Safety Data Sheet

according to Regulation (EC) No 1907/2006 (REACH), Annex II as amended by Regulation (EU) 2020/878

PENPET GREEN Chemicals Distribution GmbH
Merkurring 60-62 · 22143 Hamburg · Germany
Version 1.0 · Revision date: 11.09.2026 · Replaces version: –

Isoamyl alcohol, bio-based

CAS 123-51-3 · EC 204-633-5
3-Methylbutan-1-ol · $C_5H_{12}O$

SECTION 1 Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name	Isoamyl alcohol, bio-based
Substance name (IUPAC)	3-Methylbutan-1-ol
Synonyms	Isopentyl alcohol, isopentanol, 3-methyl-1-butanol, isobutyl carbinol
CAS No.	123-51-3
EC No.	204-633-5
Index No.	603-006-00-7
REACH registration number	Available on request (registration held by the manufacturer/importer)
Molecular formula / molar mass	$C_5H_{12}O$ · 88.15 g/mol

1.2 Relevant identified uses of the substance and uses advised against

Identified uses	Solvent; intermediate for chemical synthesis (esters, flavours and fragrances); laboratory chemical; formulation and repackaging.
Uses advised against	No consumer uses.

1.3 Details of the supplier of the safety data sheet

Supplier	PENPET GREEN Chemicals Distribution GmbH
Address	Merkurring 60-62, 22143 Hamburg, Germany
Telephone	+49 40 675799-0
E-mail (competent person)	sds@penpet.de
Internet	www.penpet.green

1.4 Emergency telephone number

Emergency number	Poison Information Centre North (GIZ-Nord), Göttingen, Germany: +49 551 19240 (24 h)
Company emergency	+49 40 675799-0 (Mon–Fri, 08:00–17:00 CET)

SECTION 2 Hazards identification

2.1 Classification of the substance or mixture

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

Hazard class / category	Hazard statement
Flam. Liq. 3	H226 – Flammable liquid and vapour.
Acute Tox. 4 (inhalation)	H332 – Harmful if inhaled.
Skin Irrit. 2	H315 – Causes skin irritation.
Eye Dam. 1	H318 – Causes serious eye damage.
STOT SE 3	H335 – May cause respiratory irritation.

2.2 Label elements

SIGNAL WORD: DANGER

H226	Flammable liquid and vapour.
H332	Harmful if inhaled.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261	Avoid breathing vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304+P340+P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor 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.
P310	Immediately call a POISON CENTER/doctor.
P403+P235	Store in a well-ventilated place. Keep cool.
P501	Dispose of contents/container to an approved waste disposal plant.

Hazardous component for labelling	3-Methylbutan-1-ol

2.3 Other hazards

Vapours are heavier than air and may spread along the ground; explosive vapour/air mixtures may form when heated above the flash point. The substance does not meet the PBT or vPvB criteria of Annex XIII of the REACH Regulation. It is not identified as having endocrine-disrupting properties (Art. 57(f) REACH, Regulations (EU) 2017/2100 and 2018/605).

SECTION 3 Composition / information on ingredients

3.1 Substances

Substance name	CAS / EG / Index	Content	Classification (CLP)
3-Methylbutan-1-ol	123-51-3 / 204-633-5 / 603-006-00-7	≥ 98.5 %	Flam. Liq. 3 (H226); Acute Tox. 4 (H332); Skin Irrit. 2 (H315); Eye Dam. 1 (H318); STOT SE 3 (H335)

Bio-based isoamyl alcohol is obtained by distillation from fusel oil, a by-product of ethanol fermentation. It may contain minor amounts of the isomer 2-methylbutan-1-ol (CAS 137-32-6, active amyl alcohol), which carries the same classification. The substance is chemically identical to petrochemically produced isoamyl alcohol.

SECTION 4 First aid measures

4.1 Description of first aid measures

General information	Remove affected person from the danger area. Take off contaminated clothing immediately. First aiders: ensure self-protection.
After inhalation	Move to fresh air, keep at rest and warm. Seek medical advice in case of breathing difficulties or if feeling unwell.
After skin contact	Wash off with plenty of soap and water. Consult a doctor if skin irritation persists.

