

Material Safety Data Sheet

(12600)

Section 1: Chemical Product and Company Identification

Product Name: Collodion

Catalog Number: 12600

CAS#: See Section 2

Contact Information:

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Section 2: Composition and Information on Ingredients

| CAS# | Chemical Name | TWA (mg/m ³) | STEL (mg/m ³) | CEIL (mg/m ³) | % by Weight |
|-----------|-------------------------------|--------------------------|---------------------------|---------------------------|-------------|
| 60-29-7 | Ethyl ether | 1200 | 1520 | 500 | 70 |
| 64-17-5 | Ethyl alcohol 200 Proof | 1900 | | | 20 |
| 9004-70-0 | Cellulose Nitrate (Parlodion) | | | | 5 |
| 7732-18-5 | Water | | | | 5 |

Toxicological Data on Ingredients:

Ethyl ether:

Oral (LD50): Acute: 1215 mg/kg [Rat]

Vapor (LC50): Acute: 73000 ppm 2 hours [Rat]

Ethyl alcohol 200 Proof:

Oral (LD50): Acute: 7060 mg/kg [Rat]. 3450 mg/kg [Mouse]

Vapor (LC50): Acute: 20000 ppm 8 hours [Rat]. 39000 mg/m³ 4 hours [Mouse]

Cellulose Nitrate:

Oral (LD50): Acute: >5000 mg/kg [Rat]. >5000 mg/kg [Mouse]

Section 3: Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (irritant), of eye contact (irritant). Slightly hazardous in case of skin contact (permeator), ingestion.

Potential Chronic Health Effects: Slightly hazardous in case of skin contact (sensitizer)

Carcinogenic Effects: Classified 1 (Proven for huma) by IARC [Ethyl alcohol 200 Proof]. Classified A4 (Not classified for human or animal) by ACGIH [Ethyl alcohol 200 Proof].

Mutagenic Effects: Mutagenic for bacteria and/or yeast. [Ethyl alcohol 200 Proof].

Teratogenic Effects: Classified Proven for human [Ethyl alcohol 200 Proof].

Developmental Toxicity: Classified Development toxin (Proven) [Ethyl alcohol 200 Proof].

The substance is toxic to blood, liver, central nervous system (CNS).
The substance may be toxic to kidneys, the reproductive system, heart, skin.
Repeated or prolonged exposure to the substance can produce target organ damage.

Section 4: First Aid Measures

Eye Contact: Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes. Get medical attention.

Skin Contact: In case of skin contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact: Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing becomes difficult, give oxygen. Get medical attention.

Ingestion: Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable

Auto ignition Temperature: The lowest known value is 180°F (Ethyl ether)

Flash Point: Closed Cup: -45°C (-49°F)

Flammable Limits: Lower: 1.9%, Upper: 36%

Products of Combustion: These products are carbon oxides (CO, CO₂)

Fire Hazards in Presence of Various Substances: Flammable in presence of open flames and sparks of heat. Slightly flammable to flammable in presence of oxidizing materials of acids.

Explosion Hazards in Presence of Various Substances: Risks of explosion of the product in presence of mechanical impact: Not available.

Explosive in presence of open flames and sparks.

Slightly explosive in presence of acids, oxidizing materials.

Fire Fighting Media and Instructions: Flammable liquid, insoluble water.

Small Fire: Use dry chemical powder.

Large Fire: Use water spray or fog.

Special Remarks on Fire Hazards: Highly flammable. Will be easily ignited by heat, sparks, and flames. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air.

Burns with smokey greenish flame.

Violent reaction or ignition on contact with halogens (e.g. bromine, chlorine), interhalogens (e.g. iodine heptafluoride), oxidants (e.g., silver perchlorate, nitrosyl perchlorate, nitryl perchlorate, chromyl chloride, fluorine nitrate, permanganic acid, nitric acid, hydrogen peroxide, peroxodisulfuric acid, iodine (VII) oxide, sodium peroxide, ozone, and liquid air), sulfur and sulfur compounds (e.g., sulfur when dried with peroxidized ether, sulfuryl chloride). (Ethyl ether).

Special Remarks on Fire Hazards: Vapors may form explosive mixtures with air. Vapor explosion hazard indoors, outdoors, or in sewers. Run off sewer may create a fire or explosion hazard. Containers may explode when heated. Tends to form explosive peroxides under influence of light and air and when evaporated to dryness.

Explosive reaction with boron triazide, bromine trifluoride, bromine pentafluoride, perchloric acid, uranyl nitrate + light, wood pulp extracts + heat.

Only electrical equipment of explosion proof type (group C classification) is permitted to be operated in ether areas.

May explode when brought in contact with anhydrous nitric acid. (Ethyl ether).

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill: Toxic flammable liquid, insoluble or very slightly soluble in water.

Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with dry earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7 : Handling and Storage

Precautions: Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, acids, alkalis.

Storage: Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection: Splash goggles, lab coat, vapor respirator, boots, gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist before handling this product.

Personal Protection in Case of a Large Spill: Splash goggles, full suit, vapor respirator, boots, gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist before handling this product.

Exposure Limits:

Ethyl ether

TWA: 400 (ppm) from OSHA (PEL) [United States]

TWA: 400 STEL: 500 CEIL: 500 (ppm) from ACGIH (TLV) [United States]

TWA: 1200 STEL: 1520 CEIL: 1500 (mg/m³) from ACGIH (TLV) [United States]

STEL: 500 (ppm) [Australia]

TWA: 1200 (mg/m³) from OSHA (PEL) [United States]

Ethyl alcohol 200 Proof

TWA: 1900 (mg/m³) from OSHA (PEL) [United States]

TWA: 1000 (ppm) from OSHA (PEL) [United States]

TWA: 1900 (mg/m³) from NIOSH [United States]

TWA: 1000 (ppm) from NIOSH [United States]

TWA: 1000 (ppm) [United Kingdom (UK)]

TWA: 1920 (mg/m³) [United Kingdom (UK)]

TWA: 1000 STEL: 1250 (ppm) [Canada]

Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical State and Appearance: Liquid (Viscous liquid)

Molecular Weight: Not applicable

pH (1% soln/water): Neutral

Boiling Point: 36.111°C (97°F)

Melting Point: May start to solidify at -114.1°C (-173.4°F) based on data for: Ethyl alcohol 200 Proof. Weighted average: -115.81°C (-176.5°F)

Critical Temperature: The lowest known value is 192.7°C (378.9°F) (Ethyl ether).

Specific Gravity: 0.76 (Water = 1)

Vapor Pressure: The highest known value is 58.6 kPa (@ 20°C) (Ethyl ether). Weighted average: 44.5 kPa (@ 20°C)

Vapor Density: >1 (Air = 1)

Volatility: Not available

Odor Threshold: The highest known value is 100 ppm (Ethyl alcohol 200 Proof). Weighted average: 22.87 ppm

Water/Oil Dist. Coeff.: Not available

Ionicity (in Water): Not available

Dispersion Properties: Is not dispersed in cold water.

Solubility: Very slightly soluble in cold water

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available

Conditions on Instability: Heat, ignition sources, incompatible materials, moisture (water). Tends to form explosive peroxides when exposed to air and light. Avoid allowing Nitrocellulose resin to become dry and avoid friction and impact to any quantity of dry resin. Dry nitrocellulose resin is extremely flammable and burns explosively and is friction and impact sensitive.

Incompatibility with various substances: Reactive with oxidizing agents, acids. Slightly reactive to reactive with metals, alkalis.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Ethyl Ether:

Air and light sensitive. Also incompatible with bromoazide, chlorine, chlorine trifluoride, chromic anhydride, chromyl chloride, lithium aluminum hydride, nitrosyl perchlorate, nitryl perchlorate, ozone, perchloric acid, permanganates, sulfuric acid, potassium peroxide, sodium peroxide, triethyl aluminum, trimethyl aluminum, bromine, iodine heptafluoride, silver perchlorate, fluorine nitrate, permanganic acid, nitric acid, hydrogen peroxide, peroxodisulfuric acid, iodine (VII) oxide, peat soils, thiotriazyl perchlorate, sulfonyl chloride, sulfur, uranyl nitrate, acetyl peroxide, and wood pulp extracts.

Can react vigorously with acetyl peroxide, air, bromoazide, ClF₃, CrO₃, Cr(OCI)₂, LiAlH₂, NOClO₄, O₂, NClO₂, (H₂S₀₄ + permanganates), K₂O₂, [(CH₃)₃Al + air].

Ethyl Alcohol:

Ethanol rapidly absorbs moisture from the air.

Can react vigorously with oxidizers.

The following oxidants have been demonstrated to undergo vigorous/explosive reaction with ethanol: barium perchlorate, bromine pentafluoride, calcium hypochlorite, chlorate, chloryl perchlorate, chromium trioxide, chromyl chloride, dioxygen difluoride, disulfuryl difluoride, fluorine nitrate, hydrogen peroxide, iodine heptafluoride, nitric acid, nitrosyl perchlorate, perchloric acid, permanganic acid, peroxodisulfuric acid, potassium dioxide, potassium perchlorate, potassium permanganate, ruthenium (VIII) oxide, silver perchlorate, silver peroxide, uranium hexafluoride, uranyl perchlorate, chlorine.

