Safety data sheet
according to Regulation (EC) No 1907/2006, Article 31

Printing date 30.04.2026 Version number 17 (replaces version 16) Revision: 30.04.2026

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

· **1.1 Product identifier**
· **Trade name: Heptane isomere mixture**
· **SDS number:** CH7406

· **EC number:**
927-510-4
· **Registration number** 01-2119475515-33
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
For professional users only
· **Life cycle stages**
IS Use at industrial Sites
F Formulation or re-packing
· **Sector of Use**
SU8 Manufacture of bulk, large scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals
· **Process category**
PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4 Chemical production where opportunity for exposure arises
PROC5 Mixing or blending in batch processes
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC10 Roller application or brushing
PROC14 Tabletting, compression, extrusion, pelletisation, granulation
PROC15 Use as laboratory reagent
· **Environmental release category**
ERC1 Manufacture of the substance
ERC2 Formulation into mixture
ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
· **Application of the substance / the mixture** Chemicals products for laboratory

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
CARLO ERBA REAGENTS
Chaussée du Vexin
Parc d'Affaires des Portes - BP616
27106 VAL DE REUIL Cedex
Téléphone: +33 (0)2 32 09 20 00
Télécopie: +33 (0)2 32 09 20 20
· **Further information obtainable from:**
Q.A / Normative
email: MSDS_CER-SDS@cer.dgroup.it
· **1.4 Emergency telephone number:**
Ireland - Tel : 00 353 1 8092568 - 00 353 1 8379964 (24h/24)
EU Tel : 112

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SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**

· **Classification according to Regulation (EC) No 1272/2008**



GHS02 flame

Flam. Liq. 2 *H225 Highly flammable liquid and vapour.*



GHS08 health hazard

STOT RE 2 *H373 May cause damage to the nervous system through prolonged or repeated exposure. Route of exposure: Inhalation.*

Asp. Tox. 1 *H304 May be fatal if swallowed and enters airways.*



GHS09 environment

Aquatic Chronic 2 *H411 Toxic to aquatic life with long lasting effects.*



GHS07

Skin Irrit. 2 *H315 Causes skin irritation.*

STOT SE 3 *H336 May cause drowsiness or dizziness.*

· **2.2 Label elements**

· **Labelling according to Regulation (EC) No 1272/2008**

The substance is classified and labelled according to the CLP regulation.

· **Hazard pictograms**



GHS02 GHS07 GHS08 GHS09

· **Signal word** *Danger*

· **Hazard-determining components of labelling:**

Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics.
n-hexane
Heptane

· **Hazard statements**

H225 Highly flammable liquid and vapour.
H315 Causes skin irritation.
H336 May cause drowsiness or dizziness.
H373 May cause damage to the nervous system through prolonged or repeated exposure. Route of exposure: Inhalation.
H304 May be fatal if swallowed and enters airways.
H411 Toxic to aquatic life with long lasting effects.

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· **Precautionary statements**

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P241	Use explosion-proof [electrical/ventilating/lighting] equipment.
P280	Wear protective gloves / eye protection / face protection.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.

· **2.3 Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable
· **vPvB:** Not applicable
· **Determination of endocrine-disrupting properties** Not applicable

*
SECTION 3: Composition/information on ingredients

· **3.1 Substances**

· **CAS No. Description**
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics.

· **Identification number(s)**

· **EC number:** 927-510-4

· **Dangerous components:**

CAS: 142-82-5 EINECS: 205-563-8 Index number: 601-008-00-2 RTECS: MI 7700000 Reg.nr.: 01-2119457603-38	Heptane Flam. Liq. 2, H225; Asp. Tox. 1, H304; Aquatic Acute 1, H400; Aquatic Chronic 1, H410; Skin Irrit. 2, H315; STOT SE 3, H336	≥10-<20%
CAS: 110-54-3 EINECS: 203-777-6 Index number: 601-037-00-0 RTECS: MN 9275000 Reg.nr.: 01-2119480412-44	n-hexane Flam. Liq. 2, H225; Repr. 2, H361f; STOT RE 1, H372-H373; Asp. Tox. 1, H304; Aquatic Chronic 2, H411; Skin Irrit. 2, H315; STOT SE 3, H336	≥0.25-<2.5%

· **SVHC**

CAS: 110-54-3	n-hexane

SECTION 4: First aid measures

· **4.1 Description of first aid measures**
· **After inhalation:** In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:**
Immediately wash with water and soap and rinse thoroughly. Wash contaminated clothing before reuse.
If skin irritation continues, consult a doctor.
· **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
Seek immediate medical advice.
· **After swallowing:**
Do not induce vomiting; call for medical help immediately.
Call for a doctor immediately.
Rinse out mouth and then drink plenty of water.

