

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™ HS SOLVENT 103

Effective Date: 5 March 2003

MSDS #: GAS03 (Dow TPC 16958)

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:	Alkanolamine Formulation
CHEMICAL FAMILY:	Alkanolamine mixture
FORMULA:	See Section 2
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™ HS SOLVENT 103	Effective Date: 5 March 2003
MSDS #: GAS03 (Dow TPC 16958)	Page 2 of 7

2. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient (CAS #)	Concentration % by weight	Hazard	Danger Symbol (s)
Alkanolamine mixture (CAS # Trade secret)	100	Irritating to eyes	Xi

3. HAZARDS IDENTIFICATION

Irritating to eyes and skin. Harmful if absorbed through skin. Vapour may cause temporary blurring of vision.

4. FIRST AID MEASURES

Never give fluids or induce vomiting if patient is unconscious or is having convulsions.

Inhalation

Move person to fresh air; if effects occur, consult a physician.

Skin Contact

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

Eye Contact

Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.

Ingestion

Do not induce vomiting. If patient is fully conscious, give one glass (ca. 2.5 dL) of water or milk if available and transport to medical facility. Do not give anything by mouth to an unconscious person.

Note to Physician

Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done.

If burn is present, treat as any thermal burn, after decontamination.

No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Water fog or fine spray. Carbon dioxide. Alcohol resistant foam. Dry chemical fire extinguishers.

Hazardous Combustion Products

Nitrogen oxides.

Product Name: UCARSOL™ HS SOLVENT 103	Effective Date: 5 March 2003
MSDS #: GAS03 (Dow TPC 16958)	Page 3 of 7

Protection of Firefighters

Wear positive-pressure self-contained breathing apparatus and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves).

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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION**Exposure Guidelines**

None established.

Engineering Controls

Local exhaust ventilation may be necessary for some operations.

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,

Product Name: UCARSOL™ HS SOLVENT 103	Effective Date: 5 March 2003
MSDS #: GAS03 (Dow TPC 16958)	Page 4 of 7

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 pale yellow
ODOUR	Ammoniacal fishy
MOLECULAR WEIGHT	Mixture
BOILING POINT	155.97 °C at 1013 hPa
FREEZING POINT	(pour point) <-59 °C
MELTING POINT	Not applicable
FLASH POINT	123.8 °C METHOD: Pensky-Martens closed cup ASTM D 93 143.3 °C METHOD: Cleveland open cup ASTM D 92
AUTOIGNITION TEMPERATURE	Not currently available.
FLAMMABILITY LIMITS IN AIR (% by volume)	LOWER: Not determined. UPPER: Not determined
SPECIFIC GRAVITY (H2O=1)	1.055 at 20/20 °C
VAPOUR PRESSURE	0.232 kPa at 20 °C
VAPOUR DENSITY (air=1)	3.24
EVAPORATION RATE (Butyl acetate = 1)	0.2
SOLUBILITY IN WATER (% by weight)	100 at 20 °C
PERCENT VOLATILES	Not determined
pH AS SUPPLIED	Not currently available

10. STABILITY AND REACTIVITY

Chemical Stability

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

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 excessive corrosion and potential chemical reaction releasing flammable hydrogen gas.

Burning can produce the following combustion products: Carbon monoxide and/or carbon dioxide. Oxides or 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

Product Name: UCARSOL™ HS SOLVENT 103	Effective Date: 5 March 2003
MSDS #: GAS03 (Dow TPC 16958)	Page 5 of 7

Hazardous Polymerization

Will not occur.

11. TOXICOLOGICAL INFORMATION**Ingestion**

Low toxicity if swallowed. The oral LD50 for rats is expected to be 2000-3980 mg/kg. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; swallowing amounts larger than that may cause injury. Ingestion may cause gastrointestinal irritation or ulceration.

Skin Contact

Prolonged or repeated exposure may cause skin irritation, even a burn. May cause more severe response if confined to skin or skin is abraded (scratched or cut). The LD50 for skin absorption in rabbits is >2000 mg/kg. Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Inhalation

Excessive exposure may cause irritation to upper respiratory tract (nose and throat).

Eye Contact

May cause moderate eye irritation. May cause moderate corneal injury.

12. ECOLOGICAL INFORMATION**Mobility and Bioaccumulation Potential**

No bioconcentration is expected because of the high water solubility. Measured chemical oxygen demand (COD) is 1.75 mg/mg. Measured theoretical oxygen demand (THOD) is 0.54 mg/mg.

Degradation

Biodegradation reached in Closed Bottle Test (OECD Test No. 301 D) after 28 days: 30-59%.

Aquatic Toxicity

Acute LC50 for fathead minnow (*Pimephales promelas*) is 1200 mg/L. Acute LC50 for water flea *Daphnia magna* is 250 mg/L. Growth inhibition in bacteria is > 10000 mg/L. Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50 greater than 100 mg/L in most sensitive species).

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. At low concentrations in water, this product is expected to be readily biodegradable in a biological wastewater treatment system. Dispose in accordance with all applicable national and local regulations. Empty containers should be recycled or disposed of through an approved waste management facility.

Product Name: UCARSOL™ HS SOLVENT 103	Effective Date: 5 March 2003
MSDS #: GAS03 (Dow TPC 16958)	Page 6 of 7

14. TRANSPORT INFORMATION

TRANSPORT CLASSIFICATION

ADR/RID	This product is not submitted to the ADR regulations MONT-BLANC OK
IMDG	This product is not submitted to the IMO regulations
MARPOL	ANNEX II: Category C – tripartite ANNEX III: Not classified
ICAO	This product is not submitted to the ICAO regulations

15. REGULATORY INFORMATION

EU CLASSIFICATION

DANGER SYMBOL(S)	Xi
RISK PHRASES	36
SAFETY PHRASES	24
LABEL TEXT	Irritating to eyes. Avoid contact with skin. FOR INDUSTRIAL USE ONLY
CONTAINS	- -

REGULATORY DATA UNITED KINGDOM

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.

TSCA

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

16. OTHER INFORMATION

Recommended Uses and Restrictions

Please consult the relevant product and/or application information for this product.

Further Information

Additional information on this product 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**

This ratings are part of specific hazard communications program(s) and should be disregarded where individuals are not trained in the use of these hazard rating systems. You should be familiar with the hazard communication applicable to your workplace.

Product Name: UCARSOL™ HS SOLVENT 103	Effective Date: 5 March 2003
MSDS #: GAS03 (Dow TPC 16958)	Page 7 of 7

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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.