We create chemistry

Safety data sheet

BASF Safety data sheet according to the United Nations' Globally Harmonized System (UN GHS)
Date / Revised: 15.08.2023 Version: 4.0
Product: **Raffinate I**

(ID no. 30042231/SDS_GEN_00/EN)
Date of print 12.10.2025

1. Identification

Product identifier

Raffinate I

Chemical name: Hydrocarbons, C4, steam-cracker distillates
INDEX-Number: 649-116-00-9
CAS Number: 92045-23-3

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

Relevant identified uses: Chemical, Intermediate, additive for the petroleum industry
Recommended use: Chemical

Details of the supplier of the safety data sheet

Company:
BASF SE
67056 Ludwigshafen
GERMANY
Operating Division Petrochemicals

Telephone: +49 621 60-42151
E-mail address: sds-petrochemicals@basf.com

Emergency telephone number

International emergency number:
Telephone: +49 180 2273-112

2. Hazards Identification

Classification of the substance or mixture

According to UN GHS criteria

Flam. Gas 1A
Press. Gas Liquefied gas
Muta. 1B
Carc. 1A

For the classifications not written out in full in this section the full text can be found in section 16.

Label elements

Globally Harmonized System (GHS)

Pictogram:

Signal Word:
Danger

Hazard Statement:

H280	Contains gas under pressure; may explode if heated.
H220	Extremely flammable gas.
H350	May cause cancer.
H340	May cause genetic defects.

Precautionary Statements (Prevention):

P280	Wear protective gloves, protective clothing and eye protection or face protection.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.

Precautionary Statements (Response):

P308 + P313	IF exposed or concerned: Get medical attention.
P377	Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381	In case of leakage, eliminate all ignition sources.

Precautionary Statements (Storage):

P405	Store locked up.
P410 + P403	Protect from sunlight. Store in a well-ventilated place.

Precautionary Statements (Disposal):

P501	Dispose of contents and container to hazardous or special waste collection point.

Other hazards

According to UN GHS criteria

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

See section 12 - Results of PBT and vPvB assessment.

3. Composition/Information on Ingredients

Substances

Chemical nature

aliphatic hydrocarbons
Hydrocarbons, C4, steam-cracker distillate (Content (W/W): 100 %)
CAS Number: 92045-23-3
EC-Number: 295-405-4
INDEX-Number: 649-116-00-9

Hazardous ingredients (GHS)
According to UN GHS criteria

isopentane

Content (W/W): >= 0,01 % - <= 1 %	Asp. Tox. 1 Flam. Liq. 1
CAS Number: 78-78-4	STOT SE 3 (drowsiness and dizziness) Aquatic Acute 2 Aquatic Chronic 2 H224, H304, H336, H401, H411 EUH066

Buta-1,3-diene

Content (W/W): >= 0,01 % - <= 0,5 %	Flam. Gas 1A Press. Gas Liquef. Gas
CAS Number: 106-99-0	Muta. 1B
EC-Number: 203-450-8	Carc. 1A
INDEX-Number: 601-013-00-X	H280, H220, H350, H340

For the classifications not written out in full in this section the full text can be found in section 16.

Mixtures

Not applicable

4. First-Aid Measures

Description of first aid measures

First aid personnel should pay attention to their own safety. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). Immediately remove contaminated clothing.

If inhaled:
Keep patient calm, remove to fresh air, seek medical attention.

On skin contact:
Immediately wash thoroughly with soap and water, seek medical attention.

On contact with eyes:
Wash affected eyes for at least 15 minutes under running water with eyelids held open.

On ingestion:
Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

Most important symptoms and effects, both acute and delayed
Symptoms: Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11.

Hazards: Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11. (Further) symptoms and / or effects are not known so far

Indication of any immediate medical attention and special treatment needed
Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. Fire-Fighting Measures

Extinguishing media
Suitable extinguishing media:
carbon dioxide, dry powder

Unsuitable extinguishing media for safety reasons:
foam, water spray, water jet

Additional information:
Use extinguishing measures to suit surroundings.

Special hazards arising from the substance or mixture

Highly flammable. Vapours may form explosive mixture with air.

Shut off or stop released substance/product under safe conditions. Cool endangered containers with water-spray.

Burning produces harmful and toxic fumes.

