

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

1.1 Product identifier

Material Name

PANA SPRAY Plus

Registration status

The amounts of individual imported substances contained in this product are < 1 tonne per year. This product and its components are not subject to registration under REACH.

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

Identified uses

Cleaning and lubrication for dental and surgical handpieces

Uses advised against

None known

1.3 Details of the supplier of the safety data sheet

NSK Europe GmbH

Elly-Beinhorn-Strasse 8

65760 Eschborn

Germany

Phone: +49 6196 77606 0

E-mail: info@nsk-europe.de

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

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

Aerosols Category 1

Flammable Liquids - Category 2

Aspiration Hazard - Category 1

Serious Eye Damage/Eye Irritation - Category 2A

Germ Cell Mutagenicity - Category 1B

Specific Target Organ Toxicity - Single Exposure - Category 3

Specific Target Organ Toxicity - Repeated Exposure - Category 1 (liver)

Specific Target Organ Toxicity - Repeated Exposure - Category 2 (nervous system)

2.2 Label elements

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

Hazard symbols



Signal word

Danger

Hazard statements

H222 Extremely flammable aerosol.

H225 Highly flammable liquid and vapor.

H229 Pressurised container: May burst if heated.

H304 May be fatal if swallowed and enters airways.

H319 Causes serious eye irritation.

H340 May cause genetic defects.

H336 May cause drowsiness or dizziness.

H372 Causes damage to organs through prolonged or repeated exposure.

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

Precautionary statements

Prevention

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P233 Keep container tightly closed.

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

P240 Ground/Bond container and receiving equipment.

P241 Use explosion-proof electrical/ventilating/lighting equipment.

P243 Take action to prevent static discharges.

P242 Use non-sparking tools.

P251 Do not pierce or burn, even after use.

P271 Use only outdoors or in a well-ventilated area.

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

P260 Do not breathe dust/fume/gas/mist/vapors/spray.

P264 Wash thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

Response

P370+P378 In case of fire: Use appropriate media to extinguish.

P308+P313 IF exposed or concerned: Get medical advice/attention.

P304+P340 IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.

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

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.

P331 Do NOT induce vomiting.

P312 Call a POISON CENTER or doctor if you feel unwell.

Storage

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P235 Keep cool.

P405 Store locked up.

P410+P412 Protect from sunlight. Do not expose to temperatures exceeding 50 oC/122oF.

Disposal

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards

None known.

SECTION 3: Composition / information on ingredients

3.2 MIXTURE

CAS EC No Registration No	Component Name Synonyms	1272/2008 (CLP)	Percent
106-97-8 203-448-7 --	Butane	Annex VI, Table 3: Flam. Gas 1 - H220 Press. Gas - H280 Note(s): C, U	25-35
64-17-5	Ethyl alcohol	Annex VI, Table 3:	25-35

200-578-6 --		Flam. Liq. 2 - H225	
74-98-6 200-827-9 --	Propane	Annex VI, Table 3: Flam. Gas 1 - H220 Press. Gas - H280 Note(s): U	15-25
75-28-5 200-857-2 --	Isobutane	Annex VI, Table 3: Flam. Gas 1 - H220 Press. Gas - H280 Note(s): C, U	5-15
N/A -- --	Non hazardous	--	5-10

Full text of H- and EUH-statements: see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation

Remove person to fresh air and keep comfortable for breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Call a POISON CENTER or doctor/physician.

Skin

Wash with plenty of soap and water. Take off immediately all contaminated clothing and wash it before reuse. Call a POISON CENTER or doctor/physician.

Eyes

Flush eyes with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTER or doctor/physician.

Ingestion

Rinse mouth. Call a POISON CENTER or doctor/physician.

4.2 Most Important Symptoms/Effects

Acute

Causes serious eye irritation. May cause drowsiness or dizziness.

Delayed

May be fatal if swallowed and enters airways. May cause genetic defects. Causes damage to organs through prolonged or repeated exposure: liver. May cause damage to organs through prolonged or repeated exposure: nervous system.

4.3 Indication of Immediate Medical Attention and Special Treatment

Treat symptomatically and supportively.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Carbon dioxide, foam, powder, fire-fighting foam, dry sand.

Unsuitable Extinguishing Media

Do not use high-pressure water streams.

5.2 Special hazards arising from the substance or mixture

Highly flammable liquid and vapor. Risk of explosion if heated under confinement.

Combustion

Irritating and toxic gases or fumes may be released during a fire: carbon monoxide, oxides of nitrogen.