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Call a doctor immediately.
· ***4.2 Most important symptoms and effects, both acute and delayed*** *Nausea*
· ***4.3 Indication of any immediate medical attention and special treatment needed***
No further relevant information available.

SECTION 5: Firefighting measures

· ***5.1 Extinguishing media***
· ***Suitable extinguishing agents:*** *CO2 or alcohol resistant foam.*
· ***For safety reasons unsuitable extinguishing agents:*** *Water with full jet.*
· ***5.2 Special hazards arising from the substance or mixture*** *Carbon monoxide and carbon dioxide*
· ***5.3 Advice for firefighters***
· ***Protective equipment:*** *Do not inhale gases in case or fire or combustion.*
· ***Additional information*** *Keep receptacles cool with water spray.*

SECTION 6: Accidental release measures

· ***6.1 Personal precautions, protective equipment and emergency procedures***
Keep away any ignition source.
Wear protective equipment. Keep unprotected persons away.
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
Ensure adequate ventilation
· ***6.2 Environmental precautions:***
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to penetrate the ground/soil.
Prevent seepage into sewage system, workpits and cellars.
In case of seepage into the ground inform responsible authorities.
· ***6.3 Methods and material for containment and cleaning up:***
Collect the liquid with vacuum in a suitable container and absorb the remainder with a porous material (diatomite, acid binders, universal binders, etc).
Ensure adequate ventilation.
Do not flush with water or aqueous cleansing agents
· ***6.4 Reference to other sections***
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

· ***7.1 Precautions for safe handling***
Store in cool, dry place in tightly closed receptacles.
Keep away from heat and direct sunlight.
Ensure good ventilation/exhaustion at the workplace.
Only handle and refill product in closed systems or under local exhaust.
Prevent formation of aerosols.
Wear suitable respiratory protective device when decanting larger quantities without extractor facilities.
Pneumatic conveyance only with nitrogen or other inert gases.

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· ***Information about fire - and explosion protection:***



Keep ignition sources away - Do not smoke.

Protect from heat.
Protect against electrostatic charges.
Use explosion-proof apparatus / fittings and spark-proof tools.

· ***7.2 Conditions for safe storage, including any incompatibilities***
· ***Storage:***
· ***Requirements to be met by storerooms and receptacles:***
Suitable material for receptacles : glass bottles.
Suitable material for receptacles and pipes: steel or stainless steel.
Store in a cool location.
Prevent any seepage into the ground.
Use only receptacles specifically permitted for this substance/product.
· ***Information about storage in one common storage facility:***
Store away from oxidizing agents.
Do not keep in contact with acids.
· ***Further information about storage conditions:***
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.
· ***7.3 Specific end use(s)*** *No further relevant information available.*

*
SECTION 8: Exposure controls/personal protection

· ***8.1 Control parameters***

· ***Ingredients with limit values that require monitoring at the workplace:***	
CAS: 142-82-5 Heptane	
IOELV	*Long-term value: 2085 mg/m³, 500 ppm*
CAS: 110-54-3 n-hexane	
IOELV	*Long-term value: 72 mg/m³, 20 ppm*

· ***DNELs***		
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics.		
Oral	*DNEL (consumer-chronic systemic effects)*	*149 mg/kg (bw/day)*
Dermal	*DNEL (workers-systemic chronic effects)*	*300 mg/kg*
	DNEL (consumer-chronic systemic effects)	*149 (mg/kg bw/day)*
Inhalative	*DNEL (workers-systemic chronic effects)*	*2,085 mg/m3*
	DNEL (consumer-systemic chronic effects)	*447 (mg/m3/24h)*

· ***Additional information:*** *The lists valid during the making were used as basis.*

· ***8.2 Exposure controls***
· ***Appropriate engineering controls*** *No further data; see section 7.*
· ***Individual protection measures, such as personal protective equipment***
· ***General protective and hygienic measures:***
The usual precautionary measures are to be adhered to when handling chemicals.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Store protective clothing separately.

