Safety Data Sheet

n-Butane

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
Reference number: EIGA014-ALBNL
Issue date: 1-7-2017 Revision date: 1-1-2022 Supersedes version of: 1-7-2017 Version: 5.0

Danger

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

1.1. Product identifier

Trade name	:	n-Butane
SDS no	:	EIGA014-ALBNL
Other means of identification	:	n-Butane
	CAS-No.	: 106-97-8
	EC-No.	: 203-448-7
	EC Index-No.	: 601-004-00-0
REACH registration No	:	01-2119474691-32
Chemical formula	:	C4H10

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

Relevant identified uses	:	Industrial and professional uses. Perform risk assessment prior to use. Test gas/Calibration gas. Chemical reaction / Synthesis. Use as a fuel. Laboratory and Process control.
Uses advised against	:	Consumer use. Uses other than those listed above are not supported, contact your supplier for more information on other uses.

1.3. Details of the supplier of the safety data sheet

THE NETHERLANDS:
AIR LIQUIDE BV
De Witbogt 1
5652 AG Eindhoven
the Netherlands-Nederland

BELGIUM:
L'AIR LIQUIDE BELGE S.A./N.V.
Avenue de Bourget / Bourgetlaan 44
1130 Bruxelles-Brussel
Belgium-Belgique-België

LUXEMBURG:
L'AIR LIQUIDE LUXEMBOURG S.A.
ZONE P.E.D.-B.P.20
L-4801 RODANGE Luxemburg

infosafetydatasheet.albv@airliquide.com
www.airliquide-benelux.com

1.4. Emergency telephone number

Emergency telephone number	:	NL: +31 (0)40 250 35 03 / BE: +32 (0)2 431 72 00 / LUX: +352 50 62 63 1

Country	Organisation/Company	Address	Emergency number	Comment
Belgium	Centre Anti-Poisons/Antigifcentrum c/o Hôpital Central de la Base - Reine Astrid	Rue Bruyn 1 1120 Bruxelles/Brussel	+32 70 245 245	Please dial: 070 245 245 for any urgent questions about intoxication (free of charge 24/7), if not accessible, dial: 02 264 96 30 (standard fee)
Luxembourg	Centre Anti-Poisons/Antigifcentrum c/o Hôpital Central de la Base - Reine Astrid	Rue Bruyn 1 1120 Bruxelles/Brussel	+352 8002 5500	Free telephone number with a 24/7 access. Experts answer all urgency questions on dangerous products in French, or German
Netherlands	Nationaal Vergiftigingen Informatie Centrum	Huispostnummer B.00.118 Postbus 85500 3508 GA Utrecht	+31 88 755 80 00	Only for the purpose of informing medical personnel in cases of acute intoxications

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Physical hazards	Flammable gases, Category 1A	H220
	Gases under pressure : Liquefied gas	H280

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :

GHS02 GHS04

Signal word (CLP) : Danger

Hazard statements (CLP) : H220 - Extremely flammable gas.
H280 - Contains gas under pressure; may explode if heated.

Precautionary statements (CLP)

- Prevention : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Response : P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 - In case of leakage, eliminate all ignition sources.
- Storage : P403 - Store in a well-ventilated place.

2.3. Other hazards

Asphyxiant in high concentrations.
Contact with liquid may cause cold burns/frostbite.
These high concentrations are within the flammability range.
The substance/mixture has no endocrine disrupting properties.

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
n-Butane	CAS-No.: 106-97-8 EC-No.: 203-448-7 EC Index-No.: 601-004-00-0	100	Flam. Gas 1A, H220 Press. Gas (Liq.), H280

Contains no other components or impurities which will influence the classification of the product.

3.2. Mixtures

Not established.

SECTION 4: First aid measures

4.1. Description of first aid measures

- Inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped.
- Skin contact : In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.
- Eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes.
- Ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation.
See section 11.

4.3. Indication of any immediate medical attention and special treatment needed

None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Water spray or fog.
  Dry powder.
  Carbon dioxide.
  Shutting off the source of the gas is the preferred method of control.
  Be aware of the risk of formation of static electricity with the use of CO2 extinguishers. Do not use them in places where a flammable atmosphere may be present.
- Unsuitable extinguishing media : Do not use water jet to extinguish.

5.2. Special hazards arising from the substance or mixture

Specific hazards : Exposure to fire may cause containers to rupture/explode.
Hazardous combustion products : Carbon monoxide.

5.3. Advice for firefighters

Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.
If possible, stop flow of product.
Use water spray or fog to knock down fire fumes if possible.
Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.
Move containers away from the fire area if this can be done without risk.

Special protective equipment for fire fighters : In confined space use self-contained breathing apparatus.
Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Act in accordance with local emergency plan.
Try to stop release.
Evacuate area.
Eliminate ignition sources.
Ensure adequate air ventilation.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
Stay upwind.
See section 8 of the SDS for more information on personal protective equipment

For emergency responders : Monitor concentration of released product.
Consider the risk of potentially explosive atmospheres.
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
See section 5.3 of the SDS for more information.

6.2. Environmental precautions

Try to stop release.

6.3. Methods and material for containment and cleaning up

Ventilate area.

6.4. Reference to other sections

See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Safe use of the product : Do not breathe gas.
Avoid release of product into work area.
The product must be handled in accordance with good industrial hygiene and safety procedures.
Only experienced and properly instructed persons should handle gases under pressure.
Consider pressure relief device(s) in gas installations.
Ensure the complete gas system was (or is regularily) checked for leaks before use.
Do not smoke while handling product.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Avoid suck back of water, acid and alkalis.
Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment.
Purge air from system before introducing gas.
Take precautionary measures against static discharge.
Keep away from ignition sources (including static discharges).
Consider the use of only non-sparking tools.
Ensure equipment is adequately earthed.

Safe handling of the gas receptacle : Refer to supplier's container handling instructions.
Do not allow backfeed into the container.
Protect containers from physical damage; do not drag, roll, slide or drop.
When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.
Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.
If user experiences any difficulty operating valve discontinue use and contact supplier.
Never attempt to repair or modify container valves or safety relief devices.
Damaged valves should be reported immediately to the supplier.
Keep container valve outlets clean and free from contaminants particularly oil and water.
Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
Close container valve after each use and when empty, even if still connected to equipment.
Never attempt to transfer gases from one cylinder/container to another.
Never use direct flame or electrical heating devices to raise the pressure of a container.
Do not remove or deface labels provided by the supplier for the identification of the content of the container.
Suck back of water into the container must be prevented.
Open valve slowly to avoid pressure shock.

