Safety data sheet as per Commission Regulation (EU) 2020/878
Product: Methyl isobutyl carbinol

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Trade name	**Methyl isobutyl carbinol (MIBC)**
Chemical Name	4-methylpentan-2-ol
CAS Number	108-11-2
EC Number	203-551-7

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Industrial use: Used in lubricants, in oil and gas field drilling and production operations, used in laboratories, in paints, in mining, functional fluids, polymer processing, coatings, for wafer cleaning in the electronics industry, as a solvent in coating products in semiconductor industry Professional use: used in paints, lubricants, functional fluids, polymer processing, in laboratories Consumer uses: Used in lubricants
Uses identified against	Not for use other than those specified

1.3 Details of the supplier of the safety data sheet:

Manufacturer	Prasol Chemicals Limited Prasol House, Plot No.A-17/2/3, T.T.C. Industrial Area, Khairne M.I.D.C., Navi Mumbai - 400 710. Maharashtra, India.
Telephone	+91-22-27782555/ 61952500
Telefax	+91-22-61952577
e-mail address	sales@prasolchem.com; inquiry@prasolchem.com

1.4 Emergency telephone number

Telephone	+91-22- 27782555/ 61952500
Language	English

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)

Flammable Liquid	Category 3	H226	Flammable liquid and vapor
Eye Irritation	Category 2	H319	Causes serious eye irritation
Specific Target Organ Toxicity	Category 3	H335	May cause respiratory irritation.

Information concerning particular hazards for human and environment: No further information

2.2 Label elements

Labeling according to Regulation (EC) No 1272/2008 (CLP)

Hazard pictograms


GHS02 GHS07

Signal word Warning

Hazard statements

H226	Flammable liquid and vapor
H319	Causes serious eye irritation
H335	May cause respiratory irritation

Precautionary statements

General	P103	Read label before use.
Prevention	P210	Keep away from heat, hot surfaces, 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 [electrical/ventilating/lighting/...] equipment
	P242	Use non-sparking tools
	P243	Take action to prevent static discharge
	P261	Avoid breathing fume/gas/mist/ vapours/spray.
	P264	Wash hands thoroughly after handling.
	P271	Use only outdoors or in a well -ventilated area
	P280	Use protective gloves and eye protection.
Response	P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse

		skin with water.
	P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breath
	P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
	P312	Call a doctor if you feel unwell.
	P337+P331	If eye irritation persists: Get medical advice.
	P370+P378	In case of fire: Use CO_2, dry powder, foam or water spray to extinguish.
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 in accordance with national regulations

2.3 Other hazards

Not a PBT, vPVB substance according to the criteria of Annex XIII to REACH regulation
Not having endocrine disruptive properties as per criteria of Delegated Regulations (EC) 2017/2100 or (EC) 2018/605

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Name	Methyl isobutyl carbinol
CAS Number	108-11-2
EC Number	203-551-7
Molecular Formula	$C_6H_{14}O$
Molecular Weight	102.17

Ingredient	Classification	Concentration (%)	SCL, M-factor, ATE
Methyl isobutyl carbinol (MIBC)	Flam. Liq, 3, Eye Irrit. 2, STOT SE 3; H226, H319, H335	100	Not assigned