Advice for fire-fighters
Special protective equipment:
Wear a self-contained breathing apparatus. Special protective equipment for firefighters

Further information:
Do not put fire out unless flow feeding it can be safely stopped. The substance/product forms flammable mixtures with air. Evacuate area of all unnecessary personnel. Fight fire from maximum distance.

Extend fire extinguishing measures to the surroundings.

6. Accidental Release Measures

Shut off or stop source of leak. Shut off or stop released substance/product under safe conditions.

Personal precautions, protective equipment and emergency procedures

Avoid contact with the skin, eyes and clothing. Avoid all sources of ignition: heat, sparks, open flame. Wear respiratory protection if ventilation is inadequate.

Keep people away and stay on the upwind side.

Handle in accordance with good industrial hygiene and safety practice.

Environmental precautions

Contain contaminated water/firefighting water.

Methods and material for containment and cleaning up

Ensure adequate ventilation.

Suppress gases/vapours/mists with water spray jet.

7. Handling and Storage

Precautions for safe handling

Refill and handle product only in closed system. Handle in accordance with good industrial hygiene and safety practice. Ensure thorough ventilation of stores and work areas.

Protection against fire and explosion:
Avoid all sources of ignition: heat, sparks, open flame. Vapours may form explosive mixture with air.

Temperature class: T2 (Autoignition temperature >300 °C).

Conditions for safe storage, including any incompatibilities

No applicable information available.
Further information on storage conditions: Keep container tightly closed in a cool, well-ventilated place.
Avoid all sources of ignition: heat, sparks, open flame.

Specific end use(s)

For the relevant identified use(s) listed in Section 1 the advice mentioned in this section 7 is to be observed.

8. Exposure Controls/Personal Protection

Control parameters

Components with occupational exposure limits

75-28-5: Isobutane
78-78-4: isopentane
106-97-8: butane
106-99-0: Buta-1,3-diene
115-11-7: 2-Methylpropene
25167-67-3: Butene

Exposure controls

Personal protective equipment

Respiratory protection:
Wear respiratory protection if ventilation is inadequate. Suitable respiratory protection for lower concentrations or short-term effect: Gas filter for gases/vapours of organic compounds (boiling point <65 °C, f.e. EN 14387 Type AX) Suitable respiratory protection for higher concentrations or long-term effect: Self-contained breathing apparatus.

Hand protection:
When there is a risk of frostbite from escaping gas, use thermally insulated gloves (EN 511).

Chemical resistant protective gloves (EN ISO 374-1)
Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN ISO 374-1):
nitrile rubber (NBR) - 0.4 mm coating thickness
fluoroelastomer (FKM) - 0.7 mm coating thickness

Suitable materials for short-term contact (recommended: At least protective index 2, corresponding > 30 minutes of permeation time according to EN ISO 374-1)
butyl rubber (butyl) - 0.7 mm coating thickness
chloroprene rubber (CR) - 0.5 mm coating thickness

Manufacturer's directions for use should be observed because of great diversity of types.
Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing.

Eye protection:
Safety glasses with side-shields (frame goggles) (e.g. EN 166)

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wearing of closed work clothing is required additionally to the stated personal protection equipment. Avoid contact with the skin, eyes and clothing. Ensure adequate ventilation. Avoid inhalation of vapour. At the end of the shift the skin should be cleaned and skin-care agents applied. Remove contaminated clothing immediately and dispose of safely.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Form:	pressurised liquified gas	
Colour:	colourless	
Odour:	sweetish	
Odour threshold:	not determined	
pH value:	not applicable	
Melting temperature:	< -100 °C Literature data.	
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Boiling range:	-7 - 0 °C The product has not been tested., The statements are based on the properties of the individual components.	
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Flash point:	< -30 °C	(ISO 13736, closed cup)
Evaporation rate:	Value can be approximated from Henry's Law Constant or vapor pressure.	
Flammability:	Extremely flammable.	(other)
Lower explosion limit:	1,5 %(V) The product has not been tested. The statement has been derived from the properties of the individual components.	
Upper explosion limit:	12 %(V) The product has not been tested. The statement has been derived from the properties of the individual components., Literature data.	
Ignition temperature:	374 °C	(DIN EN 14522)
Vapour pressure:	2.522 hPa (20 °C) static	(OECD Guideline 104)
	4.492 hPa (40 °C) static	(OECD Guideline 104)
	5.840 hPa (50 °C) static	(OECD Guideline 104)
Density:	0,58 - 0,62 g/cm3 (15 °C, 1.013 hPa) compressed liquefied gas	(ASTM D 2598)
Relative density:	approx. 0,5	
Relative vapour density (air):	Heavier than air., Information based on the main component/s.	

