



MORIARIS Chemicals

A Division of Moriaris S.A. (Pty) Ltd
PO Box 609 Umkomaas
Telephone: (031) 9136020

ECLIPSE

ACTIVE INGREDIENT: Acefone

**Net Content:
One Quart
(32 FL OZ)**

DANGER

**Read instructions
carefully before use**

Empty, uncleaned drums can
still be DANGEROUS.
Keep labelled until
decontaminated
Only then remove label

PACK GROUP:
156
UN-NO: 6-02-02

BATCH No:
147-25-2002

IN CASE OF EMERGENCY:

**Call Appropriate Emergency Services.
Call Moriaris Chemicals at
Durban (031) 9027245 or 084 689 934**

HAZARD INFORMATION

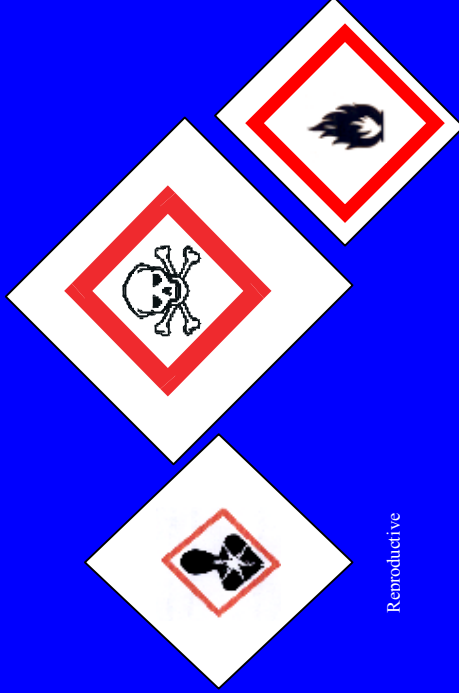
Harmful or fatal if swallowed
This chemical may cause adverse reproductive effects
Flammable

PRECAUTIONS

Keep away from heat or flame
Work in conditions of adequate ventilation
Avoid prolonged or repeated breathing of vapour
Wear Eye Protection, Suitable Gloves and Apron when handling this chemical
Protect from freezing

FIRST AID AND TREATMENT

Eyes: In case of contact, immediately flush eyes or skin with copious amounts of water for at least 15 minutes while removing contaminated clothing and shoes.
Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
Ingestion: If swallowed, do not induce vomiting. If conscious, give large amounts of water.



Reproductive



MORARIIS Chemicals

A Division of Moriaris S.A. (Pty) Ltd
PO Box 609 Umkomaas
Telephone: (031) 9136020

ZENITH

ACTIVE INGREDIENT: Acetone

**Net Content:
One Quart
(32 FL OZ)**

DANGER

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carefully before use**

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still be DANGEROUS.
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Only then remove label

PACK GROUP:
156
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IN CASE OF EMERGENCY:

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Durban (031) 9027245 or 084 689 934

HAZARD INFORMATION

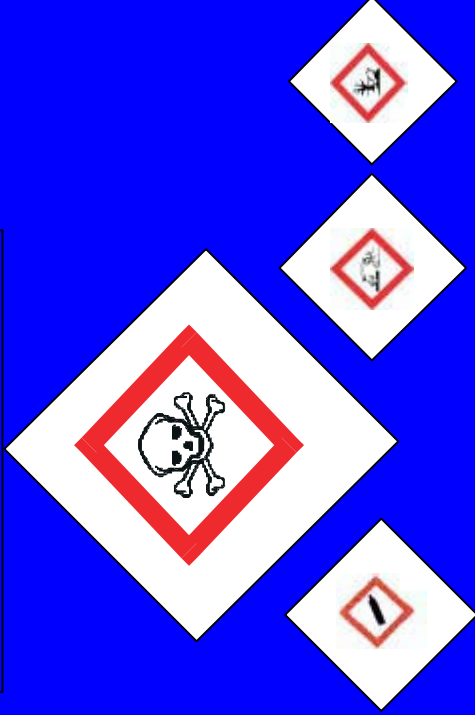
Harmful or fatal if swallowed
Acutely hazardous
Corrosive to metal and skin
Will cause dermatitis if unprotected
Hazardous to fish and the environment

PRECAUTIONS

Use barrier cream and gloves.
Wear Eye Protection, Suitable Gloves and Apron when handling this chemical
Protect from freezing

FIRST AID AND TREATMENT

Eyes: In case of contact, immediately flush eyes or skin with copious amounts of water for at least 15 minutes while removing contaminated clothing and shoes.
Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
Ingestion: If swallowed, do not induce vomiting. If conscious, give large amounts of water.





