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

1.1 Product identifier

Trade name : Propylene - Polymer Grade

Product code : X2121, X2125

Registration number EU : 01-2119447103-50-0010, 01-2119447103-50-0012, 01-

2119447103-50-0013, 01-2119447103-50-0014, 01-2119447103-50-0015, 01-2119447103-50-0142

CAS-No. : 115-07-1 Other means of identification : Propene

EC-No. : 204-062-1

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

Use of the Sub- : Base chemical., Raw material for use in the chemical industry.

stance/Mixture Please refer to section 16 and/or the annexes for the regis-

tered uses under REACH.

Uses advised against : This product must not be used in applications other than the

above without first seeking the advice of the supplier.

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier : Shell Chemicals Europe B.V.

PO Box 2334 3000 CH Rotterdam

Netherlands

Telephone : +31 (0)10 441 5137 / +31 (0)10 441 5191 Telefax : +31 (0)20 716 8316 / +31 (0)20 713 9230

Contact for Safety Data : sccmsds@shell.com

Sheet

1.4 Emergency telephone number

+44 (0) 1235 239 670 (24/7)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Flammable gases, Category 1A H220: Extremely flammable gas.

Gases under pressure, Compressed gas H280: Contains gas under pressure; may explode if

heated.

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2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :





Signal word : Danger

Hazard statements : PHYSICAL HAZARDS:

H220 Extremely flammable gas.

H280 Contains gas under pressure; may explode if heated.

HEALTH HAZARDS:

Not classified as a health hazard under CLP criteria.

ENVIRONMENTAL HAZARDS:

Not classified as environmental hazard according to

CLP criteria.

Precautionary statements : Prevention:

P210 Keep away from heat, hot surfaces, sparks, open

flames and other ignition sources. No smoking. P243 Take action to prevent static discharges.

Response:

P377 Leaking gas fire: Do not extinguish, unless leak can be

stopped safely.

P381 In case of leakage, eliminate all ignition sources.

Storage:

P410 + P403 Protect from sunlight. Store in a well-ventilated

place.

Disposal:

No precautionary phrases.

2.3 Other hazards

Ecological information: 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.

Toxicological information: 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.

High gas concentrations will displace available air; unconsciousness and death may occur suddenly from lack of oxygen.

Vapours may cause drowsiness and dizziness.

Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Vapours are heavier than air. Vapours may travel across the ground and reach remote ignition sources causing a flashback fire danger.

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May form flammable/explosive vapour-air mixture.

This material is shipped under pressure.

SECTION 3: Composition/information on ingredients

3.1 Substances

Components

Chemical name	CAS-No.	Concentration (% w/w)
	EC-No.	, , ,
propylene	115-07-1	> 99,5
	204-062-1	

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Not expected to be a health hazard when used under normal

conditions.

Protection of first-aiders : When administering first aid, ensure that you are wearing the

appropriate personal protective equipment according to the

incident, injury and surroundings.

If inhaled : Call emergency number for your location / facility.

Remove to fresh air. Do not attempt to rescue the victim unless proper respiratory protection is worn. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting, or unresponsive, give 100% oxygen with rescue breathing or Cardio-Pulmonary Resuscitation as required and transport to

the nearest medical facility.

In case of skin contact : Slowly warm the exposed area by rinsing with warm water.

Transport to the nearest medical facility for additional treat-

ment.

In case of eye contact : Slowly warm the exposed area by rinsing with warm water.

Transport to the nearest medical facility for additional treat-

ment.

If swallowed : In general no treatment is necessary unless large quantities

are swallowed, however, get medical advice.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Respiratory irritation signs and symptoms may include a tem-

porary burning sensation of the nose and throat, coughing,

and/or difficulty breathing.

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Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, lightheadedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death.

Rapid release of gases which are liquids under pressure may cause frost burns of exposed tissues (skin, eye) due to evaporative cooling.

No specific hazards under normal use conditions. Ingestion may result in nausea, vomiting and/or diarrhoea.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : IMMEDIATE TREATMENT IS EXTREMELY IMPORTANT!

Artificial respiration and/or oxygen may be necessary. Call a doctor or poison control center for guidance.

Treat symptomatically.

Potential for cardiac sensitisation, particularly in abuse situations. Hypoxia or negative inotropes may enhance these ef-

fects. Consider: oxygen therapy.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Shut off supply. If not possible and no risk to surroundings, let

the fire burn itself out.