Ethanol can react vigorously/explosively with the following: acetyl bromide (evolves hydrogen bromide), acetyl chloride, aluminum sesquibromide ethylate, ammonia + silver nitrate (forms silver nitride and silver fulminate), isocyanates, halogens, hydrazine, caustics (ammonia, ammonium hydroxide, calcium hydroxide, potassium hydroxide, sodium hydroxide), acid anhydrides, ammonia or hydrazine + silver (I) oxide, chlorate, chromic anhydride, cyanuric acid + water, dichloromethane + sulfuric acid + nitrate (or) nitrile, hydrogen peroxide + sulfuric acid, iodine + phosphorus (forms ethane iodine), iodine + methanol + mercuric oxide, magnesium perchlorate (forms ethyl perchlorate), manganese perchlorate + 2,2-dimethoxy propane, perchlorates, chromates, permanganates + sulfuric acid, potassium superoxide, potassium tert-butoxide, silver + nitric acid (forms silver fulminate), silver nitrate (forms ethyl nitrate), sodium hydrazide, sulfuric acid + sodium dichromate, tetrachlorosilane + water, mercuric nitrate, acetic anhydride + sodium hydrosulfate, disulfuric acid +

nitric acid, phosphorous (III) oxide, potassium tert-butoxide + acids, alkali metals (liberates flammable hydrogen gas). Ethanol is also incompatible with platinum, and sodium (liberates flammable hydrogen gas). No really safe conditions exist under which ethyl alcohol and chlorine oxides can be handled. Reacts vigorously with acetyl chloride. It can react with freshly cut/etched/scratched aluminum (evolution of heat and release hydrogen gas). The Ethyl alcohol has to be on the aluminum surface as it is being cut/scratched/etched. Note: This mixture can be incompatible with amines.
Special Remarks on Corrosivity: Not available
Polymerization: Will not occur

Section 11: Toxicological Information

Route of entry: Absorbed through skin. Eye contact. Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 1215 mg/kg [Rat]. (Ethyl ether).

Chronic Effects on Humans: Carcinogenic effects: Classified A4 (Not classifiable for human or animal) by ACGIH [Ethyl alcohol 200 Proof].

Mutagenic Effects: Mutagenic for bacteria and/or yeast. [Ethyl alcohol 200 Proof].

Teratogenic Effects: Classified proven for human [Ethyl alcohol 200 Proof].

Developmental Toxicity: Classified development toxin [Proven] [Ethyl alcohol 200 Proof]. Classified Reproductive system/toxin/female., Reproductive system/toxin/male [Possible] [Ethyl alcohol 200 Proof].

Contains material which may cause damage to the following organs: kidneys, the reproductive system, heart, skin.

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant), of inhalation.

Slightly hazardous in case of skin contact (permeator), ingestion.

Special Remarks on Toxicity to Animals: LD50 [Rabbit] – Route: Skin; Dose: >20 ml/kg
LDL[Man] – Route: Oral; Dose: 260 mg/kg (Ethyl ether)

Special Remarks on Chronic Effects on Humans: May affect genetic material (mutagenic) based on animal data. (Ethyl ether)

May affect genetic material (mutagenic)

Causes adverse reproductive effects and birth defects (teratogenic), based on moderate to heavy consumption.

May cause cancer based on animal data.

Human: passes through the placenta, excreted in maternal milk. (Ethyl Alcohol)

Special Remarks on other Toxic Effects on Humans: Ethyl Ether:

Acute Potential Health Effects:

Skin: Causes skin irritation. It is not appreciably absorbed through the skin.

Eyes: Causes eye irritation. Can cause slight, reversible eye injury from contact with liquid or vapor.

Inhalation: It is rapidly absorbed through lungs. Vapor mist causes irritation of the respiratory tract and mucous membranes. Affects behavior, sense organs, peripheral and central nervous systems, liver, metabolism, cardiovascular system. Symptoms may include excitement, personality changes, drowsiness, dizziness, loss of memory, headache, nausea, vomiting, paleness, decreased pulse and temperature, cardiac arrhythmias, irregular respiration, coughing, bronchodilation, increase in respiratory rate, increase in heart rate, excessive salivation, excessive sweating, muscle relaxation, anesthetic effects, and possible kidney irritation or injury, and temporarily abnormal liver function tests.

Ingestion: May be harmful if swallowed. May cause gastrointestinal tract irritation with nausea, vomiting.

Chronic Potential Health Effects:

Skin: Prolonged or repeated skin contact can produce defatting dermatitis with dryness and cracking.

Inhalation: Prolonged or repeated inhalation can also affect behavior, metabolism, and liver with symptoms similar to that of acute inhalation. It may also cause albuminuria, and polycythemia.

Ethyl alcohol:

Acute Potential Health Effects:

Skin: causes skin irritation

Eyes: causes eye irritation

Ingestion: May cause gastrointestinal tract irritation with nausea, vomiting, diarrhea, and alterations in gastric secretions.