7.2. Conditions for safe storage, including any incompatibilities

Observe all regulations and local requirements regarding storage of containers.
Containers should not be stored in conditions likely to encourage corrosion.
Container valve guards or caps should be in place.
Containers should be stored in the vertical position and properly secured to prevent them from falling over.
Stored containers should be periodically checked for general condition and leakage.
Keep container below 50°C in a well ventilated place.
Store containers in location free from fire risk and away from sources of heat and ignition.
Keep away from combustible materials.
Segregate from oxidant gases and other oxidants in store.
All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

DNEL (Derived-No Effect Level) : None established.

PNEC (Predicted No-Effect Concentration) : None established.

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Provide adequate general and local exhaust ventilation.
Product to be handled in a closed system.
Systems under pressure should be regularly checked for leakages.
Ensure exposure is below occupational exposure limits (where available).
Gas detectors should be used when flammable gases/vapours may be released.
Consider the use of a work permit system e.g. for maintenance activities.

8.2.2. Individual protection measures, e.g. personal protective equipment

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk.
The following recommendations should be considered:
PPE compliant to the recommended EN/ISO standards should be selected.

• Eye/face protection : Wear goggles when transfilling or breaking transfer connections.
Standard EN 166 - Personal eye-protection - specifications.

• Skin protection

- Hand protection : Wear working gloves when handling gas containers.
Standard EN 388 - Protective gloves against mechanical risk, performance level 1 or higher.
Wear cold insulating gloves when transfilling or breaking transfer connections.
Standard EN 511 - Cold insulating gloves.
Neoprene rubber (HNBR).

- Other : Consider the use of flame resistant anti-static safety clothing.
Standard EN ISO 14116 - Limited flame spread materials.
Standard EN 1149-5 - Protective clothing: Electrostatic properties.
Wear safety shoes while handling containers.
Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

• Respiratory protection : Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known.
Use gas filters with full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
Recommended: Filter AX (brown).
Gas filters do not protect against oxygen deficiency.
Standard EN 14387 - Gas filter(s), combined filter(s) and standard EN136, full face masks .
Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems.

• Thermal hazards : None in addition to the above sections.

8.2.3. Environmental exposure controls

Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

- Physical state at 20°C / 101.3kPa : Gas
- Colour : Colourless.

Odour : Stenchant often added. Sweetish. Poor warning properties at low concentrations.
Odour threshold is subjective and inadequate to warn of overexposure.

pH	:	Not applicable for gases and gas mixtures.
Melting point / Freezing point	:	-138 °C
Boiling point	:	-0,5 °C
Flash point	:	Not applicable for gases and gas mixtures.
Flammability	:	Extremely flammable gas.
Explosive limits	:	1,4 – 9,4 vol %
Lower explosive limit (LEL)	:	Not available
Upper explosive limit (UEL)	:	Not available
Vapour pressure [20°C]	:	2 bar(a)
Vapour pressure [50°C]	:	5 bar(a)
Density	:	Not applicable
Vapour density	:	Not applicable.
Relative density, liquid (water=1)	:	0,6
Relative density, gas (air=1)	:	2,1
Water solubility	:	88 mg/l
Partition coefficient n-octanol/water (Log Kow)	:	2,89
Auto-ignition temperature	:	365 °C
Decomposition temperature	:	Not applicable.
Viscosity, kinematic	:	No reliable data available.
Particle characteristics	:	Not applicable

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Oxidising properties	:	No oxidising properties.
Critical temperature [°C]	:	152 °C

9.2.2. Other safety characteristics

Molar mass	:	58 g/mol
Other data	:	Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10: Stability and reactivity

10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Can form explosive mixture with air.
May react violently with oxidants.

10.4. Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Avoid moisture in installation systems.

10.5. Incompatible materials

Air, Oxidisers.
For additional information on compatibility refer to ISO 11114.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

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

Acute toxicity	:	Toxicological effects not expected from this product if occupational exposure limit values are not exceeded.
Skin corrosion/irritation	:	No known effects from this product.
Serious eye damage/irritation	:	No known effects from this product.
Respiratory or skin sensitisation	:	No known effects from this product.
Germ cell mutagenicity	:	No known effects from this product.
Carcinogenicity	:	No known effects from this product.
Toxic for reproduction : Fertility	:	No known effects from this product.
Toxic for reproduction : unborn child	:	No known effects from this product.
STOT-single exposure	:	No known effects from this product.
STOT-repeated exposure	:	No known effects from this product.
Aspiration hazard	:	Not applicable for gases and gas mixtures.

11.2. Information on other hazards

No additional information available

SECTION 12: Ecological information

12.1. Toxicity

Assessment	:	Classification criteria are not met.
EC50 48h - Daphnia magna [mg/l]	:	14,2 mg/l
EC50 72h - Algae [mg/l]	:	7,7 mg/l
LC50 96 h - Fish [mg/l]	:	24,1 mg/l

12.2. Persistence and degradability

Assessment	:	The substance is readily biodegradable. Unlikely to persist.

12.3. Bioaccumulative potential

Assessment	:	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). See section 9.

12.4. Mobility in soil

Assessment	:	Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.

12.5. Results of PBT and vPvB assessment

Assessment	:	Not classified as PBT or vPvB.

12.6. Endocrine disrupting properties

No additional information available

12.7. Other adverse effects

Other adverse effects	:	No known effects from this product.
Effect on the ozone layer	:	No effect on the ozone layer.
Global warming potential [CO2=1]	:	4
Effect on global warming	:	When discharged in large quantities may contribute to the greenhouse effect. Contains greenhouse gas(es).

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Contact supplier if guidance is required.
Do not discharge into areas where there is a risk of forming an explosive mixture with air.
Waste gas should be flared through a suitable burner with flash back arrestor.
Do not discharge into any place where its accumulation could be dangerous.
Ensure that the emission levels from local regulations or operating permits are not exceeded.
Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at http://www.eiga.org for more guidance on suitable disposal methods.
Return unused product in original container to supplier.

List of hazardous waste codes (from Commission Decision 2000/532/EC as amended) : 16 05 04 *: Gases in pressure containers (including halons) containing hazardous substances.

13.2. Additional information

External treatment and disposal of waste should comply with applicable local and/or national regulations.

