HEXENE-1

Version: *4*.06 **Revision Date 2018/09/13**

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Trade name	**Hexene-1**
REACH No.	01-2119946487-24-0000
Substance name (REACH / CLP)	hex-1-ene

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

Use	Industrial use raw material for synthesis processes in the chemical industry
Uses advised against	

1.3 Details of the supplier of the safety data sheet

Company	SASOL Germany GmbH Anckelmannsplatz 1 20537 Hamburg Telephone: +49 40 63684-1000 Telefax: +49 40 63684-3700
Information (Product safety):	Telephone: + 49 (0) 23 65 - 49 47 05 Telefax: + 49 (0) 23 65 - 49 92 40
E-mail address	solvents.germany.msds@de.sasol.com

1.4 Emergency telephone number

Emergency telephone number	+44 (0)1235 239 670 (Europe, Israel, Africa, Americas) +44 (0)1235 239 671 (Middle East, Arabic African countries) +65 3158 1074 (Asia Pacific) +86 10 5100 3039 (China) +27 (0)17 610 4444 (South Africa) +61 (2)8014 4558 (Australia)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Flammable liquids Category 2	Highly flammable liquid and vapour.
Aspiration hazard Category 1	May be fatal if swallowed and enters airways.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms

Signal word Danger

Hazard statements

H225	Highly flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.

Precautionary statements

P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P243	Take precautionary measures against static discharge.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P331	Do NOT induce vomiting.
P403 + P235	Store in a well-ventilated place. Keep cool.

Supplemental Hazard Statements

EUH066	Repeated exposure may cause skin dryness or cracking.

2.3 Other hazards

No information available.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

This product is a substance in the meaning of regulation (EC) 1907/2006.

COMPONENTS TO BE NAMED IN ACCORDANCE WITH REGULATION (EC) 1907/2006 AS WELL AS OTHER HAZARDOUS INGREDIENTS AND CONTAINED SUBSTANCES WITH WORK PLACE LIMIT VALUES

Hex-1-ene

component type: Active ingredient

EC-No.: 209-753-1 **Index-No.:** **CAS-No.:** 592-41-6
REACH No.: 01-2119946487-24-0000

Classification (Regulation (EC) No 1272/2008):	Flam. Liq. 2	H225
	Asp. Tox. 1	H304

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice Take off contaminated clothing and shoes immediately.

If inhaled Bring the person into the fresh air and let rest undisturbed. Monitor breathing, give

	oxygen if necessary. Call a physician immediately.
In case of skin contact	Wash off immediately with plenty of water. If skin irritation persists, call a physician.
In case of eye contact	In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Seek medical advice.
If swallowed	Do NOT induce vomiting. If a person vomits when lying on his back, place him in the recovery position. Call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed

Most important symptoms and effects, both acute and delayed	Risks: irritant effects Risk of serious damage to the lungs (by aspiration).

4.3 Indication of any immediate medical attention and special treatment needed

Indication of any immediate medical attention and special treatment needed	Treatment: For specialist advice physicians should contact the Poisons Information Service.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media	Dry powder, Carbon dioxide (CO2), Water spray, Alcohol-resistant foam

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting	Dangerous gases or fumes may occur in case of fire.

5.3 Advice for firefighters

Special protective equipment for firefighters	In the event of fire, wear self-contained breathing apparatus.
Further information	Cool containers/tanks with water spray.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	Ensure adequate ventilation. Do not breathe vapours or spray mist. Keep away from sources of ignition - No smoking.

6.2 Environmental precautions

Environmental precautions	Do not allow material to contaminate ground water system. Do not flush into surface water or sanitary sewer system.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). The material taken up must be disposed of in accordance with regulations.

6.4 Reference to other sections

For personal protection see section 8.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling	Vapours are heavier than air and may spread along floors. Ensure adequate ventilation. Avoid formation of aerosol. Keep away from sources of ignition - No smoking.
Advice on protection against fire and explosion	Do not allow to enter drains (danger of explosion). Keep away from sources of ignition - No smoking. Use only explosion-proof equipment. Take precautionary measures against static discharges. Vapours may form explosive mixtures with air.
Temperature class	T3
Fire-fighting class	B: Fires involving liquids or liquid containing substances. Also includes substances which become liquid at elevated temperatures.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	Keep tightly closed in a dry, cool and well-ventilated place. Protect against light.
Advice on common storage	Keep away from oxidizing agents and strongly acid or alkaline materials.
Storage class (TRGS 510)	3: Flammable Liquids
container material	suitable materials: Stainless steel

7.3 Specific end use(s)

Specific use(s)	Consult the technical guidelines for the use of this substance/mixture.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

