

product code	TP07	Version / Revision	7.1
Revision date	08.03.2025	Supersedes Version	7.0

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

1.1 Product identifier

Product name **Norbornene**

Chemical name Bicyclo-[2.2.1] hept-2-ene

CAS-No. 498-66-8

EC-No. 207-866-0

Registration number 01-2119635054-47-0000

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

Identified uses

Transported isolated intermediate (1907/2006). Monomer.

Uses advised against

Consumer use.

1.3 Details of the supplier of the safety data sheet

Topas Advanced Polymers GmbH

Am Prime Parc 9
65479 Raunheim
Germany

Product information. email: info@topas.com
Tel: +49 (0)69/945158 000

1.4 Emergency telephone number +49 (0)69/305 6700 available 24/7***

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

This substance is classified based on Directive 1272/2008/EC and its amendments (CLP Regulation).

Flammable solid category 2, H228.

Serious eye damage/eye irritation: category 2, H319.

Reproductive toxicity category 2; H361.

Environmental hazard aquatic chronic category 2, H411.

2.2 Label elements

Labelling according to Regulation 1272/2008/EC and its amendments (CLP Regulation).

Hazard pictograms



Signal word

WARNING.

Hazard statements

H228 - Flammable solid.

H319: Causes serious eye irritation.

H411: Toxic to aquatic life with long lasting effects.

H361: Suspected of damaging fertility or the unborn child.

Precautionary statements

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P240: Ground and bond container and receiving equipment.

P273: Avoid release to the environment.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P311: IF exposed or concerned: Call a POISON CENTER/doctor. P391: Collect spillage.

2.3 Other hazards

Vapours may form explosive mixtures with air. Hazardous polymerisation may occur.

PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB).

Endocrine disrupting properties

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

<i>Hazardous ingredients</i>	<i>CAS-No. EC-No. Registration number</i>	<i>Classification Acute toxicity estimate (ATE) Specific concentration limit M-factor</i>	<i>Concentration</i>
Bicyclo [2.2.1]-hept-2-en	498-66-8 207-866-0 01-2119635054-47	Flam.Sol. 2 Eye Irrit. 2 Repr. 2 Aquatic Chronic 2 ATE 9577 mg/kg (oral) ATE 4350 mg/kg (dermal) ATE 26,6 mg/l (inhalation) -- 1	>98%
Toluene	108-88-3 203-625-9 --	Flam.Liq. 2 Repr. 2 Asp. Tox. 1 STOT RE 2 Skin Irrit. 2 STOT SE 3 ATE 5580 mg/kg (oral) ATE 12267 mg/kg (dermal) ATE 28 mg/l (inhalation) -- 1	< 2 %

3.2 Mixtures

Not applicable.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Remove contaminated, soaked clothing immediately and dispose of safely.

Inhalation

Aerate with fresh air. When symptoms persist or in all cases of doubt seek medical advice.

Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.

Skin contact

Wash off immediately with soap and plenty of water. When symptoms occur or in all cases of doubt seek medical advice.

Ingestion

Do not induce vomiting without medical advice. Obtain medical attention.

Protection of first-aiders

For further specification, refer to section 8 of the SDS.

4.2 Most important symptoms and effects, both acute and delayed

Exposure may result in reddening, tears and itching of the eyes and soreness in the nose and throat, together with coughing.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Foam. Dry chemical. Carbon dioxide (CO₂).

Unsuitable extinguishing media

Do not use a solid water stream as it may scatter and spread fire.

5.2 Special hazards arising from the substance or mixture

Vapours are heavier than air and may spread along floors. Combustion gases of organic materials must in principle be graded as inhalation poisons. Under conditions giving incomplete combustion, hazardous gases produced may consist of: carbon monoxide (CO). Carbon dioxide (CO₂).

5.3 Advice for firefighters

Fire fighter protection should include a self-contained breathing apparatus (NIOSH-approved or EN 133) and full fire-fighting turn out gear. Clear the danger zone. Keep people away from and upwind of fire. Remove undamaged containers from fire area if it is safe to do so. Cool closed containers exposed to fire with water spray. Dike and collect water used to fight fire.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Avoid contact with skin and eyes. Avoid breathing vapors or mists. Keep away from heat and sources of ignition. Ensure adequate ventilation, especially in confined areas.

