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

1.1 Product identifier

Trade name	:	Chemical Grade Propylene (ambient), Polymer Grade Propylene (ambient)
Registration number	:	01-2119447103-50-0003, 01-2119447103-50-XXXX
Substance name	:	propylene
Substance No.	:	204-062-1

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

Use of the Substance/Mixture	:	Manufacture, Use as an intermediate, Distribution, Formulation, Use in polymer production, Fuel, Propellant

1.3 Details of the supplier of the safety data sheet

Manufacturer	:	Borealis AB S-444 86 Stenungsund, Sweden Telephone: +46 303 86000 Borealis Polymers Oy P.O.Box 330, FI-06101 Porvoo, Finland Telephone: +358 9 394900 Borealis Kallo N.V. Haven 1568, Sint-Jansweg 2, B-9130 Kallo-Kieldrecht, Belgium Telephone: +32 3 570 5211
Supplier	:	Borealis AG Wagramerstrasse 17-19, 1220 Vienna, Austria Telephone: +43 1 22400 0
E-mail address	:	sds@borealisgroup.com

1.4 Emergency telephone number

+32 3 570 5354 Shift supervisor, Dehydrogenation plant (24h)
+32 70 245 245 Centre Antipoisons Belge (24h)

2. Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Flammable gases, Category 1	H220: Extremely flammable gas.
Gases under pressure	H280: Contains gas under pressure; may explode if

heated.

Classification (67/548/EEC, 1999/45/EC)

Extremely flammable	R12: Extremely flammable.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal word : Danger

Hazard statements :	H220	Extremely flammable gas.
	H280	Contains gas under pressure; may explode if heated.
Precautionary statements :	**Prevention:**	
	P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
	Response:	
	P377	Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
	P381	Eliminate all ignition sources if safe to do so.
	Storage:	
	P410 + P403	Protect from sunlight. Store in a well-ventilated place.

2.3 Other hazards

The product evaporates readily.
Rapid evaporation of the liquid may cause frostbite.
Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
Inhalation of high vapour concentrations can cause central nervous system depression and narcosis.
Risk of explosion if heated under confinement.
Vapours may form explosive mixtures with air.
High risk of fire in case of leakage.

3. Composition/information on ingredients

3.1 Substances

Chemical Name	CAS-No. EINECS-No. / ELINCS No.	Concentration [%]
propene	115-07-1 204-062-1	94 - 100

propane	74-98-6 200-827-9	0 - 6

4. First aid measures

4.1 Description of first aid measures

General advice : Move out of dangerous area.
In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

If inhaled : Remove from exposure.
Keep warm and at rest and provide fresh air.
Give oxygen or artificial respiration if needed.
Seek medical advice immediately.

In case of skin contact : Wash frost-bitten areas with plenty of water. Do not remove clothing.
Seek medical advice.

In case of eye contact : Rinse thoroughly with plenty of water, also under the eyelids.
Seek medical advice.

If swallowed : Not probable:
The product evaporates readily.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Inhalation may provoke the following symptoms:
Drowsiness
Suffocation
Inhalation may cause central nervous system effects.
Skin contact may provoke the following symptoms:
Frostbite

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.
Control of circulatory system, shock therapy if needed.
Treat frost-bitten areas as needed.

5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Dry powder, carbon dioxide, foam and water mist.

Unsuitable extinguishing media : Not applicable

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Risk of explosion.
Exposure to decomposition products may be a hazard to health.
Incomplete combustion may produce:

Carbon monoxide

5.3 Advice for firefighters

Special protective equipment for firefighters	:	Wear self-contained breathing apparatus and protective suit.
Further information	:	Keep people away from and upwind of spill/leak. Attempt to stop leakage without personal risk. If conditions permit, let fire burn itself out. Cool tanks with water spray. If possible, containers should be moved to safe place.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment. Keep people away from and upwind of spill/leak. Attempt to stop leakage without personal risk. Eliminate all ignition sources if safe to do so. Ensure adequate ventilation, especially in confined areas. Pay attention to the spreading of gases especially at ground level (heavier than air) and to the direction of the wind. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

6.2 Environmental precautions

Environmental precautions	:	Prevent further leakage or spillage if safe to do so. Prevent product from entering environment and drains. Observe the risk of explosion. If major spillage occurs, contact the proper local authorities.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up	:	Allow to evaporate. Ensure adequate ventilation, especially in confined areas. Do NOT use water jet.