3.2 Mixtures not applicable

None of the ingredients present are classified as skin sensitisers 1A, respiratory sensitisers 1A, aspiration hazards and endocrine disruptors.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General information	Take off all contaminated clothing immediately.
After inhalation	If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If unconscious, evaluate the need for artificial respiration. Get immediate medical attention
After skin contact	Wash off with plenty of water immediately, seek medical advice if necessary.
After eye contact	Rinse with plenty of water immediately and seek medical advice.
After swallowing	Do not induce vomiting and seek medical advice immediately.
4.2 Most important symptoms and effects, both acute and delayed	Can cause central nervous system depression, Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness. Blood disorders, Dermatitis, Blurred vision
4.3 Indication of any immediate medical attention and special treatment needed	Treat symptomatically and supportively.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media	CO_2, dry powder, foam or water spray
Unsuitable extinguishing media	water jet
5.2 Special hazards arising from the substance or mixture	Flammable. Explosive mixtures with air may even form at room temperature. Beware of re-ignition Vapours form potentially explosive mixtures with air. Heavier than air, they proceed at floor level and may back-flash over great distances when ignited. Ignition by hot surfaces, sparks and open flames. May form toxic carbon oxides if case of fire.
5.3 Advice for firefighters	Do not expose to high temperature. Danger of bursting and explosion. Use fine water spray to cool endangered containers. Move undamaged containers from immediate hazard area. Do not allow fire water to penetrate into surface or ground

water. Fire residuals and contaminated extinguishing water must be disposed of in accordance with the regulations of the local authorities.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1	**Personal precautions, protective equipment and emergency procedures**	For small spills and large spills: Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Clear spills immediately
	For non-emergency personnel	Protective equipment: Gloves, Face shield, Protective clothing. Emergency procedures: Mark the danger area. No naked flames. Wash contaminated clothes.
	For emergency responders	Protective equipment: Equip cleanup crew with proper protection. Emergency procedures: Ventilate area.
6.2	**Environmental precautions**	Do not allow to enter sewers, surface or ground water.
6.3	**Methods and material for containment and cleaning up**	For containment: Contain released product, collect/pump into suitable containers. Plug the leak, cut off the supply For cleaning up: Soak up with inert absorbent material eg. sand, earth, vermiculite or powdered lime stone and keep in suitable, closed containers for disposal. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling.
6.4	**Reference to other sections**	Section 8 for information on Exposure controls and personal protection Section 13 for disposal information

SECTION 7: HANDLING AND STORAGE

7.1	**Precautions for safe handling**	Provide adequate ventilation, and local exhaust as needed. Provide room air exhaust at ground level. Concentrated vapours are heavier than air. Avoid the formation of aerosol. Do not breathe vapours. Use only explosion-protected equipment/instruments. Do not use air pressure.
7.2	**Conditions for safe storage, including any incompatibilities**	
	Advice on protection against fire and explosion	Keep away from sources of ignition. - No smoking. Take precautionary measures against static discharge. Beware of re-ignition. Potentially explosive mixture may form within partially empty containers. Emergency cooling must be provided for in case of a fire in the vicinity. Do not weld.
	Storage	Keep container dry. Keep container tightly closed in a cool, well-ventilated place. Protect from direct sunlight.
	Incompatible materials	Oxidising agents, strongly alkaline and strongly acidic materials
	Packaging material	Recommended: Stainless steel, Iron, protected glass, HDPE
	Advice on common storage	Observe prohibition against storing together!
	Storage class	3 Flammable liquids
	Storage stability	Stable under recommended storage conditions
7.3	**Specific end use(s)**	Solvent

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters Occupational Exposure Limit 25 ppm, 100 mg/m^3 TWA

DNEL/DMEL (Workers)	
Acute - local effects, inhalation	208 mg/m³
Long-term - systemic effects, dermal	11.8 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	83 mg/m³
Long-term - local effects, inhalation	83 mg/m³
DNEL/DMEL (General population)	
Acute - local effects, inhalation	155.2 mg/m³
Long-term - systemic effects, oral	4.2 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	14.7 mg/m³
Long-term - systemic effects, dermal	4.2 mg/kg bodyweight/day
Long-term - local effects, inhalation	14.7 mg/m³
PNEC (Water)	
PNEC aqua (freshwater)	0.6 mg/l
PNEC aqua (marine water)	0.06 mg/l
PNEC (Sediment)	

PNEC sediment (freshwater)	2.94 mg/kg dwt
PNEC sediment (marine water)	0.3 mg/kg dwt
PNEC (Soil)	
PNEC soil	0.24 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	1 mg/l

