



MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	DBE™ dibasic esters
Revision date	30-Nov-2006
Manufacturer information	INVISTA S.à r.l. INVISTA Building 4123 East 37th Street North Wichita, KS 67220
Emergency	Transport Emergency CHEMTREC 1-800-424-9300 Emergency outside U.S. 1-703-527-3887 Medical Emergency 1-613-348-3616
General information	Product Information 1-877-446-8478 Information outside U.S. 1-770-792-4221

For technical assistance regarding this product, contact your local INVISTA representative.

2. Composition / Information on Ingredients

Components	CAS #	Concentration
Dimethyl glutarate	1119-40-0	55 - 65 %
Dimethyl adipate	627-93-0	10 - 25 %
Dimethyl succinate	106-65-0	15 - 25 %

3. Hazards Identification

Emergency overview

CAUTION

May cause eye/skin irritation.

May cause respiratory irritation.

Temporary blurred vision has been reported with inhalation, skin and eye contact.

OSHA regulatory status

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. -- Eye irritant.

Potential health effects

Routes of exposure

Inhalation. Skin contact. Eye contact. Ingestion.

Eyes

Contact with eyes may cause irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Skin

Prolonged and/or repeated skin contact may result in mild irritation or redness, rash and blurred vision.

Inhalation

Inhalation of vapors/fumes may cause respiratory irritation with throat discomfort, coughing or difficulty breathing.

Ingestion

Do not ingest. Ingestion can cause gastrointestinal irritation, nausea, vomiting and diarrhea.

4. First Aid Measures

First aid procedures

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin contact

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention.

Inhalation

Remove to fresh air. If the affected person is not breathing, apply artificial respiration. Get medical attention.

Ingestion

Have victim rinse mouth thoroughly with water. Never give anything by mouth to a victim who is unconscious or is having convulsions. If swallowed, do NOT induce vomiting. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Get medical attention immediately.

Notes to physician

Treat symptomatically.

General advice

If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

General fire hazards

Vapors may form explosive mixtures with air. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back.

Extinguishing media

Suitable extinguishing media

Dry chemical, CO₂, water spray or regular foam.

Unsuitable extinguishing media

Do not use water jet.

Protection of firefighters

Protective equipment and precautions for firefighters

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Move containers from fire area if you can do it without risk.

Hazardous combustion products

Combustion products include fumes, smoke, carbon monoxide and carbon dioxide. Irritating and toxic gases or fumes may be released during a fire.

Auto-ignition temperature	698 °F (370 °C)
Flammability limits in air, lower, % by volume	0.9
Flammability limits in air, upper, % by volume	8
Flash point	212 °F (100 °C) Tag Closed Cup

6. Accidental Release Measures

Personal precautions

Wear appropriate personal protective equipment.
Keep unnecessary personnel away.

Environmental precautions

Do not let product enter drains. Do not flush into surface water.

Methods for containment

Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.

Methods for cleaning up

Large Spills: Dike far ahead of liquid spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean contaminated surface thoroughly.

Never return spills in original containers for re-use.

Other information

Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling

Follow all MSDS/label precautions even after container is emptied because they may retain product residues. Do not breathe gas/fumes/vapor/spray. Do not get this material in contact with skin or eyes. Use this product with adequate ventilation.

Storage

Keep this material away from food, drink and animal feed. Store away from strong oxidizers. Keep tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks, and flame.

8. Exposure Controls / Personal Protection

Engineering controls

Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits.

Personal protective equipment

Eye / face protection

Avoid contact with eyes. Wear safety glasses; chemical goggles (if splashing is possible).

Skin protection

Wear suitable protective equipment. Wear as appropriate: solvent-resistant apron and boots.

Respiratory protection

A NIOSH- 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. 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.

General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice.
Wash hands before breaks and at the end of workday.

9. Physical & Chemical Properties

Physical state	Liquid
Color	Colorless.
Odor	Sweet.
Auto-ignition temperature	698 °F (370 °C)
Boiling point	384.8 - 437 °F (196 - 225 °C)
Decomposition temperature	Not Determined
Evaporation rate	< 0.1 ; Butyl Acetate = 1.0
Flammability limits in air, lower, % by volume	0.9
Flammability limits in air, upper, % by volume	8
Flash point	212 °F (100 °C) Tag Closed Cup
Freezing point	Not Determined
Melting point	-4 °F (-20 °C)
Octanol/H ₂ O coeff	Not Determined
Odor threshold	0.1 ppm - 100% detection; 0.01 ppm - 50% detection
pH	Not Determined
Solubility (H ₂ O)	5.3 % w/w at 20°C
Specific gravity	1.092 at 20°C
Vapor density	Not Determined
Vapor pressure	0.2 mm Hg at 20°C
Viscosity	2.6 mPa/s at 25°C
VOC (Weight %)	100 %
Comments	Meets the consumer products LVP-VOC exemption criteria established by CARB (California Air Resource Board). Meets the VOC exemption criteria for consumer products per EPA 40 CFR 59.203(f)1. DBE is considered 100% VOC (1090 g/l) per EPA 40 CFR 51.100(s) 1 for industrial application.