MORARIS Chemicals

A Division of Moriaris S.A. (Pty) Ltd
P.O. Box 609, Umkomaas
Telephone: (031) 9136020

ENDLUIS

ALTERNATIVE NAME: *Chloropyrifos*

UN-NO: 6-02-02

NETT CONTENT: One Quart (32 FL OZ)

PACK. GROUP: 156

BATCH No: 147-25-2002

HARMFUL



30/05/200

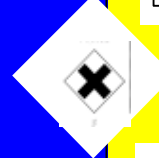
HAZARD INFORMATION

Unstable harmful or fatal if swallowed
Causes skin and eye irritation
Read instructions carefully before use

WEAR EYE PROTECTION
SUITABLE GLOVES AND
APRONS WHEN HANDLING
CHEMICALS

FIRST AID AND TREATMENT
Eyes: In case of contact, immediately flush eyes or skin with copious amounts of water for at least 15 minutes while removing contaminated clothing and shoes.

IN CASE OF EMERGENCY:
Call Appropriate Emergency Services;
Call Moriaris Chemicals at Durban 031
902 7245 or 084 689 934





MORARIIS Chemicals

A Division of Moriaris S.A. (Pty) Ltd
P.O. Box 609 Umkomaas
Telephone: (031) 9136020

ZEET

ALTERNATIVE NAME:

Chlorpyrifos

UN-NO:

6-02-02

**NETT
CONTENT:**

One Quart
(32 FL OZ)

PACK. GROUP:

156

DANGER

BATCH No:

147-25-2002



30/05/200

FIRST AID AND TREATMENT

Eyes: In case of contact, immediately flush eyes or skin with copious amounts of water for at least 15 minutes while removing contaminated clothing and shoes.

HAZARD INFORMATION

Unstable harmful or fatal if swallowed
Causes skin and eye irritation
Read instructions carefully before use

WEAR EYE PROTECTION
SUITABLE GLOVES AND
APRONS WHEN HANDLING
CHEMICALS

IN CASE OF EMERGENCY:

Call Appropriate Emergency Services;
Call Moriaris Chemicals at Durban 031
902 7245 or 084 689 934





MORIARIS Chemicals

A Division of Moriaris S.A. (Pty) Ltd
PO Box 609 Umkomaas
Telephone: (031) 9136920

ZAMPAC

ACTIVE INGREDIENT: Acefone

**Net Content:
One Quart
(32 FL OZ)**

DANGER

**Read instructions
carefully before use**

Empty, uncleaned drums can
still be DANGEROUS.
Keep labelled until
decontaminated
Only then remove label

PACK GROUP:
156
UN-NO: 6-02-02

BATCH No:
147-25-2002

IN CASE OF EMERGENCY:

**Call Appropriate Emergency Services.
Call Moriaris Chemicals at
Durban (031) 9027245 or 084 689 934**

HAZARD INFORMATION

Harmful or fatal if swallowed
Acutely hazardous
Corrosive to metal and skin - Will cause dermatitis if unprotected
Hazardous to fish and the environment
Flammable; Explosive and Oxidising