SECTION 14: Transport information

14.1. UN number or ID number

In accordance with ADR / RID / IMDG / IATA / ADN
UN-No. : 1011

14.2. UN proper shipping name

Transport by road/rail (ADR/RID) : BUTANE
Transport by air (ICAO-TI / IATA-DGR) : Butane
Transport by sea (IMDG) : BUTANE

14.3. Transport hazard class(es)

Labelling :

2.1 : Flammable gases.

Transport by road/rail (ADR/RID)
Class : 2
Classification code : 2F
Hazard identification number : 23
Tunnel Restriction : B/D - Tank carriage : Passage forbidden through tunnels of category B, C, D and E. Other carriage : Passage forbidden through tunnels of category D and E

Transport by air (ICAO-TI / IATA-DGR)
Class / Div. (Sub. risk(s)) : 2.1

Transport by sea (IMDG)
Class / Div. (Sub. risk(s)) : 2.1
Emergency Schedule (EmS) - Fire : F-D
Emergency Schedule (EmS) - Spillage : S-U

14.4. Packing group

Transport by road/rail (ADR/RID) : Not established.
Transport by air (ICAO-TI / IATA-DGR) : Not established.
Transport by sea (IMDG) : Not established.

14.5. Environmental hazards

Transport by road/rail (ADR/RID) : None.
Transport by air (ICAO-TI / IATA-DGR) : None.

Transport by sea (IMDG) : None.

14.6. Special precautions for user

Packing Instruction(s)

Transport by road/rail (ADR/RID) : P200
Transport by air (ICAO-TI / IATA-DGR)
Passenger and Cargo Aircraft : Forbidden.
Cargo Aircraft only : 200.
Transport by sea (IMDG) : P200

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment.
Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.
Before transporting product containers:
- Ensure there is adequate ventilation.
- Ensure that containers are firmly secured.
- Ensure valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.

14.7. Maritime transport in bulk according to IMO instruments

Not applicable.

SECTION 15: Regulatory information

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

EU-Regulations

Restrictions on use : None.
Seveso Directive : 2012/18/EU (Seveso III) : Listed.

National regulations

Regulatory reference : Ensure all national/local regulations are observed.

15.2. Chemical safety assessment

A CSA has been carried out.

SECTION 16: Other information

Indication of changes : Revised safety data sheet in accordance with commission regulation (EU) No 453/2010.

Section	Changed item	Change	Comments
	Reference number	Modified	
	Supersedes	Modified	
	Revision date	Modified	
	Relevant identified uses	Modified	
2.3	Other hazards which do not result in classification	Modified	
8.2	Respiratory protection	Modified	
9.1	Oxidising properties	Modified	
9.1	Flash point	Removed	

Abbreviations and acronyms : ATE - Acute Toxicity Estimate
CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
EINECS - European Inventory of Existing Commercial Chemical Substances
CAS# - Chemical Abstract Service number
PPE - Personal Protection Equipment
LC50 - Lethal Concentration to 50 % of a test population
RMM - Risk Management Measures
PBT - Persistent, Bioaccumulative and Toxic
vPvB - Very Persistent and Very Bioaccumulative
STOT- SE : Specific Target Organ Toxicity - Single Exposure
CSA - Chemical Safety Assessment
EN - European Standard
UN - United Nations
ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road
IATA - International Air Transport Association
IMDG code - International Maritime Dangerous Goods
RID - Regulations concerning the International Carriage of Dangerous Goods by Rail
WGK - Water Hazard Class
STOT - RE : Specific Target Organ Toxicity - Repeated Exposure
UFI : Unique Formula Identifier

Training advice : Ensure operators understand the flammability hazard.

Further information : Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP).
Key literature references and sources of data are maintained in EIGA doc 169 : 'Classification and Labelling Guide', downloadable at http://www.Eiga.eu .

Full text of H- and EUH-statements	
Flam. Gas 1A	Flammable gases, Category 1A
H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.
Press. Gas (Liq.)	Gases under pressure : Liquefied gas

DISCLAIMER OF LIABILITY : Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.
Details given in this document are believed to be correct at the time of going to press.
Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

Annex to the safety data sheet

This Annex documents the Exposure Scenarios (ESs) related to the identified uses of the registered substance. The ESs detail protective measures for workers and the environment in addition to those described in sections 7, 8, 11, 12 and 13 of the SDS that are required to ensure that the potential exposure to workers and the environment remains within acceptable levels for each of the identified uses.

Table of contents of the Annex

1. EIGA014-1 - Manufacture; Manufacture

1.1. Title section

Manufacture	
ES Ref.: EIGA014-1 ES Type: Worker	

Environment		Use descriptors
CS1	Contributing scenario controlling environmental exposure	

Worker		Use descriptors
CS2	Contributing scenario controlling worker exposure	PROC15

Processes, tasks, activities covered	Manufacture of the substance or use as a process chemical or extraction agent within closed or contained systems. Includes incidental exposures during recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure

Assessment method	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

Product (article) characteristics	
Physical form of product	Gas
Viscosity, dynamic	No reliable data available.
Viscosity, kinematic	No reliable data available.

Technical and organisational conditions and measures	
Air	Not relevant
Soil	Not relevant
Water	Not relevant
sediment	Not relevant
Remarks	Not relevant
None	

Conditions and measures related to treatment of waste (including article waste)	
No information available	
No information available	

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	Not relevant
Local freshwater dilution factor:	Not relevant
Local marine water dilution factor:	Not relevant

1.2.2. Control of worker exposure: Contributing scenario controlling worker exposure (PROC15)

PROC15	Use as laboratory reagent

Product (article) characteristics	
Physical form of product	Gas
Concentration of substance in product	< 100 %
Vapour pressure	Not relevant

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers daily exposures up to 8 hours	

Technical and organisational conditions and measures	
See section 8 of the SDS.	
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur	inhalation exposure
Assumes a good basic standard of occupational hygiene is implemented. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. Take precautionary measures against static discharge. Keep away from sources of ignition - No smoking. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.	Industrial. dermal exposure

Conditions and measures related to personal protection, hygiene and health evaluation	
For further information refer to section 8: "Exposure controls/personal protection"	dermal exposure. inhalation exposure

Other conditions affecting workers exposure	
No information available	
Not relevant	

1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure

Protection target	Exposure estimation	PNEC	RCR	Assessment method
Secondary Poisoning			< 1	Qualitative approach used to conclude safe use

