

MATERIAL SAFETY DATA SHEET

Flexol E



SECTION 1: IDENTIFICATION OF THE MATERIAL AND SUPPLIER

| | |
|------------------------------------|---|
| Product Name: | Flexol E |
| Other Names: | Denatured Ethanol |
| Product Codes/Trade Names: | Flexol E1, Flexol E3, Flexol E5, Flexol E10, Flexol E15, Flexol E20, Flexol E25, Flexol E30, Flexol E40, Flexol E50 |
| Recommended Use: | General printing industry solvent |
| Applicable In: | Australia |
| Supplier: | Sucrogen BioEthanol Pty Ltd (ABN 85 009 660 191) |
| Address: | 664 Lorimer St, Port Melbourne, Victoria, 3207, Australia |
| Telephone: | +61 3 9676 7200 or 1800 819 618 (applicable in Australia only) |
| Email Address: | bioethanol@sucrogen.com |
| Web Site: | www.sucrogen.com |
| Facsimile: | +61 3 9676 7220 or 1800 647 260 (applicable in Australia only) |
| Emergency Phone Number: | 000 Fire Brigade and Police (available in Australia only) |
| Poisons Information Centre: | 13 11 26 (available in Australia only) |

This Material Safety Data Sheet (MSDS) is issued by the Supplier in accordance with National Standards and Guidelines from Safe Work Australia (SWA – formerly ASCC/NOHSC). The information in it must not be altered, deleted or added to. The Supplier will not accept any responsibility for any changes made to its MSDS by any other person or organization. The Supplier will issue a new MSDS when there is a change in product specifications and/or Standards, Codes, Guidelines, or Regulations.

SECTION 2: HAZARD IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE: Classified as **Hazardous** according to the Approved Criteria For Classifying Hazardous Substances [NOHSC:1008] 3rd Edition.

Flexol E is classified as **Dangerous Goods** according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.

| Risk Phrases | Safety Phrases |
|--|---|
| R11 - Highly flammable. R20/22 - Harmful by inhalation and if swallowed. R36/38 - Irritating to eyes and skin. R66 - Repeated exposure may cause skin dryness and cracking. | S7/9 - Keep container tightly closed and in a well ventilated place. S16 - Keep away from sources of ignition - No smoking. S23 - Do not breathe vapour. S24/25 - Avoid contact with skin and eyes. S29 - Do not empty into drains. S33 - Take precautionary measures against static discharges. S36/37/39 - Wear suitable protective clothing/gloves and eye/face protection. S45 - In case of accident or if you feel unwell seek medical advice immediately (show the label whenever possible). |

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

| Chemical Name: | Synonyms | Proportion: | CAS Number: |
|----------------|----------|-------------|-------------|
| Ethyl Alcohol | Ethanol | 50-99% | 64-17-5 |
| Ethyl Acetate | – | 1-50% | 141-78-6 |
| | | | |

SECTION 4: FIRST AID MEASURES

If there are signs of drunkenness (intoxication or inebriation) then serious health effects may follow (depending on the amount swallowed or inhaled).

Immediate medical attention should be sought and the affected person transferred and accompanied to the care of a doctor or hospital. Treat unconsciousness by placing the person in the coma position. Apply artificial respiration if breathing stops.

| | |
|------------------------------|---|
| Swallowed: | See above. If a minor amount has been accidentally swallowed, then, if conscious, dilute stomach contents by giving large amounts of water. Do not allow further work until fitness for duties is established. Do not attempt to induce vomiting or give anything by mouth to an unconscious person. Seek medical attention. |
| Eyes: | Flush eye with water for a minimum of 15 minutes. Seek medical attention promptly if irritation persists or any loss of vision occurs. |
| Skin: | Immediately remove contaminated clothing. Wash skin with water. Launder contaminated clothing before re-use. |
| Inhaled: | Remove promptly to fresh air. If respiratory irritation, dizziness, nausea or unconsciousness occurs, seek immediate medical attention. Treat unconsciousness by placing the person in the coma position. Apply artificial respiration if breathing stops. |
| First Aid Facilities: | Safety showers, eye wash stations and First Aid kits. |
| Advice to Doctor: | Treat symptomatically and as for a narcotic substance. |