Unsuitable extinguishing

media

Do not use water in a jet.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-

fighting

Sustained fire attack on vessels may result in a Boiling Liquid

Expanding Vapor Explosion (BLEVE).

The vapour is heavier than air, spreads along the ground and

distant ignition is possible.

Contents are under pressure and can explode when exposed

to heat or flames.

As the vapours become lighter than air, the vapours may reach ignition sources at ground or elevated locations.

5.3 Advice for firefighters

Special protective equipment:

for firefighters

Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to

relevant Standards (e.g. Europe: EN469).

Specific extinguishing meth- : Standard procedure for chemical fires.

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ods

Further information : Clear fire area of all non-emergency personnel.

Keep adjacent containers cool by spraying with water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Observe the relevant local and international regulations

Risk of explosion. Inform the emergency services if liquid en-

ters surface water drains.

Notify authorities if any exposure to the general public or the

environment occurs or is likely to occur.

Local authorities should be advised if significant spillages

cannot be contained.

6.1.1 For non emergency personnel: Avoid contact with skin, eyes and clothing.

Isolate hazard area and deny entry to unnecessary or unpro-

tected personnel.

Do not breathe fumes, vapour. Do not operate electrical equipment. 6.1.2 For emergency responders:

Avoid contact with skin, eyes and clothing.

Isolate hazard area and deny entry to unnecessary or unpro-

tected personnel.

Do not breathe fumes, vapour. Do not operate electrical equipment.

6.2 Environmental precautions

Environmental precautions : Shut off leaks, if possible without personal risks. Remove all

possible sources of ignition in the surrounding area and evacuate all personnel. Attempt to disperse the gas or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Monitor area with combustible gas meter.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Allow to evaporate.

Attempt to disperse the vapour or to direct its flow to a safe location, for example by using fog sprays. Otherwise treat as

for small spillage.

6.4 Reference to other sections

For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet., Risk of explosion. Inform the emergency services if liquid enters surface water drains., For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet., Vapour may form an explosive mixture with air.

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SECTION 7: Handling and storage

7.1 Precautions for safe handling

Technical measures : Avoid breathing of or direct contact with material. Only use in

well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see

Section 8 of this Safety Data Sheet.

Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this

material.

Advice on safe handling : Extinguish any naked flames. Do not smoke. Remove ignition

sources. Avoid sparks.

Avoid inhaling vapour and/or mists.

Avoid contact with skin, eyes and clothing.

Use local exhaust ventilation if there is risk of inhalation of

vapours, mists or aerosols.

Bulk storage tanks should be diked (bunded).

Properly dispose of any contaminated rags or cleaning mate-

rials in order to prevent fires.

Even with proper grounding and bonding, this material can still

accumulate an electrostatic charge.

If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can oc-

cur.

Be aware of handling operations that may give rise to additional hazards that result from the accumulation of static

charges.

These include but are not limited to pumping (especially turbulent flow), mixing, filtering, splash filling, cleaning and filling of tanks and containers, sampling, switch loading, gauging, vac-

uum truck operations, and mechanical movements.

These activities may lead to static discharge e.g. spark for-

mation.

Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 1 m/s until fill pipe submerged to twice its diameter, then ≤ 7 m/s). Avoid splash filling. Do NOT use compressed air for filling, discharging, or han-

dling operations.

The vapour is heavier than air. Beware of accumulation in pits

and confined spaces.

Product Transfer : Refer to guidance under Handling section.

Hygiene measures : Wash hands before eating, drinking, smoking and using the

toilet. Launder contaminated clothing before re-use.

7.2 Conditions for safe storage, including any incompatibilities

Further information on stor-

age stability

Keep away from aerosols, flammables, oxidizing agents, corrosives and from products harmful or toxic to man or to the

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environment.

Must be stored in a diked (bunded) well- ventilated area, away from sunlight, ignition sources and other sources of heat. Vapours from tanks should not be released to atmosphere. Breathing losses during storage should be controlled by a

suitable vapour treatment system.

Electrostatic charges will be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment to reduce the risk.

The vapours in the head space of the storage vessel may lie in the flammable/explosive range and hence may be flamma-

Packaging material Suitable material: For containers, or container linings use mild

steel, stainless steel.

Container Advice : Containers, even those that have been emptied, can contain

explosive vapours. Do not cut, drill, grind, weld or perform

similar operations on or near containers.

