

Ferox (FeroxTM)

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

1.1. Product identifier

Trade name

Ferox (FeroxTM)

UFI code

Q600-D0DA-0007-5QA6 (EU only!)

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

Relevant identified uses

Use in hydrocarbon fuels to improve combustion efficiency

Not suitable for use in

All other user applications are strongly discouraged.

1.3. Details of the supplier of the safety data sheet

Supplier

Rennsli GmbH

Address

Waidach 124/1

5421 Adnet

Austria

Web site

www.ferox.world

1.4. Emergency telephone number

Poison center/Additional emergency number

0344 892 0111 - National Poisons Information Service (Belfast Centre)

Other

HS-Code 3811.19.0000 ANTI-KNOCK AGENT

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Classification

Skin irritation, hazard category 2

Eye irritation, hazard category 2

Specific Target Organ Toxicity — Single exposure, hazard category 3 - respiratory tract irritation

Hazardous to the aquatic environment — Acute hazard category 1

Hazardous to the aquatic environment — Chronic hazard category 1

Hazard statements

H315, H319, H335, H400, H410

Ferox (FeroxTM)

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

Hazard pictograms



Signal word

Warning

Hazard statements

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P273 Avoid release to the environment.

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

P302 + P352 IF ON SKIN: Wash with plenty of water/.

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

2.3. Other hazards

This product does not contain any PBT or vPvB substances. This substance does not have endocrine disrupting properties with respect to non-target organisms.

Other

The ferrocene contained is encapsulated in the biphenyl and is therefore not biologically available when used properly. It is therefore not taken into account in the classification.

Ferox (Ferox™)

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Chemical name	CAS No. EC No. REACH No. Index No.	Concentration	Classification	H-phrase M factor acute M factor chronic	Note
biphenyl; diphenyl	92-52-4 202-163-5 - 601-042-00-8	65 - 75%	Skin Irrit. 2, Eye Irrit. 2, STOT SE 3 - resp. tract irrit., Aquatic Acute 1, Aquatic Chronic 1	H315, H319, H335, H400, H410 - -	-
Ferrocene	102-54-5 203-039-3 01-2119978280-34 -	25 - 35%	Flam. Sol. 1, Acute Tox. 4 - oral, Acute Tox. 4 - inhalation, Repr. 1B, STOT RE 2, Aquatic Chronic 1	H228, H302, H332, H360, H373, H410 - M-chro=10	-

Substance additional information

For the complete text of H- / EUH-statements mentioned in this section, see section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

First aider: Pay attention to self-protection! IF exposed or concerned: Get medical advice/attention. Remove affected person from the danger area and lay down. Take off immediately all contaminated clothing.

Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing. In the event of discomfort, visit a doctor and bring the safety data sheet.

Skin contact

After contact with skin, wash immediately with plenty of water and soap. Take off immediately all contaminated clothing and wash it before reuse. In case of skin reactions, consult a physician.

Eye contact

In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If symptoms persist, call a physician.

Ingestion

Rinse mouth immediately and drink 1 glass of water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person or a person with cramps. Seek medical advice immediately (poison centre).

Ferox (Ferox™)

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

No data available

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Dry extinguishing powder , Carbon dioxide (CO₂) , Foam , sand , Earth .

Unsuitable extinguishing media

Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

In case of fire may be liberated: carbon black , Carbon monoxide , Carbon dioxide (CO₂) , Hydrocarbons, gaseous , Hydrocarbons, aromatic , Hydrocarbons, aliphatic , Metal oxides.

5.3. Advice for firefighters

Special protective equipment for fire-fighters

Wear a self-contained breathing apparatus and chemical protective clothing. Full protection suit

Measures in case of fire

Co-ordinate fire-fighting measures to the fire surroundings. Wear self-contained breathing apparatus (SCBA) with full face shield operating in positive pressure mode. Wear appropriate protective clothing/apparel that covers the entire body.

Other

Suppress gases/vapours/mists with water spray jet. Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Wear protective gloves/protective clothing/eye protection/face protection. Take off contaminated clothing and wash it before reuse. Ensure good ventilation. Evacuate uninvolved personnel from the area.

6.2. Environmental precautions

Do not allow uncontrolled discharge of product into the environment. Do not allow to enter into surface water or drains. If large quantities of the material are released uncontrolled into the environment, inform appropriate authorities and initiate appropriate environmental protection measures.

Ferox (Ferox™)

6.3. Methods and material for containment and cleaning up

Contain spill. Dispose of via a licensed waste disposal contractor.
Waste from residues: Delivery to an approved waste disposal company.

6.4. Reference to other sections

For information on fire fighting measures see section 5
For information on safe handling see section 7.
For information on personal protection see section 8.
For information on disposal see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Preventive handling precautions

Provide adequate ventilation. Remove all sources of ignition. Do not breathe gas/fumes/vapour/spray.
Avoid contact with skin, eyes and clothes. Use personal protection equipment. Information about fire and explosion protection: Usual measures for fire prevention.