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Do not inhale gases / fumes / aerosols.
Do not inhale dust / smoke / mist.
Avoid contact with the eyes and skin.

· ***Respiratory protection:***
Use suitable respiratory protective device only when aerosol or mist is formed.
Filter A/P2



In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

The selected respiratory protection must comply with standard EN 136/140/143/145/149.

· ***Hand protection***
The selected protective gloves have to satisfy the specifications of REGULATION (EU) 2016/425 and the standard EN 374 derived from it.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation



Protective gloves

Rubber gloves
Avoid direct contact with the chemical/ the product/ the preparation by organisational measures.

· ***Material of gloves***
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

· ***Penetration time of glove material***
The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

· ***For the permanent contact gloves made of the following materials are suitable:***
Fluorocarbon rubber (Viton)
Recommended thickness of the material: ≥ 0 mm
Nitrile rubber, NBR
Recommended thickness of the material: ≥ 0.55 mm
PVA gloves

· ***As protection from splashes gloves made of the following materials are suitable:***
Chloroprene rubber, CR
Nitrile rubber, NBR

· ***Eye/face protection***



Face protection

· ***Body protection:*** *Protective work clothing*

· ***Environmental exposure controls***
The product must not be released into the environment.
In case of unintended release of the product: See section 6 of the Safety Data Sheet.

· ***Risk management measures*** *Keep good industrial hygiene.*

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SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**	
· **Molecular weight**	
· **Physical state**	Liquid
· **Colour:**	Colourless
· **Odour:**	Characteristic
· **Odour threshold:**	Not determined
· **Melting point/freezing point:**	Undetermined
· **Boiling point or initial boiling point and boiling range**	80-110 °C
· **Flammability**	Highly flammable.
· **Lower and upper explosion limit**	
· **Lower:**	1 Vol %
· **Upper:**	8 Vol %
· **Flash point:**	-12 °C
· **Auto-ignition temperature:**	215 °C
· **Decomposition temperature:**	Not determined
· **Viscosity:**	
· **Kinematic viscosity at 20 °C**	0.56 mm²/s
· **Dynamic:**	Not determined
· **Solubility**	
· **water:**	Not miscible or difficult to mix.
· **Partition coefficient n-octanol/water (log value)**	Not determined
· **Vapour pressure at 20 °C:**	<70 hPa
· **Density and/or relative density**	
· **Density at 20 °C:**	0.695 g/cm³
· **Relative density**	Not determined
· **Vapour density**	Not determined

· **9.2 Other information**	
· **Appearance:**	
· **Form:**	Fluid
· **Important information on protection of health and environment, and on safety.**	
· **Ignition temperature:**	Not determined
· **Explosive properties:**	Product is not explosive. However, formation of explosive air/vapour mixtures are possible.
· **Organic solvents:**	<16.0 %
· **Solids content:**	0.0 %
· **Change in condition**	
· **Evaporation rate**	Not determined

· **Information with regard to physical hazard classes**	
· **Explosives**	Void
· **Flammable gases**	Void
· **Aerosols**	Void
· **Oxidising gases**	Void
· **Gases under pressure**	Void
· **Flammable liquids**	Highly flammable liquid and vapour.
· **Flammable solids**	Void
· **Self-reactive substances and mixtures**	Void
· **Pyrophoric liquids**	Void
· **Pyrophoric solids**	Void

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· ***Self-heating substances and mixtures***	*Void*
· ***Substances and mixtures, which emit flammable gases in contact with water***	*Void*
· ***Oxidising liquids***	*Void*
· ***Oxidising solids***	*Void*
· ***Organic peroxides***	*Void*
· ***Corrosive to metals***	*Void*
· ***Desensitised explosives***	*Void*

