MSDS #197

MSDS Number: **C5071** * * * * * *Effective Date:* ***02/22/06*** * * * * * *Supercedes:* ***08/10/04***

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

Mallinckrodt CHEMICALS | J.T.Baker

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

COLLODION, FLEXIBLE, U. S. P.

1. Product Identification

Synonyms: None
CAS No.: Not applicable to mixtures.
Molecular Weight: Not applicable to mixtures.
Chemical Formula: Not applicable to mixtures.
Product Codes:
J.T. Baker: 9204
Mallinckrodt: 0047, 0049, 4580

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Nitrocellulose	9004-70-0		Yes
Diethyl Ether	60-29-7	60 - 70%	Yes
Ethyl Alcohol	64-17-5		Yes
Camphor	76-22-2		Yes
Castor Oil	8001-79-4		Yes

Actual concentrations proprietary

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3. Hazards Identification

Emergency Overview

DANGER! EXTREMELY FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. AFFECTS CENTRAL NERVOUS SYSTEM. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY AFFECT LIVER, BLOOD, REPRODUCTIVE SYSTEM.

SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Life)
Flammability Rating: 4 - Extreme (Flammable)
Reactivity Rating: 3 - Severe (Explosive)
Contact Rating: 2 - Moderate (Life)
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER
Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:
Vapors have anesthetic properties. Early symptoms of exposure may include irritation of the nose and throat, followed by dizziness and drowsiness. Continued exposure may lead to unconsciousness, respiratory failure, and death.

Ingestion:
Harmful if swallowed. May cause headache, stomach pains, and dizziness. Acts as a depressant of the central nervous system and can produce symptoms similar to those of inhalation exposure. Irritating to the mucous membranes. Ingestion of 1 or 2 ounces may be fatal. Because of volatility the stomach becomes distended, which may cause belching. Other symptoms can include vomiting, unconsciousness, and coma.

Skin Contact:
Irritating to the skin and mucous membranes by drying effect. Can cause dermatitis on prolonged exposure. May be absorbed through skin.

Eye Contact:
Vapors may cause irritation. Splashes or high vapor concentrations may produce severe irritation or eye damage.

Chronic Exposure:
Repeated exposures may be habit forming. Prolonged exposures may result in headache, drowsiness, excitation, and psychic disturbances. The ethyl alcohol component, in repeated high exposures, may cause damage to the liver, blood and reproductive system. Teratogenic effects are possible for ether and ethyl alcohol.

Aggravation of Pre-existing Conditions:
Persons with pre-existing skin disorders or eye problems or impaired liver, kidney or respiratory function may be more susceptible to the effects of this substance. Alcoholic beverage consumption can enhance the toxic effects of this substance.

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4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion:
Do NOT induce vomiting. Give large amounts of water. Never give anything by mouth to an unconscious person. Get medical attention.
Skin Contact:
Wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:
Flash point: < -32C (< -26F)
Autoignition temperature: 180 - 190C (356 - 374F)
Flammable limits in air % by volume:
lel: 1.9; uel: 36.0
Extremely Flammable Liquid and Vapor! Vapor may cause flash fire. Very dangerous when exposed to heat or flame.
Listed autoignition temperature and % limits are for Ether.
Explosion:
Above the flash point, explosive vapor-air mixtures may be formed. Sealed containers may rupture when heated. May form explosive peroxides on long standing or after exposure to air or light. May explode when brought in contact with nitric acid. Sensitive to mechanical impact. Sensitive to static discharge.
Fire Extinguishing Media:
Dry chemical, foam or carbon dioxide. Treat as a flammable gas in a fire situation. Water spray may be used to keep fire exposed containers cool.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. This highly flammable liquid must be kept from sparks, open flame, hot surfaces, and all sources of heat and ignition. Poisonous gases are produced in fire. Vapors are heavier than air. Liquid floats on water. Both vapor and liquid may travel to source of ignition and flash back.

6. Accidental Release Measures

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Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802. If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures.

J. T. Baker SOLUSORB® solvent adsorbent is recommended for spills of this product.

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7. Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

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8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
-OSHA Permissible Exposure Limit (PEL):
400 ppm (TWA) for ether
1000 ppm (TWA) for ethyl alcohol
2 mg/m3 (TWA) for camphor

-ACGIH Threshold Limit Value (TLV):
400 ppm (TWA), 500 ppm (STEL) for ether
1000 ppm (TWA), A4 for ethyl alcohol
2 ppm (TWA), 3 ppm (STEL), for camphor,
A4 Not classifiable as a human carcinogen.

Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded and engineering controls are not feasible, a half-face

organic vapor respirator may be worn for up to ten times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece organic vapor respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. An organic vapor respirator is predicted to have a short service life (less than 30 minutes at concentrations of ten times the TLV/PEL) when used with this material.

Skin Protection:
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:
Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

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9. Physical and Chemical Properties

Appearance:
Colorless to slightly yellow, syrupy liquid.

Odor:
Ether-camphor odor.

Solubility:
Slightly soluble in water.

Specific Gravity:
0.78

pH:
No information found.

