MATERIAL SAFETY DATA SHEET

Flexol PPAC

SECTION 1: IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name:	**Flexol PPAC**
Other Names:	Denatured Ethanol, Funsize CSRL Reducer
Product Codes/Trade Names:	Flexol PPAC 25/8/2, Funsize CSRL Reducer
Recommended Use:	Flexographic printing 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 PPAC 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 accidnet or if you feel unswell seek medical advice immediately (show the label whenever possible)

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name:	Synonyms	Proportion:	CAS Number:
Ethyl Alcohol	Ethanol	65%	64-17-5
Propanol	Propyl Alcohol	25%	71-23-8
Propyl Acetate		8%	109-60-4
Cyclohexane		2%	110-82-7

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. If person vomits, place person on their side in recovery position.
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 there are signs of drunkenness (intoxication or inebriation) or 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/alcohol poisoning.

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 agitation or transferring olvents. Avoid all ignition sources. Intrinsically safe equipment is necessary in areas where this chemical is being used.
Suitable extinguishing media:	Normal foam should 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 fighters:	Highly flammable liquid. Contain spill. Full fire kit and breathing apparatus is required. 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/m3) Propyl Acetate: TWA - 200 ppm (835 mg/m3) STEL - 250 ppm (1040 mg/m3) Propanol: TWA - 200 ppm (492 mg/m3) STEL - 250 ppm (614 mg/m3) Notices - Sk Cyclohexane: TWA - 100 ppm (350mg/m3) STEL - 300 ppm (1050 mg/m3)
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. STEL (Short-Term Exposure Limit): the average airborne concentration over a 15-minute period which should not be exceeded at any time during a normal eight-hour work day. SK (Skin) Notice: absorption through the skin may be a significant source of exposure. The exposure standard is invalidated if such contact should occur.
Biological Limit Values:	No biological limit allocated.
ENGINEERING CONTROLS	
☐ **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.
☐ **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	
☐ **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.
☐ **Skin Protection:**	Avoid skin contact by the use of approved chemical resistant gloves and aprons - PVC or Neoprene (AS 2161).
☐ **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.
☐ **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.
☐ **Thermal Protection:**	None should be needed under normal circumstances.
☐ **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, propyl acetate at 20ppm, Cyclohexane at 0.6ppm
pH, at stated concentration:	Not available
Vapour Pressure:	Ethanol: 44 mm Hg @ 20°C Propanol: 14.5 mm Hg @ 20°C Propyl Acetate: 25 mm Hg @ 20°C Cyclohexane: 95 mm Hg @ 20°C
Vapour Density:	1.59 (air = 1) (ethanol) 2.1 (air = 1) (propanol) 3.52 (air = 1) (propyl acetate) 2.9 (air = 1) (cyclohexane)
Boiling Point/range (°C):	78°C (ethanol) 97.4°C (propanol) 101.6°C (propyl acetate)

	79 - 81°C (cyclohexane)
Freezing/Melting Point (°C):	-117°C (ethanol) -126.5°C (propanol) -95°C (propyl acetate) 5.0 - 6.5°C (cyclohexane)
Solubility:	Almost complete
Specific Gravity (H_2O = 1):	Approximately 0.8
FLAMMABLE MATERIALS	
☐ **Flash Point:**	13°C (ethanol) 27°C (propanol) 14.4 - 21.1°C (propyl acetate) -18°C (cyclohexane)
☐ **Flash Point Method:**	Closed cup (ethanol & Propyl Acetate) Open cup (propanol)
☐ **Flammable (Explosive) Limit - Upper:**	8% - 19%
☐ **Flammable (Explosive) Limit - Lower:**	1.3% - 3.5%
☐ **Autoignition Temperature:**	392°C (ethanol) 440°C (propanol) 457°C (propyl acetate) 245°C (cyclohexane)
ADDITIONAL PROPERTIES	
☐ **Evaporation Rate:**	253 (ethanol) 220 (propanol) 275 (propyl acetate) 610 (cyclohexane)
☐ **Molecular Weight:**	Not available
☐ **Volatile Organic Compounds Content (VOC):** (as specified by the Green Building Council of Australia)	100%
☐ **% 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:	Hazardous polymerisation will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicological Data:

Ethanol:
LD50/oral/rat: 7060 mg./kg
LC50/inhalation/rat: 38 mg/l/10 h
Propyl Acetate:
LD50/oral/rat: 8700 mg/kg
LD50/dermal/rat: 17760 mg/kg
Propanol:
LD50/oral/rat: 8038 mg/kg
LD50/dermal/rat: 4049 mg/kg
LC50/inhalation/rat: >33.8 mg/l/4 h
Cyclohexane:
LD50/oral/rat: >5000 mg/kg
LD50/dermal/rat: >2000 mg/kg
LC50/inhalation/rat: >30 mg/l/4/ h

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 Toxicity to daphnia: EC50/Daphnia magna/: >1000 mg/l/24 h Propanol: Toxicity to fish (acute): LC50/Golden orfe/: >4000 mg/l/48 h Toxicity to daphnia: EC50/Daphnia magna/: 3642 mg/l/48 h Propyl Acetate: Toxicity to fish (acute): LC50/Fathead minnow/: 56 - 64 mg/l/96 h Toxicity to Daphnia: EC50/Daphnia magn Cyclohexane: Toxicity to fish (acute): LC50/Fathead minnow/: 4.53 mg/l/96 h Toxicity to Daphnia: EC50/Daphnia magna/: 0.9 mg/l/48 h
Persistence and Degradability:	Ethanol: Degree of elimination: 94% Propanol: No data available Propyl acetate: Degree of elimination: >70% Cyclohexane: Degree of elimination: >60% Ethanol: Evaulation: biodgradable Cyclohexane: Evaluation: 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, Propanol, Propyl Acetate & Cyclohexane)
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:

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 7th Edition.

AUTHORISATION

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END OF MSDS