Safety Data Sheet

I. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name	:	Methanol
Use	:	Methanol is used in the manufacture of many products including formaldehyde, adhesives,varnishes,dyes, duplicating fluids, especially printing inks, and certain quick-drying lacquers based on synthetic. It is used in lowering the viscosity of gums and resins. It is used as a denaturant for ethyl alcohol.
Supplier	:	**TJS Pte Ltd**
Supplier's Address	:	19 Tanjong Penjuru Singapore 609021
Contact Number	:	(65) 6265 5900 or Fax : (65) 6261 7721/ 6261 8440

II. HAZARDS IDENTIFICATION

GHS Classification : **Physical Hazards**

Flammable liquids :	category 2
Health Hazards	
Acute toxicity	
Oral :	category 1
Skin corrosion/irritation :	category 3
Serious eye damage/irritation :	category 2B
Germ cell mutagenicity :	category 1A
Reproductive Toxicity :	category 1B
Spesific organ target toxicity (single exposure) :	category 1
Spesific organ target toxicity (repated exposure) :	category 1
Aspiration Hazard :	category 1

GHS label elements

Pictograms :

Signal words : DANGER

Hazard statements : ***Physical Hazards***

	H225	Highly flammable liquid and vapor
		Health Hazards
	H300	Fatal if swallowed
	H312	Harmful in contact with skin
	H332	Harmful if inhaled
	H316	Causes mild skin irritation
	H320	Causes eye irritation
	H340	May cause genetic defects
	H360	May damage fertility or unborn child
	H370	Cause damage to organs
	H373	May cause damage to organs trough prolonged or repeated exposure
	H304	Maybe fatal if swallowed and enters airways
		Environmental Hazards
		Not classified as an environmental hazard under GHS criteria.
GHS Precautionary statements	:	***Prevention***
		Physical Hazards
	P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking
	P233	Keep container tightly closed.
	P235	Keep cool
	P240	Ground/bond container and receiving equipment.
	P241	Use explosion-proof electrical/ventilating/lighting/equipment.
	P242	Use only non-sparking tools.
	P243	Take precautionary measures against static discharge.
		Health Hazards
	P264	Wash hands thoroughly after handling.
	P270	Do not eat, drink, or smoke when handling this product
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P261	Avoid breathing dust/fume/gas/mist/spray/vapour.
	P271	Use only outdoors or in a well ventilated area.
	P201	Obtain special instructions before use
	P202	Do not handle until all safety precautions have been read and understood.
	P281	Use personal protective equipment as required
		Response
	P301+P310 +P330+P33	**<u>If</u> <u>swallowed</u>** : rinse mouth, DO NOT induce vomiting, immediately call a poison center center or doctor/physician.
	P302+P352 +P312	**<u>If</u> <u>on</u> <u>skin</u>** : wash with plenty of soap and water, call a poison center or doctor/physician if you feel unwell
	P303+P353 +P361	**<u>If</u> <u>on</u> <u>skin</u> <u>(or</u> <u>hair)</u> :** rinse skin with water/shower, remove/take off immadiately all contamined clothing
	P304+P340 +P312	**<u>If</u> <u>inhaled</u>** : Remove to fresh air and keep at rest in a position comfortable for breathing, call a poison center or doctor/physician if you feel unwell

P305+P351 +P338	**If in eyes** : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313	**If eye irritation persist** : get medical advice/attention
P308+P313	**If exposed and concerned** : get medical advice/attention
P333+P313	**If skin irritation or rash occurs :** get medical advice/attention
P370+P378	**In case of fire :** use dry chemical, CO2, water spray, AFFF(R) (Aqueous Film Forming Foam (alcohol resistant)) type with either a 3% or 6% foam proportioning system for extinction
P363	Wash contamined clothing before reuse
	Storage
P403+P233	Store in a well ventilated place. Keep container tightly closed.
P403+P235	Store in a well ventilated place. Keep cool
P405	Store locked up.
	Disposal
P501	Dispose of contents and container to appropriate waste site or reclaimer in accordance with local and national regulations.

III. COMPOSITION / INFORMATION ON INGREDIENTS

Identification of the substance	:	Methanol
Chemical Family	:	Alcohol
Synonyms	:	Methyl alcohol Methyl hidroxide Carbinol Wood spirit
Molecular Formula	:	CH_4O
CAS Number	:	67-56-1
UN Number	:	1230
EC Number	:	200-659-6

IV. FIRST AID MEASURES

General Advice	:	When symptoms persist or in all cases of doubt seek medical advice
Inhalation	:	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
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 aid immediately. Wash clothing before reuse.
Eye Contact	:	Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.
Ingestion	:	Potential for aspiration if swallowed. Get medical aid immediately. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward.