% Volatiles by volume @ 21C (70F):
ca. 95

Boiling Point:
34.6C (95F) (ether)

Melting Point:
-123C (-189F) (ether)

Vapor Density (Air=1):
2.6 (ether)

Vapor Pressure (mm Hg):
440 @ 20C (68F) (ether)

Evaporation Rate (BuAc=1):
37.5

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10. Stability and Reactivity

Stability:
Heat, light, and long standing contribute to instability. Reacts with air to form explosive

peroxides. Do not allow the solvents to evaporate from the product. The dry material is shock sensitive.

Hazardous Decomposition Products:
Burning may produce toxic fumes of cyanide, carbon dioxide, carbon monoxide and oxides of nitrogen.

Hazardous Polymerization:
Will not occur.

Incompatibilities:
Acetyl peroxide, liquid air, bromoazide, chlorine, strong oxidizers, strong acids, strong bases and amines.

Conditions to Avoid:
Heat, flame, ignition sources, shock, air, sunlight and incompatibles.

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11. Toxicological Information

Toxicological Data:
Ether: Oral rat LD50: 1215 mg/kg; inhalation rat LCLo: 32000 ppm/4H; investigated as a mutagen, tumorigen. Ethyl alcohol: oral rat LD50: 7060 mg/kg; inhalation rat LC50: 20000 ppm/10H; investigated as a tumorigen, mutagen, reproductive effector. Nitrocellulose: oral rat LD50: > 5 gm/kg. Camphor: oral mouse LD50: 1310 mg/kg; investigated as a mutagen. Castor oil: investigated as a tumorigen.

Reproductive Toxicity:
See Chronic Health Hazards.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Nitrocellulose (9004-70-0)	No	No	None
Diethyl Ether (60-29-7)	No	No	None
Ethyl Alcohol (64-17-5)	No	No	None
Camphor (76-22-2)	No	No	None
Castor Oil (8001-79-4)	No	No	None

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12. Ecological Information

Environmental Fate:
For ether: When released into the soil, this material is not expected to biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released into water, this material is not expected to biodegrade. When released to water, this material is expected to quickly evaporate. When released into the water, this material is expected to have a half-life of less than 1 day. This material has a log octanol-water partition coefficient of less than 3.0. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is not expected to be degraded

by photolysis. When released into the air, this material is expected to have a half-life between 1 and 10 days.

Environmental Toxicity:
For ether: This material is not expected to be toxic to aquatic life. The LC50/96-hour values for fish are over 100 mg/l.

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13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

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14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: NITROCELLULOSE SOLUTION, FLAMMABLE
Hazard Class: 3
UN/NA: UN2059
Packing Group: II
Information reported for product/size: 320LB

International (Water, I.M.O.)

Proper Shipping Name: NITROCELLULOSE SOLUTION, FLAMMABLE
Hazard Class: 3
UN/NA: UN2059
Packing Group: II
Information reported for product/size: 320LB

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15. Regulatory Information

--------\Chemical Inventory Status - Part 1\---------------------------------

Ingredient	TSCA	EC	Japan	Australia
Nitrocellulose (9004-70-0)	Yes	No	Yes	Yes
Diethyl Ether (60-29-7)	Yes	Yes	Yes	Yes
Ethyl Alcohol (64-17-5)	Yes	Yes	Yes	Yes
Camphor (76-22-2)	Yes	Yes	Yes	Yes
Castor Oil (8001-79-4)	Yes	Yes	No	Yes

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--------\Chemical Inventory Status - Part 2\----------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Nitrocellulose (9004-70-0)	Yes	Yes	No	Yes
Diethyl Ether (60-29-7)	Yes	Yes	No	Yes
Ethyl Alcohol (64-17-5)	Yes	Yes	No	Yes
Camphor (76-22-2)	Yes	Yes	No	Yes
Castor Oil (8001-79-4)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\----------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Nitrocellulose (9004-70-0)	No	No	No	No
Diethyl Ether (60-29-7)	No	No	No	No
Ethyl Alcohol (64-17-5)	No	No	No	No
Camphor (76-22-2)	No	No	No	No
Castor Oil (8001-79-4)	No	No	No	No

--------\Federal, State & International Regulations - Part 2\----------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Nitrocellulose (9004-70-0)	No	No	No
Diethyl Ether (60-29-7)	100	U117	Yes
Ethyl Alcohol (64-17-5)	No	No	No
Camphor (76-22-2)	No	No	Yes
Castor Oil (8001-79-4)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
Reactivity: Yes (Mixture / Liquid)

Australian Hazchem Code: None allocated.
Poison Schedule: None allocated.
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

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16. Other Information

NFPA Ratings: Health: **1** Flammability: **4** Reactivity: **0**
Label Hazard Warning:
DANGER! EXTREMELY FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. AFFECTS CENTRAL NERVOUS SYSTEM. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY AFFECT LIVER, BLOOD, REPRODUCTIVE SYSTEM.
Label Precautions:

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May form explosive peroxides.
Keep away from heat, sparks and flame.
Avoid breathing vapor.
Avoid contact with eyes, skin and clothing.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.
Store At A Temperature Not Exceeding 30C (86F).DO NOT OPEN Unless Contents Are At Room Temperature (72F) or Below For At Least 24 Hours.

Label First Aid:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Contaminated clothing and shoes should be removed and placed in closed containers for storage until they can be discarded or cleaned. In all cases, get medical attention.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 3, 11.

Disclaimer:

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