After eye contact	Rinse immediately with running water for at least 15 minutes with eyelids held open. Remove contact lenses. Consult an ophthalmologist immediately.
After ingestion	Rinse mouth with water. Do NOT induce vomiting (risk of aspiration). Seek medical advice.

4.2 Most important symptoms and effects, both acute and delayed

Irritation of eyes, skin and respiratory tract; headache, dizziness, drowsiness, nausea (narcotic effect at high vapour concentrations). Serious eye damage possible.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically. In case of ingestion: risk of aspiration; gastric lavage only with airway protection.

SECTION 5 Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	Alcohol-resistant foam, carbon dioxide (CO_2), dry powder, water spray/fog.
Unsuitable extinguishing media	Full water jet.

5.2 Special hazards arising from the substance or mixture

Flammable. Vapours may form explosive mixtures with air and travel considerable distances to ignition sources. Combustion produces carbon monoxide and carbon dioxide. Containers may burst when heated.

5.3 Advice for firefighters

Wear self-contained breathing apparatus and chemical protective clothing. Cool endangered containers with water spray. Collect contaminated firefighting water separately; do not allow to enter drains.

SECTION 6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Remove all sources of ignition; no smoking. Ensure adequate ventilation. Do not breathe vapours; avoid contact with skin and eyes. Wear personal protective equipment (see Section 8). Keep unprotected persons away.

6.2 Environmental precautions

Do not allow to enter drains, surface water or groundwater. Notify the competent authorities in case of water pollution.

6.3 Methods and material for containment and cleaning up

Absorb with inert liquid-binding material (sand, diatomite, universal binder) and collect in suitable, closable containers for disposal. Use non-sparking tools. Clean contaminated surfaces thoroughly.

6.4 Reference to other sections

Safe handling: Section 7. Personal protective equipment: Section 8. Disposal: Section 13.

SECTION 7 Handling and storage

7.1 Precautions for safe handling

Handle only in well-ventilated areas; avoid formation of vapours. Keep away from ignition sources; no smoking. Take precautionary measures against electrostatic discharge (earth equipment and containers, use conductive hoses). Use explosion-proof equipment. Avoid contact with eyes and skin. Do not eat, drink or smoke when using this product. Wash hands before breaks and at the end of work.

7.2 Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a cool, dry, well-ventilated place. Protect from heat and direct sunlight. Store separately from oxidising agents, strong acids and acid anhydrides. Suitable materials: stainless steel, carbon steel, HDPE. Recommended storage temperature: 5–30 °C.

Storage class (TRGS 510, Germany)	3 – Flammable liquids

7.3 Specific end use(s)

No further information; see Section 1.2.

SECTION 8 Exposure controls / personal protection

8.1 Control parameters

Country / source	Limit value	Remark
Germany – TRGS 900 (AGW)	No AGW established	–
Germany – DFG MAK (amyl alcohols, all isomers)	20 ml/m³ (ppm) · 73 mg/m³	Peak limitation cat. I(1)
EU – indicative limit (IOELV)	Not established	–
USA – ACGIH TLV	TWA 100 ppm · STEL 125 ppm	for information
USA – OSHA PEL / NIOSH REL	TWA 100 ppm (360 mg/m³)	for information

DNEL / PNEC	No registrant values available; on request.

8.2 Exposure controls

Engineering controls	Ensure good ventilation of the workplace; use local exhaust ventilation where necessary. Provide eye wash station and safety shower.
Eye/face protection	Tightly fitting safety goggles with side shields (EN 166); face shield where splashing is possible.
Hand protection	Chemical-resistant gloves according to EN ISO 374. Suitable: butyl rubber (0.7 mm, breakthrough time > 480 min); for short-term contact nitrile rubber (0.4 mm, > 30 min). Observe the glove manufacturer's instructions.
Body protection	Antistatic, flame-retardant protective clothing; safety shoes (EN ISO 20345).
Respiratory protection	If limit values are exceeded or ventilation is insufficient: respirator with filter type A (brown, EN 14387).
Environmental exposure controls	Do not release into the environment; see Sections 6 and 12.