1.3.2. Worker exposure Contributing scenario controlling worker exposure (PROC15)

Information for contributing exposure scenario			
Route of exposure and type of effects	**Exposure estimate**	**RCR**	**Method**
Acute - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Long term - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Acute - Local - Inhalation		< 1	Qualitative approach used to conclude safe use
Long term - Local - Inhalation		< 1	Qualitative approach used to conclude safe use

1.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

1.4.1. Environment

No data available

1.4.2. Health

No data available

2. EIGA014-2 - Consumer; Distribution of substance

2.1. Title section

Distribution of substance	
ES Ref.: EIGA014-2 ES Type: Worker	

Environment		Use descriptors
CS1	Contributing scenario controlling environmental exposure	

Worker		Use descriptors
CS2	Contributing scenario controlling worker exposure	PROC15

Processes, tasks, activities covered	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

2.2. Conditions of use affecting exposure

2.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure

Assessment method	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

Product (article) characteristics	
Physical form of product	Gas
Viscosity, dynamic	No reliable data available.
Viscosity, kinematic	No reliable data available.

Technical and organisational conditions and measures	
Air	Not relevant
Soil	Not relevant
Water	Not relevant
sediment	Not relevant
Remarks	Not relevant
None	

Conditions and measures related to treatment of waste (including article waste)	
No information available	
No information available	

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	Not relevant
Local freshwater dilution factor:	Not relevant

Other conditions affecting environmental exposure	
Local marine water dilution factor:	Not relevant

2.2.2. Control of worker exposure: Contributing scenario controlling worker exposure (PROC15)

PROC15	Use as laboratory reagent

Product (article) characteristics	
Physical form of product	Gas
Concentration of substance in product	< 100 %
Vapour pressure	Not relevant

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers daily exposures up to 8 hours	

Technical and organisational conditions and measures	
See section 8 of the SDS.	
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur	inhalation exposure
Assumes a good basic standard of occupational hygiene is implemented. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. Take precautionary measures against static discharge. Keep away from sources of ignition - No smoking. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.	Industrial. dermal exposure

Conditions and measures related to personal protection, hygiene and health evaluation	
For further information refer to section 8: "Exposure controls/personal protection"	dermal exposure. inhalation exposure

Other conditions affecting workers exposure	
No information available	
Not relevant	

2.3. Exposure estimation and reference to its source

2.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure

Protection target	Exposure estimation	PNEC	RCR	Assessment method
Secondary Poisoning			< 1	Qualitative approach used to conclude safe use

2.3.2. Worker exposure Contributing scenario controlling worker exposure (PROC15)

Information for contributing exposure scenario			
Route of exposure and type of effects	**Exposure estimate**	**RCR**	**Method**
Acute - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Long term - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Acute - Local - Inhalation		< 1	Qualitative approach used to conclude safe use
Long term - Local - Inhalation		< 1	Qualitative approach used to conclude safe use

2.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

2.4.1. Environment

No data available

2.4.2. Health

No data available

3. EIGA014-3 - Consumer; Use as a fuel

3.1. Title section

Use as a fuel	
ES Ref.: EIGA014-3 ES Type: Worker	

Environment		Use descriptors
CS1	Contributing scenario controlling environmental exposure	

Worker		Use descriptors
CS2	Contributing scenario controlling worker exposure	

Processes, tasks, activities covered	Covers the use as a fuel (or fuel additives and additive components) within closed or contained systems, including incidental exposures during activities associated with its transfer, use, equipment maintenance and handling of waste

3.2. Conditions of use affecting exposure

3.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure

Assessment method	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

Product (article) characteristics	
Physical form of product	Gas
Viscosity, dynamic	No reliable data available.
Viscosity, kinematic	No reliable data available.

Technical and organisational conditions and measures	
Air	Not relevant
Soil	Not relevant
Water	Not relevant
sediment	Not relevant
Remarks	Not relevant
None	

Conditions and measures related to treatment of waste (including article waste)	
No information available	
No information available	

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	Not relevant
Local freshwater dilution factor:	Not relevant

Other conditions affecting environmental exposure	
Local marine water dilution factor:	Not relevant

3.2.2. Control of worker exposure: Contributing scenario controlling worker exposure

Product (article) characteristics	
Physical form of product	Gas
Concentration of substance in product	< 100 %
Vapour pressure	Not relevant

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers daily exposures up to 8 hours	

Technical and organisational conditions and measures	
See section 8 of the SDS.	
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur	inhalation exposure
Assumes a good basic standard of occupational hygiene is implemented. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. Take precautionary measures against static discharge. Keep away from sources of ignition - No smoking. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.	Industrial. dermal exposure

Conditions and measures related to personal protection, hygiene and health evaluation	
For further information refer to section 8: "Exposure controls/personal protection"	dermal exposure. inhalation exposure

Other conditions affecting workers exposure	
No information available	
Not relevant	

3.3. Exposure estimation and reference to its source

3.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure

Protection target	Exposure estimation	PNEC	RCR	Assessment method
Secondary Poisoning			< 1	Qualitative approach used to conclude safe use

3.3.2. Worker exposure Contributing scenario controlling worker exposure

Information for contributing exposure scenario			
Route of exposure and type of effects	**Exposure estimate**	**RCR**	**Method**
Acute - Local - Dermal		< 1	Qualitative approach used to conclude safe use

Information for contributing exposure scenario			
Long term - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Acute - Local - Inhalation		< 1	Qualitative approach used to conclude safe use
Long term - Local - Inhalation		< 1	Qualitative approach used to conclude safe use

3.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

3.4.1. Environment

No data available

3.4.2. Health

No data available

4. EIGA014-4 - Consumer; Use as a propellant in professional aerosol products

4.1. Title section

Use as a propellant in professional aerosol products	
ES Ref.: EIGA014-4 ES Type: Worker	

Environment		Use descriptors
CS1	Contributing scenario controlling environmental exposure	

Worker		Use descriptors
CS2	Contributing scenario controlling worker exposure	PROC12

Processes, tasks, activities covered	Use as a blowing agent for rigid and flexible foams, including material transfers, mixing and injection, curing, cutting, storage and packing

4.2. Conditions of use affecting exposure

4.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure

Assessment method	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

Product (article) characteristics	
Physical form of product	Gas
Viscosity, dynamic	No reliable data available.
Viscosity, kinematic	No reliable data available.