For non-emergency personnel

Keep people away from and upwind of spill/leak.

For emergency responders

For emergency responders: Personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage. Not readily biodegradable. Do not flush into surface water or sanitary sewer system. Should not be released into the environment.

6.3 Methods and material for containment and cleaning up

Stop the flow of material, if possible without risk. Allow to solidify, use mechanical handling equipment. Sweep up or vacuum up spillage and collect in suitable container for disposal. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Dispose of in accordance with local regulations.

6.4 Reference to other sections

For personal protection see section 8.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin, eyes and clothes. Provide sufficient air exchange and/or exhaust in work rooms. Refill and handle product only in closed system.

Advice on general occupational hygiene

Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. Take off all contaminated clothing immediately.

7.2 Conditions for safe storage, including any incompatibilities

Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge. Ground and bond containers when transferring material. Vapour is heavier than air and can travel considerable distance to a source of ignition and flashback. Vapours may form explosive mixtures with air. In case of fire, emergency cooling with water spray should be available.

Keep containers tightly closed in a dry, cool and well-ventilated place.

Storage class (TRGS 510)

4.1 B: Flammable solids.

Temperature class

T2.

7.3 Specific end use(s)

see section 1.2.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Substance	Long term exposure limit (8h)		Short term exposure limit	
	ppm	mg/m ³	ppm	mg/m ³
Norbornene.	No exposure limits established			
Toluene.				
Reg. 2006/15 indicative limit values	50	192	100	384
TRGS 900 (DE)	50	190	Factor 2	
TRGS 903 (DE)	BGW: 600 µg/l (peak exposure) BGW: 75 µg/l (end of shift)			
VLEP (FR)	20	76,8	100	384
Staatscourant no. 252 (NL)	39	150	100	384
INSTIT (ES)	50	192	100	384
WEL (UK)	50	190	100	384

DNEL-/PNEC-values

DNEL inhalation, systemic effects – longterm 40.6 mg/m³

DNEL dermal, systemic effects – longterm 6.9 mg/kg b.w./day

This substance is registered as intermediate under strictly controlled conditions.

8.2 Exposure controls

Appropriate engineering controls

Handle product only in closed system or provide appropriate exhaust ventilation at machinery. Explosion-proof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems. Vapors may cause flash fire or explosion. Engineering and Risk Management measures should maintain strictly controlled conditions. This also applies to environmental exposure controls.

Individual protection measures, such as personal protective equipment

General industrial hygiene practice.

Do not breathe vapours or spray mist. Avoid contact with skin, eyes and clothing.

Ensure that eyewash stations and safety showers are close to the workstation location. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

Eye/face protection

Safety glasses with side-shields conforming to EN166. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face.

Skin protection

Impervious clothing. Wear face-shield and protective suit for abnormal processing problems.

Hand protection

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Wear protective gloves. Recommendations are listed below. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

Material	Camatril
Thickness of the glove material	No data.
Breakthrough time:	480 min

Material	Viton®.
Thickness of the glove material	No data.
Breakthrough time:	480 min

Other

None under normal use.

Respiratory protection

If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn.

Filter type:

Filter type A.

Environmental exposure controls

Use product only in closed system. If leakage can not be prevented, the substance needs to be suck off at the emersion point, if possible without danger. Inform the responsible authorities in case of leakage into the atmosphere, or of entry into waterways, soil or drains.

9.1 Information on basic physical and chemical properties

Physical state	Solid.
Colour	colourless.
Odour	pungent.
Melting point/freezing point	46-47°C
Boiling point or initial boiling point and boiling range	95-96°C @ 1013 hPa
Flammability	Not applicable.
Lower and upper explosion limit	0.77 Vol%; 6.5 Vol%.
Flash point	-8°C
Auto-ignition temperature	450°C
Decomposition temperature	No data available.
pH	Not applicable.
Viscosity, kinematic	Not applicable.
Water solubility	0.13 g/l @ 20°C
Partition coefficient n-octanol/water (log value)	4.1 (measured)
Vapour pressure	301 hPa @ 59°C
Density and / or relative density	0.8706 g/cm ³ @ 20°C

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Relative vapour density Not applicable.
Particle characteristics No data available.

