

OPTIMAL GROUP OF COMPANIES

(466583 K, 466592 M, 466586 D)

An Affiliate of The Dow Chemical Company and Petroliam Nasional Berhad

CHEMICAL SAFETY DATA SHEET



O P T I M A L

Product Name: UCARSOL™ NH SOLVENT 602

Effective Date: [21 February](#)~~19 Nov~~
2003~~2~~

MSDS #: GAS62 ([Dow TPC None](#))

Page 1 of 7

OPTIMAL CHEMICALS urges the recipient of the Chemical Safety Data Sheet to study it carefully to become aware of hazards, if any of the product involved. In the interest of safety you should (1) notify your employees, agents and contractors of the information on this sheet, (2) furnish a copy to each of your customers for the product, and (3) request your customer to inform their employees and customers as well.

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY UNDERTAKING

1.1. IDENTIFICATION OF THE SUBSTANCE OR PREPARATION

CHEMICAL NAME:	Amine Formulation
CHEMICAL FAMILY:	Amines
FORMULA:	Trade secret
CAS # AND NAME:	See Section 2, "Ingredients"
SYNONYMS:	None

1.2. COMPANY IDENTIFICATION

Headquarters:

OPTIMAL CHEMICALS (MALAYSIA) SDN BHD (466586 D)

A subsidiary of The Dow Chemical Company and Petroliam Nasional Berhad
Level 13, Tower I

Petronas Twin Towers
KLCC, 50088 Kuala Lumpur Malaysia

Plant site:

OPTIMAL CHEMICALS (MALAYSIA) SDN BHD (466586 D)

A subsidiary of The Dow Chemical Company and Petroliam Nasional Berhad
OPTIMAL Administration Complex

Kerteh Industrial Area
KM 106 Jalan Kuala Terengganu - Kuantan
24300 Kerteh, Kemaman
Terengganu

1.3. EMERGENCY TELEPHONE NUMBER

24 hours a day: Malaysia 00 – 800 – 2537 8747
or call Bomba: 994

Product Name: UCARSOL™ NH SOLVENT 602	Effective Date: 19 Nov 2002 <u>21 February 2003</u>
MSDS #: GAS62 (Dow TPC None)	Page 2 of 7

2. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient (CAS #)	Concentration % by weight	Hazard	Danger Symbol (s)
N-Methylethanolamine (CAS # 109-83-1) Amine mixture (CAS # Trade Secret)	>= 93	Causes burns. May cause sensitization by inhalation and skin contact. Irritating to eyes.	Xi
Piperazine (CAS # 110-85-0) Water (CAS # 7732-18-5)	>= 6		

3. HAZARDS IDENTIFICATION

Causes burns. May cause sensitization by inhalation and skin contact. Irritating to eyes.

4. FIRST AID MEASURES

Swallowing

If patient is fully conscious, give two glasses of water. Do not induce vomiting. Obtain medical attention.

Inhalation

Remove to fresh air. Give artificial respiration if not breathing. If breathing is difficult, oxygen may be given by qualified personnel. Obtain medical attention.

Skin Contact

Remove contaminated clothing. Wash skin with soap and water. Obtain medical attention if contact has been widespread and prolonged, or if irritation persists. Wash clothing before reuse.

Eye Contact

Immediately flush eyes with water and continue washing for at least 15 minutes. DO NOT remove contact lenses, if worn. Obtain medical attention without delay, preferably from an ophthalmologist.

Notes to Physician

There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient. Slight skin irritant. Moderate eye irritant. Due to the irritant nature of the material, the stomach should be evacuated carefully in cases of poisoning by swallowing.

Any material aspirated during vomiting may cause lung injury. Therefore, emesis should not be induced mechanically or pharmacologically. If it is considered necessary to evacuate the stomach contents, this should be done by means least likely to cause aspiration (e.g., gastric lavage after endotracheal intubation).

Exposure to the vapour may cause minor transient edema of the corneal epithelium. This condition, referred to as "glauropsia", "blue haze" or "blue-gray haze", produces a blurring of vision against a general bluish haze and the appearance of halos around bright objects. The effect disappears spontaneously within a few hours of the end of an exposure and leaves no

Product Name: UCARSOL™ NH SOLVENT 602	Effective Date: 19 Nov 2002 <u>21 February 2003</u>
MSDS #: GAS62 (Dow TPC None)	Page 3 of 7

sequelae. Although not detrimental to the eye per se, glaucopsia predisposes an affected individual to physical accidents and reduces the ability to undertake skilled tasks, such as driving a motorized vehicle.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Extinguish fires with water spray or apply alcohol-type or all-purpose type foam by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical media for small fires.

Special Protective Equipment for Firefighters

Use self-contained breathing apparatus and protective clothing.

Unusual Fire and Explosion Hazards

During a fire, oxides of nitrogen may be produced.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Wear adequate personal protective equipment especially eye protection, see Section 8 EXPOSURE CONTROLS/PERSONAL PROTECTION.

Environmental Precautions

Contain liquid to prevent contamination of soil, surface water or ground water.