7.3 Specific end use(s)

Specific use(s) Please refer to section 16 and/or the annexes for the regis-

tered uses under REACH.

Ensure that all local regulations regarding handling and stor-

age facilities are followed.

See additional references that provide safe handling practices for liquids that are determined to be static accumulators: American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices

on Static Electricity).

IEC/TS 60079-32-1: Electrostatic hazards, guidance

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
propylene	115-07-1	NDS	2.000 mg/m3	PL OEL
propylene		NDSch	8.600 mg/m3	PL OEL

Biological occupational exposure limits

No biological limit allocated.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

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Substance name		Environmental Compartment	Value
propylene			
Remarks:	Exposure	assessments have not been presented for the	environment
	therefore	PNEC values not required.	

8.2 Exposure controls

Engineering measures

Read in conjunction with the Exposure Scenario for your specific use contained in the Annex. Use sealed systems as far as possible.

Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.

Local exhaust ventilation is recommended.

Firewater monitors and deluge systems are recommended.

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:

General Information:

Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

Define procedures for safe handling and maintenance of controls.

Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.

Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.

Purge system prior to equipment break-in or maintenance.

Personal protective equipment

Read in conjunction with the Exposure Scenario for your specific use contained in the Annex. The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards.

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Eye protection : Wear goggles for use against liquids and gas, combined with

face shield with chin guard.

Approved to EU Standard EN166.

Hand protection

Remarks : Where hand contact with the product may occur the use of

gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. Neoprene rubber. If contact with liquefied product is possible or anticipated, gloves should be thermally insulated to prevent cold burns. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes

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> where suitable gloves can be identified. For short-term/splash protection we recommend the same but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is

recommended.

Skin and body protection Chemical and cryogenic gloves/gauntlets, boots, and apron.

Wear antistatic and flame-retardant clothing.

If engineering controls do not maintain airborne concentra-Respiratory protection

tions to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing appa-

ratus.

If air-filtering respirators are suitable for conditions of use: Where air-filtering respirators are suitable, select an appro-

priate combination of mask and filter.

Select a filter suitable for combined particulate/organic gases and vapours [Type AX/Type P boiling point < 65°C (149°F)]

meeting EN14387 and EN143.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state Liquid under pressure.

Colour colourless

Odour Faint

Odour Threshold Typical 67 ppm

Melting point/freezing point -185,2 °C

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Boiling point/boiling range : -47,7 °C

Flammability

Flammability (solid, gas) : Flammable gas.

Lower explosion limit and upper explosion limit / flammability limit

Upper explosion limit /

upper flammability limit

: 11 %(V)

Lower explosion limit /

Lower flammability limit

2 %(V)

Flash point : -108 °C

Method: No information available.

Auto-ignition temperature : 455 °C

Decomposition temperature

Decomposition tempera-

: Data not available

ture

pH : Data not available

Viscosity

Viscosity, dynamic : 0,01 mPa.s (0 °C)

Method: ASTM D445

Viscosity, kinematic : Data not available

Solubility(ies)

Water solubility : 260 mg/l (40 °C)

380 mg/l (22 °C)

930 g/l (0 °C)

Partition coefficient: n-

octanol/water

log Pow: 1,77

Vapour pressure : 600 kPa (0 °C)

Relative density : 0,58 (0 °C)

Method: ASTM D4052

Density : 610 kg/m3 (0 °C)

Method: ASTM D4052

Relative vapour density : 1,5 (0 °C)

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Particle characteristics

Particle size : Data not available

9.2 Other information

Explosive properties : no data available

Oxidizing properties : Data not available

Evaporation rate : Data not available

Conductivity: < 100 pS/m

The conductivity of this material makes it a static accumulator., A liquid is typically considered nonconductive if its con-

ductivity is below 100 pS/m and is considered semi-

conductive if its conductivity is below 10,000 pS/m., Whether a liquid is nonconductive or semi-conductive, the precautions are the same., A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives

can greatly influence the conductivity of a liquid

Surface tension : 17,5 mN/m, -50 °C

Molecular weight : 42 g/mol

SECTION 10: Stability and reactivity

10.1 Reactivity

The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.

10.2 Chemical stability

Stable under normal conditions of use.

10.3 Possibility of hazardous reactions

Hazardous reactions : Reacts violently with strong oxidising agents.

Polymerisation may occur at elevated temperatures.