8.2 Exposure controls

Appropriate engineering controls	Explosion protection required. Provide good ventilation and/or an exhaust system in the work area.
Personal protective equipment	
Eye/ face protection	closed goggles, face shield
Skin protection	
Hand protection	Butyl-rubber 0.5 mm > 480 min
Body protection	Use solvent-resistant protective clothing. Flame-retardant antistatic protective clothing; safety shoes
Respiratory protection	Respiratory equipment with suitable filter or a self-contained respiratory apparatus.
Thermal hazards	Flammable liquid; do not expose to heat
Industrial hygiene	Do not inhale vapours / aerosols. Avoid contact with skin and eyes. Remove immediately all contaminated clothing. Use disposable clothing if appropriate. Smoking, eating and drinking should be prohibited in the application area.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	liquid
Color	colorless
Odour	mild alcohol-like
Odour threshold	1.1ppm
pH	not determined (does not liberate H ions when dissolved)
Melting point	-90°C
Boiling point	131-133°C
Flash point	41°C (Closed cup) **Flamm. Cat 3, H226**
Evaporation rate	0.28 (nBuAc=1)
Flammability (solid, gas)	flammable
Flammability limits	**Lower** 1.0Vol % **Upper** 5.5Vol %
Vapour pressure	0.42kPa at 20°C
Vapour density	3.5 (air =1)
Relative density	0.806-0.809 at 20°C
Solubility in water	1.6% at 20°C
Partition coefficient	1.68 log Kow (n-octanol/water) at 20°C
Ignition temperature	305°C
Decomposition temperature	no data available
Viscosity at 20°C	5.2mPa.s
Particle characteristics	Not applicable (substance is a liquid)

9.2 Other information

Explosive properties	No explosive properties based on chemical structure.
Oxidizing properties	No oxidizing properties based on chemical structure.
Heat of combustion	36500kJ/kg
Heat of vaporization	413 kJ/kg

SECTION 10: STABILITY AND REACTIVITY

10.1	**Reactivity**	Vapours form potentially explosive mixtures with air. Heavier than air, they proceed at floor level and may back-flash over great distances when ignited. May become electrostatically charged.
10.2	**Chemical stability**	Under storage at normal ambient temperatures (-40°C to +40°C), the product is stable.
10.3	**Possibility of hazardous reactions**	No known hazardous reactions if used as directed
10.4	**Conditions to avoid**	Flammable. Concentrated vapours are heavier than air. Forms explosive mixtures with air, also in empty, uncleaned containers.

10.5	**Incompatible materials**	Acid catalysts (sulphuric acid, hydrochloric acid, oxalic acid), Iodine, Bases, Acetic anhydride, Hydrogen peroxide (concentrated solutions)
10.6	**Hazardous decomposition products**	Thermal decomposition products- carbon oxides, organic vapours

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LD50	oral	rat	2950 mg/kg bw	not classified
LC0	inhalation	3h, rat	>16000 mg/l	not classified
LD50	Dermal	rabbit	>3870 ml/kg bw	not classified

Skin irritation	can cause moderate skin irritation
Serious eye irritation	irritating C**ategory 2 H319** (rabbit)
Respiratory or skin sensitization	No sensitizing effects known
Germ cell mutagenicity	non mutagenic (Ames test)
Carcinogenicity	no indications for a carcinogenic potential
Reproductive toxicity	no adverse effect on reproduction (rat)
STOT-single exposure	Respiratory irritation >25% **Category 3, H335** Inhalation - May cause respiratory irritation. - Lungs
STOT-repeated exposure	NOAEC 3698ppm, 8 weeks for rats (inhalation)
Aspiration hazard	no data available

11.2 Information on other hazards

Endocrine disrupting properties	No endocrine disrupting properties
Other information	No further information