Methods of Cleaning Up

Cover and soak up with a suitable absorbent material, such as: Sand. Collect in suitable and properly labelled containers. Dispose of according to applicable regulations, see Section 13 DISPOSAL CONSIDERATIONS.

7. HANDLING AND STORAGE

Handling

Practice care and caution to avoid skin and eye contact. Avoid breathing vapours if generated. Do not swallow. Wash thoroughly after handling.

Storage

Keep container closed. Store and use with adequate ventilation. Store in accordance with good industrial practices. Storage information may be obtained from product-specific OPTIMAL CHEMICALS Storage and Handling Guides, or by calling a OPTIMAL CHEMICALS Customer Service Representative.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

None established.

Engineering Controls

Local exhaust ventilation may be necessary for some operations.

Product Name: UCARSOL™ NH SOLVENT 602	Effective Date: 19 Nov 2002 21 February 2003
MSDS #: GAS62 (Dow TPC None)	Page 4 of 7

WARNING: Sudden release of hot organic chemical vapours or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into hot equipment under a vacuum, may result in ignitions without the presence of obvious ignition sources. Published "autoignition" or "ignition" temperature values cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions. Any use of this product in elevated-temperature processes should be thoroughly evaluated to establish and maintain safe operating conditions.

Personal Protective Equipment

- Respiratory Protection

If respiratory irritation is experienced, use an approved air-purifying respirator.

- Skin Protection

For brief contact, no precautions other than clean body-covering clothing should be needed. When prolonged or frequently repeated contact could occur, use protective clothing chemically resistant to this material. Selection of specific items such as face shield, gloves, boots, apron, or full body-suit will depend on operation. Eye wash fountain and safety shower should be located in immediate vicinity of work area.

- Eye/Face Protection

Use chemical goggles.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
COLOUR	Transparent yellow
ODOUR	Odourless
MOLECULAR WEIGHT	Not applicable mixture
BOILING POINT	121 °C at 1013 hPa
FREEZING POINT	6 °C
MELTING POINT	Not applicable
FLASH POINT	None (ASTM D 93) 113 °C METHOD: Cleveland open cup ASTM D 92
FLAMMABILITY LIMITS IN AIR (% by volume)	LOWER: Not determined UPPER: Not determined
SPECIFIC GRAVITY (H2O=1)	1.044 at 20/20 °C
VAPOUR PRESSURE	5.5 mmHg at 20 °C
VAPOUR DENSITY (air=1).	2.0
EVAPORATION RATE (Butyl acetate = 1)	0.5
SOLUBILITY IN WATER (% by weight)	100 at 20 °C
PERCENT VOLATILES	50
pH	11

10. STABILITY AND REACTIVITY

Chemical Stability

Stable under normal handling and storage conditions, see Section 7, "Handling and Storage."

Product Name: UCARSOL™ NH SOLVENT 602	Effective Date: 19 Nov 2002 21 February 2003
MSDS #: GAS62 (Dow TPC None)	Page 5 of 7

Materials to Avoid

Oxidising agents.

Conditions to Avoid

WARNING: Do not mix this product with nitrites or other nitrosating agents because a nitrosamine may be formed. Nitrosamines may cause cancer.

Hazardous Reactions

This product should not be heated above 60 deg.C in the presence of aluminium due to potential chemical reaction releasing flammable hydrogen gas.

Burning can produce the following combustion products: Carbon monoxide and/or carbon dioxide. Oxides of nitrogen. Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant. Acute overexposure to the products of combustion may result in irritation of the respiratory tract

Hazardous Polymerization

Will not occur.

11. TOXICOLOGICAL INFORMATION**Swallowing**

May cause irritation of the mouth, throat, esophagus, and stomach, with pain or discomfort in the mouth, throat, chest and abdomen, nausea, vomiting diarrhea, thirst, dizziness, drowsiness, and weakness. There may be difficulty in swallowing. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.

Skin absorption

Prolonged or widespread contact may result in the absorption of potentially harmful amounts of material.

Skin contact

Brief contact may cause slight irritation with itching, local redness and possibly swelling. Sustained contact of many hours may cause more severe redness and swelling with the development of fissures and possibly bleeding into the injured area.

Eye contact

Liquid causes severe irritation, experienced as discomfort or pain, excess blinking and tear production, with marked excess redness and swelling of the conjunctiva. High vapour concentrations may cause irritation, experienced as stinging excess blinking and tear production, with excess redness of the conjunctiva. Corneal injury may occur. Vapour may cause temporary disturbance of vision. (See "Notes to Physician").

Inhalation

Vapour is irritating and may cause excessive tear formation, burning sensation of the nose and throat, coughing, wheezing, shortness of breath, nausea and vomiting. Extremely high vapour concentrations may cause lung damage. Some individuals may develop asthma. (See "Other effects of overexposure").

Other Information

Long-term repeated exposures to a component of this product in the atmosphere may result in symptoms indicative of narrowing of the airways and presenting as asthma or chronic bronchitis. Repeated contact with skin may cause a severe cumulative dermatitis. Skin contact may aggravate an existing dermatitis. Inhalation of material may aggravate asthma and inflammatory or fibrotic pulmonary disease.