6.4 Reference to other sections

For personal protection see section 8.

7. Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	Refill and handle product only in closed system. Prevent leaks by checking valves, pipelines and joints regularly.
Advice on protection against fire and explosion	:	Keep away from sources of ignition - No smoking. Take precautionary measures against static discharges. To avoid ignition of vapours by static electricity discharge, all metal parts of the equipment must be grounded.

Ensure adequate ventilation.
Risk of explosion if heated under confinement.
Vapours may form explosive mixtures with air.
High risk of fire in case of leakage.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Keep in a dry, cool and well-ventilated place. Keep product and empty container away from heat and sources of ignition. Protect from sunlight.
Further information on storage conditions	:	Protect container from physical shock.
Advice on common storage	:	Incompatible with strong bases and oxidizing agents.
Storage temperature	:	< 50 °C

7.3 Specific end uses

Specific use(s) : Not applicable

8. Exposure controls/personal protection

8.1 Control parameters

Components	CAS-No.	Value	Control parameters	Update	Basis
propane	74-98-6	TGG 8 hr	1.000 ppm	2009-06-11	BE OEL

DNEL : Not possible from current data.

PNEC : Not applicable

8.2 Exposure controls

Engineering measures

Application in a closed system
Provide adequate ventilation.
Use personal protective equipment.

Personal protective equipment

Respiratory protection : In case of insufficient ventilation: Self-contained breathing apparatus.
Vapours are heavier than air and can cause suffocation by

reducing oxygen available for breathing.

Hand protection	:	Cold-insulating gloves (e.g. nitrile rubber).
Eye protection	:	Safety goggles or face-shield.
Skin and body protection	:	Wear suitable protective clothing and rubber boots.
Protective measures	:	Avoid contact with skin, eyes and clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Environmental exposure controls

General advice	:	Prevent further leakage or spillage if safe to do so. Prevent product from entering environment and drains. Observe the risk of explosion. If major spillage occurs, contact the proper local authorities.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	Liquefied gas, Compressed gas
Colour	:	colourless
Odour	:	mild, aromatic
Odour Threshold	:	69,3 - 203,5 ppm
pH	:	no data available
Melting point	:	-185 °C, 1013,0 hPa
Boiling point	:	-48 °C, 1013,0 hPa
Flash point	:	not applicable
Evaporation rate	:	no data available
Flammability (solid, gas)	:	Extremely flammable.
Lower explosion limit	:	2 %(V)
Upper explosion limit	:	11 %(V)
Vapour pressure	:	11.580 hPa, 25 °C
Relative vapour density	:	1,4, (Air = 1.0)
Relative density	:	not applicable
Water solubility	:	0,2 g/l, 25 °C
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	log Pow: 1,77
Autoignition temperature	:	455 °C

Thermal decomposition	:	Heating or fire can release toxic and irritating gases.
Viscosity, dynamic	:	not applicable
Viscosity, kinematic	:	not applicable

9.2 Other information

Molecular Weight	:	42,08 g/mol

10. Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions	:	Vapours may form explosive mixture with air. Hazardous polymerisation may occur.

10.4 Conditions to avoid

Conditions to avoid	:	Keep away from heat and sources of ignition. Observe the risk of explosion.

10.5 Incompatible materials

Materials to avoid	:	Strong bases Strong oxidizing agents

10.6 Hazardous decomposition products

Hazardous decomposition products	:	In case of fire hazardous decomposition products may be produced such as: Carbon monoxide

11. Toxicological information

11.1 Information on toxicological effects

Product

Acute oral toxicity	:	not applicable, (gaseous)
Acute inhalation toxicity	:	Based on available data, the classification criteria are not met.
Acute dermal toxicity	:	not applicable, (gaseous)
Skin corrosion/irritation	:	Contact with liquid or refrigerated gas can cause cold burns and frostbite.
Serious eye damage/eye irritation	:	Non persistent irritation
Respiratory or skin sensitization	:	This information is not available.

