

DBE SOLVENT

MATERIAL SAFETY DATA SHEET

EW

6025CR DBE-6
Revised 10-APR-1996 Printed 10-APR-1996

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

Corporate MSDS Number : DU005940
Formula : $\text{CH}_3\text{OOC}(\text{CH}_2)_n\text{COOCH}_3$, $n=3,4$
Molecular Weight : Avg. 173

Tradenames and Synonyms

DIBASIC ESTER-6
DIMETHYL ADIPATE
HEXANEDIOIC ACID, DIMETHYL ESTER

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-800-231-0998
Transport Emergency : CHEMTREC: 1-800-424-9300
Medical Emergency : 1-800-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
DIMETHYL ADIPATE	627-93-0	>98.5
DIMETHYL SUCCINATE	106-65-0	<0.1



HAZARDS IDENTIFICATION

Potential Health Effects

DBE-6 may irritate skin, eyes, nose and throat. May cause blurry vision.

HUMAN HEALTH EFFECTS:

Skin contact may cause skin irritation with discomfort or rash. Eye contact may cause eye irritation with discomfort, tearing, or blurring of vision. Inhalation may cause irritation of the upper respiratory passages, with coughing and discomfort. Some individuals who have been overexposed by inhalation or skin contact experienced blurry vision.

The mechanism of blurred vision in humans is unknown. Based on observed effects from animal studies, we believe that some symptoms of pre-existing eye disease could be aggravated by overexposure to this material.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INHALATION

If inhaled, immediately remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

SKIN CONTACT

Flush skin with water after contact. Wash contaminated clothing before reuse.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, do not induce vomiting. Immediately give 2 glasses of water. Never give anything by mouth to an unconscious person. Call a physician.

(FIRST AID MEASURES - Continued)

Notes to Physicians

Activated charcoal mixture may be beneficial. Suspend 50 g activated charcoal in 400 mL water and mix well. Administer 5 mL/kg, or 350 mL for an average adult.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : 113 C (235 F)
Method : TCC
Flammable limits in Air, % by Volume
LEL : 0.8
UEL : 8.1
Autoignition : 360 C (680 F)

Actual Autoignition Temperature (AIT) can be affected by the concentration of vapors and oxygen, vapor/air contact time, pressure, volume, catalytic impurities, etc. Process conditions should be analyzed to determine if the AIT's may be higher or lower.

Vapor forms explosive mixture with air. Hazardous gases/vapors produced in fire are carbon monoxide.

Extinguishing Media

Water Spray, Foam, Dry Chemical, CO2.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment. Cool tank/container with water spray.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Initial Containment

Remove source of heat, sparks, flame, impact, friction or electricity. Dike spill. Prevent material from entering sewers, waterways, or low areas.

(ACCIDENTAL RELEASE MEASURES - Continued)

Spill Clean Up

Recover free liquid for reuse or reclamation. Recover undamaged and minimally contaminated material for reuse and reclamation. Soak up with sawdust, sand, oil dry or other absorbent material.

HANDLING AND STORAGE

Handling (Personnel)

Avoid breathing vapors or mist. Avoid contact with eyes, skin, or clothing. Wash thoroughly after handling.

Storage

Do not mix with strong oxidants, acids, or alkalies. Store in a well ventilated place. Keep container tightly closed.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Use sufficient ventilation to keep employee exposure below recommended limits.

Personal Protective Equipment

EYE/FACE PROTECTION

Wear safety glasses. Wear coverall chemical splash goggles when possibility exists for eye and face contact due to splashing or spraying material.

RESPIRATOR

A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

PROTECTIVE CLOTHING

Wear impervious clothing, such as gloves, apron, boots, or whole bodysuit as appropriate.

Recommended glove and clothing material: Butyl Rubber.

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Exposure Guidelines

Exposure Limits

DBE-6

PEL (OSHA)

: None Established

TLV (ACGIH)

: None Established

AEL * (DuPont)

: 1.5 ppm, 10 mg/m³, 8 Hr. TWA
This limit is for DBE.

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Boiling Point : 227-230 C (441-446 F)
Vapor Pressure : <0.05 torr @ 20 C (68 F)
Melting Point : 10 C (50 F)
% Volatiles : 100 WT% @ 20 C (68 F)
Evaporation Rate : <0.1 (Butyl Acetate=1.0)
Solubility in Water : 2.4 WT% @ 20 C (68 F)
Odor : Sweet
Form : Liquid
Color : Clear
Specific Gravity : 1.064 @ 20 C (68 F)

STABILITY AND REACTIVITY

Chemical Stability

Stable.