Product Name: UCARSOL™ NH SOLVENT 602	Effective Date: 19 Nov 2002 <u>21 February 2003</u>
MSDS #: GAS62 (Dow TPC None)	Page 6 of 7

Inhalation may cause sensitization of the respiratory tract and the development of an asthmatic reaction on further exposure. There may be susceptible individuals who develop long-term hyper-reactive airways, asthma and other respiratory injury following exposure to extremely low concentrations of a component of this product, even below the irritation threshold. Other respiratory irritants may produce a reaction in individuals whose airways have become hyper-reactive.

Since there are no definitive screening methods available to identify susceptible individuals, we suggest that people with asthma, or other longstanding respiratory conditions (for example, chronic bronchitis, emphysema, etc) should be protected from any potential exposure to this product.

Skin contact may cause sensitization and an allergic skin reaction. Cross-sensitization may occur by skin contact with this material and other amines. A component in this product can induce central nervous system effects including petit and grand mal seizures, when given by mouth in amounts used therapeutically. The effects resolve shortly after cessation of dosing.

No developmental effects were observed in pregnant rats treated cutaneously with maternal toxic dosages of a component in this product. Contains one or more amines, which may react with nitrites to form nitrosamines. Some nitrosamines have been shown to be carcinogenic in laboratory animals.

12. ECOLOGICAL INFORMATION

Persistence and Degradability

Partial information may be available, call OPTIMAL CHEMICALS.

Environmental Risks

Partial information may be available, call OPTIMAL CHEMICALS.

Other Information

None.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method(s)

It is recommended that disposal of this material be performed by incineration biological treatment or by other means in full compliance with national and local regulations. Dispose in accordance with all national and local environmental regulations. Empty containers should be recycled or disposed of through an approved waste management facility.

Laboratory tests indicate that this material is biodegradable at very low concentrations (approximately 10 ppm) in water. If spilled material cannot be collected, it may be possible to neutralize with dilute hydrochloric acid, then landfill the neutral salt.

Disposal methods identified are for the product as sold. For proper disposal of used materials, an assessment must be completed to determine the proper and permissible waste management options permissible under applicable rules regulations and/or laws governing your location.

14. TRANSPORT INFORMATION

TRANSPORT CLASSIFICATION

ADR/RID	This product is not submitted to the ADR regulations
IMDG	This product is not submitted to the IMO regulations
MARPOL	ANNEX II : Not evaluated at this moment ANNEX III : Not classified

Product Name: UCARSOL™ NH SOLVENT 602	Effective Date: 19 Nov 2002 <u>21 February 2003</u>
MSDS #: GAS62 (Dow TPC None)	Page 7 of 7

ICAO	PROPER SHIPPING NAME: Aviation Regulated Liquid, nos (contains alkanolamines) CLASS: 9 PACK. GROUP: none UN : 3334 LABEL: Class 9 PACKING INSTRUCTIONS: PASSENGER: 906 CARGO: 906 MAX. NET QUANT/PACK: PASSENGER: 4 liters CARGO: 4 liters
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15. REGULATORY INFORMATION

HAZARD CLASSIFICATION

DANGER SYMBOL(S)	Xi
RISK PHRASES	34 - 42/43
SAFETY PHRASES	26 - 36/37/39 – 45
LABEL TEXT	Causes burns. May cause sensitization by inhalation and skin contact. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately. (show the label where possible) FOR INDUSTRIAL USE ONLY
CONTAINS	--

REGULATORY DATA

All other national and local regulations, if applicable to the use, transport or disposal of this product, should be observed.

CHEMICAL INVENTORY INFORMATION

EINECS

The components of this product are on the EINECS inventory or are exempt from EINECS inventory requirements.

TSCA

All components of this product are on the TSCA inventory or are exempt from TSCA Inventory requirements.

DSL

The components of this product are on the DSL or are exempt from reporting under the New Substances Notification Regulations.

16. OTHER INFORMATION

Recommended Uses and Restrictions

For Industry Use Only.

Further Information

There may be additional information on this product, which may be obtained by calling your OPTIMAL CHEMICALS SALES or Customer Service contact.

Hazard Rating System

NFPA ratings for this product are: **H-2 F-1 R-0**

Product Name: UCARSOL™ NH SOLVENT 602	Effective Date: 19 Nov 2002 <u>21 February 2003</u>
MSDS #: GAS62 (Dow TPC None)	Page 8 of 7

These ratings are part of a specific hazard communication program and should be disregarded where individuals are not trained in the use of this hazard rating system. You should be familiar with the hazard communication programs applicable to your workplace.

OPTIMAL CHEMICALS believe that the information contained herein is current as of the date of the Chemical Safety Data Sheet. Since the use of the information and these opinions and the conditions of use of this product are not within the control of OPTIMAL CHEMICALS, it is the user's obligation to determine the condition of safe use of the products.