GENERAL INFORMATION

Section 1  Identification

Product: CHROMATOGRAPHY SOLVENT

Synonyms: Petroleum Ether / Acetone (9:1)

Section 2  Hazards identification

Signal word: DANGER

Pictograms: GHS02 / GHS07 / GHS08

Target organs: Central nervous system

GHS Classification:
- Flammable liquid and vapour (Category 2)
- Health hazard (Category 3)
- Skin corrosion/irritant (Category 3)
- Serious eye damage/eye irritation (Category 3)
- Catergorization: GHS02 / GHS07 / GHS08

GHS Label information: Hazard statement(s):
- H225: Highly flammable liquid and vapour.
- H304: May be fatal if swallowed and enters airways.
- H336: May cause drowsiness or dizziness.
- H350: May cause cancer.
- H340: May cause genetic defects.
- H319: Causes serious eye irritation.
- H310: May cause drowsiness or dizziness.
- H330: May cause skin irritation.
- H315: Causes serious eye irritation.
- H304: May be fatal if swallowed and enters airways.
- H317: Causes respiratory irritation.

Precautionary statement(s):
- P235: Keep container tightly closed.
- P261: Avoid breathing mist/vapours/spray.
- P271: Use only outdoors or in a well-ventilated area.
- P260: Wear protective gloves/protective clothing/eye protection/face protection.
- P337+P313: If eye irritation persists: Get medical attention.
- P305+P351+P338: IF ON SKIN (or hair): Take off immediately all contaminated clothing.
- P308+P313: IF exposed or concerned: Get medical attention.
- P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P303+P365+P353: IF IN EYES: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P280: Wear protective gloves/protective clothing/eye protection/face protection.

Hazard not otherwise classified:
- Health hazards not otherwise classified (HHNOC) - Not Known
- Physical hazards not otherwise classified (PHNOC) - Not Known

Section 3  Composition / information on ingredients

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS #</th>
<th>%</th>
<th>EINECS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum ether</td>
<td>8032-32-4</td>
<td>90%</td>
<td>232-453-7</td>
</tr>
<tr>
<td></td>
<td>67-64-1</td>
<td>10%</td>
<td>200-862-2</td>
</tr>
</tbody>
</table>

Section 4  First aid measures

INGESTION: MAY BE HARMFUL IF SWALLOWED. Call physician or Poison Control Center immediately. Induce vomiting only if advised by appropriate medical personnel. Never give anything by mouth to an unconscious person.

INHALATION: MAY BE HARMFUL IF INHALED. CAUSES RESPIRATORY TRACT IRRITATION. Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

EYE CONTACT: CAUSES SERIOUS EYE IRRITATION. Check for and remove contact lenses. Flush thoroughly with water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get immediate medical attention.

SKIN ABSORPTION: REPEATED EXPOSURE MAY CAUSE SKIN DRYNESS OR CRACKING. Remove contaminated clothing. Flush thoroughly with mild soap and water. If irritation occurs, get medical attention.

Section 5  Fire fighting measures

Suitable Extinguishing Media: Carbon dioxide, dry chemical, dry sand, alcohol foam.

Protective Actions for Fire-fighters: In fire conditions, wear a NIOSH/MSHA-approved self-contained breathing apparatus and full protective gear. Use water spray to keep fire-exposed containers cool.

Specific Hazards: During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Vapors formed from this product are heavier than air and may travel along the ground to a distant source of ignition and flash back instantly. Flame may not be visible in daylight.

Section 6  Accidental release measures

Personal Precautions: Evacuate personnel to safe area. Use proper personal protective equipment as indicated in Section 8. Provide adequate ventilation.

Environmental Precautions: Avoid runoff into storm sewers and ditches which lead to waterways.

Containment and Cleanup: Remove all sources of ignition. Absorb with inert dry material, sweep or vacuum up and place in a suitable container for proper disposal. Wash spill area with soap and water.
Section 7 Handling and storage

Precautions for Safe Handling: Read label on container before using. Do not wear contact lenses when working with chemicals. Keep out of reach of children. Avoid contact with eyes, skin and clothing. Do not inhale vapors, spray or mist. Use with adequate ventilation. Avoid ingestion. Wash thoroughly after handling. Remove and wash clothing before reuse.

Conditions for Safe Storage: Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from ignition sources.

Section 8 Exposure controls / personal protection

Exposure Limits:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH (TLV)</th>
<th>OSHA (PEL)</th>
<th>NIOSH (REL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum distillates, Naphtha</td>
<td>None listed</td>
<td>TWA: 500 ppm / 2000 mg/m³</td>
<td>TWA: 350 ppm / C 1800 mg/m³</td>
</tr>
</tbody>
</table>

Engineering controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower and fire extinguishing material. Personnel should wear safety glasses, goggles, or faceshield, lab coat or apron, appropriate protective gloves. Use adequate ventilation to keep airborne concentrations low.