Solubility in water:	135,6 - 732,3 mg/l (20 °C)	(calculated)
Solubility (qualitative) solvent(s):	organic solvents soluble	
Partitioning coefficient n-octanol/water (log Kow):	2,09 - 2,31 Literature data.	(calculated)
Self ignition:	Based on its structural properties the product is not classified as self-igniting.	Test type: Spontaneous self-ignition at room-temperature.
Thermal decomposition:	No decomposition if stored and handled as prescribed/indicated.	
Viscosity, dynamic:	not applicable	
Viscosity, kinematic:	not applicable	
Explosion hazard:	Based on the chemical structure there is no indication of explosive properties.	(other)
Fire promoting properties:	Based on its structural properties the product is not classified as oxidizing.	(other)

Other information

Self heating ability:	It is not a substance capable of spontaneous heating.	
SADT:	No data available.	
Radioactivity:		not radioactive for transport purposes
:	No data available.	
Surface tension:	Based on chemical structure, surface activity is not to be expected.	
Grain size distribution:	The substance / product is marketed or used in a non solid or granular form.	

10. Stability and Reactivity

Reactivity
No hazardous reactions if stored and handled as prescribed/indicated.

Corrosion to metals:	Corrosive effects to metal are not anticipated.	
Formation of flammable gases:	Remarks:	Forms no flammable gases in the presence of water.

Chemical stability
The product is stable if stored and handled as prescribed/indicated.

Peroxides: The product does not contain peroxides.

Possibility of hazardous reactions
Formation of explosive gas/air mixtures.

Conditions to avoid
Avoid all sources of ignition: heat, sparks, open flame. Avoid direct sunlight.

Incompatible materials

Substances to avoid:
Oxygen, nitrogen oxides, oxidizing agents

Hazardous decomposition products

:
No hazardous decomposition products if stored and handled as prescribed/indicated.

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:
Virtually nontoxic by inhalation. The product has not been tested. The statement has been derived from the properties of the individual components.

LC50 rat (by inhalation): 620 mg/l 4 h (other)
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition. The vapour was tested.

Irritation

Assessment of irritating effects:
Contact with liquid may cause frostbite. The substance is gaseous at room temperature and pressure. Testing for this particular endpoint is technically not feasible and/or this endpoint does not represent a relevant exposure scenario.

Respiratory/Skin sensitization

Assessment of sensitization:
No data available. The substance is gaseous at room temperature and pressure. Testing for this particular endpoint is technically not feasible and/or this endpoint does not represent a relevant exposure scenario. The chemical structure does not suggest a sensitizing effect.

Germ cell mutagenicity

Assessment of mutagenicity:
Capable of causing genetic defects. EU-classification

Carcinogenicity

Assessment of carcinogenicity:
The substance caused cancer in animal studies. EU-classification
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Reproductive toxicity

Assessment of reproduction toxicity:
Animal studies gave no indication of a fertility impairing effect at doses which were not toxic to the parental animals. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition. The results were determined in a Screening test (OECD 421/422).

Developmental toxicity

Assessment of teratogenicity:
Animal studies gave no indication of a developmental toxic effect at doses that were not toxic to the parental animals. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition. The results were determined in a Screening test (OECD 421/422).

Experiences in humans

Experimental/calculated data:

High concentrations have a narcotizing effect.
May cause frostbite

Specific target organ toxicity (single exposure)

Assessment of STOT single:
Based on the available information there is no specific target organ toxicity to be expected after a single exposure.

Remarks: The product has not been tested. The statement has been derived from the properties of the individual components.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:
Repeated inhalative uptake of the substance did not cause substance-related effects. The product has not been tested. The statement has been derived from the properties of the individual components.