SECTION 9 Physical and chemical properties

9.1 Information on basic physical and chemical properties

Property	Value
Physical state	Liquid
Colour	Colourless, clear
Odour	Characteristic, fusel-like alcoholic
Melting point / freezing point	−117 °C
Boiling point	131 °C (1013 hPa)
Flammability	Flammable liquid
Lower / upper explosion limit	1.2 vol% / 9.0 vol%
Flash point	43 °C (c.c.)
Auto-ignition temperature	approx. 340 °C
Decomposition temperature	Not determined
pH	Not applicable (organic liquid)
Kinematic viscosity	5.3 mm²/s (20 °C)
Water solubility	approx. 28 g/l (20 °C); miscible with ethanol, ether, acetone
Partition coefficient n-octanol/water (log Kow)	1.16

Property	Value
Vapour pressure	approx. 3 hPa (20 °C); 24 hPa (50 °C)
Density	0.81 g/cm³ (20 °C)
Relative vapour density	3.0 (air = 1)
Particle characteristics	Not applicable (liquid)

9.2 Other information

Explosive properties	Not explosive; however, vapour/air mixtures may be explosive.
Oxidising properties	None
Refractive index	n_D^{20} 1.407

SECTION 10 Stability and reactivity

10.1 Reactivity

No hazardous reactions under normal conditions of handling and storage.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Violent reaction with strong oxidising agents possible. Formation of explosive vapour/air mixtures.

10.4 Conditions to avoid

Heat, sparks, open flames, electrostatic discharge.

10.5 Incompatible materials

Strong oxidising agents, strong acids, acid chlorides, acid anhydrides, alkali metals.

10.6 Hazardous decomposition products

In case of fire: carbon monoxide, carbon dioxide.

SECTION 11 Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Endpoint	Result / value
Acute toxicity, oral	LD50 rat: 1,300 mg/kg – not classified
Acute toxicity, dermal	LD50 rabbit: 3,970 mg/kg – not classified
Acute toxicity, inhalation	Harmful if inhaled (Acute Tox. 4, H332; harmonised classification)
Skin corrosion/irritation	Causes skin irritation (Skin Irrit. 2, H315)
Serious eye damage/irritation	Causes serious eye damage (Eye Dam. 1, H318)
Respiratory or skin sensitisation	Not sensitising (guinea pig data)
Germ cell mutagenicity	Ames test negative; no evidence of mutagenic activity
Carcinogenicity	No evidence; not classified
Reproductive toxicity	No evidence; not classified
STOT – single exposure	May cause respiratory irritation (STOT SE 3, H335); narcotic effects at high concentrations
STOT – repeated exposure	Not classified
Aspiration hazard	Not classified (criteria not met)

11.2 Information on other hazards

Endocrine-disrupting properties: the substance is not included in the list of substances with endocrine-disrupting properties. Symptoms following exposure: see Section 4.2.

SECTION 12 Ecological information

12.1 Toxicity

Endpoint	Value
Fish toxicity	LC50 (96 h) Oncorhynchus mykiss: 700 mg/l
Daphnia toxicity	EC50 (48 h) Daphnia magna: 260 mg/l
Bacterial toxicity	EC50 (17 h) Pseudomonas putida: 2,500 mg/l

Not classified as hazardous to the aquatic environment.

12.2 Persistence and degradability

Readily biodegradable (OECD 301, > 70 % in 28 days).

12.3 Bioaccumulative potential

No significant bioaccumulation expected (log Kow 1.16).

12.4 Mobility in soil

Water-soluble, high mobility in soil expected; partially evaporates from water and soil surfaces.

12.5 Results of PBT and vPvB assessment

The substance does not meet the PBT/vPvB criteria of REACH Annex XIII.

12.6 Endocrine disrupting properties

Not identified as endocrine disrupting for the environment.

12.7 Other adverse effects

Water hazard class (AwSV, Germany)	WGK 1 – slightly hazardous to water

SECTION 13 Disposal considerations

13.1 Waste treatment methods

Dispose of at an approved waste incineration plant or hazardous waste facility in accordance with local regulations. Do not dispose of with household waste; do not allow to enter drains. Empty packaging completely; dispose of uncleaned packaging as the substance itself.