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity

Toxicity to fish	LC50	96h	92.4mg/L	*Pimephales promelas*
Toxicity to aquatic invertebrates	EC50	48h	337mg/L	*Daphnia magna*
Toxicity to aquatic algae and cyanobacteria	ErC50	96h	334 mg/L	*Pseudokirchneriella subcapitata*
Toxicity to microorganisms	EC50	3h	>100mg	sewage, domestic

12.2 Persistence and degradability	
Biodegradation	readily biodegradable (85% in 28days)
12.3 Bioaccumulative potential	Bioconcentration factor 0.5 very low potential for bioaccumulation
12.4 Mobility in soil	log Koc <3; very low potential for geoaccumulation
12.5 Results of PBT and vPvB assessment	Not a PBT, vPvB substance according to the REACH regulation
12.6 Endocrine disrupting properties	No endocrine disrupting properties
12.7 Other adverse effects	No further information available

SECTION 13: DISPOSAL CONSIDERATIONS

13.1	**Waste treatment methods**	Observe all national, state and local environmental regulations.
	Product disposal	Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
	Packaging disposal	Clean container with water. Recover waste water for processing later. Destroy packaging by incineration at an approved waste disposal site.
	Sewage disposal	Do not dispose in sewage.

SECTION 14: TRANSPORT INFORMATION

		ADR/RID	**IMDG**	**ICAO/IATA**
14.1	**UN Number**	2053	2053	2053
14.2	**UN proper shipping name**	METHYL ISOBUTYL CARBINOL		
14.3	**Transport hazard class**	3	3	3
14.4	**Packaging group**	III	III	III
14.5	**Environmental hazards**	not environmentally hazardous, not a marine pollutant		
14.6	**Special precautions for the user**	Flammable liquid; Flash point 41°C (closed cup)		
	EmS Number	F-E, S-D		

14.7 Maritime transport in bulk according to IMO instruments Ship type: 3; Pollution Category: Z

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Major accident hazard	**Seveso III**	P5a,b,c (Flammable Liquids)

International Chemical Inventory Status

USA (TSCA)	Listed (Tracking No. 24869)
Canada (DSL)	listed
Australia (AICS)	listed
Japan (MITI)	listed
Korea (KECL)	Listed (KE No. 24720)
Philippines (PICCS)	listed
China	listed
New Zealand	listed
Taiwan	listed

15.2 Chemical safety assessment A Chemical Safety Assessment will be carried out at the time of REACH registration

◆ SECTION 16: OTHER INFORMATION

Indication of changes: Sections in which changes have been made since the last version are marked with a diamond ◆ in the left hand margin.

Abbreviations and acronyms:

ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
AICS	Australian Inventory of Chemical Substances
ATE	Acute Toxicity Estimate
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CLP	Classification for Labeling and Packaging
DMEL	Derived minimal effect level
DNEL	Derived No-Effect Level
DSL	Domestic Substances List
EC	European Commission
EC50	Half maximal effective concentration
EINECS	European Inventory of Existing Commercial Chemical Substances
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
IATA	International Air Transport Association
IBC	International Bulk Chemical
ICAO	International Civil Aviation Organization
IMDG	International Maritime Code for Dangerous Goods
KECL	Korea Existing Chemicals List
KOC	Soil adsorption coefficient
KOW	Partition Coefficient octanol-water
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
M-factor	Multiplication Factor
MITI	Ministry of International Trade and Industry
NOAEC	No Observed Adverse Effect Concentration
PBT	Persistent, bioaccumulative and toxic substances
PICCS	Philippine Inventory of Chemicals and Chemical Substances
PNEC	Predicted No-Effect Concentration
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
SCL	Specific concentration limit
STOT	Specific target organ toxicity
TSCA	Toxic Substances Control Act
UN	United Nations
vPVB	(very) Persistent, (very) Bioaccumulative

Key literature references and sources for data

Commission Regulation (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

ECHA https://echa.europa.eu/registration-dossier/-/registered-dossier/16189/1
Chemid https://chem.nlm.nih.gov/chemidplus/rn/108-11-2

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