SECTION 5: FIRE FIGHTING MEASURES

| | |
|--|--|
| Flammability: | Highly flammable liquid. May form flammable mixtures with air. Burns with a colourless flame. The vapour is heavier than air and may travel along the ground; distant ignition and flash back are possible. Run off to sewers and drains may cause explosions. Isolate for at least 800 metres in all directions if tanks or tankers are involved. The use of compressed air for filling, discharging, mixing or handling is prohibited due to the vapour hazard. All vessels must be earthed to avoid generation of static charges when agitating or transferring solvents. Avoid all ignition sources. Intrinsically safe equipment is necessary in areas where this chemical is being used. |
| Suitable extinguishing media: | Alcohol-resistant foam is the preferred fire fighting medium but, if it is not available, normal foam can be used. Water fog, fine water spray, dry chemical or carbon dioxide may also be used. |
| Hazards from combustion products: | Burning can produce carbon monoxide and/or carbon dioxide. |
| Special protective precautions and equipment for fire | Highly flammable liquid. Contain spill. Full fire kit and breathing apparatus is required. |

MSDS Reference: MSDS-028

Date Issued: 10 August 2010



| | |
|----------------------|--|
| fighters: | Use water to cool exposed containers. Heating can cause expansion or decomposition leading to violent rupture of containers. If safe to do so, remove containers from path of fire. Spills and leaks may be washed away with copious volumes of water, fog or spray. Prevent run-off from entering drains and watercourses. |
| HAZCHEM Code: | ●3YE |

SECTION 6: ACCIDENTAL RELEASE MEASURES

| | |
|-------------------------------|--|
| Emergency Procedure: | In the event of a spill eliminate all sources of ignition and take measures to prevent static discharge. No smoking. Use water spray to disperse vapour. Clear area of all personnel not directly involved in the clean up. All personnel involved in the containment and disposal procedures to wear protective equipment as described in Section 8 to prevent skin and eye contamination and inhalation of vapours. Ventilate area well and ensure the atmosphere is safe before personnel return to the work area. |
| Containment Procedure: | Stop and contain the spill for salvage or absorb in inert absorbent material (e.g. Soil, sand, vermiculite) for disposal by an approved method. Prevent run-off into drains and waterways. If contamination of sewers or waterways has occurred, advise the local emergency services. |
| Clean Up Procedure: | Wash the cleaned-up area with copious volumes of water to remove any trace amounts of product. Spills can be converted to non-flammable mixtures by dilution with water. Non-returnable containers should be de-gassed prior to disposal. Dispose of all waste containers and used drums in accordance with local authority guidelines. |

SECTION 7: HANDLING AND STORAGE

| | |
|---------------------------|--|
| Handling: | Use in well ventilated areas away from all ignition sources. Intrinsically safe equipment only must be used in areas where this chemical is being used. The use of compressed air for filling, discharging, mixing or handling is prohibited due to the vapour hazard. Containers must be earthed to avoid generation of static charges when agitating or transferring product. |
| Storage: | Store in tightly closed containers in cool, dry, isolated and well-ventilated areas away from heat, sources of ignition and incompatibles (see below). Store away from oxidizing agents. Keep containers closed at all times - check regularly for leaks. Do not eat, drink or smoke in areas of use or storage. Observe State Regulations concerning the storage and handling of Dangerous Goods. Store with all precautions required for handling flammable liquids. The requirement of Australian Standard AS 1940 should be observed in addition to AS 1020, AS 1076, AS 2380 and AS 3000. Empty containers retain residue (liquid and/or vapour) and are dangerous. Do not pressure cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. |
| Incompatibilities: | Not to be stored with explosives (Class 1), flammable gases in bulk (Class 2.1), poisonous gases (Class 2.3), spontaneously combustible |

| | |
|--|---|
| | substances (Class 4.2), oxidizing agents (Class 5.1), organic peroxides (Class 5.2), radioactive substances (Class 7). Exemptions may apply. |
|--|---|