5.3 Advice for firefighters

Eliminate all sources of ignition. Do not spray on an open flame or other ignition sources. If safe to do so, move undamaged containers from the fire area. Keep unnecessary people away, isolate hazard area and deny entry. Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. Let the fire burn. Stay away from the ends of tanks. Prevent entry into sewers, drains, ditches, underground or confined spaces and waterways. Avoid inhalation of material or combustion by-products.

Protective Equipment and Precautions for Firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear personal protective clothing and equipment, see Section 8.

6.2 Environmental precautions

Avoid release to the environment.

6.3 Methods and Materials for Containment and Cleaning Up

Eliminate all ignition sources if safe to do so. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.

6.4 Reference to other sections

Safe handling: see section 7. Personal protection equipment (PPE): see section 8. Disposal: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Pressurized container: Do not pierce or burn, even after use. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only outdoors or in a well-ventilated area. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Take action to prevent static discharges. Use non-sparking tools. Do not spray on an open flame or other ignition sources. Wash thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

Store in a well-ventilated place. Keep container tightly closed.

Keep cool.

Store locked up.

Further information on storage conditions: Keep out of reach of children. Keep away from perchloric acid, hydrogen peroxide water, sodium peroxide, chromic acid, nitric acid, oxidizing materials, etc. Keep away from flame. Use explosion-proof electrical equipment. Grounding of equipment is recommended. Store and handle in accordance with all current regulations and standards: Industrial Safety and Health Act. Packaging materials: Container - High Pressure Gas Safety Act.

Incompatible Materials

Strong acid, strong alkali, oxidizing materials, calcium hypochlorite, silver oxide

7.3 Specific end use(s)

Cleaning and lubrication for dental and surgical handpieces

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Component Exposure Limits

Butane	106-97-8
ACGIH:	1000 ppm STEL (explosion hazard)

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH) as amended
Material Name: PANA SPRAY Plus **SDS ID: NSK-SDS-002(EN_EU)_Rev001**

Austria:	800 ppm TWA [TMW]; 1900 mg/m3 TWA [TMW]
	1600 ppm STEL [KZW] 3 X 60 min ; 3800 mg/m3 STEL [KZW] 3 X 60 min
Belgium:	1000 ppm TWA as Aliphatic hydrocarbons [alkanes C1-4] gas
Bulgaria	1900 mg/m3 TWA
Croatia	600 ppm TWA [GVI]; 1450 mg/m3 TWA [GVI]; 10 ppm TWA [GVI] (containing >=0.1% 1,3-Butadiene); 22 mg/m3 TWA [GVI] (containing >=0.1% 1,3-Butadiene)
	750 ppm STEL [KGVI]; 1810 mg/m3 STEL [KGVI]
Denmark.	500 ppm TWA ; 1200 mg/m3 TWA
Estonia	800 ppm TWA ; 1500 mg/m3 TWA
Finland:	800 ppm TWA ; 1900 mg/m3 TWA
	1000 ppm STEL ; 2400 mg/m3 STEL
France:	800 ppm TWA [VME]; 1900 mg/m3 TWA [VME]
Germany (TRGS):	1000 ppm TWA AGW exposure factor 4 ; 2400 mg/m3 TWA AGW exposure factor 4
Germany (DFG):	1000 ppm TWA MAK ; 2400 mg/m3 TWA MAK
	4000 ppm Peak ; 9600 mg/m3 Peak
Greece:	1000 ppm TWA ; 2350 mg/m3 TWA
Hungary	2350 mg/m3 TWA [AK]
	9400 mg/m3 STEL [CK]
Ireland:	1000 ppm TWA
	3000 ppm STEL (calculated)
Italy:	1000 ppm TWA (all isomers)
Latvia	300 mg/m3 TWA
Poland	1900 mg/m3 TWA [NDS]
Slovenia	1000 ppm TWA (containing >=0.1% Butadiene); 2400 mg/m3 TWA (containing >=0.1% Butadiene)
	4000 ppm STEL (containing >=0.1% Butadiene); 9600 mg/m3 STEL (containing >=0.1% Butadiene)
	Category 1A (concentration >=0.1% Butadiene)
Switzerland:	800 ppm TWA [MAK]; 1900 mg/m3 TWA [MAK]

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH) as amended
Material Name: PANA SPRAY Plus **SDS ID: NSK-SDS-002(EN_EU)_Rev001**

