OXFORD LAB FINE CHEM LLP

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Oxford
Range of
Laboratory Chemicals

MATERIAL SAFETY DATA SHEET

COLLODION FLEXIBLE

MSDS CAS: 99994-22-6

Section 1: Chemical Product and Company Identification

Section 1: Chemical Product
Product Name: COLLODION FLEXIBLE
CAS#: 99994-22-6
Synonym: Collodion; Flexible Collodion
Chemical Name: Not Applicable.
Chemical Formula: Not Applicable.

Brand: OXFORD

Details Of The Supplier Of The Safety Data Sheet :

Company identification: **OXFORD LAB FINE CHEM LLP**
Unit. No. 12, 1st Floor, Neminath Industrial Estate No. 6,
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Mumbai, Maharashtra, INDIA.
Tel: 91-250-2390989
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Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Cellulose nitrate	9004-70-0	5
Ethyl ether	60-29-7	65
Camphor (DL)	76-22-2	<10
Water	7732-18-5	<10
Castor oil	8001-79-4	<10
Ethyl alcohol 200 Proof	64-17-5	20-25

Section 2: Composition and Information on Ingredients (Continued)

Toxicological Data on Ingredients:

Cellulose nitrate: ORAL (LD50): Acute: >5000 mg/kg [Rat]. >5000 mg/kg [Mouse]. Ethyl ether: ORAL (LD50): Acute: 1215 mg/kg [Rat]. VAPOR (LC50): Acute: 73000 ppm 2 hours [Rat]. Camphor (DL) : ORAL (LD50): Acute: 1310 mg/kg [Mouse]. Castor oil LD50: Not available. LC50: Not available. 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/m 4 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:

Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion. Slightly hazardous in case of skin contact (permeator). Non-corrosive for skin. Non-corrosive to the eyes. Non-corrosive for lungs.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: Classified A4 (Not classifiable for human or animal.) by ACGIH [Camphor (DL)]. Classified PROVEN by State of California Proposition 65 [Ethyl alcohol 200 Proof]. Classified A4 (Not classifiable for human or animal.) by ACGIH [Ethyl alcohol 200 Proof]. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. [Ethyl ether]. Mutagenic for bacteria and/or yeast. [Ethyl ether]. Mutagenic for mammalian somatic cells. [Ethyl alcohol 200 Proof]. 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/male [POSSIBLE] [Ethyl alcohol 200 Proof]. The substance is toxic to blood, the reproductive system, liver, upper respiratory tract, skin, central nervous system (CNS). The substance may be toxic to eyes. Repeated or prolonged exposure to the substance can produce target organs 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, keeping eyelids open. Get medical attention.

Skin Contact:

In case of 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.

Section 4: First Aid Measures (Continued)

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 is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek 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°C (356°F) (Ethyl ether).

Flash Points: CLOSED CUP: -45°C (-49°F).

Flammable Limits: LOWER: 0.6% UPPER: 36%

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

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

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Section 5: Fire and Explosion Data (Continued)

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

Fire Fighting Media and Instructions:
Flammable liquid, insoluble in 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 Explosion Hazards:
Vapors may form explosive mixtures with air. Vapor explosion hazard indoors, outdoors, or in sewers. Run off to 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 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.

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Section 7: Handling and Storage

Precautions:

Keep locked up.. 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, acids, alkalis, moisture.

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. Be sure to use an approved/certified respirator or equivalent. Gloves.

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] Camphor (DL) TWA: 2 STEL: 3 (ppm) [Australia] TWA: 2 STEL: 3 (ppm) [Canada] TWA: 12 STEL: 19 (mg/m3) [Canada] TWA: 2 (mg/m3) from NIOSH TWA: 2 (mg/m3) from OSHA (PEL) [United States] TWA: 2 STEL: 4 (ppm) from ACGIH (TLV) [United States] [1999] TWA: 2 STEL: 3 (ppm) [United Kingdom (UK)] TWA: 13 STEL: 19 (mg/m3) [United Kingdom (UK)] Ethyl alcohol 200 Proof TWA: 1000 (ppm) from ACGIH (TLV) [United States] [1999] TWA: 1000 (ppm) from OSHA (PEL) [United States].

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid. (Viscous liquid.)

Odor	: Ethereal. (Strong.)
Taste	: Not available.
Molecular Weight	: Not available.
Color	: Clear Colorless to light yellow.
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: -115.73°C (-176.3°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: 40.66 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: 26.33 ppm.
Water/Oil Dist. Coeff.	: Not applicable.
Ionicity (in Water)	: Not available.
Dispersion Properties	: Is not dispersed in cold water, hot water. See solubility in methanol, diethyl ether, acetone.
Solubility	: Easily soluble in hot water. Soluble in methanol, diethyl ether, acetone. Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability:
Heat, ignition sources, incompatible materials, moisture (water). 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, reducing agents, acids, alkalis.