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

| | |
|--|--|
| Exposure Standards: | National Occupational Exposure Standard (NES), Safe Work Australia (formerly ASCC/NOHSC). Ethanol: TWA - 1000 ppm (1880 mg/m ³) Ethyl Acetate: TWA - 200 ppm (720mg/m ³) |
| Notes: | All occupational exposures to atmospheric contaminants should be kept to as low a level as is workable (practicable) and in all cases to below the National Standard. These exposure standards are guides to be used in the control of occupational health hazards. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity. TWA (Time Weighted Average): the time-weighted average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life. According to current knowledge this concentration should neither impair the health of, nor cause undue discomfort to, nearly all workers. |
| Biological Limit Values: | No biological limit allocated. |
| ENGINEERING CONTROLS | |
| <input type="checkbox"/> Ventilation: | Local exhaust ventilation and/or mechanical (general) exhaust is recommended where vapours are likely to be generated. All such equipment must be intrinsically safe. |
| <input type="checkbox"/> Special Consideration for Repair &/or Maintenance of Contaminated Equipment: | Empty containers retain residue (liquid and/or vapour) and are dangerous. Do not pressure cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. Vapour is heavier than air - prevent concentration in hollows or sumps. Do not enter confined spaces where vapour may have collected. Keep containers closed when not in use. |
| PERSONAL PROTECTION | |
| <input type="checkbox"/> Personal Hygiene | Protective clothing (gloves, coveralls, boots, etc.) should be worn to prevent skin contact. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using. |
| <input type="checkbox"/> Skin Protection: | Avoid skin contact by the use of approved chemical resistant gloves and aprons - PVC or Neoprene (AS 2161). |
| <input type="checkbox"/> Eye Protection: | Avoid eye contact by wearing chemical goggles with side-shields or face-shield (AS/NZS 1336) whenever exposed to vapour or mist or if there is a risk of splashing liquid in the eyes. Safety showers with eye-wash should be provided in all areas where product is handled. |
| <input type="checkbox"/> Respiratory Protection: | None should be needed if engineering, storage and handling controls are adequate to ensure that atmospheric contamination is kept below the National Standard. |

| | |
|---|--|
| | Where vapour concentrations are likely to approach or exceed the National Standard, an approved organic vapour respirator (AS/NZS 1715 and 1716) must be worn. In high vapour concentrations, or in suspected oxygen-deficient atmospheres such as empty vessels or confined spaces, use air-supplied hood. |
| <input type="checkbox"/> Thermal Protection: | None should be needed under normal circumstances. |
| <input type="checkbox"/> Smoking & Other Dusts | Smoking must be prohibited in all areas where this product is used. See safety information on flammability above. |

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

| | |
|--|--|
| Appearance: | Clear colourless liquid |
| Odour: | Ethanol odour detectable at 80 - 100 ppm. Ethyl Acetate odour detectable at < 1 ppm |
| pH, at stated concentration: | Not available |
| Vapour Pressure: | 44 - 73 mm Hg @ 20°C |
| Vapour Density: | 1.59 - 3.0 (air = 1) |
| Boiling Point/range (°C): | 78°C (Ethanol) |
| Freezing/Melting Point (°C): | -117°C (Ethanol) -83.6°C (Ethyl Acetate) |
| Solubility: | Appreciable |
| Specific Gravity (H₂O = 1): | Approximately 0.8 |
| FLAMMABLE MATERIALS | |
| <input type="checkbox"/> Flash Point: | 13°C (Ethanol) 7.2°C (Ethyl Acetate) |
| <input type="checkbox"/> Flash Point Method: | Abel closed cup (Ethanol) Tag open cup (Ethyl Acetate) |
| <input type="checkbox"/> Flammable (Explosive) Limit - Upper: | 11.4% - 19% |
| <input type="checkbox"/> Flammable (Explosive) Limit - Lower: | 2.0% - 3.5% |
| <input type="checkbox"/> Autoignition Temperature: | 392 - 427°C |
| ADDITIONAL PROPERTIES | |
| <input type="checkbox"/> Evaporation Rate: | 253 (n-Butyl Acetate = 100) 480 (Ethyl Acetate) (n-Butyl Acetate = 100) |
| <input type="checkbox"/> Molecular Weight: | |
| <input type="checkbox"/> Volatile Organic Compounds Content (VOC): (as specified by the Green Building Council of Australia) | 100% |
| <input type="checkbox"/> % Volatiles: | 100% |