Incompatibility with Other Materials

Incompatible or can react with strong oxidizers, acids, alkalies.

Decomposition

Decomposes with heat.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

DIMETHYL ADIPATE

Skin absorption LD50: >200 mg/kg in rabbits
Oral LD50 : >7,500 mg/kg in rats

The material is a mild eye irritant. It was of very low toxicity by ingestion and of moderate toxicity by skin contact.

The information below is based on toxicity testing of a DBE mixture of dimethyl glutarate (66%), dimethyl adipate (17%), and dimethyl succinate (17%), and may be applicable to DBE-6. It is provided to supplement the above information.

DIBASIC ESTERS MIXTURE (DBE)

Inhalation 4-hour LC50: >11 mg/L in rats
Inhalation 1-hour LC50: >10.7 mg/L in rats

The mixture is a mild to severe skin irritant, but is not a skin sensitizer in animals. Toxic effects described in animals from exposure by inhalation include upper respiratory tract irritation. A single 4-hour exposure to 60 ppm caused transient corneal opacity and transient increases in the distance from the cornea to the anterior surface of the lens of the eye. Toxicity described in animals from repeated exposure by inhalation include decreased weight gain, absolute and relative liver weight decrease, and degeneration of olfactory epithelium (nasal tissue). Toxicity described in animals from repeated exposure by ingestion include weight loss, but there were no pathological abnormalities noted.

A single application of 10 μ L to the eye caused corneal opacity. The administration of 10-100 μ L of a similar mixture caused corneal opacity, transient increases in corneal thickness, and transient corneal anesthesia. A single application of approximately 60 mg/kg to the skin caused transient increases in the distance from the cornea to the anterior surface of the lens of the eye.

The mixture does not produce genetic damage in animals, or in bacterial cell cultures, but it was positive in one study with cultured mammalian cells. Animal testing indicates that this mixture does not have developmental, or reproductive effects.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

DBE

96 hour LC50 - Fathead minnows: 18-24 mg/L.
Moderately toxic.

48 hour LC50 - Daphnia magna: 112-150 mg/L

DISPOSAL CONSIDERATIONS

Waste Disposal

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Recover nonusable free liquid and dispose of in approved and permitted incinerator. Recover nonusable free liquid and dispose of in approved and permitted biological treatment system. Recover contaminated water and dispose of in approved and permitted biological treatment system. Remove nonusable solid material and/or contaminated soil, for disposal in an approved and permitted landfill. Do not flush to surface water or sanitary sewer system.

TRANSPORTATION INFORMATION

Shipping Information

NOT REGULATED AS A HAZARDOUS MATERIAL BY DOT, IMO, OR IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : Reported/Included.

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute : Yes
Chronic : No
Fire : No
Reactivity : No
Pressure : No

HAZARDOUS CHEMICAL LISTS

SARA Extremely Hazardous Substance: No
CERCLA Hazardous Substance : No

(REGULATORY INFORMATION - Continued)

SARA Toxic Chemical : No

VOC's for DBE-6 per the EPA Federal Register/Volume 57,
No. 22/, 2/3/92/Page 3945, considered to be 100% VOC
(1062 gr/ltr).

Canadian Regulations

CLASS D Division 2 Subdivision B - Toxic Material. Skin or Eye
Irritant.

OTHER INFORMATION

NFPA, NPCA-HMIS

NPCA-HMIS Rating
Health : 1
Flammability : 1
Reactivity : 0

Personal Protection rating to be supplied by user depending on use
conditions.

Additional Information

The hydrogen cyanide concentration in this product is so low (<10 ppm) as to be toxicologically insignificant when this product is used as a solvent. However, when this product is chemically reacted with alcohols, and methanol is recovered from that reaction and purified for reuse by distillation, concentration of highly volatile impurities such as hydrogen cyanide to toxicologically significant levels can occur in the waste stream from this process. Processors using this product as a raw material should be aware of this potential hazard.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : DuPont Chemicals
Address : Engineering & Product Safety
> : P.O. Box 80709, Chestnut Run
> : Wilmington, DE 19880-0709
Telephone : (302) 999-4946

Indicates updated section.

End of MSDS