Section 10: Stability and Reactivity Data (Condition)

Corrosivity: **Non-corrosive in presence of glass.**

Special Remarks on Reactivity:
Incompatible with amines, bromine trifluoride, chlorine trifluoride, halogens, nitric acid, permanganates, silver perchlorate, sodium peroxide, sulfur, sulfuric acid, hydrogen peroxide, ozone, bromine, chromyl chloride, fluorine nitrate, nitrosyl perchlorate, bromine pentafluoride, perchloric acid, chromic anhydride, interhalogens, chlorine, uranhl nitrate, iodine heptafluoride, boron triazide, wood pulp extracts + heat, acetyl peroxide, bromoazide, potassium peroxide, triethyl or trimethyl aluminum + air, iodine (VII) oxide, sulfonyl chloride, liquid air.

Special Remarks on Corrosivity: **Not available.**

Polymerization: **Will not occur.**

Section 11: Toxicological Information

Routes 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 [Camphor (DL)]. Classified PROVEN by State of California Proposition 65 [Ethyl alcohol 200 Proof]. Classified A4 (Not classifiable for human or animal.) by ACGIH [Ethyl alcohol 200 Proof]. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. [Ethyl ether]. Mutagenic for bacteria and/or yeast. [Ethyl ether]. Mutagenic for mammalian somatic cells. [Ethyl alcohol 200 Proof]. 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: eyes.

Other Toxic Effects on Humans:
Hazardous in case of ingestion. Slightly hazardous in case of skin contact (irritant, permeator) and eye contact (irritant), of inhalation (lung irritant).

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

Section 11: Toxicological Information (Continued)

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

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation. It is not appreciably absorbed through intact 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 and metabolism. Symptoms may include excitement, drowsiness, headache, nausea, vomiting, paleness, decreased pulse and temperature, irregular respiration, coughing, bronchodilation, increase in respiratory rate, increase in heart rate, excessive salivation, 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 (Ethyl ether).

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 EVAPORAT 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 HAV HALF-LIFE OF LESS THAN 1 DAY. WHEN RELEASED TO WATER, THIS MATERIAL IS EXP 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 BY REACTION WITH PHOTOCHEMICALLY PRODUCED HYDROXYL RADICA WHEN RELEASED 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

Land transport (ADR-RID)
Proper shipping name : FLAMMABLE LIQUID, N.O.S.
UN N° : 1993
H.I. nr : 33
ADR - Class : 3
Labelling - Transport : 3: Flammable liquid.
ADR - Group : I

Sea transport (IMDG) [English only]
Proper shipping name : FLAMMABLE LIQUID, N.O.S.
UN N° : 1993
IMO-IMDG - Class or division: 3: Flammable liquid.
IMO-IMDG - Packing group: I

Air transport (ICAO-IATA) [English only]
Proper shipping name : FLAMMABLE LIQUID, N.O.S.
UN N° : 1993
IATA - Class or division : 3: Flammable liquid.
IATA - Packing group : I

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 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

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Section 15: Other Regulatory Information (Continued)

Statute: Ethyl alcohol 200 Proof 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: Ethyl alcohol 200 Proof Connecticut hazardous material survey.: Cellulose nitrate; Ethyl ether Illinois toxic substances disclosure to employee act: Ethyl ether Illinois chemical safety act: Ethyl ether New York release reporting list: Ethyl ether Rhode Island RTK hazardous substances: Cellulose nitrate; Ethyl ether; Camphor (DL) ; Ethyl alcohol 200 Proof Pennsylvania RTK: Cellulose nitrate; Ethyl ether; Camphor (DL) ; Ethyl alcohol 200 Proof Florida: Ethyl ether; Camphor (DL) ; Ethyl alcohol 200 Proof Minnesota: Ethyl ether; Camphor (DL) Massachusetts RTK: Cellulose nitrate; Ethyl ether; Camphor (DL) ; Ethyl alcohol 200 Proof Massachusetts spill list: Cellulose nitrate; Ethyl ether New Jersey: Cellulose nitrate; Ethyl ether; Camphor (DL) ; Ethyl alcohol 200 Proof New Jersey spill list: Cellulose nitrate New Jersey toxic catastrophe prevention act: Ethyl ether Louisiana spill reporting: Ethyl ether TSCA 8(b) inventory: Cellulose nitrate; Ethyl ether; Camphor (DL) ; Water; Castor oil; 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(d) 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);

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-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC): R11- Highly flammable. R19- May form explosive peroxides. R22- Harmful if swallowed. S2- Keep out of the reach of children. S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.):

Health Hazard: 2
Fire Hazard: 4
Reactivity: 3
Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 1
Flammability: 4
Reactivity: 0
Specific hazard:

Protective Equipment: Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

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Section 16 - Additional Information

References: Not available.

Other Special Considerations: Not available.

Disclaimer:

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