9.2 Other information

Molecular weight 94.2
Molecular formula C7H10

Other safety characteristics

Not applicable.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

The reactivity of the product corresponds to the typical reactivity shown by the substance group as described in any text book on organic chemistry.

10.2 Chemical stability

Stable under normal conditions of handling, use and transportation.

10.3 Possibility of hazardous reactions

Hazardous polymerisation may occur. Polymerization is a highly exothermic reaction and may generate sufficient heat to cause thermal decomposition and/or rupture containers.

10.4 Conditions to avoid

Avoid any source of ignition. Avoid contact with heat, sparks, open flame and static discharge.

10.5 Incompatible materials

oxidizing agents. Oxygen. radical initiators. Strong acids. Strong bases.

10.6 Hazardous decomposition products

No decomposition if stored and applied as directed.

SECTION 11: TOXICOLOGICAL INFORMATION

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

Acute toxicity

	Species.	Endpoint.	Test Method.
Oral	Rat	LD ₅₀ 9577 mg/kg	OECD 401
Dermal	Rabbit	LD ₅₀ > 4350 mg/kg	other
inhalative	Rat	LC ₅₀ > 26,6 mg/l	other

Based on available data, the classification criteria are not met.

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Skin corrosion/irritation

Result / evaluation	No skin irritation.
Species	Rabbit.
Test Method	other

Based on available data, the classification criteria are not met.

Serious eye damage/irritation

Result / evaluation	Causes serious eye irritation.
Species	Rabbit.
Test Method	other

The available data lead to the classification given in section 2.

Respiratory or skin sensitisation

Result / evaluation	not sensitizing. sensitizing.
Species	Mouse.
Test Method	OECD 429

Based on available data, the classification criteria are not met.

Germ cell mutagenicity

Test Method	Result / evaluation
OECD 471	negative
OECD 473	negative
OECD 476	negative

Carcinogenicity

No structural alerts for carcinogenicity were found.

NTP(National Toxicity Program)

not evaluated.

IARC (International Agency for Research on Cancer)

not evaluated.

Reproductive toxicity

Test Method	Result / evaluation
OECD 422	negative
OECD 414	significant body weight loss

Overall assessment on CMR properties

The available data lead to the classification given in section 2.

STOT-single exposure

no data available.

STOT - repeated exposure

Based on available data, the classification criteria are not met.

Aspiration hazard

Due to the viscosity, this product does not present an aspiration hazard.

Information on likely routes of exposure

The substance is handled under strictly controlled conditions throughout the life cycle.

Symptoms related to the physical, chemical and toxicological characteristics

None known.

Delayed and immediate effects and also chronic effects from short and long term exposure

None known.

Information on other hazards

Endocrine disrupting properties

This substance does not have endocrine disrupting properties with respect to humans.

11.2 Other information

no data available.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Species	Endpoint	Exposure time	Test Method
Danio rerio (Zebra fish)	LC50 > 7.5 mg/l	96h	OECD 203
Poecilia reticulata (guppy)	EC50 > 40 mg/l	5 d	
Daphnia magna (Water flea)	EC50: 7,3 mg/l	48h	OECD 202
Scenedesmus subspicatus	EC50: 9,9 mg/l (biomass)	72h	OECD 201
Activated sludge (domestic)	EC50 > 1000 mg/l	3h	OECD 209

12.2 Persistence and degradability

Biodegradation: Not biodegradable.

12.3 Bioaccumulative potential

log Pow: 4.1

12.4 Mobility in soil

no data available.

12.5 Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB).

12.6 Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

12.7 Other adverse effects

no data available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal.

Uncleaned empty packaging

Regulations concerning reuse or disposal of used packaging materials must be observed.

SECTION 14: TRANSPORT INFORMATION

	ADR/RID	IMDG	IATA	ADN
14.1 UN number or ID number	UN 1325			
14.2 UN proper shipping name	Flammable solid, organic, n.o.s.			
Hazard Inducer	Norbornene			
14.3 Transport hazard class(es)	4.1			
14.4 Packing group	II			
14.5 Environmental hazards	Fish and tree.			
14.6 Special precautions for user	(E)			
ADR Tunnel restriction code.	F1			
Classification Code.	40			
Hazard Number.				
Marine Pollutant		yes		
EmS		F-A,S-G		

14.7 Maritime transport in bulk according to IMO instruments

Not relevant.