	3200 ppm STEL [KZW]; 7600 mg/m3 STEL [KZW]
United Kingdom:	600 ppm TWA ; 1450 mg/m3 TWA
	750 ppm STEL ; 1810 mg/m3 STEL
Ethyl alcohol	64-17-5
ACGIH:	1000 ppm STEL
Austria:	1000 ppm TWA [TMW]; 1900 mg/m3 TWA [TMW]
	2000 ppm STEL [KZW] 3 X 60 min ; 3800 mg/m3 STEL [KZW] 3 X 60 min
Belgium:	1000 ppm TWA ; 1907 mg/m3 TWA
Bulgaria	1000 mg/m3 TWA
Croatia	1000 ppm TWA [GVI]; 1900 mg/m3 TWA [GVI]
Czech Republic	1000 mg/m3 TWA
	3000 mg/m3 Ceiling
Denmark.	1000 ppm TWA ; 1900 mg/m3 TWA
Estonia	500 ppm TWA ; 1000 mg/m3 TWA
	1000 ppm STEL ; 1900 mg/m3 STEL
Finland:	1000 ppm TWA ; 1900 mg/m3 TWA
	1300 ppm STEL ; 2500 mg/m3 STEL
France:	1000 ppm TWA [VME]; 1900 mg/m3 TWA [VME]
	5000 ppm STEL [VLCT]; 9500 mg/m3 STEL [VLCT]
Germany (TRGS):	500 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed) exposure factor 2 ; 960 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed) exposure factor 2
Germany (DFG):	200 ppm TWA MAK ; 380 mg/m3 TWA MAK
	800 ppm Peak ; 1520 mg/m3 Peak
Greece:	1000 ppm TWA ; 1900 mg/m3 TWA
Hungary	1900 mg/m3 TWA [AK]
	7600 mg/m3 STEL [CK]
Ireland:	1000 ppm STEL

Latvia	1000 mg/m3 TWA
Lithuania	500 ppm TWA [IPRD]; 1000 mg/m3 TWA [IPRD]
	1000 ppm STEL [TPRD]; 1900 mg/m3 STEL [TPRD]
Netherlands:	260 mg/m3 TWA
	1900 mg/m3 STEL
	skin notation
Poland	1900 mg/m3 TWA [NDS]
Portugal:	1000 ppm TWA [VLE-MP]
Romania	1000 ppm TWA ; 1900 mg/m3 TWA
	5000 ppm STEL ; 9500 mg/m3 STEL
Slovak Republic	500 ppm TWA ; 960 mg/m3 TWA
	1920 mg/m3 Ceiling
Slovenia	1000 ppm TWA ; 1900 mg/m3 TWA
	4000 ppm STEL ; 7600 mg/m3 STEL
Spain:	1000 ppm STEL [VLA-EC]; 1910 mg/m3 STEL [VLA-EC]
Sweden:	500 ppm TLV ; 1000 mg/m3 TLV
	1000 ppm Indicative STEL ; 1900 mg/m3 Indicative STEL
Switzerland:	500 ppm TWA [MAK]; 960 mg/m3 TWA [MAK]
	1000 ppm STEL [KZW]; 1920 mg/m3 STEL [KZW]
United Kingdom:	1000 ppm TWA ; 1920 mg/m3 TWA
	3000 ppm STEL (calculated); 5760 mg/m3 STEL (calculated)
Propane	74-98-6
ACGIH:	(See Appendix F: Minimal Oxygen Content, explosion hazard)
Austria:	1000 ppm TWA [TMW]; 1800 mg/m3 TWA [TMW]
	2000 ppm STEL [KZW] 3 X 60 min ; 3600 mg/m3 STEL [KZW] 3 X 60 min
Belgium:	1000 ppm TWA as Aliphatic hydrocarbons [alkanes C1-4] gas
Bulgaria	1800 mg/m3 TWA