V. FIRE - FIGHTING MEASURES

Flash Point	:	12 °C (closed cup)
Auto-ignition Temperature	:	455 °C
Explosive Limits	:	3 - 31 % vol
Extinguishing Media	:	Carbon dioxide, dry extinguishing media, water spray, alcohol resistant foam.
Inappropriate Extinguishing Media	:	Straight streams of water
Fire Fighting Procedures	:	Methanol burns with a clean clear flame that is almost invisible in daylight. Stay upwind! Isolate and restrict area access. Concentrations of greater that 25% methanol in water can be ignited. Use fine water spray or fog to control fire spread and cool adjacent structures or containers. Contain fire control water for later disposal. Fire fighters must wear full face, positive pressure, self-contained breathing apparatus or airline and appropriate protective clothing. Protective fire fighting structural clothing is not effective protection from methanol. Do not walk through spilled product.
Special Protective Equipment for Fire-Fighter	:	Wear self-contained breathing apparatus with full face mask and protective clothing.

VI. ACCIDENTAL RELEASE MEASURES

Personal Precautions	:	Full face, positive pressure self-contained breathing apparatus or airline, and protective clothing must be worn. Protective fire fighting structural clothing is not effective protection from methanol.
Environment Precautions	:	Prevent run-off to sewers, streams or other bodies of water. If run-off occurs, notify proper authorities as required, that a spill has occurred.
Methods for Cleaning Up	:	<u>For Small Spill</u> Soak up spill with non-combustible absorbent material. Recover methanol and dilute with water to reduce fire hazard. Prevent spilled methanol from entering sewers, confined spaces, drains, or waterways. Restrict access to unprotected personnel. Put material in suitable, covered, labeled containers. Flush area with water. <u>For Large Spill</u> If necessary, contain spill by diking. Fluorocarbon alcohol resistant foams may be applied to spill to diminish vapour and fire hazard. Maximize methanol recovery for recycling or reuse. Collect liquid with explosion proof pumps.

VII. HANDLING AND STORAGE

Handling	:	Flammable liquid and vapors. No smoking or open flame in storage, use or handling areas. Keep container closed. Do not breathe vapors. Avoid contact with skin, eyes and mucous membranes. Electrically ground all handling equipment. Use explosion proof electrical equipment.

Storage	:	Store in totally enclosed equipment, designed to avoid ignition and human contact. Tanks must be grounded, vented, and should have vapour emission controls. Tanks must be diked. Avoid storage with incompatible materials. Anhydrous methanol is non-corrosive to most metals at ambient temperatures except for lead, nickel, monel, cast iron and high silicon iron. Coatings of copper (or copper alloys), zinc (including galvanized steel), or aluminum are unsuitable for storage. These materials may be attacked slowly by the methanol. Storage tanks of welded construction are normally satisfactory. They should be designed and built in conformance with good engineering practice for the material being stored. While plastics can be used for short term storage, they are generally not recommended for long-term storage due to deterioration effects and the subsequent risk of contamination.

VIII. EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure standards	:	American Conference of Governmental Industrial Hygienists (ACGIH) Methanol : TWA - 200 ppm The time weighted average concentration for a normal 8-hour workday and a 40-hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect.
Respiratory Protection	:	If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus.
Skin and Body Protection	:	Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure.
Eye Protection	:	Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work areas.
Hand Protection	:	Wear chemically protective gloves, boots and aprons to prevent prolonged or repeated skin contact.

IX. PHYSICAL AND CHEMICAL PROPERTIES

Form	:	Liquid
Colour	:	Colourless
Odour	:	Mild alcohol
Boiling Point Range	:	64 ± 1^{o}C
Melting Point	:	- 98 ^{o}C
Flash Point	:	12 ^{o}C (closed cup)
Auto-ignition Temperature	:	455 ^{o}C
Explosive Limits	:	3 - 31 % vol
Vapour Pressure	:	103 mmhg @ 21^{o}C mmHg
Vapour Denstiy (relative to air)	:	1.11
Specific Gravity	:	0.7910-0.7930 (20 ^{o}C)

Evaporation Rate	:	4.1 (BuAc = 1)
Water Solubility	:	Total

X. STABILITY AND REACTIVITY

Stability	:	Stabil under ordinary conditions of use and storage.
Conditions to avoid	:	Heat, flame, ignition sources and incompatible materials.
Incompatible Materials	:	Strong oxidizers, strong mineral or organic acids, and strong bases. Contact with these materials may cause a violent or explosive reaction. May be corrosive to lead, aluminum, magnesium, and platinum.
Hazardous Polymerization	:	Will not occur
Hazardous Decomposition Products	:	May form carbon dioxide, carbon monoxide and formaldehyde when heated to decomposition.