COMPONENTS WITH WORKPLACE CONTROL PARAMETERS

National occupational exposure limits

No data available

EUROPEAN OCCUPATIONAL EXPOSURE LIMITS

No data available

8.2 Exposure controls

PERSONAL PROTECTIVE EQUIPMENT

Respiratory protection	In inadequately ventilated areas, where workplace limits are exceeded, where unpleasant odours exist or where aerosols are in use, or smoke and mist occur, use self-contained breathing apparatus or breathing apparatus with a type AX filter or appropriate combined filter (e.g. where aerosols are in use, or smoke and mist occur, AX-P2 or AX-P3), in compliance with EN 371.
Hand protection	The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other., Please

observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time., Be aware that in daily use the durability of a chemical resistant protective glove can be notably shorter than the break through time measured according to EN 374, due to the numerous outside influences (e.g. temperature).

gloves suitable for permanent contact:
Material: Fluorinated rubber
Break through time: >= 480 min
Layer thickness: 0.4 mm

Material: Nitrile rubber/nitrile latex
Break through time: >= 480 min
Layer thickness: 0.35 mm

unsuitable gloves
Material: Natural rubber/natural latex, Polychloroprene, butyl-rubber

Eye protection	Tightly fitting safety goggles
Skin and body protection	Rubber or plastic apron
Hygiene measures	Take off all contaminated clothing immediately.
Protective measures	Do not breathe vapours or spray mist. Avoid contact with the skin and the eyes.

ENVIRONMENTAL EXPOSURE CONTROLS

General advice	Do not allow material to contaminate ground water system. Do not flush into surface water or sanitary sewer system.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	liquid; 20 °C; 1,013 hPa
Form	liquid
Colour	colourless
Odour	mild, pleasant
Odour Threshold	No valid method available
pH	Not applicable
Melting point/range	-139.9 °C
Boiling point/boiling range	64 °C
Flash point	-25 °C
Evaporation rate	No data available
Flammability (solid, gas)	not applicable (liquid)
Lower explosion limit	1.2 %(V)

Upper explosion limit	7 %(V)
Vapour pressure	202 hPa; 20 °C
	249 hPa; 25 °C
	413 hPa; 38 °C
Relative vapour density	3.0
Density	0.674 g/cm3; 20 °C
Water solubility	0.047 g/l; 20 °C
Partition coefficient: n-octanol/water	Pow: 3.87
Ignition temperature	265 °C
Auto-ignition temperature	285 °C
Viscosity, dynamic	0.252 mPas; 25 °C
Viscosity, kinematic	0.412 mm2/s; 20 °C
	0.356 mm2/s; 40 °C
Explosive properties	No data available
Oxidizing properties	No data available

9.2 Other data

None known.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Note	Keep away from oxidizing agents, strongly alkaline and strongly acid materials in order to avoid exothermic reactions.

10.2 Chemical stability

Note	No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions	Vapours may form explosive mixture with air.

10.4 Conditions to avoid

Conditions to avoid	Heat, flames and sparks.

10.5 Incompatible materials to avoid

Materials to avoid	Oxidizing agents; Acids

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions.	No decomposition if stored and applied as directed.
Thermal decomposition	No decomposition if used as directed. Distils without decomposition at atmospheric pressure.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Acute oral toxicity
Hex-1-ene:
LD50 Rat: > 5,000 mg/kg
(literature value)
Based on available data, the classification criteria are not met.

Acute inhalation toxicity
Hex-1-ene:
LC50 Rat: 110.1 mg/l; 4 h
Test atmosphere: vapour
(literature value)
Based on available data, the classification criteria are not met.

Acute dermal toxicity
Hex-1-ene:
LD50 Rabbit: > 2,000 mg/kg;
(literature value)
Based on available data, the classification criteria are not met.

Skin corrosion/irritation

Skin irritation
Hex-1-ene:
Rabbit: slightly irritating
(literature value)
Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation

Eye irritation
Hex-1-ene:
Rabbit: slightly irritating
(literature value)
Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation

Sensitisation
Hex-1-ene:
Buehler Test Guinea pig: not sensitizing; OECD Test Guideline 406
(literature value)
Based on available data, the classification criteria are not met.

Germ cell mutagenicity

Genotoxicity in vitro
Hex-1-ene:
In vitro tests did not show mutagenic effects
(literature value)

Genotoxicity in vivo
Hex-1-ene:
In vivo tests did not show mutagenic effects
(literature value)

Remarks
Hex-1-ene:
Based on available data, the classification criteria are not met.