SECTION 10: Stability and reactivity

· ***10.1 Reactivity*** *See 10.3*
· ***10.2 Chemical stability***
· ***Thermal decomposition / conditions to be avoided:***
No decomposition if used and stored according to specifications.
· ***10.3 Possibility of hazardous reactions*** *Reacts with strong oxidising agents.*
· ***10.4 Conditions to avoid***
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
· ***10.5 Incompatible materials:*** *Strong Oxidant.*
· ***10.6 Hazardous decomposition products:*** *Carbon monoxide, Carbon dioxide.*

SECTION 11: Toxicological information

· ***11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008***
· ***Acute toxicity*** *Based on available data, the classification criteria are not met.*

· ***LD/LC50 values relevant for classification:***

Oral	*LD50*	*5,840 mg/kg (rat) (OECD 401)*
Dermal	*LD50*	*2,920 mg/kg (rat) (OECD 402)*
Inhalative	*LC50/4 h*	*23.3 mg/L (rat) (OECD 403)*

Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics.

Oral	*LD50*	*>5,840 mg/kg (rat)*
Dermal	*LD50*	*>2,920 mg/kg (rat)*
Inhalative	*LC50/4 h*	*>23,300 mg/L (rat)*

· ***Primary irritant effect:***
· ***Skin corrosion/irritation*** *Causes skin irritation.*
· ***Serious eye damage/irritation*** *Irritating effect.*
· ***Respiratory or skin sensitisation*** *Based on available data, the classification criteria are not met.*
· ***Germ cell mutagenicity*** *Based on available data, the classification criteria are not met.*
· ***Carcinogenicity*** *Based on available data, the classification criteria are not met.*
· ***Reproductive toxicity*** *Based on available data, the classification criteria are not met.*
· ***STOT-single exposure*** *May cause drowsiness or dizziness.*
· ***STOT-repeated exposure***
May cause damage to the nervous system through prolonged or repeated exposure. Route of exposure: Inhalation.
· ***Aspiration hazard*** *May be fatal if swallowed and enters airways.*

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· ***11.2 Information on other hazards***

· ***Endocrine disrupting properties***
None of the ingredients is listed.

SECTION 12: Ecological information

· ***12.1 Toxicity***	
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics.	
LL50 (96h)	*13.4 mg/L (fishes)*

· ***Aquatic toxicity:***	
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics.	
ECr50	*3 mg/L (Daphnia)*

· ***12.2 Persistence and degradability*** *No further relevant information available.*
· ***Method***
· ***Ecological information*** *Not available*
· ***12.3 Bioaccumulative potential*** *No further relevant information available.*
· ***12.4 Mobility in soil*** *No further relevant information available.*
· ***12.5 Results of PBT and vPvB assessment***
· ***PBT:*** *Not applicable*
· ***vPvB:*** *Not applicable*
· ***12.6 Endocrine disrupting properties***
The product does not contain substances with endocrine disrupting properties.
· ***12.7 Other adverse effects***
· ***Remark:*** *Toxic for fish*
· ***Additional ecological information:***
· ***General notes:***
Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
Also poisonous for fish and plankton in water bodies.
Toxic for aquatic organisms

*
SECTION 13: Disposal considerations

· ***13.1 Waste treatment methods***
· ***Recommendation***
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
Reutilise if possible or contact a waste processors for recycling or safe disposal.
· ***Waste disposal key:***
The European Union does not establish uniform rules for the disposal of chemical waste, which are special waste. Their treatment and elimination of the domestic legislation of each country. So, in each case, you should contact the relevant authorities, or those companies legally authorized for elimination of waste.
2014/955/UE: Council Decision of 18 December 2014 amending the list of wastes contained in Decision 2000/532/EC.
Directive 2008/98/EC of the european parliament and of the council of 18 November 2008, in ist latest valid version.

