SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME	:	VOC11 Mixture
NAME OF MANUFACTURER	:	GL Sciences Inc.
ADDRESS	:	22-1 Nishishinjuku 6-chome Shinjuku-ku Tokyo 163-1130, Japan
CHARGE SECTION	:	International Sales Section
TELEPHONE No.	:	+81-3-5323-6620
FACSIMILE No.	:	+81-3-5323-6621
PRODUCT No.	:	1021-58505
SDS No.	:	1021-58505

Research use only.

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATION :

Flammable liquids	:	Category 2
Acute toxicity - oral -	:	Category 4
Eye damage/irritation	:	Category 2
Germ cell mutagenicity	:	Category 2
Carcinogenicity	:	Category 1
Reproductive toxicity	:	Category 1
Specific target organ toxicity (Single exposure)	:	Category 1 <Central nervous system, optic organ, systemic toxicity>
Specific target organ toxicity (Single exposure)	:	Category 3(anesthesia)
Specific target organ toxicity (Repeated exposure)	:	Category 1 <Central nervous system, optic organ>

HAZARDS SYMBOL :

SIGNAL WORD : Danger

HAZARD STATEMENT :

H225	Highly flammable liquid and vapour
H302	Harmful if swallowed
H319	Cause serious eye irritation
H341	Suspected of causing genetic defects
H350	May cause cancer
H360	May damage fertility or the unborn child
H370	Cause damage to organs
H336	May cause drowsiness or dizziness
H372	Cause damage to organs through prolonged or repeated exposure

PRECAUTIONARY STATEMENTS :

P210	Keep away from heat, hot surface, sparks, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof equipment.
P242	Use non-sparking tools.
P243	Take action to prevent static discharges.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathing fume/gas/mist/spray.
P264	Wash hands thoroughly after handling.

P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P303+P361+P353	IF ON SKIN or hair: Take off immediately all contaminated clothing. Rinse skin with water.
P370+P378	In case of fire: Use appropriate medias to extinguish.
P301+P312	IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
P330	Rinse mouth.
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 persists: Get medical attention.
P308+P313	IF exposed or concerned: Get medical attention.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312	Call a POISON CENTER or doctor if you feel unwell.
P314	Get medical attention if you feel unwell.
P403+P233+P235	Store in a well-ventilated place. Keep container tightly closed. Keep cool.
P405	Store locked up.
P501	Dispose of contents/container in accordance with all applicable regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL IDENTITY : VOC11 Mixture
SYNONYMS : - - -
CHEMICAL FOMULA : Mixture

CHEMICAL IDENTITY	CONTENT	CHEMICAL FOMULA	CAS No.	TSCA INVENTRY	EINECS No.	EC INDEX No.
Methanol	≧99%	CH3OH	67-56-1	Listed	200-659-6	603-001-00-X
1,1-Dichloroethylene	0.1%	$CCl_2=CH_2$	75-35-4	Listed	200-864-0	602-025-00-8
Dichloromethane	0.1%	CH_2Cl_2	75-09-2	Listed	200-838-9	602-004-00-3
cis-1,2-Dichloroethylene	0.1%	CHCl=CHCl	156-59-2	Listed	—	—
1,1,1-Trichloroethane	0.1%	CH_3CCl_3	71-55-6	Listed	200-756-3	602-013-00-2
Tetrachloromethane	0.1%	CCl_4	56-23-5	Listed	200-262-8	602-008-00-5
1,2-Dichloroethane	0.1%	CH_2ClCH_2Cl	107-06-2	Listed	203-458-1	602-012-00-7
Benzene	0.1%	C_6H_6	71-43-2	Listed	200-753-7	601-020-00-8
Trichloroethylene	0.1%	$CHCl=CCl_2$	79-01-6	Listed	201-167-4	602-027-00-9
cis-1,3-Dichloropropene	0.1%	$ClCH_2CH=CHCl$	10061-01-5	Not Listed	233-195-8	—
trans-1,3-Dichloropropene	0.1%	$ClCH_2CH=CHCl$	10061-02-6	Not Listed	—	—
1,1,2-Trichloroethane	0.1%	$ClCH_2CHCl_2$	79-00-5	Listed	201-166-9	602-014-00-8
Tetrachloroethylene	0.1%	$Cl_2C=CCl_2$	127-18-4	Listed	204-825-9	602-028-00-4

4. FIRST AID MEASURES

GENERAL ADVICE : Wash off with soap and plenty of water. Consult a physician immediately. Use personal protective equipment.

INHALATION : Move victim to fresh air and gargle. If breathing is difficult, give oxygen. Consult a physician immediately.

SKIN CONTACT : Remove contaminated clothes and shoes, rinse skin with plenty of water or shower. Use soap to help assure removal. If irritation persists, consult a physician.