SECTION 15: REGULATORY INFORMATION

International Regulations

Regulation (EC) No. 1005/2009 on substances that lead to the depletion of the ozone layer	not subject.
Regulation (EG) 2019/1021 - Stockholm Convention (Persistent Organic Pollutants)	not subject.
Regulation (EU) 649/2012 - Prior Informed Consent (PIC)	not subject.
Regulation (EC) 428/2009 - dual use items	not subject.
Regulation (EU) 2019/1148 - explosive precursors	not subject.
Regulation (EC) 273/2004 - drug precursors	Toluene (CAS 108-88-3).
Directive 2010/75/EU on industrial emissions [Industrial Emissions Directive]	Toluene (CAS 108-88-3).
Directive 2008/50/EC on ambient air quality	Toluene (CAS 108-88-3).

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Directive 1992/85/EEC - Maternity Protection Directive Toluene (CAS 108-88-3).
Directive 98/24/EC - Chemical Agents Directive Toluene (CAS 108-88-3).
Directive 2008/98/EC (Waste Framework Directive) Toluene (CAS 108-88-3).

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

Regulation (EC) No. 1907/2006 (REACH), Annex XVII (restrictions)

No. 48 (Toluene)

Regulation 1272/2008, Annex VI

Toluene (CAS 108-88-3)

Flam. Liq. 2; H225
Repr. 2; H361d***
Asp. Tox. 1; H304
STOT RE 2*; H373**
Skin Irrit. 2; H315
STOT SE 3; H336

DI 2012/18/EU (Seveso III)

E2.

National regulatory information

Storage Class (TRGS510)

4.1 B: Flammable solids.

Water hazard class according to AwSV

KBwS Class hazardous to water (WGK 2)
KBwS-classification self classification

Maternity Protection Law

The product falls into a hazard category which, in accordance with §11 of the Maternity Protection Act, suggests an uncontrollable hazard. A risk assessment taking into account §10 and §11 as well as the general provisions of the Maternity Protection Act must be observed. The employment restrictions for the protection of working mothers (MuschG) must be observed.

Youth Employment Protection Act

The employment restrictions for the protection of young people at work (JArbSchG) must be observed.

15.2 Chemical Safety Assessment

The Chemical Safety Assessment (CSR) has been generated.

Global Inventories

Bicyclo [2.2.1]-hept-2-en, CAS: 498-66-8

AICS (AU)	Listed
DSL/NDSL (CA)	DSL: Listed
IECSC (CN)	Not listed

EINECS	Listed
ENCS (JP)	(4)-1763
ISHL (JP)	7-(2)-108
KECI (KR)	2012-3-5388
INSQ (MX)	Not listed
PICCS (PH)	Listed
TSCA (US)	Listed
NZioC (NZ)	Listed
TSCI (TW)	Not listed

SECTION 16: OTHER INFORMATION

Indication of changes

*** Data changed compared with the previous version. Minor changes due to a redesign of the SDS are not marked.

Abbreviations and acronyms

IARC: (International Agency for Research on Cancer). NTP - National Toxicology Program Report.

List of references

Information contained in this safety data sheet is based on TOPAS owned data and public sources deemed valid or acceptable. The absence of data elements required by OSHA, ANSI or Annex II, Regulation 1907/2006/EC indicates, that no data meeting these requirements is available.

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) No. 1272/2008

Full text of H-Statements referred to under sections 2 and 3.

H226: Flammable liquid and vapour.

H319: Causes serious eye irritation.

H361: Suspected of damaging fertility or the unborn child.

H411: Toxic to aquatic life with long lasting effects.

H225 - Highly flammable liquid and vapour.

H361d: Suspected of damaging the unborn child.

H304: May be fatal if swallowed and enters airways.

H373: May cause damage to organs through prolonged or repeated exposure.

H315 - Causes skin irritation.

H336: May cause drowsiness or dizziness.

H412: Harmful to aquatic life with long lasting effects.

Training advice

For effective first-aid, special training / education is needed.

Disclaimer

This information is based on our present state of knowledge. It shall describe our products regarding safety requirements and shall not be construed as a guarantee or statement of condition and/or quality.



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End of Safety Data Sheet