10. Chemical Stability & Reactivity Information

Chemical stability

Stable at normal conditions.

Conditions to avoid

Heat, flames and sparks.

Incompatible materials

Strong acids, alkalis and oxidizing agents.

Hazardous decomposition products

Irritating and/or toxic fumes and gases may be emitted upon the products decomposition. At thermal decomposition temperatures, carbon monoxide and carbon dioxide.

Possibility of hazardous reactions

Not expected to occur.

11. Toxicological Information

Acute effects

Acute LD50: > 5000 mg/kg, Rat, Oral

Acute LC50: > 10.7 mg/l, Rat, Inhalation

Acute LD50: > 2250 mg/kg, Rabbit, Dermal

Component analysis - LD50

Toxicology Data - LD50s and LC50s

Dimethyl succinate	106-65-0	Oral LD50 Rat: >5 g/kg; Dermal LD50 Rabbit: >5 g/kg
Dimethyl glutarate	1119-40-0	Inhalation LC50 Rat: 6.1 mg/L/4H; Oral LD50 Rat: 8191 mg/kg
Dimethyl adipate	627-93-0	Oral LD50 Rat: 1920 mg/kg

Routes of exposure

Inhalation. Skin contact. Eye contact. Ingestion.

Sensitization

Did not cause sensitization on laboratory animals.

Reproductive effects

Animal studies did not show statistically significant developmental toxicological effects.

Human experience

Temporary blurred vision has been reported with inhalation, skin and eye contact.

Inhalation can cause irritation to mucous membranes.

Skin contact can cause irritation, rash, discomfort.

Eye contact can cause irritation, excessive tearing, and discomfort.

Eye contact

Contact with eyes may cause irritation.

A single application of 10 uL to the eye cause corneal opacity. The administration of 10-100 uL of a similar mixture caused corneal opacity, transient increases in corneal thickness, and transient corneal anesthesia.

Skin contact

This product was not a skin irritant in rabbits when applied to intact skin for 4 hours under semi-occlusive dressings. Earlier studies indicated skin irritation is evident when applied to intact skin for 24 hours under rubber sheeting.

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.

Inhalation

Avoid inhalation of mists or aerosols.

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.

Further information

Repeated dose toxicity: oral, rat :28 day, NOEL: >1,000 mg/kg

Repeated dose toxicity: inhalation, rat :90 day, NOEL: 0.02 mg/l

12. Ecological Information

Ecotoxicity

EC50 18 - 24 mg/l, Fathead Minnows, 96 Hours

EC50 122.1 - 163.5 mg/l, Daphnia, 48 Hours

Readily biodegradable, according to appropriate OECD test.

Assessment of biological degradability (Closed-Bottle Test): 87 % After 28 days

13. Disposal Considerations

Disposal instructions

Dispose in accordance with all applicable regulations.

14. Transport Information

Department of Transportation (DOT) Requirements

Not regulated as dangerous goods.

15. Regulatory Information

United States Regulations

Federal Regulations

All components are on the U.S. EPA TSCA Inventory List.

TSCA (Toxic Substances Control Act) - Section 12(b) - Export Notification

Dimethyl succinate	106-65-0	Section 4 (applies only to those companies that signed an Enforceable Consent Agreement for this chemical)
Dimethyl glutarate	1119-40-0	Section 4 (applies only to those companies that signed an Enforceable Consent Agreement for this chemical)
Dimethyl adipate	627-93-0	Section 4 (applies only to those companies that signed an Enforceable Consent Agreement for this chemical)

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes
	Delayed Hazard - No
	Fire Hazard - No
	Pressure Hazard - No
	Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

International Regulations

European Union

Not a hazardous substance or preparation according to EC-directives 67/548/EEC or 1999/45/EC.

16. Other Information

HMIS ratings

Health: 1
Flammability: 1
Physical hazard: 0

NFPA ratings

Health: 1
Flammability: 1
Instability: 0

Disclaimer

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MSDS sections updated

This document has undergone significant changes and should be reviewed in its entirety.

Issue date 30-Nov-2006

Abbreviation key

ND = No data NA = Not applicable