Technical and organisational conditions and measures	
Air	Not relevant
Soil	Not relevant
Water	Not relevant
sediment	Not relevant
Remarks	Not relevant
None	

Conditions and measures related to treatment of waste (including article waste)	
No information available	
No information available	

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	Not relevant
Local freshwater dilution factor:	Not relevant

Other conditions affecting environmental exposure	
Local marine water dilution factor:	Not relevant

4.2.2. Control of worker exposure: Contributing scenario controlling worker exposure (PROC12)

PROC12	Use of blowing agents in manufacture of foam

Product (article) characteristics	
Physical form of product	Gas
Concentration of substance in product	< 100 %
Vapour pressure	Not relevant

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers daily exposures up to 8 hours	

Technical and organisational conditions and measures	
See section 8 of the SDS.	
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur	inhalation exposure
Assumes a good basic standard of occupational hygiene is implemented. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. Take precautionary measures against static discharge. Keep away from sources of ignition - No smoking. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.	Industrial. dermal exposure

Conditions and measures related to personal protection, hygiene and health evaluation	
For further information refer to section 8: "Exposure controls/personal protection"	dermal exposure. inhalation exposure

Other conditions affecting workers exposure	
No information available	
Not relevant	

4.3. Exposure estimation and reference to its source

4.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure

Protection target	Exposure estimation	PNEC	RCR	Assessment method
Secondary Poisoning			< 1	Qualitative approach used to conclude safe use

4.3.2. Worker exposure Contributing scenario controlling worker exposure (PROC12)

Information for contributing exposure scenario			
Route of exposure and type of effects	**Exposure estimate**	**RCR**	**Method**
Acute - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Long term - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Acute - Local - Inhalation		< 1	Qualitative approach used to conclude safe use
Long term - Local - Inhalation		< 1	Qualitative approach used to conclude safe use

4.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

4.4.1. Environment

No data available

4.4.2. Health

No data available

5. EIGA014-5 - Consumer; Formulation

5.1. Title section

Formulation	
ES Ref.: EIGA014-5 ES Type: Worker	

Environment		Use descriptors
CS1	Contributing scenario controlling environmental exposure	

Worker		Use descriptors
CS2	Contributing scenario controlling worker exposure	PROC14, PROC15

Processes, tasks, activities covered	Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities

5.2. Conditions of use affecting exposure

5.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure

Assessment method	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

Product (article) characteristics	
Physical form of product	Gas
Viscosity, dynamic	No reliable data available.
Viscosity, kinematic	No reliable data available.

Technical and organisational conditions and measures	
Air	Not relevant
Soil	Not relevant
Water	Not relevant
sediment	Not relevant
Remarks	Not relevant
None	

Conditions and measures related to treatment of waste (including article waste)	
No information available	
No information available	

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	Not relevant
Local freshwater dilution factor:	Not relevant

Other conditions affecting environmental exposure	
Local marine water dilution factor:	Not relevant

5.2.2. Control of worker exposure: Contributing scenario controlling worker exposure (PROC14, PROC15)

PROC14	Tabletting, compression, extrusion, pelettisation, granulation
PROC15	Use as laboratory reagent

Product (article) characteristics	
Physical form of product	Gas
Concentration of substance in product	< 100 %
Vapour pressure	Not relevant

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers daily exposures up to 8 hours	

Technical and organisational conditions and measures	
See section 8 of the SDS.	
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur	inhalation exposure
Assumes a good basic standard of occupational hygiene is implemented. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. Take precautionary measures against static discharge. Keep away from sources of ignition - No smoking. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.	Industrial. dermal exposure

Conditions and measures related to personal protection, hygiene and health evaluation	
For further information refer to section 8: "Exposure controls/personal protection"	dermal exposure. inhalation exposure

Other conditions affecting workers exposure	
No information available	
Not relevant	

5.3. Exposure estimation and reference to its source

5.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure

Protection target	Exposure estimation	PNEC	RCR	Assessment method
Secondary Poisoning			< 1	Qualitative approach used to conclude safe use

5.3.2. Worker exposure Contributing scenario controlling worker exposure (PROC14, PROC15)

Information for contributing exposure scenario			
Route of exposure and type of effects	**Exposure estimate**	**RCR**	**Method**
Acute - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Long term - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Acute - Local - Inhalation		< 1	Qualitative approach used to conclude safe use
Long term - Local - Inhalation		< 1	Qualitative approach used to conclude safe use

5.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

5.4.1. Environment

No data available

5.4.2. Health

No data available

6. EIGA014-6 - Consumer; Polymer production.

6.1. Title section

Polymer production.	
ES Ref.: EIGA014-6 ES Type: Worker	

Environment		Use descriptors
CS1	Contributing scenario controlling environmental exposure	ERC6c

Worker		Use descriptors
CS2	Contributing scenario controlling worker exposure	

Processes, tasks, activities covered	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)

6.2. Conditions of use affecting exposure

6.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure (ERC6c)

ERC6c	Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
Assessment method	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

Product (article) characteristics	
Physical form of product	Gas
Viscosity, dynamic	No reliable data available.
Viscosity, kinematic	No reliable data available.

Technical and organisational conditions and measures	
Air	Not relevant
Soil	Not relevant
Water	Not relevant
sediment	Not relevant
Remarks	Not relevant
None	

Conditions and measures related to treatment of waste (including article waste)	
No information available	
No information available	

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	Not relevant
Local freshwater dilution factor:	Not relevant
Local marine water dilution factor:	Not relevant

6.2.2. Control of worker exposure: Contributing scenario controlling worker exposure

Product (article) characteristics	
Physical form of product	Gas
Concentration of substance in product	< 100 %
Vapour pressure	Not relevant

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers daily exposures up to 8 hours	

Technical and organisational conditions and measures	
See section 8 of the SDS.	
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur	inhalation exposure
Assumes a good basic standard of occupational hygiene is implemented. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. Take precautionary measures against static discharge. Keep away from sources of ignition - No smoking. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.	Industrial. dermal exposure

Conditions and measures related to personal protection, hygiene and health evaluation	
For further information refer to section 8: "Exposure controls/personal protection"	dermal exposure. inhalation exposure

Other conditions affecting workers exposure	
No information available	
Not relevant	

6.3. Exposure estimation and reference to its source

6.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure (ERC6c)