Denmark.	1000 ppm TWA ; 1800 mg/m3 TWA
Estonia	1000 ppm TWA ; 1800 mg/m3 TWA
Finland:	800 ppm TWA ; 1500 mg/m3 TWA
	1100 ppm STEL ; 2000 mg/m3 STEL
Germany (TRGS):	1000 ppm TWA AGW exposure factor 4 ; 1800 mg/m3 TWA AGW exposure factor 4
Germany (DFG):	1000 ppm TWA MAK ; 1800 mg/m3 TWA MAK
	4000 ppm Peak ; 7200 mg/m3 Peak
Greece:	1000 ppm TWA ; 1800 mg/m3 TWA
Ireland:	1000 ppm TWA
	3000 ppm STEL (calculated)
	Simple asphyxiant
Italy:	1000 ppm TWA
Latvia	1000 ppm TWA ; 1800 mg/m3 TWA
Poland	1800 mg/m3 TWA [NDS]
Portugal:	1000 ppm TWA [VLE-MP]
Romania	778 ppm TWA ; 1400 mg/m3 TWA
	1000 ppm STEL ; 1800 mg/m3 STEL
Slovenia	1000 ppm TWA ; 1800 mg/m3 TWA
	4000 ppm STEL ; 7200 mg/m3 STEL
Switzerland:	1000 ppm TWA [MAK]; 1800 mg/m3 TWA [MAK]
	4000 ppm STEL [KZW]; 7200 mg/m3 STEL [KZW]
Isobutane	75-28-5
ACGIH:	1000 ppm STEL (explosion hazard)
Austria:	800 ppm TWA [TMW] ; 1900 mg/m3 TWA [TMW]
	1600 ppm STEL [KZW] 3 X 60 min ; 3800 mg/m3 STEL [KZW] 3 X 60 min
Belgium:	1000 ppm TWA as Aliphatic hydrocarbons [alkanes C1-4] gas
Estonia	800 ppm TWA ; 1900 mg/m3 TWA

Finland:	800 ppm TWA ; 1900 mg/m3 TWA
	1000 ppm STEL ; 2400 mg/m3 STEL
Germany (TRGS):	1000 ppm TWA AGW exposure factor 4 ; 2400 mg/m3 TWA AGW exposure factor 4
Germany (DFG):	1000 ppm TWA MAK ; 2400 mg/m3 TWA MAK
	4000 ppm Peak ; 9600 mg/m3 Peak
Italy:	1000 ppm TWA
Slovenia	1000 ppm TWA ; 2400 mg/m3 TWA
	4000 ppm STEL ; 9600 mg/m3 STEL
	Category 1A (concentration $\geq 0.1\%$ Butadiene)
Switzerland:	800 ppm TWA [MAK]; 1900 mg/m3 TWA [MAK]
	3200 ppm STEL [KZW]; 7600 mg/m3 STEL [KZW]

Component Biological Exposure Limits

None of this product's components are on the list.

Derived No Effect Levels (DNELs)

No DNELs available.

Predicted No Effect Concentrations (PNECs)

No PNECs available.

8.2 Exposure Controls

Engineering controls

Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Eye/face protection

Wear splash resistant safety goggles with a faceshield (EN 166).

Skin Protection

Wear appropriate chemical resistant clothing (EN ISO 6529). Wear fire-resistant protective clothing.

Respiratory Protection

If airborne contaminant levels exceed recommended exposure limits, use CEN/EN Standard applicable respiratory protection appropriate for employee exposure levels. Consult with a health and safety professional for specific respirators appropriate for your use.

Glove Recommendations

Wear appropriate chemical resistant gloves (EN 374).

Environmental exposure controls

Avoid release to environment.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	Clear colorless liquid	Clear colorless aerosol
Odor	Alcohol	Odiferous

Odor Threshold	Not available	Not available
pH Solution	N/A	N/A
Boiling Point	78.32 °C at 101.325 kPa (as Ethanol)	-42.1 °C ~ -0.5 °C
Freezing point	Not available	Not available
Flammability (solid, gas)	Highly flammable	Extremely flammable
Flash Point	>13 °C [Closed Cup] (as Ethanol)	-104.4 °C ~ -73.8 °C
Decomposition temperature	Not available	Not available
Vapor Pressure	Not available	0.248 ~ 1.275 MPa (40□)
Specific Gravity (water=1)	0.803 at 20 °C	0.551 at 15 °C
Partition coefficient: n-octanol/water	-0.3 (log Pow) (as Ethanol)	Not available
Kinematic viscosity	Not available	Not available
Density	Not available	Not available
Molecular Weight	Not available	Not available
Physical State	liquid	aerosol under atmospheric pressure
Color	Clear colorless	Clear colorless
pH	N/A	N/A
Melting Point	-114.5 °C (as Ethanol)	-187.7 °C ~ -134.8 °C
Boiling Point Range	Not available	Not available
Evaporation Rate	Not available	Not available
Autoignition Temperature	439 °C (as Ethanol)	405 °C ~ 550 □
Lower Explosive Limit	Not available	1.8 vol %
Upper Explosive Limit	Not available	9.5 vol %
Vapor Density (air=1)	Not available	1.895~2.538 kg/m3 (1 Mpa, 15.6 □)
Water Solubility	easily soluble in water	soluble in water
Viscosity	Not available	Not available
Solubility (Other)	Not available	Not available
Physical Form	Liquid	aerosol under atmospheric pressure

SECTION 10: Stability and reactivity

10.1 Reactivity

Reacts with Incompatible materials. Incompatible materials include oxidizing materials. Explosion risk in case of fire. Reacts with plastic, rubber, coating agent.