10.4 Conditions to avoid

Conditions to avoid : Heat, flames, and sparks.

Exposure to air.

In certain circumstances product can ignite due to static elec-

tricity.

10.5 Incompatible materials

Materials to avoid : Strong oxidising agents.

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10.6 Hazardous decomposition products

Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases including carbon monoxide, carbon dioxide, sulphur oxides and unidentified organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

SECTION 11: Toxicological information

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

Information on likely routes of : Inhalation is the primary route of exposure.

exposure

Acute toxicity

Components:

propylene:

Acute oral toxicity : Remarks: Not applicable

Acute inhalation toxicity : LC50 (Rat): > 20 mg/l

Exposure time: 4 h Test atmosphere: gas

Remarks: Low toxicity by inhalation.

High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.

Acute dermal toxicity : Remarks: Not applicable

Skin corrosion/irritation

Components:

propylene:

Remarks : Not irritating to skin.

Serious eye damage/eye irritation

Components:

propylene:

Remarks : Not irritating to eye.

Respiratory or skin sensitisation

Components:

propylene:

Remarks : Not a sensitiser.

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

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Germ cell mutagenicity

Components:

propylene:

Genotoxicity in vivo : Remarks: Non mutagenic

Germ cell mutagenicity- As-

sessment

This product does not meet the criteria for classification in

categories 1A/1B.

Carcinogenicity

Components:

propylene:

Remarks : Not a carcinogen.

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

Carcinogenicity - Assess-

ment

This product does not meet the criteria for classification in

categories 1A/1B.

Material	GHS/CLP Carcinogenicity Classification
propylene	No carcinogenicity classification.

Material	Other Carcinogenicity Classification
propylene	IARC: Group 3: Not classifiable as to its carcinogenicity to humans

Reproductive toxicity

Components:

propylene:

Effects on fertility

Remarks: Does not impair fertility., Not a developmental toxi-

cant.

Reproductive toxicity - As-

sessment

: This product does not meet the criteria for classification in

categories 1A/1B.

STOT - single exposure

Components:

propylene:

Remarks : Not a respiratory irritant

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STOT - repeated exposure

Components:

propylene:

Remarks : Low systemic toxicity on repeated exposure.

Aspiration toxicity

Components:

propylene:

Not an aspiration hazard., Based on available data, the classification criteria are not met.

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components consid-

ered 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.

Further information

Product:

Remarks : Unless indicated otherwise, the data presented is representa-

tive of the product as a whole, rather than for individual com-

ponent(s).

Components:

propylene:

Remarks : High gas concentrations will displace available air; uncon-

sciousness and death may occur suddenly from lack of oxy-

gen.

Rapid release of gases which are liquids under pressure may cause frost burns of exposed tissues (skin, eye) due to evapo-

rative cooling.

Exposure to very high concentrations of similar materials has been associated with irregular heart rhythms and cardiac ar-

rest.

Remarks : Classifications by other authorities under varying regulatory

frameworks may exist.

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SECTION 12: Ecological information

12.1 Toxicity

Components:

propylene:

Toxicity to fish : Remarks: Based on available data, the classification criteria are not

met

Toxicity to daphnia and other :

aquatic invertebrates

Remarks: Based on available data, the classification criteria are not

met.

Toxicity to algae/aquatic plants : Remarks: Based on available data, the classification criteria are not

met

Toxicity to microorganisms

Remarks: Based on available data, the classification criteria are not

met.

Toxicity to fish (Chronic tox-

icity)

Remarks: Based on available data, the classification criteria

are not met.

Toxicity to daphnia and other : aquatic invertebrates (Chron-

ic toxicity)

Remarks: Based on available data, the classification criteria are not

met.

12.2 Persistence and degradability

Product:

Biodegradability : Remarks: Inherently biodegradable.

Oxidises rapidly by photo-chemical reactions in air.

Not Persistent per IMO criteria.

International Oil Pollution Compensation (IOPC) Fund definition: "A non-persistent oil is oil, which, at the time of shipment, consists of hydrocarbon fractions, (a) at least 50% of which, by volume, distills at a temperature of 340°C (645°F) and (b) at least 95% of which, by volume, distils at a temperature of 370°C (700°F) when tested by the ASTM Method D-86/78 or any subsequent revision

thereof."

Components:

propylene:

Biodegradability : Remarks: Inherently biodegradable.

Oxidises rapidly by photo-chemical reactions in air.