· ***European waste catalogue***	
07 00 00	*WASTES FROM ORGANIC CHEMICAL PROCESSES*
07 01 00	*wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals*

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*07 01 04**	*other organic solvents, washing liquids and mother liquors*
HP3	*Flammable*
HP4	*Irritant - skin irritation and eye damage*
HP5	*Specific Target Organ Toxicity (STOT)/Aspiration Toxicity*
HP14	*Ecotoxic*

· ***Uncleaned packaging:***
The containers and packaging materials contaminated with dangerous substances or preparations, have the same treatment of products.
Directive 94/62/EC of the European Parliament and the Council of 20 December 1994 on packaging and packaging waste.
· ***Recommendation:***
Disposal must be made according to official regulations.
Packagings that may not be cleansed are to be disposed of in the same manner as the product.

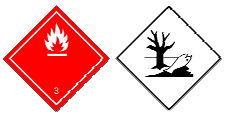
SECTION 14: Transport information

· ***14.1 UN number or ID number***
· ***ADR/RID, IMDG, IATA*** *UN1206*

· ***14.2 UN proper shipping name***
· ***ADR/RID*** *1206 HEPTANES, ENVIRONMENTALLY HAZARDOUS*
· ***IMDG*** *HEPTANES, MARINE POLLUTANT*
· ***IATA*** *Heptanes*

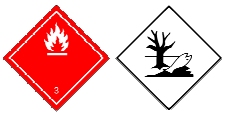
· ***14.3 Transport hazard class(es)***

· ***ADR/RID***



· ***Class*** *3 (F1) Flammable liquids.*
· ***Label*** *3*

· ***IMDG***



· ***Class*** *3 Flammable liquids.*
· ***Label*** *3*

· ***IATA***



· ***Class*** *3 Flammable liquids.*
· ***Label*** *3*

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· **14.4 Packing group**	
· **ADR/RID, IMDG, IATA**	II
· **14.5 Environmental hazards:**	Product contains environmentally hazardous substances: n-heptane, Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics.
· **Marine pollutant:**	Symbol (fish and tree)
· **Special marking (ADR/RID):**	Symbol (fish and tree)
· **14.6 Special precautions for user**	Warning: Flammable liquids.
· **Hazard identification number (Kemler code):**	33
· **EMS Number:**	F-E,S-D
· **Stowage Category**	B
· **14.7 Maritime transport in bulk according to IMO instruments**	Not applicable
· **Transport/Additional information:**	
· **ADR/RID**	
· **Limited quantities (LQ)**	1L
· **Excepted quantities (EQ)**	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· **Transport category**	2
· **Tunnel restriction code**	D/E
· **IMDG**	
· **Limited quantities (LQ)**	1L
· **Excepted quantities (EQ)**	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· **UN "Model Regulation":**	UN 1206 HEPTANES, 3, II, ENVIRONMENTALLY HAZARDOUS

*

SECTION 15: Regulatory information

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

· **SARA Section 355 (extremely hazardous substances)**

None of the ingredients is listed.

· **SARA Section 313 (specific toxic chemical listings)**

CAS: 110-54-3	n-hexane

· **Prop 65 - Chemicals known to cause cancer**

None of the ingredients is listed.

· **Directive 2012/18/EU**
· **Named dangerous substances - ANNEX I** Substance is not listed.
· **Seveso category**
E2 Hazardous to the Aquatic Environment
P5c FLAMMABLE LIQUIDS
· **Qualifying quantity (tonnes) for the application of lower-tier requirements** 200 t
· **Qualifying quantity (tonnes) for the application of upper-tier requirements** 500 t

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· **REGULATION (EU) 2019/1021 on persistent organic pollutants (POP)**
None of the ingredients is listed.

· **LIST OF SUBSTANCES SUBJECT TO AUTHORISATION (ANNEX XIV)**
None of the ingredients is listed.

· **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3

· **DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II**
None of the ingredients is listed.

· **REGULATION (EU) 2024/590 on substances that deplete the ozone layer**
None of the ingredients is listed.

· **National regulations:**

· **Technical instructions (air):**

Class	Share in %
I	<2.5
NK	10-25

· **Waterhazard class:** Water hazard class 2 (Self-assessment): hazardous for water.