10.2 Chemical stability

Hazard of explosion @ 40 °C. Container - pressure at room temperature: approx. 0.43 MPa.

10.3 Possibility of hazardous reactions

Hazardous polymerization will not occur.

10.4 Conditions to avoid

Avoid heat and humidity. Keep away from heat, sparks, open flame or other ignition sources. Avoid contact with incompatible materials.

10.5 Incompatible materials

Strong acid, strong alkali, oxidizing materials, calcium hypochlorite, silver oxide

10.6 Hazardous decomposition products

Irritating and toxic gases or fumes may be released during a fire: carbon monoxide, oxides of nitrogen.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Butane (106-97-8)

Inhalation LC50 Rat 658 g/m³ 4 h

Ethyl alcohol (64-17-5)

Oral LD50 Rat 7060 mg/kg

Inhalation LC50 Rat 124.7 mg/L 4 h

Propane (74-98-6)

Inhalation LC50 Rat >800000 ppm 15 min

Isobutane (75-28-5)

Inhalation LC50 Rat 658 mg/L 4 h

Product Toxicity Data

Acute Toxicity Estimate

Inhalation - Vapor	> 20 mg/L
Oral	> 2000 mg/kg

Irritation/Corrosivity Data

Causes serious eye irritation.

Respiratory Sensitization

No information available for the product.

Dermal Sensitization

No information available for the product.

Germ Cell Mutagenicity

May cause genetic defects.

Tumorigenic Data

No information available for the product.

Component Carcinogenicity

Ethyl alcohol	64-17-5
IARC:	Monograph 100E [2012] (in alcoholic beverages); Monograph 96 [2010] (in alcoholic beverages)

	(Group 1 (carcinogenic to humans))
DFG:	Category 5 (low carcinogenic potency)

Toxicity for reproduction

No information available for the product.

Specific Target Organ Toxicity - Single Exposure

nervous system.

Specific Target Organ Toxicity - Repeated Exposure

liver, nervous system

Aspiration hazard

May be fatal if swallowed and enters airways.

SECTION 12: Ecological information

12.1 Toxicity

Component Analysis - Aquatic Toxicity

Ethyl alcohol	64-17-5
Fish:	LC50 96 h Oncorhynchus mykiss 12 - 16 mL/L [static]; LC50 96 h Pimephales promelas >100 mg/L [static]; LC50 96 h Pimephales promelas 13400 - 15100 mg/L [flow-through]
Invertebrate:	LC50 48 h Daphnia magna 9268 - 14221 mg/L IUCLID ; EC50 48 h Daphnia magna 2 mg/L [Static] EPA

12.2 Persistence and degradability

No information available for the product.

12.3 Bioaccumulative potential

No information available for the product.

12.4 Mobility in soil

No information available for the product.

12.5 Results of PBT and vPvB assessment

No information available for the product.

12.6 Other adverse effects

No additional information available for the product.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Dispose of waste in accordance with Directive 2008/98/EC, covering waste and dangerous waste.

Waste codes/waste designations according to LoW. EWC-code: 15 01 11*.

Do not dispose of with household waste. Do not allow to enter drains.

Do not puncture or burn containers, even when empty. Since emptied containers retain material residue, follow safe handling/label warnings even after container is emptied. Dispose of completely emptied containers as combustible waste or metal waste depending on the material.

Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

		ADR	RID	ICAO	IATA	ADN	IMDG
14.1	UN Number	UN1950	UN1950	UN1950	UN1950	UN1950	UN1950

14.2	UN Proper Shipping Name	AEROSOLS	AEROSOLS	Forbidden	Forbidden	AEROSOLS	AEROSOLS
14.3	Transport Hazard Class(es)	2.1	2.1	--	--	2.1	2
14.4	Packing Group	--	--	--	--	--	--
14.5	Environmental Hazards	--	--	--	--	--	--
14.6	Special Precautions For User	--	--	--	--	--	--
14.7	Transport in Bulk According to Annex II of MARPOL and the IBC Code	--	--	--	--	--	--
14.8	Further information	--	--	Forbidden by Air.	Forbidden by Air.	--	--

International Bulk Chemical Code

This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture REACH Candidate List of Substances of Very High Concern (SVHC) for Authorization (Article 59(1)) - Reg. (EU) No. 1907/2006

No components of this material are listed.