Carcinogenicity

Remarks
Hex-1-ene:
The substance has been shown to be not genotoxic, therefore it is not expected to have a carcinogenic potential.

Reproductive toxicity

Reproductive toxicity
Hex-1-ene:
Rat; Oral; OECD Test Guideline 421
Animal testing did not show any effects on fertility.
(literature value)

RemarksReproductive toxicity	Hex-1-ene: Based on available data, the classification criteria are not met.
Teratogenicity	Hex-1-ene: Testing proposal OECD Test Guideline 414

STOT - single exposure

Remarks	Hex-1-ene: The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure

Remarks	Hex-1-ene: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.
Repeated dose toxicity	Hex-1-ene: Rat; Oral; Subacute toxicity NOAEL: 1,010 mg/kg (based on body weight and day) (literature value) Hex-1-ene: Rat; Oral; 42 - 51 d NOAEL: 1,000 mg/kg (based on body weight and day); OECD Test Guideline 422 (literature value) The data are derived from the evaluations or test results achieved with similar products (conclusion by analogy). Test substance: Tetradec-1-ene Hex-1-ene: Rat; inhalation (vapour); Subchronic toxicity; NOAEC: 3000 ppm; OECD Test Guideline 413 (literature value)

Aspiration hazard

Aspiration toxicity	Hex-1-ene: May be fatal if swallowed and enters airways.
Toxicological information	Hex-1-ene: Toxicokinetics The substance is metabolised. Hex-1-ene: Neurotoxicity The substance is not likely to cause neurotoxicity.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	Hex-1-ene: LC50 (96 h) Oncorhynchus mykiss (rainbow trout): > 1 - 10 mg/l ; semi-static test; OECD Test Guideline 203 (literature value)
Toxicity to daphnia and other aquatic invertebrates	Hex-1-ene: EC50 (48 h) Daphnia magna (Water flea): > 1 - 10 mg/l ; static test; OECD Test Guideline 202

(literature value)

Toxicity to aquatic plants	Hex-1-ene: EC50 (96 h) Pseudokirchneriella subcapitata (green algae): > 1 - 10 mg/l ; Growth rate; static test; OECD Test Guideline 201; (literature value)
	Hex-1-ene: NOEC (96 h) Pseudokirchneriella subcapitata (green algae): 1.8 mg/l ; Growth rate; static test; OECD Test Guideline 201; (literature value)
Toxicity to soil dwelling organisms	Hex-1-ene: The study is not necessary. Readily biodegradable. The substance does not pose a chronic hazard to soil organisms.
Toxicity to terrestrial flora	Hex-1-ene: The study is not necessary. Readily biodegradable. The substance does not pose a chronic hazard to soil organisms.
Toxicity for other terrestrial non-mammalian fauna	Hex-1-ene: study scientifically unjustified Studies on birds do not need to be conducted due to large mammalian dataset.

12.2 Persistence and degradability

Biodegradability	Hex-1-ene: Readily biodegradable.; > 60 %; 28 d; aerobic; OECD Test Guideline 301C (literature value)

12.3 Bioaccumulative potential

Bioaccumulation	Hex-1-ene: Bioconcentration factor (BCF): 2.22 - 2.59; calculated Does not bioaccumulate. (literature value)

12.4 Mobility in soil

Mobility	Hex-1-ene: Adsorption/Soil; log Koc: 3.23; QSAR (literature value) Slightly mobile in soils

12.5 Results of PBT and vPvB assessment

Results of PBT assessment	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
Results of PBT assessment	Hex-1-ene: This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

12.6 Other adverse effects

General advice	Hex-1-ene: None known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product	Following pre-treatment and observing the regulations for hazardous wastes, it

	must be taken to a permitted hazardous wastes landfill or hazardous wastes incinerator.
Contaminated packaging	Contaminated packaging should be emptied optimally and after being suitably cleaned returned for re-use.
waste code of the European Union: EWC	A waste code in accordance with the European Waste Catalogue (EWC) may not be assigned to this product since it admits of a classification only when the consumer uses it for some purpose.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

ADR	2370
RID	2370
ADN	2370
IMDG	2370
ICAO/IATA	2370

14.2 Proper shipping name

ADR	1-HEXENE
RID	1-HEXENE
ADN	1-HEXENE
IMDG	1-HEXENE
ICAO/IATA	1-HEXENE

14.3 Transport hazard class

ADR	3
RID	3
ADN	3
IMDG	3
ICAO/IATA	3

14.4 Packing group

ADR	II
RID	II
ADN	II
IMDG	II
ICAO/IATA	II

14.5 Environmental hazards

ADR	Environmentally hazardous	no
RID	Environmentally hazardous	no
ADN	Environmentally hazardous	no
IMDG	Marine pollutant	no
ICAO/IATA	Environmentally hazardous	no

14.6 Special precautions for user

ADR	Hazard Identification Number	33

	Labels		3
	Tunnel restriction code		(D/E)
IMDG	Labels 3		
	EmS Number 1	F-E	
	EmS Number 2	S-D	
ICAO/IATA	Labels		3

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

Ship type	3
Pollution category	Y

SECTION 15: REGULATORY INFORMATION

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

Occupational restrictions

Employment restrictions for children and young workers in accordance with Directive 94/33/EC and the respective national provisions are to be observed.