· **Other regulations, limitations and prohibitive regulations**
<111.2 g/l
<16.00 %

· **Substances of very high concern (SVHC) according to REACH, Article 57**

CAS: 110-54-3	n-hexane

· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant phrases**
H225 Highly flammable liquid and vapour.
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H336 May cause drowsiness or dizziness.
H361f Suspected of damaging fertility.
H372 Causes damage to organs through prolonged or repeated exposure.
H373 May cause damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
H411 Toxic to aquatic life with long lasting effects.
· **Department issuing SDS:** Q.A./Normative
· **Date of previous version:** 18.04.2021
· **Version number of previous version:** 16
· **Abbreviations and acronyms:**
RCR : Risk Characterisation Ratio
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances

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CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
SVHC: Substances of Very High Concern
vPvB: very Persistent and very Bioaccumulative
ATE: Acute toxicity estimate values
Flam. Liq. 2: Flammable liquids – Category 2
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Repr. 2: Reproductive toxicity – Category 2
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1
STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2
Asp. Tox. 1: Aspiration hazard – Category 1
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1
Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2

· ***Sources***
Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006, REACH, in the latest valid version.
Regulation (EC) N° 1272/2008 of the European Parliament and of the Council of 16 December 2008, CLP, in the latest valid version.
Globally Harmonized System, GHS
ADR/RID, IMDG, IATA
PubChem : an open chemistry database at the National Institutes of Health (NIH)
ECHA : European CHemicals Agency
GESTIS : Information system on hazardous substances of the German Social Accident Insurance

· **** Data compared to the previous version altered.*** .

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Annex: Exposure scenario 1

· ***Short title of the exposure scenario*** *Chemicals products for laboratory*
· ***Sector of Use*** *Industrial use.*
· ***Process category***
PROC10 Roller application or brushing
PROC15 Use as laboratory reagent
· ***Environmental release category***
ERC2 Formulation into mixture
ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
· ***Description of the activities / processes covered in the Exposure Scenario***
See section 1 of the annex to the Safety Data Sheet.
· ***Conditions of use***
According to directions for use.
Customary application according to section 1.
· ***Duration and frequency*** *8hrs (full working shift).*
· ***Physical parameters***
The data on the physical - chemical properties in the Exposure Scenario is based on the properties of the preparation.
· ***Physical state*** *Fluid*
· ***Concentration of the substance in the mixture*** *The substance is main component.*
· ***Used amount per time or activity*** *40 kg per day*
· ***Other operational conditions*** *Observe the general safety regulations when handling chemicals.*
· ***Other operational conditions affecting environmental exposure***
Observe section 6 of the Safety Data Sheet (Accidental release measures).
Use only on hard ground.
· ***Other operational conditions affecting worker exposure***
Avoid contact with the skin.
Take precautionary measures against static discharge.
Keep away from sources of ignition - No smoking.
· ***Risk management measures***
· ***Worker protection***
· ***Organisational protective measures***
Keep good industrial hygiene.
Ensure that activities are executed by specialists or authorised personnel only.
Deploy only trained chemical workers.
For special applications, it is recommended to verify the chemical resistance of the above stated protective gloves with the manufacturer.
Persons, who tend to skin diseases or other hypersensitivity reactions of the skin, should not handle the product.
Provide sufficient washing facilities.
Ensure good ventilation. This can be achieved by using a local exhaustion or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.
Work clothes must not consist of textiles that exhibit dangerous melting behaviour in case of fire.
· ***Technical protective measures***
Provide explosion-proof electrical equipment.
Use product only in enclosed systems.
Ensure that suitable extractors are available on processing machines
Ensure good ventilation/exhaustion at the workplace.
· ***Personal protective measures***
Do not inhale gases / fumes / aerosols.
Avoid contact with the skin.
The selected protective gloves have to satisfy the specifications of REGULATION (EU) 2016/425 and the standard EN 374 derived from it.

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Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Protective gloves
Rubber gloves
Avoid direct contact with the chemical/ the product/ the preparation by organisational measures.
Protective work clothing
Face protection
The usual precautionary measures are to be adhered to when handling chemicals.
Detailed measures on hand protection according to Safety Data Sheet, section 8.
Use suitable respiratory protective device only when aerosol or mist is formed.
Filter A/P2
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
The selected respiratory protection must comply with standard EN 136/140/143/145/149.