EYE CONTACT : Remove any contact lenses at once. Flush eyes well with flooding large amounts of running water for at least 15 minutes. Assure adequate flushing by separating the eyelids with sterile fingers. Consult a physician immediately.

INGESTION : Rinse mouth, give plenty of water. Do not induce to vomiting. Never give anything by mouth to an unconscious person. Consult a physician immediately.

MOST IMPORTANT SYMPTOMS AND EFFECTS

: May irritate to skin, eyes, respiratory systems.
May induce Unconsciousness, blindness, death and headache.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA : Carbon dioxide, dry chemical powder, foam, water spray

FIRE & EXPLOSION HAZARDS : Toxic and irritating dust, fumes or smoke may be emitted.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS

: Fireman should wear normal protective equipment (full bunker gear) and positive-pressure self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS : Remove ignition sources and ventilate the area. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid raising mist/gas/vapour and avoid contact with skin and eyes.

ENVIROMENTAL PRECATIONS : Prevent spills from entering sewers, watercourses or low areas.
Comply with local disposal regulations.

METHODS FOR CLEANING UP : Do not touch spilled material without suitable protection. After material is completely wipe down, wash the spill site with soap and water and ventilate the area. Pull all wastes in a container for disposal and seal it tightly. Remove, clean, or dispose contaminated clothing.

7. HANDLING AND STORAGE

HANDLING : Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Handle this product with appropriate protective equipments.

STORAGE : Store away from sunlight in a refrigerator (2 - 10 ℃).
Keep container tightly closed.

INCOMOPATIBLE PRODUCTS : Oxidizers and acids

8. EXPOSURE CONTROL/PERSONAL PROTECTION

ENGINEERING MEASURES : Use exhaust ventilation to keep airborne concentrations below exposure limits. Use adequate ventilation.

VENTILATION : Local Exhaust ; Recommended, Mechanical(General) ; Recommended

CONTROL PARAMETERS :

CHEMICAL IDENTITY	OSHA PEL-TWA	NIOSH REL	ACGIH TLV-TWA
Methanol	200ppm	TWA 200ppm	200ppm
1,1-Dichloroethylene	-	-	-
Dichloromethane	25ppm	-	50ppm
cis-1,2-Dichloroethylene	-	-	-
1,1,1-Trichloroethane	-	C 350ppm	-
Tetrachloromethane	10ppm	Ca ST 2ppm	5ppm
1,2-Dichloroethane	50ppm	Ca TWA 1ppm	10ppm
Benzene	1ppm	Ca TWA 0.1ppm	0.5ppm
Trichloroethylene	100ppm	-	10ppm
cis-1,3-Dichloropropene	-	-	-
trans-1,3-Dichloropropene	-	-	-
1,1,2-Trichloroethane	-	Ca TWA 10ppm	-
Tetrachloroethylene	100ppm	-	25ppm

PERSONAL PROTECTION

RESPRATORY PROTECTION : Safety masks

HAND PROTECTION : Chemical resistance gloves

EYE PROTECTION : Safety glasses(goggles)

SKIN PROTECTION : Protective clothing

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE : Colorless, clear liquid

ODOR : Characteristic odor

pH : No data available

BOILING POINT : approx.64 °C(Methanol)

MELTING POINT : -98 °C(Methanol)

FLASH POINT : 11 ℃ (TCC) (Methanol)

EXPLOSIVE LIMITS : 6.0% (lower), 35.6 % (upper) (Methanol)

VAPOR PRESSURE	:	12.3 kPa (at 20°C) (Methanol)
VAPOR DENSITY	:	1.11(Methanol)
SPECIFIC GRAVITY	:	0.729 g/cm^3 (at 20/4°C) (Methanol)
SOLUBILITY IN		
Water	:	Miscible
Organic solvent	:	Miscible
PARTITION COEFFICIENT ; n-octanol/water		
	:	log Pow: -0.82/-0.66(Methanol)
AUTOIGNITION TEMPERATURE	:	464°C(Methanol)
DECOMPOSITION TEMPERATURE		
	:	No data available

10. STABILITY AND REACTIVITY

REACTIVITY	:	Vapour may create a explosive gases mixed with the air. There is a risk for ignition contacted with strong oxidizers.
CHEMICAL STABILITY	:	Deteriorated by sun-light.
CONDITION TO AVOID	:	Sunlight, heat, high temperature, open flame, static electrical charge, other ignition sources
INCOMPATIBILE MATERIALS	:	Oxidizers, acids
HAZARDOUS DECOMPOSITION PRODUCTS		
	:	CO, CO_2, Cl, HCl