PRECAUTIONS

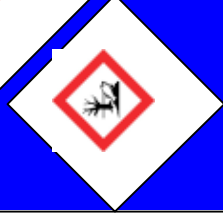
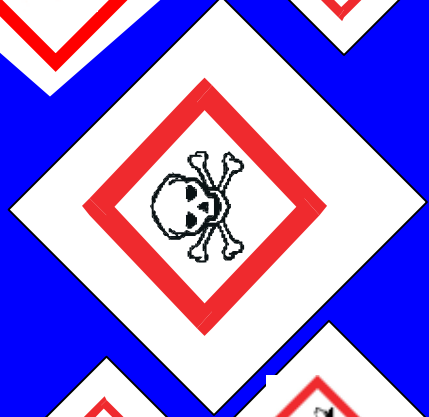
Wear Eye Protection, Suitable Gloves and Apron when handling this chemical
Do not allow contact with skin or eyes or mucous membranes

FIRST AID AND TREATMENT

In case of contact, immediately flush eyes or skin with copious amounts of water for at least 15 minutes while removing contaminated clothing and shoes.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Ingestion: If swallowed, do not induce vomiting. If conscious, give large amounts of water.



Annexure 4: SDS's

CONTENTS

SDS 3.1	SDS for Bayetone = Acetone
SDS 3.2	SDS for Heptane
SDS 3.3	SDS for Phehyl Isocyanate
SDS 8.1	SDS Bayetone and Saloc - Health hazard information under Regulatory Information (Header 15)

SDS 3.1

Bayetone

MSDS Number: A0446 --- Effective Date: 04/09/98

1. Product Identification

Synonyms: Dimethylketone; 2-propanone; dimethylketal
CAS No.: 67-64-1
Molecular Weight: 58.08
Chemical Formula: (CH₃)₂CO
Product Codes:
5356, 5580, 5805, 9001, 9002, 9003, 9004, 9005, 9006, 9007, 9008, 9009,
9010, 9015, 9036, 9125, 9254, 9271, A134
0018, 2432, 2435, 2437, 2438, 2440, 2443, 2445, 2850, H451, H580, H981

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Acetone	67-64-1	99 - 100%	Yes

3. Hazards Identification

Emergency Overview

DANGER! EXTREMELY FLAMMABLE LIQUID AND VAPOR.
VAPOR MAY CAUSE FLASH FIRE. HARMFUL IF SWALLOWED OR
INHALED. CAUSES IRRITATION TO SKIN, EYES AND
RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM.

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

Health Rating: 1 - Slight
Flammability Rating: 4 - Extreme (Flammable)
Reactivity Rating: 2 - Moderate
Contact Rating: 1 - Slight
Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER
GLOVES; CLASS B EXTINGUISHER
Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:
Inhalation of vapors irritates the respiratory tract. May cause coughing, dizziness,
dullness, and headache. Higher concentrations can produce central nervous
system depression, narcosis, and unconsciousness.
Ingestion:
Swallowing small amounts is not likely to produce harmful effects. Ingestion of

larger amounts may produce abdominal pain, nausea and vomiting. Aspiration into lungs can produce severe lung damage and is a medical emergency. Other symptoms are expected to parallel inhalation.

Skin Contact:

Irritating due to defatting action on skin. Causes redness, pain, drying and cracking of the skin.

Eye Contact:

Vapors are irritating to the eyes. Splashes may cause severe irritation, with stinging, tearing, redness and pain.

Chronic Exposure:

Prolonged or repeated skin contact may produce severe irritation or dermatitis.

Aggravation of Pre-existing Conditions:

Use of alcoholic beverages enhances toxic effects. Exposure may increase the toxic potential of chlorinated hydrocarbons, such as chloroform, trichloroethane.

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: Aspiration hazard. If swallowed, vomiting may occur spontaneously, but DO

NOT INDUCE. If vomiting occurs, keep head below hips to prevent aspiration into lungs. Never give anything by mouth to an unconscious person. Call a physician immediately.

Skin Contact:

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 upper and lower eyelids occasionally. Get medical attention.

5. Fire Fighting Measures

Fire:

Flash point: -20C (-4F) CC

Autoignition temperature: 465C (869F)

Flammable limits in air % by volume:

lfl: 2.5; uel: 12.8

Extremely Flammable Liquid and Vapor! Vapor may cause flash fire.