· ***Environmental protection measures***
Avoid release to the environment. Obtain special instructions / refer to Safety Data Sheet.
· ***Water***
Do not allow to reach sewage system.
Generally, prior to the introduction of wastewater into wastewater treatment plants a neutralisation is required.
· ***Soil*** *Prevent contamination of soil.*
· ***Notes*** *In case of unintended release of the product: See section 6 of the Safety Data Sheet.*
· ***Disposal measures*** *Ensure that waste is collected and contained.*
· ***Disposal procedures***
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
· ***Waste type*** *Partially emptied and uncleaned packaging*
· ***Exposure estimation***
· ***Worker (oral)***
The calculated value is smaller than the DNEL.
The exposure estimation was carried out in accordance with ECETOC TRA.
· ***Worker (dermal)***
The calculated value is smaller than the DNEL.
The exposure estimation was carried out in accordance with ECETOC TRA.
· ***Worker (inhalation)***
The exposure estimation was carried out in accordance with ECETOC TRA.
The calculated value is smaller than the DNEL.
· ***Guidance for downstream users***
Whether the downstream user acts within the scope of the Exposure Scenario can be verified based on the information in sections 1 to 8.

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Annex: Exposure scenario 2

· ***Short title of the exposure scenario*** *Substance manufacturing*
· ***Sector of Use*** *Industrial use.*
· ***Process category***
PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4 Chemical production where opportunity for exposure arises
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC15 Use as laboratory reagent
· ***Environmental release category***
ERC1 Manufacture of the substance
ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
· ***Description of the activities / processes covered in the Exposure Scenario***
See section 1 of the annex to the Safety Data Sheet.
· ***Conditions of use*** *Customary application according to section 1.*
· ***Duration and frequency*** *8hrs (full working shift).*
· ***Worker*** *8hrs (full working shift).*
· ***Environment***
Frequency of use:
100 d/y (continuous)
· ***Physical parameters***
The data on the physical - chemical properties in the Exposure Scenario is based on the properties of the preparation.
· ***Physical state*** *Fluid*
· ***Concentration of the substance in the mixture*** *The substance is main component.*
· ***Used amount per time or activity*** *45000 kg per day*
· ***Other operational conditions*** *Observe the general safety regulations when handling chemicals.*
· ***Other operational conditions affecting environmental exposure*** *Use only on hard ground.*
· ***Other operational conditions affecting worker exposure***
Avoid contact with the skin.
Take precautionary measures against static discharge.
Keep away from sources of ignition - No smoking.
· ***Risk management measures***
· ***Worker protection***
· ***Organisational protective measures***
Keep good industrial hygiene.
Ensure that activities are executed by specialists or authorised personnel only.
Persons, who tend to skin diseases or other hypersensitivity reactions of the skin, should not handle the product.
Provide sufficient washing facilities.
Work clothes must not consist of textiles that exhibit dangerous melting behaviour in case of fire.
· ***Technical protective measures***
Provide explosion-proof electrical equipment.
Use product only in enclosed systems.
Ensure good ventilation/exhaustion at the workplace.
· ***Personal protective measures***
Avoid contact with the skin.
The selected protective gloves have to satisfy the specifications of REGULATION (EU) 2016/425 and the standard EN 374 derived from it.

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Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Protective gloves
Rubber gloves
Avoid direct contact with the chemical/ the product/ the preparation by organisational measures.
Face protection
The usual precautionary measures are to be adhered to when handling chemicals.
Detailed measures on hand protection according to Safety Data Sheet, section 8.
Use suitable respiratory protective device only when aerosol or mist is formed.
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
The selected respiratory protection must comply with standard EN 136/140/143/145/149.
Protective work clothing