Aspiration hazard

not applicable

12. Ecological Information

Toxicity

Assessment of aquatic toxicity:

There is a high probability that the product is not acutely harmful to aquatic organisms. The product has not been tested. The statement has been derived from the properties of the individual components.

Assessment of terrestrial toxicity:
No data available.
Study technically not feasible.

Persistence and degradability

Assessment biodegradation and elimination (H2O):
The product is highly volatile and can be eliminated from water by stripping. The product has not been tested. The statement has been derived from the properties of the individual components.

Elimination information:
The product has not been tested. The statement has been derived from the properties of the individual components.

Assessment of stability in water:
According to structural properties, hydrolysis is not expected/probable.
Information on Stability in Water (Hydrolysis):
No data available.

Bioaccumulative potential

Assessment bioaccumulation potential:
Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.
The product has not been tested. The statement has been derived from the properties of the individual components.

Bioaccumulation potential:
No data available.

Mobility in soil

Assessment transport between environmental compartments:
Volatility: The substance will rapidly evaporate into the atmosphere from the water surface. The product has not been tested. The statement has been derived from the properties of the individual components.
Adsorption in soil: No data available.

Results of PBT and vPvB assessment

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not fulfill the criteria for PBT (Persistent/bioaccumulative/toxic) and vPvB (very persistent/very bioaccumulative).

Other adverse effects

The substance is not listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

Additional information

Other ecotoxicological advice:
Avoid release into the atmosphere.

13. Disposal Considerations

Waste treatment methods

Dispose of in accordance with national, state and local regulations.

Contaminated packaging:
Disposal must be made according to official regulations.

14. Transport Information

Land transport

ADR

UN number or ID number:	UN1965
UN proper shipping name:	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (MIXTURE A)
Transport hazard class(es):	2.1
Packing group:	Not applicable
Environmental hazards:	no
Special precautions for user:	Tunnel code: B/D

RID

UN number or ID number:	UN1965
UN proper shipping name:	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (MIXTURE A)
Transport hazard class(es):	2.1, 13
Packing group:	Not applicable
Environmental hazards:	no
Special precautions for user:	Shunting label: 13

Inland waterway transport
ADN

UN number or ID number:	UN1965
UN proper shipping name:	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (MIXTURE A)
Transport hazard class(es):	2.1
Packing group:	Not applicable
Environmental hazards:	no
Special precautions for	None known

user:

Transport in inland waterway vessel

UN number or ID number:	UN1965
UN proper shipping name:	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S.
Transport hazard class(es):	2.1, CMR
Packing group:	Not applicable
Environmental hazards:	no
Type of inland waterway vessel:	G
Cargo tank design:	1
Cargo tank type:	1

Sea transport

IMDG

UN number or ID number:	UN 1965
UN proper shipping name:	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (BUTENE/BUTANE)
Transport hazard class(es):	2.1
Packing group:	Not applicable
Environmental hazards:	no Marine pollutant: NO
Special precautions for user:	EmS: F-D; S-U

Air transport

IATA/ICAO

UN number or ID number:	UN 1965
UN proper shipping name:	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (BUTENE/BUTANE)
Transport hazard class(es):	2.1
Packing group:	Not applicable
Environmental hazards:	No Mark as dangerous for the environment is needed
Special precautions for user:	None known

Maritime transport in bulk according to IMO instruments

Maritime transport in bulk is not intended.

15. Regulatory Information

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

Not applicable

16. Other Information

Full text of classifications, hazard symbols and hazard statements, if mentioned in section 2 or 3:

Flam. Gas	Flammable gases
Press. Gas	Gases under pressure
Muta.	Germ cell mutagenicity
Carc.	Carcinogenicity
Asp. Tox.	Aspiration hazard
Flam. Liq.	Flammable liquids
STOT SE	Specific target organ toxicity — single exposure
Aquatic Acute	Hazardous to the aquatic environment - acute
Aquatic Chronic	Hazardous to the aquatic environment - chronic
H224	Extremely flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H336	May cause drowsiness or dizziness.
H401	Toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.
H280	Contains gas under pressure; may explode if heated.
H220	Extremely flammable gas.
H350	May cause cancer.
H340	May cause genetic defects.
EUH066	Repeated exposure may cause skin dryness or cracking.

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

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