XI. TOXICOLOGICAL INFORMATION

Acute Toxicity

Acute Oral Toxicity	:	LD50 rat : 5600 mg/kg
Acute Inhalation Toxicity	:	LC50 rat : 64000 ppm/ 4 h
Acute Dermal Toxicity	:	LD50 rabbit : 15800 mg/kg

Effects on Human

Inhalation	:	Inhalation of high airborne concentration can also irritate mucous membrane, causes headaches, sleepiness, nause, confusion, loss of consciousness, digestive and visual disturbances, blindness and even death.
Eye	:	Produces irritation, characterized by a burning sensation, redness, tearing, inflammation, and possible corneal injury. Vapors may cause eye irritation. May cause painful sensitization to light.
Skin	:	Causes moderate skin irritation. May be absorbed through the skin in harmful amounts. Prolonged and/or repeated contact may cause defatting of the skin and dermatitis. Methanol can be absorbed through the skin, producing systemic effects that include visual disturbances.
Ingestion	:	May be fatal or cause blindness if swallowed. Aspiration hazard. Cannot be made non-poisonous. May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause systemic toxicity with acidosis. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure. May cause cardiopulmonary system effects.

Chronic Effects	:	Prolonged or repeated skin contact may cause dermatitis. Chronic exposure may cause effects similar to those of acute exposure. Methanol is only very slowly eliminated from the body. Because of this slow elimination, methanol should be regarded as a cumulative poison. Though a single exposure may cause no effect, daily exposures may result in the accumulation of a harmful amount.
Reproductive toxicity	:	May cause fetotoxic (toxic to the fetus during the latter stages of pregnancy, often through the placenta) and teratogenic effects (causing malformations of the fetus), based on animal information.
Spesific organ target	:	Exposure to lethal concentrations of methanol has been shown to cause damage to organs including liver, kidneys, pancreas, heart, lungs and brain. Although this rarely occurs, survivors of severe intoxication may suffer from permanent neurological damage. Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals: liver abnormalities, central nervous system damage. Overexposure to this material (or its components) has been suggested as a cause of the following effects in humans: visual impairment

XII. ECOLOGICAL INFORMATION

Persistence and Degradability	:	Product is readily biodegradable
Ecotoxicity	:	Toxicity to fish: LC50 (96 h): 29.4 mg/l, Fathead Minnow Toxicity to bacteria : EC50 (30 minutes) = 51,000-320,000 mg/L, Phytobacterium phosphoreum
Bioaccumulation	:	Not expected to bioaccumulate significantly
Additional information	:	Methanol in fresh or salt water may have serious effects on aquatic life.

XIII. DISPOSAL CONSIDERATIONS

Substance	:	This material must be contained and not disposed to sewerage systems, drains or waterways. It is prohibited to dispose its waste to the environment, without prior treatment in accordance with government regulation
Container	:	Dispose of all waste containers and used drums in accordance with local authority guidelines. Empty containers must be decontaminated by rinsing with water. Non-returnable containers should be de-gassed prior to disposal. Waste containers can either be reused for the same material or disposed in accordance with government regulation

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

XIV. TRANSPORTATION INFORMATION

Road and Rail Transport	:	UN number	: 1230
		Class	: 3
		Packing Group	: II
Marine Transport	:	UN number	: 1230
		Class	: 3
		Packing Group	: II
Air Transport	:	UN number	: 1230
		Class	: 3
		Packing Group	: II

XV. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Related Regulations : **SS586 : 2008**

- Standard on Hazard communication for hazardous chemicals and dangerous goods:
  - Part 1 : Transport of DGs
  - Part 2 : GHS of Classification & Labelling
  - Part 3 : Preparation of SDS
- AVA - The Control of Plants (Regulation of Pesticides) Rules.
- MOM - The Workplace Safety and Health Act, the Workplace Safety and Health (General Provisions) Regulations and the Workplace Safety and Health (Risk Management) Regulations
- MPA - The Maritime & Port Authority of Singapore (Dangerous Goods, Petroleum and Explosives) Regulations 2005.
- NEA - The Environmental Protection and Management Act and the Environment Protection and Management (Hazardous Substances) Regulations, and the Control of Vectors and Pesticides Act.
- SCDF - The Fire Safety Act and the Fire Safety (Petroleum and Flammable Materials) Regulations 2005.
- SPF - The Arms and Explosives Act, the Arms and Explosives (Explosives) Rules, and the Arms and Explosives (Explosive Precursors) Rules 2007.

XVI. OTHER INFORMATION

Abbreviation	:	ASTM	American Society for Testing and Materials

ACGIH	American Conference of Governmental Industrial Hygienists
EC_{50}	Half Maximal Effective Concentration
LC_{50}	Lethal Concentration and Time
LD_{50}	Median Lethal Dose
TWA	Time Weighted Averages

Disclaimer

The information contained in this Safety Data Sheet is intended to assist in the use of the above product without risk to safety or health and is based on current knowledge and experience. This information relates only to the specific material designed and may not be valid for such material used in combination with any other materials or in any process. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use.