Explosion:

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Vapors can flow along surfaces to distant ignition source and flash back. Contact with strong oxidizers may cause fire. Sealed containers may rupture when heated. This material may produce a floating fire hazard. Sensitive to static discharge.

Fire Extinguishing Media:

Dry chemical, alcohol foam or carbon dioxide. Water may be ineffective. Water spray may be used to keep fire exposed containers cool, dilute spills to nonflammable mixtures, protect personnel attempting to stop leak and disperse vapors.

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.

6. Accidental Release Measures

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! 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.

Solvent adsorbent is recommended for spills of this product.

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.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits: Acetone:

- Permissible Exposure Limit (PEL): 1000 ppm (TWA)
- Threshold Limit Value (TLV): 500 ppm (TWA), 750 ppm (STEL)

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 Personal Respirators:

If the exposure limit is exceeded, 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.

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.

9. Physical and Chemical Properties

Appearance: Clear, colorless, volatile liquid.
Odor: Fragrant, mint-like
Solubility: Miscible in all proportions in water.
Specific Gravity: 0.79 @ 20C/4C
pH: No information found.
% Volatiles by volume @ 21C (70F): 100
Boiling Point: 56.5C (133F) @ 760 mm Hg
Melting Point: -95C (-139F)
Vapor Density (Air=1): 2.0
Vapor Pressure (mm Hg): 400 @ 39.5C (104F)
Evaporation Rate (BuAc=1): ca. 7.7

10. Stability and Reactivity

Stability: Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products: Carbon dioxide and carbon monoxide may form when heated to decomposition.
Hazardous Polymerization: Will not occur.
Incompatibilities: Concentrated nitric and sulfuric acid mixtures, oxidizing materials, chloroform, alkalis, chlorine compounds, acids, potassium t-butoxide.
Conditions to Avoid: Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

Oral rat LD50: 5800 mg/kg; Inhalation rat LC50: 50,100mg/m3; Irritation eye rabbit, Standard Draize, 20 mg severe; investigated as a tumorigen, mutagen, reproductive effector.

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

Table with 4 columns: Ingredient, ---NTP Carcinogen--- Known, Anticipated, IARC Category. Row 1: Acetone (67-64-1), No, No, None

12. Ecological Information

Environmental Fate: When released into the soil, this material is expected to readily 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 expected to readily biodegrade. When released to water, this material is expected to quickly evaporate. 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 may be moderately degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material may be moderately degraded by photolysis. When released into the air, this material is expected to be readily removed from the atmosphere by wet deposition.

Environmental Toxicity:

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

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.

14. Transport Information

Domestic (Land, D.O.T.)

 Proper Shipping Name: ACETONE
 Hazard Class: 3
 UN/NA: UN1090
 Packing Group: II
 Information reported for product/size: 350LB

International (Water, I.M.O.)

 Proper Shipping Name: ACETONE
 Hazard Class: 3.1
 UN/NA: UN1090
 Packing Group: II
 Information reported for product/size: 350LB

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----
 Ingredient TSCA EC Japan Australia

 Acetone (67-64-1) Yes Yes Yes Yes

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

Ingredient Korea DSL NDSL Phil.

 Acetone (67-64-1) Yes Yes No Yes

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

 Ingredient -SARA 302- -SARA 313-----
 RQ TPQ List Chemical Catg.

Acetone (67-64-1) No No Yes No

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

-RCRA- -TSCA-

Ingredient	CERCLA	261.33	8(d)
Acetone (67-64-1)	5000	U002	No

Chemical Weapons Convention: No TSCA 12(b): Yes CDTA: Yes

SARA 311/312: Acute: Yes Chronic: No Fire: Yes Pressure: No
Reactivity: No (Pure / Liquid)

Australian Hazchem Code: 2[Y]E

Poison Schedule: No information found.

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.

16. Other Information

NFPA Ratings: Health: 1 Flammability: 3 Reactivity: 0

Label Hazard Warning:

DANGER! EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM.

Label Precautions:

Keep away from heat, sparks and flame.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Avoid breathing vapor.

Avoid contact with eyes, skin and clothing.