May affect behavior/central nervous system (central nervous system depression – amnesia, headache, muscular incoordination, excitation, mild euphoria, slurred speech, drowsiness, staggering gait, fatigue, changes in mood/personality, excessive talking, dizziness, ataxia, convulsions, somnolence, coma/narcosis, hallucinations, distorted perceptions, general anesthetic), peripheral nervous system (spastic paralysis) vision (diplopia). Moderately toxic and narcotic in high concentrations. May also affect metabolism (anorexia), blood (changes in serum composition), liver (fatty liver degeneration, hepatocellular necrosis), respiration (dyspnea), and endocrine system. May affect respiratory tract, cardiovascular (cardiac arrhythmias, hypotension), and urinary system Kidneys – interstitial nephritis.

Inhalation: May cause irritation of the respiratory tract and affect behavior/central nervous system with symptoms similar to ingestion.

Chronic Potential Health Effects:

Skin: Prolonged or repeated skin contact may cause dermatitis, an allergic reaction.

Ingestion: Prolonged or repeated ingestion will have similar effects as acute ingestion. It may also affect the brain, metabolism (weight loss).

Section 12: Ecological Information

Ecotoxicity: Not available

BOD5 and COD: Not available

Products of Biodegradation: Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: When released into the soil, this material is expected to quickly evaporate. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is not expected to biodegrade. When released into water, this material is not expected to biodegrade. When released into the water, this material is expected to have half-life of less than 1 day. When released to water, this material is expected to quickly evaporate. This material is not expected to significantly bioaccumulate. This material has a log octanol-water partition coefficient less than 3.0. When released into the air, this material is expected to be readily degraded into the air, this material is not expected to be degraded B photolysis. When released into the air, this material is expected to have half-life between 1 and 10 days. (Ethyl Ether)

Section 13: Disposal Considerations

Waste Disposal: Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 3: Flammable liquid

Identification: UNNA: 2059: Nitrocellulose, solution PG: II

Special Provisions for Transport: Not available

Section 15: Other Regulatory Information

Federal and State Regulations

California Prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Ethyl alcohol 200 Proof

(in alcoholic beverages)

California Prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Ethyl alcohol 200 Proof (in alcoholic beverages).

Connecticut hazardous material survey: Cellulose nitrate; Ethyl ether; Ethyl alcohol 200 Proof

Illinois toxic substances disclosure to employee act: Ethyl ether; Ethyl alcohol 200 Proof

Illinois chemical safety act: Ethyl ether

New York release reporting list: Ethyl ether

Rhode Island RTK hazardous substances: Cellulose nitrate; Ethyl ether; Ethyl alcohol 200 Proof

Pennsylvania RTK: Cellulose nitrate; Ethyl ether; Ethyl alcohol 200 Proof

Florida: Ethyl ether; Ethyl alcohol 200 Proof

Minnesota: Ethyl ether; Ethyl alcohol 200 Proof

Massachusetts RTK: Cellulose nitrate; Ethyl ether; Ethyl alcohol 200 Proof

Massachusetts spill list: Cellulose nitrate; Ethyl ether; Ethyl alcohol 200 Proof

New Jersey: Cellulose nitrate; Ethyl ether; Ethyl alcohol 200 Proof

New Jersey spill list: Cellulose nitrate

New Jersey toxic catastrophe prevention act: Ethyl ether

Louisiana spill reporting: Ethyl ether

California Director's List of Hazardous Substances: Ethyl ether; Ethyl alcohol 200 Proof

TSCA 8(b) inventory: Cellulose nitrate; Ethyl ether; Water; Ethyl alcohol 200 Proof

TSCA 4(a) proposed test rules: Ethyl ether

TSCA 8(a) PAIR: Ethyl ether

TSCA 8(a) IUR: Ethyl ether

TSCA 8(b): H and S data reporting: Ethyl ether: 1/26/94

TSCA 12(b): one time export: Ethyl ether

CERCLA: Hazardous substances: Ethyl ether: 100 lbs. (45.36 kg)

California Proposition 65 Warnings: California Prop. 65. This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.

California Prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Ethyl alcohol 200 Proof (in alcoholic beverages).

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications: WHMIS (Canada): Class B-2: Flammable liquid with a flash point lower than 37.8°C (100°F)

Class D-2B: Material causing other toxic effects (TOXIC).

DSCL: R11 – Highly flammable, R19 – May form explosive peroxides, R22 – Harmful if swallowed, S46 – If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.): Health Hazard: 2, Fire Hazard: 3, Reactivity: 3, Personal Protection: h

National Fire Protection Association (U.S.A.): Health:2, Flammability: 4, Reactivity: 0

Section 16: Other Information:

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