Respiratory protection: Use a chemical fume hood and/or wear a NIOSH/MSHA-approved respirator.

Section 9 Physical and chemical properties

Appearance: Clear, colorless liquid.

Odor: Gasoline or kerosene-like odor.

Melting / Freezing point: <-73°C (-99°F)*

Boiling point: 20-75°C (68-167°F)*

Flash point: -18°C (0°F) CC

Explosion limits: Lower / Upper: 1.1% / 5.9%

Vapor pressure (mm Hg): Ca 40 @ 20°C

Vapor density (Air = 1): 2.5

Relative density (Specific gravity): 0.60-0.75*

Solubility(ies): Insoluble in water.

Partition coefficient: Data not available

Auto-ignition temperature: 288°C (550°F)*

Decomposition temperature: Data not available.

Viscosity: Data not available.

Molecular formula: Mixture

Molecular weight: Mixture

*Petroleum ether

Section 10 Stability and reactivity

Chemical stability: Stable

Hazardous polymerization: Will not occur.

Conditions to avoid: Heat and sunlight can cause instability. Avoid heat, flame, ignition sources, sunlight and incompatibles.

Incompatible materials: Strong oxidizers. Will attack some forms of plastics, rubber and coatings.

Hazardous decomposition products: Oxides of carbon.

Section 11 Toxicological information

Acute toxicity: Data not available

Skin corrosion/irritation: Data not available

Serious eye damage/irritation: Data not available

Respiratory or skin sensitization: Data not available

Germ cell mutagenicity: Data not available

Carcinogenicity:

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

IARC classified: Group 3: Not classifiable as to its carcinogenicity to humans. [Petroleum ether ]

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by NTP.

Aspiration hazard: Yes

Potential health effects:

Inhalation: May cause symptoms of intoxication and peripheral nerve disorders and central nervous system depression. Symptoms include loss of appetite, muscle weakness, impairment of motor action, dizziness, and drowsiness. May cause throat irritation.

Ingestion: Causes local irritation with burning sensation in mouth, esophagus, and stomach. Vomiting, blurred vision, and diarrhea may also occur. Cases of chemical pneumonitis have been reported from ingestion of this substance. Nervous system disorders paralleling those from inhalation exposure may also occur.

Skin: Contact with skin may cause irritation and defatting on prolonged contact.

Eyes: Vapors may cause irritation. Splashes may cause redness and pain.

Signs and symptoms of exposure: See Potential health effects above.

Additional information: RTECS #: O86180000 [Petroleum ether]

Section 12 Ecological information

Toxicity to fish: No data available

Toxicity to daphnia and other aquatic invertebrates: No data available

Toxicity to algae: Schizothrix capricornutum (Algae) EC50: 4,700 mg/l/72 hours [Petroleum ether]

Persistence and degradability: No data available

Bioaccumulative potential: No data available

Mobility in soil: No data available

PBT and vPvB assessment: No data available

Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Section 13 Disposal considerations

These disposal guidelines are intended for the disposal of catalog-size quantities only. Federal regulations may apply to empty container. State and/or local regulations may be different. Dispose of in accordance with all local, state and federal regulations or contract with a licensed chemical disposal agency.

Section 14 Transport information

UN/NA number: UN1993

Shipping name: Flammable liquids, n.o.s., (Petroleum ether, Acetone)

Hazard class: 3

Packing group: II

Reportable Quantity: See below

Marine pollutant: No

Exceptions: Limited quantity equal to or less than 1 L

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Section 15 Regulatory information

A chemical is considered to be listed if the CAS number for the anhydrous form is on the Inventory list.

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>CERCLA (RQ)</th>
<th>RCRA code</th>
<th>DSL</th>
<th>NDSL</th>
<th>CA Prop 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum ether</td>
<td>Listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Listed</td>
<td>Not listed</td>
<td>This product does not contain any chemicals known to the State of California to cause cancer or reproductive toxicity.</td>
</tr>
<tr>
<td>Acetone</td>
<td>Listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Listed</td>
<td>Not listed</td>
<td></td>
</tr>
</tbody>
</table>

Section 16 Other information

The information contained herein is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees. NTP: National Toxicology Program, IARC: International Agency for Research on Cancer, OSHA: Occupational Safety and Health Administration, STOT: Specific Target Organ Toxicity, SE: Single Exposure, RE: Repeated Exposure, ERG: Emergency Response Guidebook.