Not Persistent per IMO criteria.

International Oil Pollution Compensation (IOPC) Fund definition: "A non-persistent oil is oil, which, at the time of shipment, consists of hydrocarbon fractions, (a) at least 50% of which, by volume, distills at a temperature of 340°C (645°F) and (b) at least 95% of

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which, by volume, distils at a temperature of 370°C (700°F) when tested by the ASTM Method D-86/78 or any subsequent revision

thereof."

12.3 Bioaccumulative potential

Components:

propylene:

Bioaccumulation : Remarks: Does not bioaccumulate significantly.

12.4 Mobility in soil

Components:

propylene:

Mobility : Remarks: Because of their extreme volatility, air is the only

environmental compartment that hydrocarbon gases will be

found

12.5 Results of PBT and vPvB assessment

Components:

propylene:

Assessment : The substance does not fulfill all screening criteria for persis-

tence, bioaccumulation and toxicity and hence is not consid-

ered to be PBT or vPvB..

12.6 Endocrine disrupting properties

Product:

Assessment : 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.

12.7 Other adverse effects

Product:

Additional ecological infor-

mation

Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

Components:

propylene:

Additional ecological infor-

mation

: Physical properties indicate that hydrocarbon gases will rapidly volatilise from the aquatic environment and that acute and chronic

effects would not be observed in practice.

In view of the high rate of loss from solution, the product is unlikely

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to pose a significant hazard to aquatic life.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Recover or recycle if possible.

It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.

ods in compliance with applicable regulations.

Do not dispose into the environment, in drains or in water

courses.

Waste product should not be allowed to contaminate soil or

water.

Disposal should be in accordance with applicable regional,

national, and local laws and regulations.

Local regulations may be more stringent than regional or na-

tional requirements and must be complied with.

MARPOL - see International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) which provides tech-

nical aspects at controlling pollutions from ships.

Contaminated packaging : Data not available

SECTION 14: Transport information

14.1 UN number or ID number

ADN : 1077
ADR : 1077
RID : 1077
IMDG : 1077
IATA : 1077

14.2 UN proper shipping name

ADN : PROPYLENE
ADR : PROPYLENE
RID : PROPYLENE
IMDG : PROPYLENE

IATA : PROPYLENE

14.3 Transport hazard class(es)

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ADN : 2
ADR : 2
RID : 2
IMDG : 2.1
IATA : 2.1

14.4 Packing group

ADN

Packing group : Not Assigned

Classification Code : 2F Labels : 2.1

ADR

Packing group : Not assigned by regulation

Classification Code : 2F Hazard Identification Number : 23 Labels : 2.1

RID

Packing group : Not assigned by regulation

Classification Code : 2F Hazard Identification Number : 23 Labels : 2.1

IMDG

Packing group : Not assigned by regulation

Labels : 2.1

IATA

Packing group : Not Assigned

Labels : 2.1

14.5 Environmental hazards

ADN

Environmentally hazardous : no

adr

Environmentally hazardous : no

rid

Environmentally hazardous : no

IMDG

Marine pollutant : no

14.6 Special precautions for user

Remarks : Special Precautions: Refer to Section 7, Handling & Storage,

for special precautions which a user needs to be aware of or

needs to comply with in connection with transport.

14.7 Maritime transport in bulk according to IMO instruments

Ship type : 2G/2PG Product name : Propylene

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Additional Information : Transport in bulk according to the IGC code

Transport in bulk according to the IGC code

SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII) : Not applicable

REACH - List of substances subject to authorisation (Annex XIV)

Product is not subject to Authorisation under REACH.

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).

This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

Liquefied flammable gases (including LPG) and natural gas

Other regulations:

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

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Act of 25 February 2011 on chemical substances and their mixtures (Dz.U. 2011 nr 63 poz. 322)

Ordinance of the Minister of Health of 12 January 2015 concerning the criteria and procedures for classification of chemical substances and their mixtures (Dz.U. 2015 poz. 208).

Regulation of the Minister of Labor and Social Policy of 6th June 2014 concerning the highest allowable concentrations and levels of agents harmful for health in the workplace (Dz.U. 2018 poz. 1286).

Regulations of the Minister of Economy, Labor and Social Policy of 21 December 2005 concerning the basic requirements for personal protective equipment (Dz.U. 2005 nr 259 poz. 2173).