· ***Environmental protection measures***
Avoid release to the environment. Obtain special instructions / refer to Safety Data Sheet.
· ***Water***
Do not allow to reach sewage system.
Generally, prior to the introduction of wastewater into wastewater treatment plants a neutralisation is required.
· ***Soil*** *Prevent contamination of soil.*
· ***Notes*** *In case of unintended release of the product: See section 6 of the Safety Data Sheet.*
· ***Disposal measures*** *Ensure that waste is collected and contained.*
· ***Disposal procedures***
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
· ***Waste type*** *Partially emptied and uncleaned packaging*
· ***Exposure estimation***
· ***Worker (oral)***
The calculated value is smaller than the DNEL.
The exposure estimation was carried out in accordance with ECETOC TRA.
· ***Worker (dermal)***
The calculated value is smaller than the DNEL.
The exposure estimation was carried out in accordance with ECETOC TRA.
· ***Worker (inhalation)***
The exposure estimation was carried out in accordance with ECETOC TRA.
The calculated value is smaller than the DNEL.
· ***Guidance for downstream users***
Whether the downstream user acts within the scope of the Exposure Scenario can be verified based on the information in sections 1 to 8.

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Annex: Exposure scenario 3

· ***Short title of the exposure scenario*** *Formulation or re-packing*
· ***Sector of Use*** *Industrial use.*
· ***Process category***
PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4 Chemical production where opportunity for exposure arises
PROC5 Mixing or blending in batch processes
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC15 Use as laboratory reagent
· ***Environmental release category*** *ERC2 Formulation into mixture*
· ***Description of the activities / processes covered in the Exposure Scenario***
See section 1 of the annex to the Safety Data Sheet.
· ***Conditions of use*** *Customary application according to section 1.*
· ***Duration and frequency*** *8hrs (full working shift).*
· ***Worker*** *8hrs (full working shift).*
· ***Physical parameters***
The data on the physical - chemical properties in the Exposure Scenario is based on the properties of the preparation.
· ***Physical state*** *Fluid*
· ***Concentration of the substance in the mixture*** *The substance is main component.*
· ***Used amount per time or activity*** *3600 kg per day*
· ***Other operational conditions*** *Observe the general safety regulations when handling chemicals.*
· ***Other operational conditions affecting environmental exposure*** *Use only on hard ground.*
· ***Other operational conditions affecting worker exposure***
Avoid contact with the skin.
Take precautionary measures against static discharge.
Keep away from sources of ignition - No smoking.
· ***Risk management measures***
· ***Worker protection***
· ***Organisational protective measures***
Keep good industrial hygiene.
Ensure that activities are executed by specialists or authorised personnel only.
Persons, who tend to skin diseases or other hypersensitivity reactions of the skin, should not handle the product.
Provide sufficient washing facilities.
Work clothes must not consist of textiles that exhibit dangerous melting behaviour in case of fire.
· ***Technical protective measures***
Provide explosion-proof electrical equipment.
Use product only in enclosed systems.
Ensure good ventilation/exhaustion at the workplace.
· ***Personal protective measures***
Avoid contact with the skin.
The selected protective gloves have to satisfy the specifications of REGULATION (EU) 2016/425 and the standard EN 374 derived from it.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Protective gloves

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Rubber gloves
Avoid direct contact with the chemical/ the product/ the preparation by organisational measures.
Tightly sealed goggles
The usual precautionary measures are to be adhered to when handling chemicals.
Detailed measures on hand protection according to Safety Data Sheet, section 8.
Use suitable respiratory protective device only when aerosol or mist is formed.
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
The selected respiratory protection must comply with standard EN 136/140/143/145/149.
Protective work clothing

· ***Environmental protection measures***
· ***Water*** *Do not allow to reach sewage system.*
· ***Soil*** *Prevent contamination of soil.*
· ***Notes*** *In case of unintended release of the product: See section 6 of the Safety Data Sheet.*
· ***Disposal measures*** *Ensure that waste is collected and contained.*
· ***Disposal procedures***
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
· ***Waste type*** *Partially emptied and uncleaned packaging*
· ***Exposure estimation***
· ***Worker (oral)***
The calculated value is smaller than the DNEL.
The exposure estimation was carried out in accordance with ECETOC TRA.
· ***Worker (dermal)***
The calculated value is smaller than the DNEL.
The exposure estimation was carried out in accordance with ECETOC TRA.
· ***Worker (inhalation)***
The exposure estimation was carried out in accordance with ECETOC TRA.
The calculated value is smaller than the DNEL.
· ***Guidance for downstream users***
Whether the downstream user acts within the scope of the Exposure Scenario can be verified based on the information in sections 1 to 8.