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY -oral-	:	rat; LD50 = 6200mg/kg, 9100mg/kg(EHC 196,1997) Acute toxicity of Methanol affects primates stronger than rodents(EHC 196,1997). Human; LD50=1400mg/kg(DFGOT vol.16,2001).
SKIN CORROSION/IRRITATION	:	rabbit: not irritating to skin.(DFGOT vol.16,2001)
EYE DAMAGE/EYE IRRITATION	:	rabbit: chemosis (4hr), markedly improved(72hr).(EHC 196,1997))
RESPIRATORY OR SKIN SENSITIZATION		
	:	It cannot conclude that Methanol has sensitization.(DFGOT vol.16,2001)
GERM CELL MUTAGENICITY		
(Dichloroethylene)	:	Chromosome aberration exam.: Positive(EHC150(1993), NTP TE289(19 96))
(Dichloroethane)	:	Mouse-spot exam.: week-positive(EHC176,1995), other exam.: positive(JECFA,1993)
(Benzene)	:	in vivo mutagenesis exam.: Positive(EHC150(1993), NTP TR289(1996))
(Trichloroethylene)	:	in vivo mutagenesis exam.: Positive(CERI/NITE,2004)
CARCINOGENICITY		
(Benzene)	:	Classified in K(NTP,2005), 1(IARC,1987), A1(ACGIH,2001), A(EPA,2000)
(Trichloroethylene)	:	Classified in 2A(IARC), R(NTP,2005)
(Tetrachloroethylene)	:	Classified in R(NTP,2005), 2A(IARC,1995)
REPRODUCTIVE TOXICITY		
(Methanol)	:	Methanol has a potential impact on human development(NTP-CHRHR Monograph,2003).
(Trichloroethylene)	:	An action change of young animal.(CERI/NITE,2004)
SPECIFIC TARGET ORGAN TOXICITY - single exposure -		
(Methanol)	:	Central nervous depression (acute toxicity), metabolic acidosis, visual defect, blindness, headache, dizziness, vomiting, narcosis, death(DFGOT vol.16,2001).
SPECIFIC TARGET ORGAN TOXICITY - repeated exposure -		
(Methanol)	:	disorder of the eye, blindness(EHC 196(1997), ACGIH(7th,2001)).

12. ECOLOGICAL INFORMATION

Hazardous to the aquatic environment - Acute hazard		
(Tetrachloromethane)	:	Preudokirchneriel lasubcapitata: ErC50=0.46mg/L/72hr(MOE,2002)
(Tetrachloroethylene)	:	Ceriodaphnia dubia: EC50=0.602mg/L/48hr(NITE,2006)
BIODEGRADABILITY	:	There are not biodegradation in Tetrachloromethane(0%) and Tetrachloro ethylene(11%).
BIOACCUMULATION POTENTIAL	:	Tetrachloromethane: BCF=3.2 - 7.4(10μg/L), 3.8 - 11.0(1.0μg/L)
MOBILITY IN SOIL	:	No data available
OTHER ADVERSE EFFECTS	:	Tetrachloromethane is the Ozone-Depleting substance in Group II, Annex B of the Montreal Protocol. Ozone-Depleting Potential: 1.1, GWP: 0.34 - 0.35

13. DISPOSAL INFORMATION

Dispose in a hazardous-waste site in accordance with all applicable regulations. Any disposal practice must be in compliance with country, local, state, and federal laws and regulations (contact country, local or state environment agency for specific rules).

14. TRANSPORT INFORMATION

IATA

UN NUMBER	:	1986
UN PROPER SHIPPING NAME	:	Alcohols, Flammable, Toxic, N.O.S (Methanol solution)
CLASS	:	3, flammable liquid (6.1, toxic substances)
PACKING GROUP	:	Ⅱ
ADR/RID	:	1986, Alcohols, Flammable, Toxic, N.O.S
DOT	:	1986, Alcohols, Flammable, Toxic, N.O.S
MARINE POLLUTANT	:	Yes

15. REGULATORY INFORMATION

US REGULATIONS	:	Labeling according to EC Directives; See section 2
EU REGURATIONS	:	Labeling according to EC Directives; See section 2

16. OTHER INFORMATION

NOTICE:

The information contained in the SDS description is applicable exclusively to the chemical substance identified herein and for its intended use as an analytical reference standard or reagent and to the unit quantity intended for that purpose. The information does not relate to, and may not be appropriate for, any application or larger quantity of the substance described. Our products are intended for the use by individuals possessing sufficient technical skill and qualification on use the material potential hazardous chemical. Accordingly, no representation or warranty, express or implied, with respect to merchantability and fitness for a particular purpose is made with respect to the information contained herein.

Attention:

This product in terms of chemical identity and the unit amount provide is intended for use in chemical analysis and not for human consumption, nor any other purpose.