Ordinance of the Minister of Health of 9 September 2016 on the health and safety of workers related to chemical agents at work (Dz.U. 2016 poz. 1488).

Regulation of the Minister of Health of 2nd February 2011 concerning tests and measurement of agents harmful for health in the workplace (Dz.U. 2011 nr 33 poz 166).

Regulation of the Minister of Health of 20 April 2012 on the labelling of packaging of dangerous substances and mixtures of dangerous substances and mixtures (Dz.U. 2011 nr 33 poz. 166). Act of 14 December 2012 on Waste (Dz.U. 2013 poz. 21).

Act of 13 June 2013 on packaging and packaging waste (Dz.U. 2013 poz. 888).

Regulation of the Minister of Environment of 9 December 2014 on the Waste Catalog (Dz.U.

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2014 poz. 1923).

Act of 19 August 2011 on the carriage of dangerous goods (Dz.U. 2011 nr 227 poz. 1367).

Product is subject to types and quantities of dangerous substances with an increased risk of developing a major industrial accident (ROZPORZĄDZENIE MINISTRA ROZWOJU z dnia 29 stycznia 2016 r. w sprawie rodzajów i ilości znajdujących się w zakładzie substancji niebezpiecznych, decydujących o zaliczeniu zakładu do zakładu o zwiększonym lub dużym ryzyku wystąpienia poważnej awarii przemysłowej) based on Seveso III directive (2012/18/EU).

Product is subject to the Regulation of the Minister of Development of 29 January 2016 on the types and quantities of hazardous substances present in the establishment, determining the establishment's count as an establishment with an increased or high risk of a major industrial accident (Dz.U. 2016 poz. 138), based on Seveso III directive (2012/18/EU).

The components of this product are reported in the following inventories:

AIIC : Listed

DSL : Listed

IECSC : Listed

ENCS : Listed

KECI : Listed

NZIoC : Listed

PICCS : Listed

TSCA : Listed

TCSI : Listed

15.2 Chemical safety assessment

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

SECTION 16: Other information

Full text of other abbreviations

PL OEL : Ordinance of the Minister of Family, Labour and Social Policy

of 12 June 2018 concerning the highest allowable concentrations and levels of the agents harmful for health in the work-

place (Dz.U 2018 pos 1286, with later amendments)

PL OEL / NDS : Maximal Admissible Concentration

PL OEL / NDSch : Maximal Admissible Temporary Concentration

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by

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Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA -European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI -Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

Training advice : Provide adequate information, instruction and training for op-

erators.

Other information : For Industry guidance and tools on REACH please visit the

CEFIC website at http://cefic.org/Industry-support.

The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not consid-

ered to be PBT or vPvB.

A vertical bar (|) in the left margin indicates an amendment

from the previous version.

Sources of key data used to compile the Safety Data

Sheet

The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU

IUCLID date base, EC 1272 regulation, etc).

Classification of the mixture:

Classification procedure:

Flam. Gas 1A H220 On basis of test data.

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Press. Gas Compr. Gas H280 On basis of test data.

Identified Uses according to the Use Descriptor System

Uses - Worker

Title : Manufacture of substance- Industrial

Uses - Worker

Title : Distribution of substance- Industrial

Uses - Worker

Title : Use as an intermediate- Industrial

Uses - Worker

Title : Polymer production- Industrial

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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Exposure Scenario - Worker

30000010077	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Manufacture of substance- Industrial
Use Descriptor	Sector of Use: SU3, SU8, SU9 Process Categories: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15 Environmental Release Categories: ERC1, ERC4
Scope of process	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.

-		
SECTION 2	OPERATIONAL CONDITIONS AND RIS MEASURES	SK MANAGEMENT
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Gas/liquefied gas	
Concentration of the Sub-	Covers use of substance/product up to 10	00% (unless stated
stance in Mixture/Article	differently).,	,
Frequency and Duration of	Use	
	8 hours (unless stated differently).	
Other Operational Conditio	ns affecting Exposure	
Assumes a good basic stand	ard of occupational hygiene is implemented	d.
Contributing Scenarios	Risk Management Measures	
General measures (Flammable gas)	Risks from the physicochemical hazards as flammability or explosiveness can be a menting risk management measures at the lit is recommended to follow the ATEX Dia and its subsequent updates. Based on the implementation of a selectical storage risk management measures for the risk can be regarded as controlled to Use in contained systems. Avoid ignition sources — No smoking. Handle in well-ventilated area to prevent sive atmosphere. Use equipment and protective systems a ble substances. Restrict line velocity during pumping to a electrostatic discharge. Ground/bond container and receiving equipment updated in the protection of th	controlled by impleme workplace. rective 2014/34/EU on of handling and he identified uses, an acceptable level. formation of explopproved for flammavoid generation of uipment.