Revision Date: September 23, 2020
Supercedes: October 31, 2019
Section 1: Identification

Product: ETHYL ALCOHOL, DENATURED, 95%

Section 2: Hazards Identification

GHS Classification:
- Flammable liquid (Category 2)
- Acute toxicity, oral (Category 3)
- Acute toxicity, inhalation (Category 3)

Target organs:
- Eyes, Central nervous system, Liver, Kidneys.

Precautionary statement:
- P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P233+P235: Keep container tightly closed. Keep cool.
- P240: Ground/bond container and receiving equipment.
- P241: Use explosion-proof electrical/ventilating/lighting equipment.
- P242: Use only non-sparking tools.
- P243: Take precautionary measures against static discharge.
- P260: Do not breathe mist/vapours/spray.
- P264: Wash hands thoroughly after handling.
- P270: Do not eat, drink or smoke when using this product.
- P271: Use only outdoors or in a well-ventilated area.
- P280: Wear protective gloves/protective clothing/eye protection/face protection.
- P304+P311: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P305+P351+P338: IF IN EYES: Rinse cautiously with water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P305+P353: IF ON SKIN: Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P303+P361+P338: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P308+P311: IF exposed or concerned: Call a POISON CENTER or doctor.
- P337+P313: If eye irritation persists: Get medical attention.
- P361+P364: Take off immediately all contaminated clothing and wash it before reuse.
- P370+P378: In case of fire: Use dry chemical, alcohol foam, carbon dioxide or water spray to extinguish.
- P403+P405: Use only non-sparking tools.
- P404/405: Use explosion-proof electrical/ventilating/lighting equipment.
- P405: Wear self-contained breathing apparatus.
- P406: Wear protective equipment.
- P407: Wear dust/mist mask.
- P501: Dispose of contents/container to a licensed chemical disposal agency in accordance with local/regional/national regulations.

Section 3: Composition / Information on ingredients

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<thead>
<tr>
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<th>%</th>
<th>EINECS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl alcohol</td>
<td>64-17-5</td>
<td>80.75 - 81.51%</td>
<td>200-578-6</td>
</tr>
<tr>
<td>Isopropyl alcohol</td>
<td>67-63-0</td>
<td>8.55%</td>
<td>200-681-7</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>5.00%</td>
<td>231-791-2</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-66-1</td>
<td>3.80 - 4.08%</td>
<td>200-659-6</td>
</tr>
<tr>
<td>Methyl isobutyl ketone</td>
<td>108-10-1</td>
<td>0.85 - 0.95%</td>
<td>203-550-1</td>
</tr>
</tbody>
</table>

Section 4: First aid measures

Ingestion: TOXIC IF SWALLOWED. Call physician or Poison Control Center immediately. Induce vomiting only if advised by appropriate medical personnel. Never give anything by mouth to an unconscious person.

Inhalation: TOXIC IF INHALED. CAUSED RESPIRATORY TRACT IRRITATION. Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Eye Contact: CAUSES SERIOUS EYE IRRITATION. Check for and remove contact lenses. Flush thoroughly with water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get immediate medical attention.

Skin Absorption: TOXIC IN CONTACT WITH SKIN. CAUSED SKIN IRRITATION. Remove contaminated clothing. Flush thoroughly with mild soap and water. If irritation occurs, get medical attention.

Section 5: Fire fighting measures

Suitable Extinguishing Media: Carbon dioxide, dry chemical, dry sand, alcohol foam.

Protective Actions for Fire-fighters: In fire conditions, wear a NIOSH/MSHA-approved self-contained breathing apparatus and full protective gear. Use water spray to keep fire-exposed containers cool.

Specific Hazards: During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Vapors formed from this product are heavier than air and may travel along the ground to a distant source of ignition and flash back instantly. Flame may not be visible in daylight.

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<th>OSHA (PEL)</th>
<th>NIOSH (REL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>STEL: 1000 ppm / 1880 mg/m^3 (A3)</td>
<td>TWA: 1000 ppm / 1900 mg/m^3</td>
<td>TWA: 1000 ppm / 1900 mg/m^3</td>
</tr>
</tbody>
</table>

Engineering controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower and fire extinguishing material. Personnel should wear safety glasses, goggles, or face shield, lab coat or apron, appropriate protective gloves. Use adequate ventilation to keep airborne concentrations low.

Respiratory protection: None should be needed in normal laboratory handling at room temperatures. If misty conditions prevail, wear in fume hood or wear a NIOSH/MSHA-approved respirator.