Label First Aid:

Aspiration hazard. If swallowed, vomiting may occur spontaneously, but DO NOT INDUCE. If vomiting occurs, keep head below hips to prevent aspiration into lungs. Never give anything by mouth to an unconscious person. Call a physician immediately. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 8.

Disclaimer:

Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.

Prepared by: Strategic Services Division
Phone Number: (314) 539-1600 (S.A.)

SDS 3.2

HEPTANE

MSDS Number: H0584 --- Effective Date: 10/20/98

1. Product Identification

Synonyms: n-Heptane; normal heptane; dipropyl methane; heptyl hydride
CAS No.: 142-82-5
Molecular Weight: 100.20
Chemical Formula: CH₃(CH₂)₅CH₃
Product Codes:
5872, 9177, 9198, 9338, 9365, M955, M956
3162, 4830, 5139, 5166, 5177, 5178, V554

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Heptane	142-82-5	90 - 100%	Yes

3. Hazards Identification

Emergency Overview

DANGER! FLAMMABLE LIQUID AND VAPOR. HARMFUL OR
FATAL IF SWALLOWED. HARMFUL IF INHALED. CAUSES
IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.
AFFECTS CENTRAL NERVOUS SYSTEM.

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

Health Rating: 2 - Moderate
Flammability Rating: 3 - Severe (Flammable)
Reactivity Rating: 0 - None
Contact Rating: 2 - Moderate
Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER
GLOVES; CLASS B EXTINGUISHER
Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:
Inhalation of vapors irritates the respiratory tract. May produce light headedness,
dizziness, muscle incoordination, loss of appetite and nausea. Higher
concentrations can produce central nervous system depression, narcosis, and
unconsciousness.
Ingestion:
May produce abdominal pain, nausea. Aspiration into lungs can produce severe
lung damage and is a medical emergency. Other symptoms expected to parallel
inhalation.
Skin Contact:

May cause mild irritation, redness, pain.

Eye Contact:

Vapors may irritate the eyes. Splashes may produce redness, pain.

Chronic Exposure:

Repeated or prolonged skin contact may defat the skin and produce irritation and dermatitis.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or impaired pulmonary function may be more susceptible to the effects of this substance.

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:

Aspiration hazard. Do NOT induce vomiting. Give large amounts of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if irritation develops.

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: -4C (25F) CC

Autoignition temperature: 204C (399F)

Flammable limits in air % by volume:

l_{el}: 1.05; u_{el}: 6.7

Flammable Liquid and Vapor!

Explosion:

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Vapors can flow along surfaces to distant ignition source and flash back.

Sensitive to static discharge.

Fire Extinguishing Media:

Dry chemical, foam or carbon dioxide. Water may be ineffective. 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.

6. Accidental Release Measures

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! 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.

Solvent adsorbent is recommended for spills of this product.

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. Do Not attempt to clean empty containers since residue is difficult to remove. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits: N-Heptane:

- Permissible Exposure Limit (PEL) - 500 ppm (TWA)
- Threshold Limit Value (TLV) - 400 ppm (TWA), 500 ppm (STEL)

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.

Personal Respirators:

If the exposure limit is exceeded, 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 low est. 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 low est. 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.

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.

9. Physical and Chemical Properties

Appearance: Clear, colorless liquid.

Odor: Mild, gasoline-like.

Solubility: Insoluble in water.

Specific Gravity: 0.684 @ 20C/4C
 pH: No information found.
 % Volatiles by volume @ 21C (70F): 100
 Boiling Point: 98C (208F)
 Melting Point: - 91C (-132F)
 Vapor Density (Air=1): 3.5
 Vapor Pressure (mm Hg): 40 @ 20C (68F)
 Evaporation Rate (BuAc=1): No information found.