General hygiene

When using do not eat, drink, smoke, sniff. Wash hands before breaks and after work.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels : Keep container tightly closed and in a well-ventilated place. Store in a cool dry place.
Recommended storage temperature 10-20 °C
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Protect from direct sunlight.

Keep away from food, drink and animal feeding stuffs. Never store in containers that are used for food or drink or could be mistaken for such.

7.3. Specific end use(s)

Use in hydrocarbon fuels to improve combustion efficiency

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limits

The ferrocene contained is encapsulated in the biphenyl and is therefore biologically unavailable when used properly.

8.2. Exposure controls

Appropriate engineering controls

See section 7. No additional measures necessary.

Ferox (Ferox™)

Eye / face protection

Goggles giving complete protection to eyes. Goggles/face shield are recommended.

Hand protection

Wear suitable gloves. When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Recommended material:

NBR (Nitrile rubber) Breakthrough time: 480 min , Glove thickness : $\geq 0,4$ mm

Butyl caoutchouc (butyl rubber) Breakthrough time: 480 min , Glove thickness : $\geq 0,4$ mm

Use gloves only once. Do not wear gloves near rotary machines and tools. Take recovery periods for skin regeneration.

Other skin protection

Use of protective clothing Body protection products for the workplace should be selected depending on the concentration and quantity of hazardous substances.

Respiratory protection

In case of inadequate ventilation wear respiratory protection.

Filtering device (full mask or mouthpiece) with filter: A-P3 Respiratory protection according to EN 141.

Observe the wear time limits as specified by the manufacturer.

Environmental exposure controls

Do not allow to enter into surface water or drains.

Other

For information on limiting and monitoring environmental exposure, see sections 6 and 7.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state

Solid

Colour

brown

Odour

No data available

Melting point / freezing point

65 °C

Boiling point or initial boiling point and boiling range

No data available

Ferox (Ferox™)

Flammability

Not combustible.

Lower and upper explosion limit

Not combustible.

Flash point

No data available

Auto-ignition temperature

No data available

Decomposition temperature

> 300 °C

pH

slightly alkaline

Kinematic viscosity

No data available

Solubility

Soluble in hydrocarbons.

Water solubility

Insoluble in water.

Partition coefficient n-octanol/water

No data available

Vapour pressure

No data available

Density and/or relative density

1.2 g/cm³

Relative vapour density

No data available

Particle characteristics

No data available

9.2. Other information

No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

No hazardous reaction when handled and stored according to provisions.

Ferox (Ferox™)

10.2. Chemical stability

The product is stable under storage at normal ambient temperatures.

10.3. Possibility of hazardous reactions

Strong oxidising substances, strong acids and strong bases.

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 oxidising substances, strong acids and strong bases.

10.6. Hazardous decomposition products

No known hazardous reactions.

Decomposition products in case of fire: see section 5.

SECTION 11: Toxicological information

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

The ferrocene contained is encapsulated in the biphenyl and is therefore biologically unavailable when used properly. It is therefore not taken into account in the evaluation of the toxicological data.

Acute toxicity

Based on available data, the classification criteria are not met.

Product / Sub- stance name CAS / EC no.	Dose descriptor	Value / Dose	Exposure route	Duration of exposure	Test animals
biphenyl; diphenyl 92-52-4 / 202-163-5	LD50	>2000 mg/kg	Oral	-	Rat
biphenyl; diphenyl 92-52-4 / 202-163-5	LD50	> 2000 mg/kg	Dermal	-	Rabbit
Ferrocene 102-54-5 / 203-039-3	LD50	1320 mg/kg	Oral	-	Rat
Ferrocene 102-54-5 / 203-039-3	LD50	> 3000 mg/kg	Dermal	24 h	-

Skin corrosion/irritation

Causes skin irritation.

Serious eye damage/irritation

Causes eye irritation.

Respiratory or skin sensitisation

Based on available data, the classification criteria are not met.

Ferox (Ferox™)

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 respiratory irritation.

STOT-repeated exposure

Based on available data, the classification criteria are not met.

Aspiration hazard

Based on available data, the classification criteria are not met.

11.2. Information on other hazards**Endocrine disrupting properties**

This substance does not have endocrine disrupting properties with respect to non-target organisms.

SECTION 12: Ecological information

12.1. Toxicity**Toxicity**

Very toxic to aquatic life.

Acute fish toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
biphenyl; diphenyl 92-52-4 / 202-163-5	LC50	3 mg/L	96 hours	Pimephales promelas (fathead minnow)
Ferrocene 102-54-5 / 203-039-3	LC50	12,3 mg/L	96 hours	Fish

Acute algae toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species	Method / Guideline
biphenyl; diphenyl 92-52-4 / 202-163-5	EC50	1,772 mg/L	96 hours	-	ECOSAR
Ferrocene	EC50	1,03 mg/L	72 hours	Desmodesmus sub-	-

Ferox (Ferox™)

Product / Sub- stance name CAS / EC no.	Measurement type	Value / Result	Duration of expos- ure	Species	Method / Guideline
102-54-5 / 203-039-3				spicatus	

Acute crustacean toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
biphenyl; diphenyl 92-52-4 / 202-163-5	LC50	0,36 mg/L	48 hours	Daphnia magna (Big water flea)
Ferrocene 102-54-5 / 203-039-3	EC50	1,17 mg/L	48 hours	Daphnia magna (Big water flea)

Chronical toxicity

Very toxic to aquatic life with long lasting effects.