Protection target	Exposure estimation	PNEC	RCR	Assessment method
Secondary Poisoning			< 1	Qualitative approach used to conclude safe use

6.3.2. Worker exposure Contributing scenario controlling worker exposure

Information for contributing exposure scenario			
Route of exposure and type of effects	**Exposure estimate**	**RCR**	**Method**
Acute - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Long term - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Acute - Local - Inhalation		< 1	Qualitative approach used to conclude safe use
Long term - Local - Inhalation		< 1	Qualitative approach used to conclude safe use

6.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

6.4.1. Environment

No data available

6.4.2. Health

No data available

7. EIGA014-7 - Consumer; Use in polymer processing

7.1. Title section

Use in polymer processing	
ES Ref.: EIGA014-7 ES Type: Worker	

Environment		Use descriptors
CS1	Contributing scenario controlling environmental exposure	

Worker		Use descriptors
CS2	Contributing scenario controlling worker exposure	PROC6, PROC13, PROC14

Processes, tasks, activities covered	Processing of formulated polymers including material transfers, additives handling (e.g. pigments, stabilisers, fillers, plasticisers, etc.), moulding, curing and forming activities, material re-works, storage and associated maintenance

7.2. Conditions of use affecting exposure

7.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure

Assessment method	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

Product (article) characteristics	
Physical form of product	Gas
Viscosity, dynamic	No reliable data available.
Viscosity, kinematic	No reliable data available.

Technical and organisational conditions and measures	
Air	Not relevant
Soil	Not relevant
Water	Not relevant
sediment	Not relevant
Remarks	Not relevant
None	

Conditions and measures related to treatment of waste (including article waste)	
No information available	
No information available	

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	Not relevant
Local freshwater dilution factor:	Not relevant

Other conditions affecting environmental exposure	
Local marine water dilution factor:	Not relevant

7.2.2. Control of worker exposure: Contributing scenario controlling worker exposure (PROC6, PROC13, PROC14)

PROC6	Calendering operations
PROC13	Treatment of articles by dipping and pouring
PROC14	Tabletting, compression, extrusion, pelettisation, granulation

Product (article) characteristics	
Physical form of product	Gas
Concentration of substance in product	< 100 %
Vapour pressure	Not relevant

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers daily exposures up to 8 hours	

Technical and organisational conditions and measures	
See section 8 of the SDS.	
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur	inhalation exposure
Assumes a good basic standard of occupational hygiene is implemented. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. Take precautionary measures against static discharge. Keep away from sources of ignition - No smoking. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.	Industrial. dermal exposure

Conditions and measures related to personal protection, hygiene and health evaluation	
For further information refer to section 8: "Exposure controls/personal protection"	dermal exposure. inhalation exposure

Other conditions affecting workers exposure	
No information available	
Not relevant	

7.3. Exposure estimation and reference to its source

7.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure

Protection target	Exposure estimation	PNEC	RCR	Assessment method
Secondary Poisoning			< 1	Qualitative approach used to conclude safe use

7.3.2. Worker exposure Contributing scenario controlling worker exposure (PROC6, PROC13, PROC14)

Information for contributing exposure scenario			
Route of exposure and type of effects	**Exposure estimate**	**RCR**	**Method**
Acute - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Long term - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Acute - Local - Inhalation		< 1	Qualitative approach used to conclude safe use
Long term - Local - Inhalation		< 1	Qualitative approach used to conclude safe use

7.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

7.4.1. Environment

No data available

7.4.2. Health

No data available

8. EIGA014-8 - Consumer; Functional fluids

8.1. Title section

Functional fluids	
ES Ref.: EIGA014-8 ES Type: Worker	

Environment		Use descriptors
CS1	Contributing scenario controlling environmental exposure	

Worker		Use descriptors
CS2	Contributing scenario controlling worker exposure	

Processes, tasks, activities covered	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in professional equipment including maintenance and related material transfers

8.2. Conditions of use affecting exposure

8.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure

Assessment method	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

Product (article) characteristics	
Physical form of product	Gas
Viscosity, dynamic	No reliable data available.
Viscosity, kinematic	No reliable data available.

Technical and organisational conditions and measures	
Air	Not relevant
Soil	Not relevant
Water	Not relevant
sediment	Not relevant
Remarks	Not relevant
None	

Conditions and measures related to treatment of waste (including article waste)	
No information available	
No information available	

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	Not relevant
Local freshwater dilution factor:	Not relevant

Other conditions affecting environmental exposure	
Local marine water dilution factor:	Not relevant

8.2.2. Control of worker exposure: Contributing scenario controlling worker exposure

Product (article) characteristics	
Physical form of product	Gas
Concentration of substance in product	< 100 %
Vapour pressure	Not relevant

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers daily exposures up to 8 hours	

Technical and organisational conditions and measures	
See section 8 of the SDS.	
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur	inhalation exposure
Assumes a good basic standard of occupational hygiene is implemented. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. Take precautionary measures against static discharge. Keep away from sources of ignition - No smoking. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.	Industrial. dermal exposure

Conditions and measures related to personal protection, hygiene and health evaluation	
For further information refer to section 8: "Exposure controls/personal protection"	dermal exposure. inhalation exposure

Other conditions affecting workers exposure	
No information available	
Not relevant	

8.3. Exposure estimation and reference to its source

8.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure

Protection target	Exposure estimation	PNEC	RCR	Assessment method
Secondary Poisoning			< 1	Qualitative approach used to conclude safe use

8.3.2. Worker exposure Contributing scenario controlling worker exposure

Information for contributing exposure scenario			
Route of exposure and type of effects	**Exposure estimate**	**RCR**	**Method**
Acute - Local - Dermal		< 1	Qualitative approach used to conclude safe use

Information for contributing exposure scenario			
Long term - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Acute - Local - Inhalation		< 1	Qualitative approach used to conclude safe use
Long term - Local - Inhalation		< 1	Qualitative approach used to conclude safe use

8.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

8.4.1. Environment

No data available

8.4.2. Health

No data available

9. EIGA014-9 - Consumer; Use as a fuel

9.1. Title section

Use as a fuel	
ES Ref.: EIGA014-9 ES Type: Worker	

Environment		Use descriptors
CS1	Contributing scenario controlling environmental exposure	

Worker		Use descriptors
CS2	Contributing scenario controlling worker exposure	

Processes, tasks, activities covered	Use as a fuel

9.2. Conditions of use affecting exposure

9.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure

Assessment method	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

Product (article) characteristics	
Physical form of product	Gas
Viscosity, dynamic	No reliable data available.
Viscosity, kinematic	No reliable data available.

