises) @ 20 C; 0.31 mPa.s (0.31 centipoises) @ 25 C
Methane	-260 F (-162 C)	-297 F (-183 C)	760 mmHg @ -161 C	0.555 (Air=1)	Not applicable	3.5% @ 17 C	Not applicable	Not available	Not applicable	0.01118 cP @ 27 C

	Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
Nitrogen	-321 F (-196 C)	-346 F (-210 C)	760 mmHg @ -196 C	0.967 (Air=1)	Not applicable	1.6% @ 20 C	Not applicable	Not available	Not applicable	0.01787 cP @ 27 C

	Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
Methyl Alcohol	32.04	C-H4-O	Not available	Not available	100%	Not available	Soluble: Soluble in all proportions in ethanol, other alcohols, benzene, chloroform, diethyl ether, other ethers, esters, ketones, and most other organic solvents
Acetic Acid	60.1	C2H4O2	8.8 lb / gal	Not available	Not available	Not Available	Not Available
Ethanol	46.07	C-H3-C-H2-O-H	Not available	Not available	Not available	1	Soluble: Benzene, ether, acetone, chloroform, methanol, organic solvents
Ethyl Acetate	88.11	C4-H8-O2	Not available	Not available	Not available	Not available	SOL IN ALCOHOL, ETHER, ACETONE, AND BENZENE
Acetone	58.08	C-H3-C-O-C-H3	Not available	Not available	Not available	1	Soluble: Ethanol, ether, chloroform, benzene, oils, dimethylformamide
Methane	16.04	C-H4	0.717 g/L @ 0 C	Not available	Not applicable	Not applicable	Soluble: Alcohol, ether, benzene, organic solvents
Nitrogen	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
Methyl Alcohol	Normally stable.	Normally stable.	Oxidizing agents, peroxides, metals, alkali metals, acetyl bromide
Acetic Acid	Normally stable	Normally stable	Strong oxidizers (especially chromic acid, sodium peroxide & nitric acid), strong caustics [Note: Corrosive to metals.]
Ethanol	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Halo carbons, metals, metal salts, oxidizing materials, halogens, peroxides, acids, metal oxides, bases, combustible materials
Ethyl Acetate	Slowly decomposes in moisture	Slowly decomposes in moisture	Nitrates, strong oxidizers, strong alkalies, strong acids
Acetone	Stable at normal temperatures and pressure. Prolonged exposure to direct sunlight may result in the formation of carbon monoxide.	Stable at normal temperatures and pressure. Prolonged exposure to direct sunlight may result in the formation of carbon monoxide.	Acids, amines, halogens, halo carbons, oxidizing materials, metal salts, peroxides, combustible materials, bases, HEXACHLOROMELAMINE or TRICHLOROMELAMINE, POTASSIUM TERT-BUTOXIDE, NITRIC ACID and ACETIC ACID, HALOGENATED SOLVENT/ALKALI MIXTURES, STRONG REDUCING AGENTS, SULFUR DICHLORIDE, 2-METHYL-1,3-BUTADIENE (ISOPRENE)
Methane	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Halogens, oxidizing materials, combustible materials
Nitrogen	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Metals, oxidizing materials

	Hazardous Decomposition Products	Possibility of Hazardous Reactions
Methyl Alcohol	Decomposes on heating to produce carbon monoxide and formaldehyde.	Not known.
Acetic Acid	Irritating vapor.	Acetaldehyde was put in drums previously pickled with acetic acid. The acid caused the acetaldehyde to polymerize and the drums got hot and vented [MCA Case History 1764, 1971]
Ethanol	Oxides of carbon	Will not polymerize.
Ethyl Acetate	Irritating vapor	Not available
Acetone	Oxides of carbon. Formaldehyde, methanol, acetic acid, hydrogen peroxide, methane and ethylene oxide may be formed during fire.	Will not polymerize.
Methane	Oxides of carbon	Will not polymerize.
Nitrogen	Oxides of nitrogen	Will not polymerize.

Section 11: Toxicology Information

Acute Effects			
	Oral LD50	Dermal LD50	Inhalation
Methyl Alcohol	LD50 (oral, rat): 5628 mg/kg	LD50 (dermal, rabbit): 15800 mg/kg (cited as 20 mL/kg)	Mild central nervous system depressant, nausea, headache, vomiting, dizziness, sensitivity to light, blurred, double and/or snowy vision, and blindness
Acetic Acid	Inhalation LC50 4h =1405 ppm, oral LD50 in mice 4960 mg/kg	Not available	Breathing of vapors causes coughing, chest pain, and irritation of nose and throat; may cause nausea and vomiting. Contact with skin and eye causes burns. Sore throat. Cough. Burning sensation. Headache. Dizziness. Shortness of breath. Labored breathing.
Ethanol	7 gm/kg oral-rat LD50	LD50 (dermal, rabbit): greater than 15800 mg/kg (cited as greater than 20 mL/kg); at 20 mL/kg, 1/4 rabbits died	Irritation, difficulty breathing, headache, drowsiness, symptoms of drunkenness
Ethyl Acetate	Rat oral 5.6 g/kg, Mouse inhalation 1500 ppm/4hr	Not available	Irritation
Acetone	5800 mg/kg oral-rat LD50	>9400 uL/kg skin-guinea pig LD50	Irritation, low body temperature, nausea, stomach pain, difficulty breathing, headache, drowsiness, symptoms of drunkenness, kidney damage, liver damage, coma
Methane	Not available	Not available	Nausea, vomiting, difficulty breathing, irregular heartbeat, headache, drowsiness, fatigue, dizziness, disorientation, mood swings, tingling sensation, loss of coordination, suffocation, convulsions, unconsciousness, coma
Nitrogen	Not available	Not available	Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, loss of coordination, convulsions, coma