Employment restrictions for pregnant workers, workers who have recently given birth and nursing mothers in accordance with Directive 92/85/EEC and the respective national provisions are to be observed.

Occupational restrictions

Employment restrictions for children and young workers in accordance with Directive 94/33/EC and the respective national provisions are to be observed.

NATIONAL/OTHER REGULATIONS

Legislation on the control of major-accident hazards involving dangerous substances

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

list entry in the directive:: FLAMMABLE LIQUIDS; P5c

Qualifiying quantity 1: 5,000 t; Qualifiying quantity 2: 50,000 t;

NOTIFICATION STATUS

Switzerland. Consolidated Inventory	CH INV	listed (product or constituents are listed)
US. Toxic Substances Control Act	TSCA	listed (product or constituents are listed)
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)	DSL	listed (product or constituents are listed)
Australia. Industrial Chemical (Notification and Assessment) Act	AICS	listed (product or constituents are listed)
Japan. Kashin-Hou Law List	ENCS (JP)	listed (product or constituents are listed)
Japan. Industrial Safety & Health Law (ISHL) List	ISHL (JP)	listed (product or constituents are listed)
Korea. Existing Chemicals Inventory (KECI)	KECI (KR)	listed (product or constituents are listed)
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	PICCS (PH)	listed (product or constituents are listed)
China. Inventory of Existing Chemical Substances	INV (CN)	listed (product or constituents are listed)

Please note: the names and CAS numbers which are used for this product in the stated inventories may deviate from the information which is listed in chapter 3.

15.2 Chemical safety assessment

Hex-1-ene

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

SECTION 16: OTHER INFORMATION

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

H225	Highly flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.

Safety datasheet sections which have been updated:

1. Identification of the substance/mixture and of the company/undertaking
2. Hazards identification
5. Firefighting measures
6. Accidental release measures

Further information: The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material

designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
This safety datasheet only contains information relating to safety and does not replace any product information or product specification.

Key or legend to abbreviations and acronyms used in the safety data sheet

ADN	Accord européen relatif au transport international des marchandises dangereuses par voie de navigation intérieure
ADR	Accord européen relatif au transport international des marchandises Dangereuses par Route
AICS	Australian Inventory of Chemical Substances
ANSI	American National Standards Institute
ASTM	American Society of Testing and Materials (US)
BCF	Bioconcentration factor
CLP	Regulation on Classification, Labelling and Packaging of Substances and Mixtures
DIN	Deutsches Institut für Normung
DNEL	Derived No-Effect Level
DSL	Domestic Substances List
EC…	Effect concentration ... %
ENCS	Existing Notified Chemical Substances (Japan)
EWC	European Waste Catalogue
IATA	International Air Transport Association
IBC	Intermediate Bulk Container
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
ISHL	Industrial Safety and Health Law (Japan)
ISO	International Organization for Standardization
IUAPC	International Union of Pure and Applied Chemistry
KECI	Korea Existing Chemicals Inventory
LC…	Lethal Concentration, ...%
LD…	Lethal Dose, ...%
MARPOL	International Convention for the Prevention of Pollution From Ships
NDSL	Non-Domestic Substances List
NOAEL	no observable adverse effect level
NOEL/NOEC	No Observed-effect level/concentration
NZIoC	New Zealand Inventory of Chemicals
OECD	Organisation for Economic Co-operation and Development
PBT	persistent, bioaccumulative, toxic
PICCS	Philippine Inventory of Chemicals and Chemical Substances
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport international ferroviaire de marchandises dangereuses
TG	Test Guideline
TRGS	Technische Regeln für Gefahrstoffe
TSCA	Toxic Substances Control Act
vPvB	very persistent, very bioaccumulative
WGK	Wassergefährdungsklasse

Annex

Attachments to the safety data sheet and/or lists of the identified uses for the listed substances can be downloaded using the internet links below.

http://www.sasolgermany.de/fileadmin/doc/productsafety/Annex/000000005136_EN_01.pdf