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	Review Safety Data Sheet for additional a	advice.
Section 2.2	Control of Environmental Exposure	
Not applicable.		
Frequency and Duration o	f Use	
Not applicable.		
Environmental factors not	influenced by risk management	
Not applicable.		
•	ons affecting Environmental Exposure	
Not applicable.		
Technical conditions and	measures at process level (source) to pro	event release
Not applicable.		
	ns and measures to reduce or limit discha	arges, air emis-
sions and releases to soil		T
Not applicable.		
	to prevent/limit release from site	
Not applicable.		
	related to municipal sewage treatment p	ant
Not applicable.		
Conditions and Measures	related to external treatment of waste for	disposal
Not applicable.		
Conditions and measures	related to external recovery of waste	
Not applicable.		

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
Risk Management Measures	are based on qualitative risk characterisation.

Section 3.2 -Environment
Not applicable.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	
Not applicable.	

Section 4.2 -Environment	
Not applicable.	

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Exposure Scenario - Worker

30000010078	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Distribution of substance- Industrial
Use Descriptor	Sector of Use: SU3, SU8, SU9 Process Categories: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC9, PROC15 Environmental Release Categories: ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7
Scope of process	Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RIS	K MANAGEMENT
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Gas/liquefied gas	
Concentration of the Sub-	Covers use of substance/product up to 10	00% (unless stated
stance in Mixture/Article	differently).,	,
Frequency and Duration of	Use	
Covers daily exposures up to	8 hours (unless stated differently).	
Other Operational Condition	ns affecting Exposure	
Assumes a good basic stand	ard of occupational hygiene is implemented	d.
Contributing Scenarios	Risk Management Measures	
General measures (Flammable gas)	Risks from the physicochemical hazards as flammability or explosiveness can be of menting risk management measures at the lit is recommended to follow the ATEX Director and its subsequent updates. Based on the implementation of a selective storage risk management measures for the risk can be regarded as controlled to Use in contained systems. Avoid ignition sources — No smoking. Handle in well-ventilated area to prevent sive atmosphere. Use equipment and protective systems as ble substances. Restrict line velocity during pumping to avelectrostatic discharge. Ground/bond container and receiving equipment used to the provided systems and the substances. Ground/bond container and receiving equipments and receiving equipments and receiving equipments.	controlled by impleme workplace. rective 2014/34/EU on of handling and he identified uses, an acceptable level. formation of explopproved for flammavoid generation of uipment.

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	Review Safety Data Sheet for additional advice.
Section 2.2	Control of Environmental Exposure
Not applicable.	
Frequency and Duration	n of Use
Not applicable.	
	not influenced by risk management
Not applicable.	
•	ditions affecting Environmental Exposure
Not applicable.	
Technical conditions ar	nd measures at process level (source) to prevent release
Not applicable.	
Technical onsite condit	tions and measures to reduce or limit discharges, air emis-
sions and releases to se	oil
Not applicable.	
	es to prevent/limit release from site
Not applicable.	
Conditions and Measure	es related to municipal sewage treatment plant
Not applicable.	
Conditions and Measur	es related to external treatment of waste for disposal
Not applicable.	
Conditions and measur	res related to external recovery of waste
Not applicable.	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
Risk Management Measures	are based on qualitative risk characterisation.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	
Not applicable.	

Section 4.2 -Environment	
Not applicable.	

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Exposure Scenario - Worker

30000010079	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use as an intermediate- Industrial
Use Descriptor	Sector of Use: SU3, SU8, SU9 Process Categories: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15 Environmental Release Categories: ERC6a
Scope of process	Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