	Eye Irritation	Skin Irritation	Sensitization
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	Eye Irritation	Skin Irritation	Sensitization
Methyl Alcohol	Irritation	Mild central nervous system depressant, nausea, headache, vomiting, dizziness, sensitivity to light, blurred, double and/or snowy vision, and blindness	Acute toxicity, Category 3, inhalation; H331: Toxic if inhaled. Acute toxicity, Category 3, dermal; H311: Toxic in contact with skin. Acute toxicity, Category 3, oral; H301: Toxic if swallowed. Specific Target Organ Toxicity (single exposure), Category 1; H370: Causes damage to organs.-- Affected organs: eyes
Acetic Acid	Irritation (possibly severe), blurred vision	Pain. Redness. Skin burns. Blisters.	Skin corrosion, Category 1A; H314: Causes severe skin burns and eye damage.
Ethanol	Irritation, tearing	Mild irritation, rash	Eye irritation, Category 2; H319: Causes serious eye irritation.
Ethyl Acetate	Irritation (possibly severe), blurred vision	Drying as well as skin defatting and cracking may be seen with dermal application.	Eye irritation, Category 2; H319: Causes serious eye irritation. Specific Target Organ Toxicity (single exposure), Category 3; H336: May cause drowsiness or dizziness.
Acetone	Irritation	Irritation	Eye irritation, Category 2; H319: Causes serious eye irritation. Specific Target Organ Toxicity (single exposure), Category 3; H336: May cause drowsiness or dizziness.
Methane	No information on significant adverse effects	No information on significant adverse effects	Difficulty breathing
Nitrogen	Contact with rapidly expanding gas may cause burns or frostbite	No information on significant adverse effects	Difficulty breathing

Chronic Effects				
	Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
Methyl Alcohol	May be carcinogenic.	Insufficient information	Not available	No data
Acetic Acid	Not available	Not established	Not available	No data
Ethanol	NTP: Known Human Carcinogen (Alcoholic beverages); IARC: Human Sufficient Evidence, Group 1 (Alcoholic beverages), Animal Inadequate Evidence; ACGIH: A4 -Not Classifiable as a Human Carcinogen	Available.	Available.	No data
Ethyl Acetate	Not established	Not available	Not available	No data
Acetone	ACGIH: A4 -Not Classifiable as a Human Carcinogen	Available.	Available.	No data
Methane	Not available	Not available	Not 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
Methyl Alcohol	Fish toxicity: Acute EC50 22200 to 23400 mg/L Fresh water Daphnia - Water flea - Daphnia obtusa - Neonate - <24 hours 48 hours Invertebrate toxicity: Acute LC50 2500000 ug/L Marine water Crustaceans - Common shrimp, sand shrimp - Crangon crangon - Adult 48 hours Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available
Acetic Acid	Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available
Ethanol	Fish toxicity: 93 ug/L 96 hour(s) LC50 (Mortality) Bluegill (Lepomis macrochirus) Invertebrate toxicity: 24 ug/L 48 hour(s) EC50 (Immobilization) Water flea (Daphnia pulex) Algal toxicity: 10000-25000 ug/L 1-2 hour(s) (Photosynthesis) Green algae (Acrosiphonia sonderi) Phyto toxicity: Not available Other toxicity: Not available	Highly toxic to aquatic life.	Not available	Not available
Ethyl Acetate	Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available
Acetone	Fish toxicity: 14,250 ppm 24 hr(s) Sunfish, 4 ug/L 96 hour(s) LC50 (Mortality) Harlequinfish, red rasbora (Rasbora heteromorpha) Invertebrate toxicity: 35 ug/L 48 hour(s) EC50 (Immobilization) Water flea (Daphnia pulex) Algal toxicity: <14 ug/L 11-14 hour(s) MATC (Growth) Red algae (Champia parvula) Phyto toxicity: Not available Other toxicity: Not available	Highly toxic to aquatic life.	Not available	Not available
Methane	Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Relatively non-persistent in the environment. Moderately volatile from water.	Accumulates very little in the bodies of living organisms.	Not expected to leach through the soil or the sediment.
Nitrogen	Fish toxicity: Not available Invertebrate 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

Methyl Alcohol	Use a licensed waste disposal contractor. Dispose of according to all regulations.
Acetic Acid	Cautiously neutralize spilled liquid with sodium carbonate only under the responsibility of an expert. Do NOT let this chemical enter the environment.
Ethanol	Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. Dispose in accordance with all applicable regulations.