10. Stability and Reactivity

Stability:
 Stable under ordinary conditions of use and storage. Heat will contribute to instability.
 Hazardous Decomposition Products:
 Carbon dioxide and carbon monoxide may form when heated to decomposition.
 Hazardous Polymerization:
 Will not occur.
 Incompatibilities:
 Strong oxidizers.
 Conditions to Avoid:
 Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

Inhalation rat LC50: 103 gm/m³/4H

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

---NTP Carcinogen---

Ingredient	Known	Anticipated	IARC Category
Heptane (142-82-5)	No	No	None

12. Ecological Information

Environmental Fate:
 For n-Heptane: When released into the soil, this material may biodegrade to a moderate extent. When released into the soil, this material is not expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released into water, this material may biodegrade to a moderate extent. When released to water, this material is expected to quickly evaporate. This material has an estimated bioconcentration factor (BCF) of greater than 100. This material has a log octanol-water partition coefficient of greater than 3.0. This material may bioaccumulate to some extent. 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 expected to have a half-life between 1 and 10 days.
 Environmental Toxicity:
 No information found.

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.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: HEPTANES
Hazard Class: 3
UN/NA: UN1206
Packing Group: II
Information reported for product/size: 302LB

International (Water, I.M.O.)

Proper Shipping Name: HEPTANES
Hazard Class: 3.2
UN/NA: UN1206
Packing Group: II
Information reported for product/size: 302LB

15. Regulatory Information

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

Ingredient	TSCA	EC	Japan	Australia
Heptane (142-82-5)	Yes	Yes	Yes	Yes

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

Ingredient	--Canada--	Korea	DSL	NDSL	Phil.
Heptane (142-82-5)	Yes	Yes	No	Yes	

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

Ingredient	-SARA 302-	TPQ	-----SARA 313-----	List	Chemical Catg.
Heptane (142-82-5)	No	No	No	No	No

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

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

Australian Hazchem Code: 3[Y]E

Poison Schedule: No information found.

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.

16. Other Information

NFPA Ratings: Health: 1 Flammability: 3 Reactivity: 0

Label Hazard Warning:

DANGER! FLAMMABLE LIQUID AND VAPOR. HARMFUL OR FATAL IF SWALLOWED. HARMFUL IF INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM.

Label Precautions:

Keep away from heat, sparks and flame.
Keep container closed.
Avoid breathing vapor or mist.
Use only with adequate ventilation.
Avoid contact with eyes, skin and clothing.
Wash thoroughly after handling.

Label First Aid:

Aspiration hazard. 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, immediately flush eyes or skin with plenty of water for at least 15 minutes. In all cases call a physician.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 1, 2, 3, 4, 8, 9, 11, 15, 16.

Disclaimer:

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Prepared by: Strategic Services Division
Phone Number: (314) 539-1600 (S.A.)

SDS 3.3

Phenyl Isocyanate

MSDS Number: P3214 --- Effective Date: 04/20/00

1. Product Identification

Synonyms: Isocyanatobenzene; Phenylcarbimide; Carbanil; Benzene,
Isocyanato-
CAS No.: 103-71-9
Molecular Weight: 119.12
Chemical Formula: C₆H₅NCO
Product Codes: T768

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Phenyl Isocyanate	103-71-9	100%	Yes

3. Hazards Identification

Emergency Overview

POISON! DANGER! MAY BE FATAL IF INHALED. FLAMMABLE LIQUID AND VAPOR. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY CAUSE ALLERGIC SKIN OR RESPIRATORY REACTION. MAY BE HARMFUL IF SWALLOWED.

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

Health Rating: 4 - Extreme (Poison)
Flammability Rating: 2 - Moderate
Reactivity Rating: 1 - Slight
Contact Rating: 2 - Moderate
Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES
Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. Inhalation exposure may be fatal as a result of bronchospasms and a build-up of fluid in the lungs (pulmonary edema). May produce pulmonary sensitization or allergic asthma.

Ingestion:

May cause irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea.

Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain. May cause allergic skin reactions.

Eye Contact:

Causes irritation and excessive eye tearing.

Chronic Exposure:

Repeated exposure may cause symptoms similar to those listed for acute effects.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders and impaired respiratory function may be more susceptible to the effects of the substance.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

Skin Contact:

Immediately flush skin with plenty of soap and water. 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: 56C (133F) OC

Flammable Liquid and Vapor! Contact with strong oxidizers may cause fire.