Technical and organisational conditions and measures	
Air	Not relevant
Soil	Not relevant
Water	Not relevant
sediment	Not relevant
Remarks	Not relevant
None	

Conditions and measures related to treatment of waste (including article waste)	
No information available	
No information available	

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	Not relevant
Local freshwater dilution factor:	Not relevant
Local marine water dilution factor:	Not relevant

9.2.2. Control of worker exposure: Contributing scenario controlling worker exposure

Product (article) characteristics	
Physical form of product	Gas
Concentration of substance in product	< 100 %
Vapour pressure	Not relevant

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers daily exposures up to 8 hours	

Technical and organisational conditions and measures	
See section 8 of the SDS.	
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur	inhalation exposure
Assumes a good basic standard of occupational hygiene is implemented. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. Take precautionary measures against static discharge. Keep away from sources of ignition - No smoking. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.	Industrial. dermal exposure

Conditions and measures related to personal protection, hygiene and health evaluation	
For further information refer to section 8: "Exposure controls/personal protection"	dermal exposure. inhalation exposure

Other conditions affecting workers exposure	
No information available	
Not relevant	

9.3. Exposure estimation and reference to its source

9.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure

Protection target	Exposure estimation	PNEC	RCR	Assessment method
Secondary Poisoning			< 1	Qualitative approach used to conclude safe use

9.3.2. Worker exposure Contributing scenario controlling worker exposure

Information for contributing exposure scenario			
Route of exposure and type of effects	**Exposure estimate**	**RCR**	**Method**
Acute - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Long term - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Acute - Local - Inhalation		< 1	Qualitative approach used to conclude safe use

Information for contributing exposure scenario			
Long term - Local - Inhalation		< 1	Qualitative approach used to conclude safe use

9.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

9.4.1. Environment

No data available

9.4.2. Health

No data available

10. EIGA014-10 - Consumer; Use as a propellant in professional aerosol products

10.1. Title section

Use as a propellant in professional aerosol products	
ES Ref.: EIGA014-10 ES Type: Worker	

Environment		Use descriptors
CS1	Contributing scenario controlling environmental exposure	

Worker		Use descriptors
CS2	Contributing scenario controlling worker exposure	

Processes, tasks, activities covered	Use as a propellant in professional aerosol products

10.2. Conditions of use affecting exposure

10.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure

Assessment method	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

Product (article) characteristics	
Physical form of product	Gas
Viscosity, dynamic	No reliable data available.
Viscosity, kinematic	No reliable data available.

Technical and organisational conditions and measures	
Air	Not relevant
Soil	Not relevant
Water	Not relevant
sediment	Not relevant
Remarks	Not relevant
None	

Conditions and measures related to treatment of waste (including article waste)	
No information available	
No information available	

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	Not relevant
Local freshwater dilution factor:	Not relevant
Local marine water dilution factor:	Not relevant

10.2.2. Control of worker exposure: Contributing scenario controlling worker exposure

Product (article) characteristics	
Physical form of product	Gas
Concentration of substance in product	< 100 %
Vapour pressure	Not relevant

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers daily exposures up to 8 hours	

Technical and organisational conditions and measures	
See section 8 of the SDS.	
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur	inhalation exposure
Assumes a good basic standard of occupational hygiene is implemented. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. Take precautionary measures against static discharge. Keep away from sources of ignition - No smoking. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.	Industrial. dermal exposure

Conditions and measures related to personal protection, hygiene and health evaluation	
For further information refer to section 8: "Exposure controls/personal protection"	dermal exposure. inhalation exposure

Other conditions affecting workers exposure	
No information available	
Indoor or outdoor use	

10.3. Exposure estimation and reference to its source

10.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure

Protection target	Exposure estimation	PNEC	RCR	Assessment method
Secondary Poisoning			< 1	Qualitative approach used to conclude safe use

10.3.2. Worker exposure Contributing scenario controlling worker exposure

Information for contributing exposure scenario			
Route of exposure and type of effects	**Exposure estimate**	**RCR**	**Method**
Acute - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Long term - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Acute - Local - Inhalation		< 1	Qualitative approach used to conclude safe use

Information for contributing exposure scenario			
Long term - Local - Inhalation		< 1	Qualitative approach used to conclude safe use

10.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

10.4.1. Environment

No data available

10.4.2. Health

No data available

11. EIGA014-11 - Consumer; Use in polymer processing

11.1. Title section

Use in polymer processing	
ES Ref.: EIGA014-11 ES Type: Worker	

Environment		Use descriptors
CS1	Contributing scenario controlling environmental exposure	

Worker		Use descriptors
CS2	Contributing scenario controlling worker exposure	PROC6, PROC14, PROC21

Processes, tasks, activities covered	Processing of formulated polymers including material transfers, moulding and forming activities, material re-works and associated maintenance

11.2. Conditions of use affecting exposure

11.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure

Assessment method	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

Product (article) characteristics	
Physical form of product	Gas
Viscosity, dynamic	No reliable data available.
Viscosity, kinematic	No reliable data available.

Technical and organisational conditions and measures	
Air	Not relevant
Soil	Not relevant
Water	Not relevant
sediment	Not relevant
Remarks	Not relevant
None	

Conditions and measures related to treatment of waste (including article waste)	
No information available	
No information available	

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	Not relevant
Local freshwater dilution factor:	Not relevant

Other conditions affecting environmental exposure	
Local marine water dilution factor:	Not relevant

11.2.2. Control of worker exposure: Contributing scenario controlling worker exposure (PROC6, PROC14, PROC21)

PROC6	Calendering operations
PROC14	Tabletting, compression, extrusion, pelettisation, granulation
PROC21	Low energy manipulation and handling of substances bound in/on materials or articles

Product (article) characteristics	
Physical form of product	Gas
Concentration of substance in product	< 100 %
Vapour pressure	Not relevant

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers daily exposures up to 8 hours	

Technical and organisational conditions and measures	
See section 8 of the SDS.	
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur	inhalation exposure
Assumes a good basic standard of occupational hygiene is implemented. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. Take precautionary measures against static discharge. Keep away from sources of ignition - No smoking. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.	Industrial. dermal exposure