SECTION 10: STABILITY AND REACTIVITY

| | |
|--|--|
| Chemical Stability: | Stable |
| Incompatible Materials: | Will react with strong oxidizing agents. |
| Conditions to avoid: | Heat, sparks, flame and build-up of static electricity. |
| Hazardous Decomposition Products: | Burning can produce carbon monoxide and/or carbon dioxide. |
| Hazardous Reactions: | None |

SECTION 11: TOXICOLOGICAL INFORMATION**Toxicological Data:**

Ethanol:
 LD50/oral/rat: 7060 mg/kg (literature data)
 LC50/inhalation/rat: 38 mg/l/10 h (literature data)

Ethyl Acetate:
 LD50/oral/rat: 8700 mg/kg
 LD50/dermal/rat: 17760 mg/kg

Health effects information is based on reported effects in use from overseas and Australian reports.

Effects: Acute

| | |
|-------------------|--|
| Swallowed: | Accidental swallowing is unlikely in the industrial setting. Swallowing ethanol can cause drunkenness or harmful central nervous system effects. The deliberate ingestion of ethanol is a known occupational risk. As little as 50 - 100 ml intake in a shift in a 70kg worker may cause inebriation to the point where safety is impaired. Effects of a small intake may include excitation, euphoria, headache, dizziness, drowsiness, blurred vision, and fatigue. Drinking a large amount may lead to severe acute intoxication, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death. Aspiration into lungs may cause pneumonitis. |
| Eyes: | Vapours may irritate the eyes. Liquid and mists may severely irritate or damage the eyes. |
| Skin: | Contact with skin may result in slight irritation and redness. |
| Inhaled: | Vapour is moderately irritating to mucous membranes and respiratory tract. Inhalation of the vapour may result in drunkenness (see effects of swallowing above) or headache, nausea, incoordination, narcosis (sleepiness) and vomiting. Early signs or symptoms may occur at airborne levels of 1000 to 5000 ppm. |

Effects: Chronic

Long term exposure by swallowing or repeated inhalation may cause degenerative changes in the liver, kidneys, gastrointestinal tract and heart muscle.

Prolonged or repeated contact and heavy skin contamination may cause skin drying and cracking and/or dermatitis with redness, itching, and swelling. This may lead to secondary infection.

Ongoing or repeated exposures at high concentrations may cause central nervous system symptoms similar to "Acute: Swallowed" above. Deliberate inhalation of the vapour is a known occupational risk.

Additional Notes

Nasal and eye irritation may occur at concentrations below the exposure standard. Exposure to ethanol in the work setting adds to any intake from alcoholic drinks and any health effects caused by the total intake of alcohol.

In work areas where exposures in excess of the occupational exposure limits occur, then the following may apply:

- Persons with pre-existing liver impairment, skin and respiratory disorders may be at an increased risk.
- Ethanol may cause adverse reproductive effects.
- Absorption of some drugs may be affected causing adverse health effects.
- Ingestion by pregnant women may cause serious effects in their newborn babies called "foetal alcohol syndrome".

The National Occupational Health & Safety Commission in Australia (NOHSC) does not classify ethanol as a carcinogen.

IARC has evaluated ethanol as a carcinogen on the basis of effects of drinking alcoholic beverages, but there is no known carcinogenic risk from occupational exposures.

There is extensive toxicological and epidemiological information on the health effects of ingesting alcoholic drinks containing ethanol.

Inhalation at levels at or exceeding the Occupational Exposure limits or any deliberate ingestion is known to lead to health effects which may be evident in themselves or lead to impaired functioning and consequent safety risks in the industrial setting.

A blood alcohol level in excess of 0.05g/100ml is regarded as likely to impair functioning for tasks such as operating machinery.

SECTION 12: ECOLOGICAL INFORMATION

| | |
|---------------------------------------|--|
| Eco-toxicity: | Ethanol: Toxicity to fish (acute): LC50/Golden ide/: >1000 mg/l/48 h Ethyl Acetate: Toxicity to fish (acute): LC50/Fathead minnow/:56-64 mg/l/96 h Ethanol: Toxicity to daphnia: ec50/Daphnia magna/: >1000 mg/l/24 h Ethanol: Toxicity to daphnia: ec50/Daphnia magna/: 3 |
| Persistence and Degradability: | Ethanol: Degree of elimination: 94% Ethyl Acetate: Degree of Elimination:.60% Ethanol: Evaluation: biodegradable Ethyl Acetate: readily biodegradable |
| Mobility: | No data available |

SECTION 13: DISPOSAL CONSIDERATIONS

Suitable for incineration by approved agent under controlled conditions if permitted by local authorities, otherwise disposal must be in accordance with local waste authority requirements.