Explosion:

Sealed containers may rupture when heated. Above the flash point, explosive vapor-air mixtures may be formed. Vapors can flow along surfaces to distant ignition source and flash back.

Fire Extinguishing Media:

Dry chemical or carbon dioxide. Do not use water. Water spray may be used to keep fire exposed containers cool. Move exposed containers from fire area, if it can be done without risk.

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.

6. Accidental Release Measures

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! 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.

Solvent adsorbent is recommended for spills of this product.

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. Do Not attempt to clean empty containers since residue is difficult to remove. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

None established.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. 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.

Personal Respirators :

For conditions of use where exposure to the substance is apparent, consult an industrial hygienist. For emergencies, or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator.

WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

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.

9. Physical and Chemical Properties

Appearance: Colorless to tan liquid.

Odor: Pungent odor.

Solubility: Decomposes

Density: 1.0956 @ 19.6C/4C

pH: No information found.

% Volatiles by volume @ 21C (70F): 100

Boiling Point: 158 - 168C (316 - 334F)

Melting Point: - 30C (-22F)

Vapor Density (Air=1): Not applicable.

Vapor Pressure (mm Hg): 3 @ 20C (68F)

Evaporation Rate (BuAc=1): No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Carbon monoxide, carbon dioxide, hydrogen cyanide, oxides of nitrogen.

Hazardous Polymerization:

May occur.

Incompatibilities:

Water, strong oxidizing agents, strong acids, strong bases, alcohols, amines.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

For Phenyl Isocyanate: LC50 inhalation rat 22 mg/m³/4H; LD50 oral rat 800 mg/kg; LD50 skin rabbit 7130 mg/kg. Investigated as a mutagen.

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

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Phenyl Isocyanate (103-71-9)	No	No	None

12. Ecological Information

Environmental Fate:

When released to moist soil, water, or air, this material is expected to hydrolyze rapidly. When released into the soil, this material is not expected to leach into groundwater. When released into the soil, this material may evaporate to a moderate extent. When released into water, this material may evaporate to a moderate extent. This material has an estimated bioconcentration factor (BCF) of less than 100. 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.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to 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.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: PHENYL ISOCYANATE
 Hazard Class: 6.1, 3
 UN/NA: UN2487
 Packing Group: I
 Information reported for product/size: 500G

International (Water, I.M.O.)

Proper Shipping Name: PHENYL ISOCYANATE
 Hazard Class: 6.1, 3.2
 UN/NA: UN2487
 Packing Group: I
 Information reported for product/size: 500G

15. Regulatory Information

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

Ingredient	TSCA	EC	Japan	Australia
Phenyl Isocyanate (103-71-9)	Yes	Yes	Yes	Yes

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

Ingredient	--Canada--			
	Korea	DSL	NDSL	Phil.
Phenyl Isocyanate (103-71-9)	Yes	Yes	No	Yes

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

Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Phenyl Isocyanate (103-71-9)	No	No	No	No

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

Ingredient	-RCRA-		-TSCA-
	CERCLA	261.33	8(d)
Phenyl Isocyanate (103-71-9)	No	No	Yes

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

Australian Hazchem Code: 3W

Poison Schedule: S6

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.

16. Other Information

NFPA Ratings: Health: 4 Flammability: 2 Reactivity: 1

Label Hazard Warning:

POISON! DANGER! MAY BE FATAL IF INHALED. FLAMMABLE LIQUID AND VAPOR. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY CAUSE ALLERGIC SKIN OR RESPIRATORY REACTION. MAY BE HARMFUL IF SWALLOWED.

Label Precautions:

Do not breathe vapor or mist.
Keep container closed.
Use only with adequate ventilation.
Keep away from heat, sparks and flame.
Avoid contact with eyes, skin and clothing.
Wash thoroughly after handling.

Label First Aid:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately. In case of skin contact, immediately flush skin with plenty of soap and water. Remove contaminated clothing and shoes. Wash clothing before reuse. In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In all cases, get medical attention.

Product Use:

Laboratory Reagent.

Revision Information:

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