12.2. Persistence and degradability

No data available

12.3. Bioaccumulative potential

No data available

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

Not Classified as PBT/vPvB by current EU criteria.

12.6. Endocrine disrupting properties

This substance does not have endocrine disrupting properties with respect to non-target organisms.

12.7. Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal considerations

Product must not be disposed of with normal waste. Special disposal in accordance with official regulations is required. Do not empty into drains.

Ferox (FeroxTM)

Packaging

Contaminated packaging should be emptied optimally. Non-contaminated packages may be recycled. Packaging that cannot be cleaned must be disposed of like the unused product.

Other

European Waste Catalogue The waste code number is to be determined by the waste producer in consultation with the regional waste disposal company. It can also be discussed with the responsible authorities.

SECTION 14: Transport information

14.1. UN number

3077

14.2. UN proper shipping name

ADR / RID / ADN proper shipping name

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (BIPHENYL, DIPHENYL)

IMDG proper shipping name

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (BIPHENYL, DIPHENYL)

IATA proper shipping name

Environmentally hazardous substance, solid, n.o.s. (Biphenyl, Diphenyl)

14.3. Transport hazard class(es)

Label

ADR/RID/ADN



9

Environmental hazard



IMDG



9

IATA



9

Environmental hazard



Ferox (Ferox™)

ADR / RID Class

9

ADR / RID Classification code

M7

ADR / RID hazard identification number

90

IMDG Class

9

IATA Class

9

ADN Class

9

ADN Class Code

M7

14.4. Packing group

ADR / RID / ADN: III

IMDG: III

IATA: III

14.5. Environmental hazards

Yes

14.6. Special precautions for user

Tunnel restriction code: -

Transport category: 3

IMDG EmS

F-A, S-F

14.7. Maritime transport in bulk according to IMO instruments

IBC Instruction: IBC08

SECTION 15: Regulatory information

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

EU regulations

EU Regulation (EC) No. 1907/2006 (REACH)

CLP - Regulation (EC) No 1272/2008

ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road.

Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

National regulations

Ferox (Ferox™)

EH40/2005 Workplace exposure limits as amended
Control of Substances Hazardous to Health Regulations (COSHH)
The GB Classification Labelling and Packaging Regulation (GB CLP) - Retained CLP Regulation (EU) No. 1272/2008 as amended for Great Britain
UK Statutory Instrument 2021 No. 904 The REACH etc. (Amendment) Regulations 2021

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

Changes to previous revision

First edition: Version 1.0

Abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE - Acute Toxicity Estimate
C&L - Classification and Labelling
CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
CMR - Carcinogen, Mutagen, or Reproductive Toxicant
CSR - Chemical Safety Report
DMEL - Derived Minimum Effect Level
DNEL - Derived No Effect Level
EC50 - Half Maximal Effective Concentration
ECHA - European Chemicals Agency
GHS - Globally Harmonized System
IATA - International Air Transport Association
IMDG - International Maritime Dangerous Goods
Kow - octanol-water partition coefficient
LC50 - Lethal Concentration to 50 % of a test population
LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose)
LoW - List of Wastes
OEL - Occupational Exposure Limit
PBT - Persistent, Bioaccumulative and Toxic substance
PEC - Predicted Environmental Concentration
PNEC - Predicted No Effect Concentration(s)
REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID - Regulations concerning the International Carriage of Dangerous Goods by Rail
SCBA - Self-Contained Breathing Apparatus
STOT - Specific Target Organ Toxicity
SVHC - Substances of Very High Concern
UFI - Unique Formula Identifier
vPvB - Very Persistent and Very Bioaccumulative

Ferox (Ferox™)

Phrase meaning

Skin Irrit. 2 - Skin irritation, hazard category 2

Eye Irrit. 2 - Eye irritation, hazard category 2

STOT SE 3 - resp. tract irrit. - Specific Target Organ Toxicity — Single exposure, hazard category 3 - respiratory tract irritation

Aquatic Acute 1 - Hazardous to the aquatic environment — Acute hazard category 1

Aquatic Chronic 1 - Hazardous to the aquatic environment — Chronic hazard category 1

Flam. Sol. 1 - Flammable solids, hazard category 1

Acute Tox. 4 - oral - Acute toxicity, oral, hazard category 4

Acute Tox. 4 - inhalation - Acute toxicity, inhalation, hazard category 4

Repr. 1B - Reproductive toxicity, hazard category 1B

STOT RE 2 - Specific Target Organ Toxicity — Repeated exposure, hazard category 2

H228 Flammable solid.

H302 Harmful if swallowed.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H332 Harmful if inhaled.

H335 May cause respiratory irritation.

H360 May damage fertility or the unborn child.

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.

Other

Additional 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 contained herein is based on the present state of our knowledge and does therefore not guarantee certain properties.