Ethyl Acetate	1. BY ABSORBING IT IN VERMICULITE, DRY SAND, EARTH, OR A SIMILAR MATERIAL. 2. BY ATOMIZING IN A SUITABLE COMBUSTION CHAMBER.
Acetone	Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U002. Dispose in accordance with all applicable regulations.
Methane	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, Acetone)
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
Methyl Alcohol	METHANOL	UN1230	3, 6.1	II	FLAMMABLE LIQUID, POISON	1 kg or L	N/A	N/A
Acetic Acid	Acetic Acid	UN2789	8	II	Not available	Not available	Not available	Not available
Ethanol	ETHANOL or ETHYL ALCOHOL or ETHANOL SOLUTIONS or ETHYL ALCOHOL SOLUTIONS	UN1170	3	II, III	3	N/A	N/A	N/A
Ethyl Acetate	Ethyl Acetate	UN1173	Not available	Not available	Not available	Not available	Not available	Not available
Acetone	Acetone	UN1090	3	II	3	5 kg or L	N/A	N/A
Methane	Methane, compressed	UN1971	2.1	Not applicable	2.1	Forbidden	150 kg	N/A
Nitrogen	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
Methyl Alcohol	METHANOL	UN1230	3	II
Acetic Acid	Acetic Acid	UN2789	8	II
Ethanol	Ethanol	UN1170	3	II
Ethyl Acetate	Ethyl Acetate	UN1173	Not available	Not available
Acetone	Acetone	UN1090	3	II
Methane	Methane, compressed	UN1971	2.1	Not applicable
Nitrogen	Nitrogen, compressed	UN1066	2.2	Not applicable

Section 15: Regulatory Information

U.S. Regulations			
	CERCLA Sections	SARA 355.30	SARA 355.40
Methyl Alcohol	Not regulated.	Not regulated.	Not regulated.
Acetic Acid	5000 LBS RQ	Not available	Not available
Ethanol	Not regulated.	Not regulated.	Not regulated.
Ethyl Acetate	Not available	Not available	Not available
Acetone	5000 LBS RQ	Not regulated.	Not regulated.
Methane	Not regulated.	Not regulated.	Not regulated.
Nitrogen	Not regulated.	Not regulated.	Not regulated.

SARA 370.21					
	Acute	Chronic	Fire	Reactive	Sudden Release
Methyl Alcohol	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.
Acetic Acid	Not available.	Not available.	Not available.	Not available.	Not available.
Ethanol	Yes	Yes	Yes	No	No
Ethyl Acetate	Not available.	Not available.	Not available.	Not available.	Not available.
Acetone	Yes	No	Yes	No	No
Methane	Yes	No	Yes	No	Yes
Nitrogen	Yes	No	No	No	Yes

SARA 372.65	
Methyl Alcohol	Not regulated.
Acetic Acid	Not available
Ethanol	Not regulated.
Ethyl Acetate	Not available
Acetone	Not regulated.
Methane	Not regulated.
Nitrogen	Not regulated.

OSHA Process Safety	
Methyl Alcohol	Not regulated.
Acetic Acid	Not available
Ethanol	Not regulated.
Ethyl Acetate	Not available
Acetone	Not regulated.

Methane	Not regulated.
Nitrogen	Not regulated.

State Regulations

CA Proposition 65	
Methyl Alcohol	California Proposition 65 - This product contains, or may contain, a substance(s) known to the state of California to cause cancer, developmental and/or reproductive harm.
Acetic Acid	Not available
Ethanol	Not regulated.
Ethyl Acetate	Not available
Acetone	Not regulated.
Methane	Not regulated.
Nitrogen	Not regulated.

Canadian Regulations

WHMIS Classification	
Methyl Alcohol	B2, D1B, D2A, D2B
Acetic Acid	Not available
Ethanol	B2, D2B
Ethyl Acetate	Not available
Acetone	BD2
Methane	A, B1
Nitrogen	A

National Inventory Status

	US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
Methyl Alcohol	Listed on inventory.	N/A	N/A
Acetic Acid	Not available	Not available	Not available
Ethanol	Listed on inventory.	Not listed.	Not determined.
Ethyl Acetate	Not available	Not available	Not available
Acetone	Listed on inventory.	Not listed.	Not determined.
Methane	Listed on inventory.	Not listed.	Listed on inventory.
Nitrogen	Listed on inventory.	Not listed.	Listed on inventory.

Section 16: Other Information

NFPA Rating	
Methyl Alcohol	Not available
Acetic Acid	HEALTH=3 FIRE=2 REACTIVITY=0
Ethanol	HEALTH=2 FIRE=3 REACTIVITY=0
Ethyl Acetate	HEALTH=1 FIRE=3 REACTIVITY=0
Acetone	HEALTH=2 FIRE=3 REACTIVITY=0
Methane	HEALTH=0 FIRE=4 REACTIVITY=0
Nitrogen	HEALTH=0 FIRE=0 REACTIVITY=0 SPECIAL=SA

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