EU - REACH (1907/2006) - Annex XVII Restrictions of Certain Dangerous Substances, Mixtures and Articles REACH List of Substances Subject to Restriction (Annex XVII) - Reg. (EU) No. 1907/2006

This list includes substances subject to Restriction. Under REACH, these substances are subject to restrictions on manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Butane (106-97-8)

Use restricted. See item 28 (containing $\geq 0.1\%$ Butadiene); Use restricted. See item 29 (containing $\geq 0.1\%$ Butadiene)

Isobutane (75-28-5)

Use restricted. See item 28 (containing $\geq 0.1\%$ Butadiene); Use restricted. See item 29 (containing $\geq 0.1\%$ Butadiene)

EU - Substances Depleting the Ozone layer (1005/2009)

No components of this material are listed.

EU - Persistent Organic Pollutants (850/2004)

No components of this material are listed.

EU - Export and Import Restrictions (689/2008) - Chemicals and Articles Subject to Export Ban

No components of this material are listed.

EU - Seveso III Directive (2012/18/EU) - Qualifying Quantities of Dangerous Substances

No components of this material are listed.

EU - Plant Protection Products (1107/2009/EC)

No components of this material are listed.

EU - Biocides (528/2012/EU)

No components of this material are listed.

EU - Water Framework Directive (2000/60/EC)

No components of this material are listed.

EU - Limitation of Emissions of Volatile Organic Compounds Due to the Use of Organic Solvents in Certain Activities and Installations (1999/13/EC)

No components of this material are listed.

EU - Detergent Regulation (648/2004/EC)

No components of this material are listed.

Germany Regulations

Germany Water Classification - Product

hazard class 1 - low hazard to waters

* Self-classification

Germany Water Classification - Component

Butane (106-97-8)

ID Number 561, not considered hazardous to water (1,3-Butadiene <0.1%)

Ethyl alcohol (64-17-5)

ID Number 96, hazard class 1 - low hazard to waters (footnote 10)

Propane (74-98-6)

ID Number 560, not considered hazardous to water

Isobutane (75-28-5)

ID Number 562, not considered hazardous to water (ratio 1,3-butadiene <0.1%)

Denmark Regulations

No components of this material are listed.

Component Analysis - Inventory

Butane (106-97-8)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Ethyl alcohol (64-17-5)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Propane (74-98-6)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Isobutane (75-28-5)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)

							1	2						
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Non hazardous (N/A)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

15.2 Chemical Safety Assessment

No chemical safety assessment has been carried out for the substance/mixture.

SECTION 16: Other information

16.1 Indication of changes

New SDS

Preparation Date

3 July 2018

16.2 Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC - European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; F - Background (for Venezuela Biological Exposure Indices); IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL) , KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of LIsts™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX - Mexico; Ne- Non-specific; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; Nq - Non-quantitative; NSL - Non-Domestic Substance List (Canada); NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL- Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; Sc - Semi-quantitative; STEL - Short-term Exposure Limit; TCCA - Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW - Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN (Draft) - Vietnam (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada)

16.3 Key literature references and sources for data

Available upon request.

16.4 Methods Used for Classification of Mixture According to Regulation (EC) No 1272/2008

Available upon request.

16.5 Relevant H- and EUH-phrases (Number and full text) and Notes

H220 Extremely flammable gas

H225 Highly flammable liquid and vapor

H280 Contains gas under pressure, may explode when heated

NOTE C: Some organic substances may be marketed either in a specific isomeric form or as a mixture of several isomers. In this case the supplier must state on the label whether the substance is a specific isomer or a mixture of isomers.

NOTE U: When put on the market gases have to be classified as 'Gases under pressure', in one of the groups compressed gas, liquefied gas, refrigerated liquefied gas or dissolved gas. The group depends on the physical state in which the gas is packaged and therefore has to be assigned case by case.

16.6 Training advice

Read the Safety Data Sheet before handling product.

16.7 Further Information

Disclaimer:

The information set forth in this Safety Data Sheet does not purport to be all-inclusive and should be used only as a guide. While the information and recommendations set forth herein are believed to be accurate, the company makes no warranty regarding such information and recommendations and disclaims all liability from reliance thereon.