Conditions and measures related to personal protection, hygiene and health evaluation	
For further information refer to section 8: "Exposure controls/personal protection"	dermal exposure. inhalation exposure

Other conditions affecting workers exposure	
No information available	
Indoor use	

11.3. Exposure estimation and reference to its source

11.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure

Protection target	Exposure estimation	PNEC	RCR	Assessment method
Secondary Poisoning			< 1	Qualitative approach used to conclude safe use

11.3.2. Worker exposure Contributing scenario controlling worker exposure (PROC6, PROC14, PROC21)

Information for contributing exposure scenario			
Route of exposure and type of effects	**Exposure estimate**	**RCR**	**Method**
Acute - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Long term - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Acute - Local - Inhalation		< 1	Qualitative approach used to conclude safe use
Long term - Local - Inhalation		< 1	Qualitative approach used to conclude safe use

11.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

11.4.1. Environment

No data available

11.4.2. Health

No data available

12. EIGA014-12 - Consumer; Functional fluids

12.1. Title section

Functional fluids	
ES Ref.: EIGA014-12 ES Type: Worker	

Environment		Use descriptors
CS1	Contributing scenario controlling environmental exposure	

Worker		Use descriptors
CS2	Contributing scenario controlling worker exposure	

Processes, tasks, activities covered	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in professional equipment including maintenance and related material transfers

12.2. Conditions of use affecting exposure

12.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure

Assessment method	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

Product (article) characteristics	
Physical form of product	Gas
Viscosity, dynamic	No reliable data available.
Viscosity, kinematic	No reliable data available.

Technical and organisational conditions and measures	
Air	Not relevant
Soil	Not relevant
Water	Not relevant
sediment	Not relevant
Remarks	Not relevant
None	

Conditions and measures related to treatment of waste (including article waste)	
No information available	
No information available	

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	Not relevant
Local freshwater dilution factor:	Not relevant

Other conditions affecting environmental exposure	
Local marine water dilution factor:	Not relevant

12.2.2. Control of worker exposure: Contributing scenario controlling worker exposure

Product (article) characteristics	
Physical form of product	Gas
Concentration of substance in product	< 100 %
Vapour pressure	Not relevant

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers daily exposures up to 8 hours	

Technical and organisational conditions and measures	
See section 8 of the SDS.	
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur	inhalation exposure
Assumes a good basic standard of occupational hygiene is implemented. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. Take precautionary measures against static discharge. Keep away from sources of ignition - No smoking. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.	Industrial. dermal exposure

Conditions and measures related to personal protection, hygiene and health evaluation	
For further information refer to section 8: "Exposure controls/personal protection"	dermal exposure. inhalation exposure

Other conditions affecting workers exposure	
No information available	
Indoor or outdoor use	

12.3. Exposure estimation and reference to its source

12.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure

Protection target	Exposure estimation	PNEC	RCR	Assessment method
Secondary Poisoning			< 1	Qualitative approach used to conclude safe use

12.3.2. Worker exposure Contributing scenario controlling worker exposure

Information for contributing exposure scenario			
Route of exposure and type of effects	**Exposure estimate**	**RCR**	**Method**
Acute - Local - Dermal		< 1	Qualitative approach used to conclude safe use

Information for contributing exposure scenario			
Long term - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Acute - Local - Inhalation		< 1	Qualitative approach used to conclude safe use
Long term - Local - Inhalation		< 1	Qualitative approach used to conclude safe use

12.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

12.4.1. Environment

No data available

12.4.2. Health

No data available

13. EIGA014-13 - Consumer; Use as a fuel

13.1. Title section

Use as a fuel	
ES Ref.: EIGA014-13 ES Type: Consumer	

Environment		Use descriptors
CS1	Contributing scenario controlling environmental exposure	

Worker		Use descriptors
CS2	Contributing scenario controlling worker exposure	

Processes, tasks, activities covered	Covers consumer uses in liquid fuels

13.2. Conditions of use affecting exposure

13.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure

Assessment method	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

Product (article) characteristics	
Physical form of product	Gas
Viscosity, dynamic	No reliable data available.
Viscosity, kinematic	No reliable data available.

Technical and organisational conditions and measures	
Air	Not relevant
Soil	Not relevant
Water	Not relevant
sediment	Not relevant
Remarks	Not relevant
None	

Conditions and measures related to treatment of waste (including article waste)	
No information available	
No information available	

Other conditions affecting environmental exposure	
Flow rate of receiving water at least:	Not relevant
Local freshwater dilution factor:	Not relevant
Local marine water dilution factor:	Not relevant

13.2.2. Control of worker exposure: Contributing scenario controlling worker exposure

Product (article) characteristics	
Physical form of product	Gas
Concentration of substance in product	< 100 %
Vapour pressure	Not relevant

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers daily exposures up to 8 hours	

Technical and organisational conditions and measures	
See section 8 of the SDS.	
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Provide extract ventilation to points where emissions occur	inhalation exposure
Assumes a good basic standard of occupational hygiene is implemented. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. Take precautionary measures against static discharge. Keep away from sources of ignition - No smoking. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.	Industrial. dermal exposure

Conditions and measures related to personal protection, hygiene and health evaluation	
See sections 2 and 7 of the SDS. For further information refer to section 8: "Exposure controls/personal protection". Keep away from sources of ignition - No smoking. Take precautionary measures against static discharges	dermal exposure. inhalation exposure

Other conditions affecting workers exposure	
No information available	
Indoor or outdoor use	

13.3. Exposure estimation and reference to its source

13.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure

Protection target	Exposure estimation	PNEC	RCR	Assessment method
Secondary Poisoning			< 1	Qualitative approach used to conclude safe use

13.3.2. Worker exposure Contributing scenario controlling worker exposure

Information for contributing exposure scenario			
Route of exposure and type of effects	**Exposure estimate**	**RCR**	**Method**
Acute - Local - Dermal		< 1	Qualitative approach used to conclude safe use
Long term - Local - Dermal		< 1	Qualitative approach used to conclude safe use

Information for contributing exposure scenario			
Acute - Local - Inhalation		< 1	Qualitative approach used to conclude safe use
Long term - Local - Inhalation		< 1	Qualitative approach used to conclude safe use

13.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

13.4.1. Environment

No data available

13.4.2. Health

No data available

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