Germ cell mutagenicity		
Genotoxicity in vitro	:	Based on available data, the classification criteria are not met.
Genotoxicity in vivo	:	In vivo tests did not show mutagenic effects
Carcinogenicity	:	IARC evaluation:, Group 3: Not classifiable as to its carcinogenicity to humans
Reproductive toxicity	:	Dose: 10000 ppm, Fertility and developmental toxicity tests did not reveal any effect on reproduction.
STOT - single exposure	:	Exposure routes: Inhalation Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure., May cause effects on the central nervous system, resulting in lowering of consciousness.
STOT - repeated exposure	:	Inhalation, The substance or mixture is not classified as specific target organ toxicant, repeated exposure., The substance may cause effects on the:, Central nervous system depression
	:	Dermal, Not applicable, (gaseous)
	:	Oral, Not applicable, (gaseous)
Further information	:	Absorbs into the body by inhalation.

12. Ecological information

12.1 Toxicity

Product

Toxicity to fish	:	LC50: 51,7 mg/l, Short term, QSAR
Toxicity to daphnia and other aquatic invertebrates	:	28,2 mg/l, 48 h, Daphnia, Short term
Toxicity to algae	:	EbC50: 12,1 mg/l, 96 h, Growth inhibition, QSAR
Toxicity to bacteria	:	no data available
Toxicity to fish (Chronic toxicity)	:	no data available
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	no data available

12.2 Persistence and degradability

Product

Biodegradability	:	Not readily biodegradable.

12.3 Bioaccumulative potential

Product

Bioaccumulation	:	Bioaccumulation not expected: Partition coefficient (n-octanol/water) log Pow < 3.

12.4 Mobility in soil

Product

Mobility	:	Soil, Not expected to adsorb on soil., The product evaporates readily to air.
Environmental fate and pathways	:	Prone to photochemical degradation, reacting with OH radicals and ozone.

12.5 Results of PBT and vPvB assessment

Product

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

12.6 Other adverse effects

Product

Additional ecological information	:	This product has no known eco-toxicological effects.

13. Disposal considerations

13.1 Waste treatment methods

Product	:	Where possible recycling is preferred to disposal or incineration.

14. Transport information

14.1 UN number

ADR	:	1077
IMDG	:	1077

14.2 Proper shipping name

ADR	:	PROPYLENE
IMDG	:	PROPYLENE

14.3 Transport hazard class

ADR	:	2
IMDG	:	2.1

14.4 Packing group

ADR

	:	
Hazard identification No	:	23
Labels	:	2.1
Tunnel restriction code	:	B/D

IMDG

EmS Number	:	F-D, S-U

14.5 Environmental hazards

ADR

Environmentally hazardous	:	no

IMDG

Marine pollutant	:	no

14.6 Special precautions for user

No specific instructions needed.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Remarks	:	Not applicable

15. Regulatory information

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

Other regulations	:	no data available

15.2 Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for this substance.

16. Other information

Full text of R-phrases referred to under sections 2 and 3

R12	Extremely flammable.

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

H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.

Further information

Issuer	:	Borealis, Group Product Stewardship / Andreas Ekholm.
Sources of key data used to	:	Chemical Safety Report, Propene. Lower Olefins and

compile the Safety Data Sheet	Aromatics REACH Consortium, 2010 IUCLID Dataset 2000 Propene (http://esis.jrc.ec.europa.eu/doc/existing-chemicals/IUCLID/data_sheets/115071.pdf) Environment Guide 71; Environmental properties of chemicals, Finnish Environment Institute, Helsinki 2000 International Chemical Safety Card, Propylene, Nov. 1998, updated 2007 (http://www.inchem.org/documents/icsc/icsc/eics0559.htm) IARC (International Agency for Research on Cancer) - Summaries & Evaluations, Propylene, 60 (1994) (http://www.inchem.org/documents/iarc/vol60/m60-03.html) Emergency Response Information Propylene (http://www.ericards.net/psp/ericonline.psp_ericard?lang=1&subkey=10770423)

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