SECTION 2	OPERATIONAL CONDITIONS AND RIS MEASURES	K MANAGEMENT
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Gas/liquefied gas	
Concentration of the Sub-	Covers use of substance/product up to 10	00% (unless stated
stance in Mixture/Article	differently).,	,
Frequency and Duration of	Use	
Covers daily exposures up to	8 hours (unless stated differently).	
Other Operational Condition	ns affecting Exposure	
Assumes a good basic stand	ard of occupational hygiene is implemented	d.
Contributing Scenarios	Risk Management Measures	
General measures (Flammable gas)	Risks from the physicochemical hazards as flammability or explosiveness can be of menting risk management measures at the It is recommended to follow the ATEX Dirand its subsequent updates. Based on the implementation of a selection storage risk management measures for the risk can be regarded as controlled to Use in contained systems. Avoid ignition sources – No smoking. Handle in well-ventilated area to prevent sive atmosphere. Use equipment and protective systems as ble substances. Restrict line velocity during pumping to avelectrostatic discharge. Ground/bond container and receiving equipments used to the protection of the pr	controlled by impleme workplace. rective 2014/34/EU on of handling and he identified uses, an acceptable level. formation of explopproved for flammavoid generation of uipment.

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	Review Safety Data Sheet for additional advice) .
Section 2.2	Control of Environmental Exposure	
Not applicable.		
Frequency and Duration	n of Use	
Not applicable.		
Environmental factors n	not influenced by risk management	
Not applicable.		
•	litions affecting Environmental Exposure	
Not applicable.		
	d measures at process level (source) to prevent	release
Not applicable.		
	ions and measures to reduce or limit discharges	, air emis-
sions and releases to so	oil	
Not applicable.		
	es to prevent/limit release from site	
Not applicable.		
Conditions and Measure	es related to municipal sewage treatment plant	
Not applicable.		
	es related to external treatment of waste for disp	osal
Not applicable.		
Conditions and measure	es related to external recovery of waste	
Not applicable.	·	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
Risk Management Measures	are based on qualitative risk characterisation.

Section 3.2 -Environment	
Not applicable.	

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	
Not applicable.	

Section 4.2 -Environment	
Not applicable.	

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Exposure Scenario - Worker

30000010080	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Polymer production- Industrial
Use Descriptor	Sector of Use: SU3, SU10 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC14 Environmental Release Categories: ERC6c
Scope of process	Manufacture of polymers from monomers in continuous and batch processes. Including production, re-cycling and recovery, degassing, discharging, reactor maintenance and immediate polymer product formation (i.e. compounding, pelletisation, product off-gassing).

SECTION 2	OPERATIONAL CONDITIONS AND RIS MEASURES	K MANAGEMENT
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Gas/liquefied gas	
Concentration of the Sub-	Covers use of substance/product up to 10	00% (unless stated
stance in Mixture/Article	differently).,	,
Frequency and Duration of	Use	
Covers daily exposures up to	8 hours (unless stated differently).	
Other Operational Condition	ns affecting Exposure	
Assumes a good basic stand	ard of occupational hygiene is implemented	d.
Contributing Scenarios	Risk Management Measures	
General measures (Flammable gas)	Risks from the physicochemical hazards as flammability or explosiveness can be of menting risk management measures at the It is recommended to follow the ATEX Dirand its subsequent updates. Based on the implementation of a selection storage risk management measures for the risk can be regarded as controlled to Use in contained systems. Avoid ignition sources – No smoking. Handle in well-ventilated area to prevent sive atmosphere. Use equipment and protective systems as ble substances. Restrict line velocity during pumping to avelectrostatic discharge. Ground/bond container and receiving equipments used to the protection of the pr	controlled by impleme workplace. rective 2014/34/EU on of handling and he identified uses, an acceptable level. formation of explopproved for flammavoid generation of uipment.

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	Review Safety Data Sheet for additional advi	ce.
Section 2.2	Control of Environmental Exposure	
Not applicable.	Control of Environmental Exposure	
Frequency and Duration of	Use	
Not applicable.		
	influenced by risk management	
Not applicable.	,	
	ns affecting Environmental Exposure	
Not applicable.		
Technical conditions and n	neasures at process level (source) to preve	nt release
Not applicable.		
Technical onsite conditions	s and measures to reduce or limit discharge	es, air emis-
sions and releases to soil	_	
Not applicable.		
	prevent/limit release from site	
Not applicable.		
Conditions and Measures r	elated to municipal sewage treatment plant	
Not applicable.		
Conditions and Measures r	elated to external treatment of waste for dis	sposal
Not applicable.		
Conditions and measures r	elated to external recovery of waste	
Not applicable.		

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
Risk Management Measures	are based on qualitative risk characterisation.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	
Not applicable.	

Section 4.2 -Environment	
Not applicable.	