Waste code (EWC, recommendation)	07 01 04* – other organic solvents, washing liquids and mother liquors; packaging: 15 01 10*

SECTION 14 Transport information

	ADR / RID / ADN	IMDG	IATA
14.1 UN number or ID number	UN 1105	UN 1105	UN 1105
14.2 UN proper shipping name	PENTANOLS	PENTANOLS	Pentanols
14.3 Transport hazard class(es)	3	3	3
14.4 Packing group	III	III	III
14.5 Environmental hazards	No	Marine pollutant: No	No
Labels	3	3	3
Classification code / hazard ID no.	F1 / 30	–	–

	ADR / RID / ADN	IMDG	IATA
Tunnel restriction code	D/E	–	–
Limited quantity (LQ) / excepted quantity (EQ)	5 L / E1	5 L / E1	–
EmS	–	F-E, S-D	–
Packing instruction (cargo / passenger)	–	–	366 (220 L) / 355 (60 L)

14.6 Special precautions for user	See Sections 6 to 8. Secure against slipping and damage during transport; keep away from ignition sources.
14.7 Maritime transport in bulk according to IMO instruments	IBC Code: product name “Pentanol (all isomers)”, ship type 3, pollution category Y (relevant for bulk transport only)

SECTION 15 Regulatory information

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

EU regulations	Regulation (EC) No 1907/2006 (REACH): not listed in Annex XIV (authorisation) or Annex XVII (restrictions); not on the SVHC candidate list. Regulation (EC) No 1272/2008 (CLP). Regulation (EU) 2019/1021 (POPs): not listed. Regulation (EC) No 273/2004 (drug precursors): not listed. Directive 2012/18/EU (Seveso III): category P5c – flammable liquids (qualifying quantities 5,000 / 50,000 t).
VOC (Directive 2010/75/EU / 2004/42/EC)	Volatile organic compound: 100 %
National regulations (Germany)	Water hazard class: WGK 1 (AwSV). Storage class: LGK 3 (TRGS 510). Ordinance on Industrial Safety (BetrSichV): flammable liquid. Major Accidents Ordinance (12. BImSchV): no. 2.7.1 (P5c). TA Luft: organic substance, no. 5.2.5. Observe employment restrictions for expectant mothers and young workers.

15.2 Chemical safety assessment

A chemical safety assessment has been carried out by the registrant; exposure scenarios are not available to the supplier.

SECTION 16 Other information

Full text of hazard statements and abbreviations referred to in Sections 2 and 3

Code	Meaning
H226	Flammable liquid and vapour.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
Flam. Liq. 3	Flammable liquid, category 3
Acute Tox. 4	Acute toxicity, category 4
Skin Irrit. 2	Skin corrosion/irritation, category 2
Eye Dam. 1	Serious eye damage, category 1
STOT SE 3	Specific target organ toxicity (single exposure), category 3
ADR / RID / ADN / IMDG / IATA	European agreements on the carriage of dangerous goods by road / rail / inland waterways; International Maritime Dangerous Goods Code; International Air Transport Association
AGW / MAK / TLV / PEL	German occupational exposure limit / DFG maximum workplace concentration / Threshold Limit Value / Permissible Exposure Limit

Code	Meaning
DNEL / PNEC	Derived No-Effect Level / Predicted No-Effect Concentration
PBT / vPvB	Persistent, bioaccumulative, toxic / very persistent, very bioaccumulative
WGK / AwSV	German water hazard class / Ordinance on facilities for handling substances hazardous to water
LC50 / LD50 / EC50	Lethal concentration / lethal dose / effective concentration for 50 % of the test population

Further information

Classification procedure	Harmonised classification (Annex VI CLP, index no. 603-006-00-7) supplemented by manufacturer data (Eye Dam. 1).
Data sources	Manufacturers' safety data sheets; ECHA registration dossier; GESTIS substance database; ADR 2025 / IMDG Code / IATA DGR.
Version / issue date	1.0 / 11.09.2026 (first issue)
Training advice	Workers must be instructed on the basis of this safety data sheet and the workplace instructions before starting work with the substance.

Disclaimer

The information in this safety data sheet reflects the present state of our knowledge on the date of issue and describes the product with regard to safety requirements. It does not represent a guarantee of product properties and does not establish a contractual legal relationship. The recipient is responsible for observing all applicable laws and regulations.