Section 9 Physical and chemical properties

Appearance: Clear, colorless liquid.
Odor: Methyl isobutyl ketone.
Odor threshold: Data not available.
pH: Data not available.
Melting / Freezing point: 114°C (173°F)*
Boiling point: 74-80°C (165.2-176°F)*
Flash point: 5°C (41°F)*

Evaporation rate (Butyl acetate = 1): Ca 2*
Flammability (solid/gas): Data not available.
Explosion limits: Lower / Upper: 4.0%(V) / 20.0%(V) *
Vapor pressure (mm Hg): Ca 50 @ 20°C*
Vapor density (Air = 1): Ca 1.5*
Relative density (Specific gravity): 0.7919-0.7955°C @ 60/80°F*
Solubility(ies): Soluble in water.
Partition coefficient: (n-octanol / water): Low Pow: -32*
Auto-ignition temperature: 400°C (752°F) *
Decomposition temperature: Data not available.
Viscosity: Data not available.
Molecular formula: Mixture
Molecular weight: Mixture

Chemical stability: Stable
Hazardous polymerization: Will not occur.

Conditions to avoid: Excessive temperatures, heat, sparks, open flame and other sources of ignition.

Incompatible materials: Strong oxidizers, inorganic acids and halogens.

Hazardous decomposition products: Oxides of carbon.

Section 10 Stability and reactivity

Strong oxidizers, inorganic acids and halogens.

Section 11 Toxicological information

Acute toxicity: Oral-rat LD50: 7060 mg/kg; Inhalation-rat LC50: 124.7 mg/l/4hours [Ethanol]
Skin corrosion/irritation: Skin-rabbit - Slight irritant.
Serious eye damage/irritation: Eyes-rabbit - Severe irritant.
Respiratory or skin sensitization: Data not available
Germ cell mutagenicity: Data not available
Carcinogenity: Data not available
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
IARC classified: Group 3: Not classifiable as to its carcinogenicity to humans. [Isopropanol]
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
CA Prop 65: WARNING! This product can expose you to chemicals including Methanol and Methyl isobutyl ketone, which are known to the State of California to cause cancer and birth defects or other reproductive harm.

Reproductive toxicity: Data not available
STOT-single exposure: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.
STOT-repeated exposure: Data not available
Aspiration hazard: Data not available
Potential health effects:
Inhalation: Inhalation may cause dizziness, drowsiness, nausea, vomiting, inability to concentrate and irritation of the throat.
Ingestion: Ingestion causes dizziness, drowsiness, decreased reaction, euphoria, nausea, vomiting, staggering gait and coma.
Skin: Contact with skin causes irritation defaturing on prolonged contact.
Eyes: Contact with eyes may cause blindness.

Additional information: RTECS #: KQ630000 [Ethanol]

Section 12 Ecological information

Toxicity to fish: Oncorhyncus mykias (fish, fresh water), LC50 = 11,200 mg/l/24 hours [Ethanol]
Toxicity to daphnia and other aquatic invertebrates: Daphnia magna (Crustacia), EC50 = 10,800 mg/l/24 hours [Ethanol, 99.8% pure]
Toxicity to algae: Chlorella pyrenoidosa (Algae), EC50 = 9,310 mg/l/growth rate [Ethanol, absolute]
Toxicity to daphnia and other aquatic invertebrates: Daphnia magna (Crustacia), EC50 = 9,310 mg/l/growth rate [Ethanol, absolute]
Persistence and degradability: No data available
Bioaccumulative potential: No data available
Mobility in soil: No data available
PBT and vPvB assessment: No data available
Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Section 13 Disposal considerations

These disposal guidelines are intended for the disposal of catalog-size quantities only. Federal regulations may apply to empty container. State and/or local regulations may be different. Dispose of in accordance with all local, state and federal regulations or contract with a licensed chemical disposal agency.

Section 14 Transport information

UN/NA number: UN1170
Shipping name: Ethanol
Hazard class: 3
Packing group: II
Reportable Quantity: 5,000 lbs (2270 kg)
Marine pollutant: No

Exceptions: Limited quantity equal to or less than 1 L
2020 ERG Guide # 127

Section 15 Regulatory information

A chemical is considered to be listed if the CAS number for the anhydrous form is on the Inventory list.

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>CERCLA (RQ)</th>
<th>RCRA code</th>
<th>DSL</th>
<th>NDSL</th>
<th>CA Prop 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>Listed</td>
<td>Not listed</td>
<td>D001</td>
<td>Listed</td>
<td>Not listed</td>
<td>WARNING -Cancer and Reproductive Harm - <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>.</td>
</tr>
<tr>
<td>Methanol</td>
<td>Listed</td>
<td>Not listed</td>
<td>U154</td>
<td>Listed</td>
<td>Not listed</td>
<td></td>
</tr>
<tr>
<td>Isopropanol</td>
<td>Listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td></td>
</tr>
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Section 16 Other information

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