Product must be contained and not disposed to sewerage systems, drains or waterways. Advise flammable nature. Empty containers must be decontaminated by rinsing with water.

SECTION 14: TRANSPORT INFORMATION

| | |
|---|---|
| Proper Shipping Name: | FLAMMABLE LIQUID, N.O.S. (Contains Ethanol & Ethyl Acetate) |
| UN number: | 1993 |
| DG Class: | 3 |
| Subsidiary Risk 1: | None Allocated |
| Packaging Group: | II |
| HAZCHEM code: | ●3YE |
| Marine Pollutant: | No |
| Special Precautions for User: | Refer to incompatibilities in Section 7 and stability and reactivity information in Section 10. |
| ADDITIONAL TRANSPORT REQUIREMENTS: | |
| Nil | |

SECTION 15: REGULATORY INFORMATION

| | |
|--------------------------|---------------|
| Poisons Schedule: | Not Scheduled |
| Other: | Nil |

SECTION 16: OTHER INFORMATION**For further information on this product, please contact:**

Sucrogen BioEthanol Pty Ltd (ABN 85 009 660 191)

664 Lorimer St, Port Melbourne, Victoria, 3207, Australia

Phone: +61 3 9676 7200 or 1800 819 618 (applicable in Australia only)**Fax:** +61 3 9676 7220 or 1800 647 260 (applicable in Australia only)**ADDITIONAL INFORMATION****Australian Standards References:**

| | |
|-------------|---|
| AS 1020 | The Control of Undesirable Static Electricity. |
| AS 1076 | Code of Practice for selection, installation and maintenance of electrical apparatus and associated equipment for use in explosive atmospheres (other than mining applications) – Parts 1 to 13 |
| AS/NZS 1336 | Recommended Practices for Occupational Eye Protection |
| AS/NZS 1715 | Selection, Use and Maintenance of Respiratory Protective Devices |
| AS/NZS 1716 | Respiratory Protective Devices |
| AS 1940 | The Storage and Handling of Flammable and Combustible Liquids |
| AS 2161 | Industrial Safety Gloves and Mittens (excluding electrical and medical gloves) |
| AS 2380 | Electrical equipment for explosive atmospheres – Explosion Protection Techniques (Parts 1 to 9) |
| AS 3000 | Electrical installations (known as the Australian/New Zealand Wiring Rules). |

Other References:

MSDS Reference: MSDS-028

Date Issued: 10 August 2010



| | |
|--------------------|---|
| NOHSC:2011(2003) | National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition, April 2003, National Occupational Health and Safety Commission. |
| NOHSC; 2012 (1994) | National Code of Practice for the Labelling of Workplace Substances, March 1994, Australian Government Publishing Service, Canberra. |
| NES | National Occupational Exposure Standards for Workplace Atmospheric Contaminants (NES), Safe Work Australia (formerly ASCC/NOHSC) 1995 as amended. |
| ADG Code | Australian Dangerous Goods Code 7 th Edition. |
| | |

AUTHORISATION

Reason for Issue: New Sucrogen format. Updated hazchem code and associated information.

Authorised by: Quality & Technical Manager

Date of Issue: 10 August 2010

Review/Expiry Date: August 2015

Whilst the information contained in this document is based on data which, to the best of our knowledge, was accurate and reliable at the time of preparation, no responsibility can be accepted by us for errors and omissions. The provision of this information should not be construed as a recommendation to use any of our products in violation of any patent rights or in breach of any statute or regulation. Users are advised to make their own determination as to the suitability of this information in relation to their particular purposes and specific circumstances. Since the information contained in this document may be applied under conditions beyond our control, no responsibility can be accepted by us for any loss or damage caused by any person acting or refraining from action as a result of this information.

END OF MSDS