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

1.1 Product identifier

perma FLEX 125 / perma FLEX 60

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

1.2.1 Relevant uses

Lubrication system

1.2.2 Uses advised against

None known.

1.3 Details of the supplier of the safety data sheet

Company

perma-tec GmbH & Co. KG
Hammelburger Straße 21
97717 Euerdorf / GERMANY
Phone (049) 09704-609-0
Fax (049) 09704-609-50
Homepage www.perma-tec.com
E-mail info@perma-tec.com

Address enquiries to

Technical information info@perma-tec.com

Safety Data Sheet sdb@chemiebuero.de

1.4 Emergency telephone number

Company +49 (0) 9704-609-0 (Mo-Th 8:00-16:30, Fr 8:00-12:00)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Ox. Liq. 2: H272 May intensify fire; oxidiser.
Acute Tox. 3: H301 Toxic if swallowed.
Skin Irrit. 2: H315 Causes skin irritation.
Eye Irrit. 2: H319 Causes serious eye irritation.
STOT SE 3: H335 May cause respiratory irritation.
STOT RE 2: H373 May cause damage to organs through prolonged or repeated exposure.
Carc. 1A: H350i May cause cancer by inhalation.
Aquatic Chronic 2: H411 Toxic to aquatic life with long lasting effects.
Repr. 1B: H360FD May damage fertility. May damage the unborn child.

2.2 Label elements

This product is an article and therefore it does not require labelling according to EC directives [REACH/CLP].

2.3 Other hazards

Physico-chemical hazards The structural design of the cells prevents release of the hazardous media contained therein when the unit is used for its intended purpose.
The device contains an inaccessible stock of hazardous substances in a closed cartridge in order to produce the gases needed for operation (nitrogen/hydrogen). Do not therefore open the device or cartridge by force. Do not touch any substances that escape in the event of damage to the cartridge, and place the damaged cartridge in a closed container. While doing so, wear protective gloves and avoid contact with skin. Contact the manufacturer immediately. Further information is available on request.

Human health dangers The contained dangerous materials are not freely available with foreseeable use.

Environmental hazards The contained dangerous materials are not freely available with foreseeable use.

Other hazards No particular hazards known.

SECTION 3: Composition / Information on ingredients

Product-type:

The product is an article.

Range [%]	Substance
< 40	Manganese dioxide
	CAS: 1313-13-9, EINECS/ELINCS: 215-202-6, EU-INDEX: 025-001-003
	GHS/CLP: Acute Tox. 4: H302 H332
10 - <20	magnesium perchlorate
	CAS: 10034-81-8, EINECS/ELINCS: 233-108-3
	GHS/CLP: Ox. Sol. 2: H272 - Eye Irrit. 2: H319 - Skin Irrit. 2: H315 - STOT SE 3: H335
10 - <15	Sodium azide
	CAS: 26628-22-8, EINECS/ELINCS: 247-852-1, EU-INDEX: 011-004-00-7
	GHS/CLP: Acute Tox. 2: H300 - Aquatic Acute 1: H400 - Aquatic Chronic 1: H410
< 10	Propylene carbonate
	CAS: 108-32-7, EINECS/ELINCS: 203-572-1, EU-INDEX: 607-194-00-1, Reg-No.: 01-2119537232-48-XXXX
	GHS/CLP: Eye Irrit. 2: H319
< 6	1,2-Dimethoxyethane
	CAS: 110-71-4, EINECS/ELINCS: 203-794-9, EU-INDEX: 603-031-00-3
	GHS/CLP: Flam. Liq. 2: H225 - Acute Tox. 4: H332 - Repr. 1B: H360FD
< 3	lithium
	CAS: 7439-93-2, EINECS/ELINCS: 231-102-5, EU-INDEX: 003-001-00-4
	GHS/CLP: Skin Corr. 1B: H314 - Water-react. 1: H260
0,1 - < 0,25	nickel sulphate hexahydrate
	CAS: 10101-97-0, EINECS/ELINCS: 232-104-9, EU-INDEX: 028-009-00-5
	GHS/CLP: Acute Tox. 4: H302 H332 - Skin Irrit. 2: H315 - Skin Sens. 1: H317 - Resp. Sens. 1: H334 - Muta. 2: H341 - Carc. 1A: H350i - Repr. 1B: H360D - STOT RE 1: H372 - Aquatic Acute 1: H400 - Aquatic Chronic 1: H410, M = 1

Comment on component parts

The concentrations of the ingredients are valid for batteries. They are not for the complete system.
The structural design of the cells prevents release of the hazardous media contained therein when the unit is used for its intended purpose.
SVHC (Candidate List of Substances of Very High Concern for authorisation) ≥ 0.1%
CAS 110-71-4 - 1,2-Dimethoxyethane
The concentrations of the ingredients are valid for gas generation cell. They are not for the complete system.
For full text of H-statements: see SECTION 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information

Measures are only valid for damaged lubrication systems.
Adhere to personal protective measures when giving first aid.

Inhalation

Consult a doctor immediately.
Remove the victim into fresh air and keep him calm.

Skin contact

In case of contact with skin wash off immediately with soap and water.
Consult a doctor if skin irritation persists.

Eye contact

In case of contact with eyes rinse thoroughly with plenty of water and seek medical advice.

Ingestion

Consult a doctor immediately.
Induce the patient to vomit of his own accord only if fully conscious.
Rinse out mouth and give plenty of water to drink.

4.2 Most important symptoms and effects, both acute and delayed

No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.
Forward this sheet to the doctor.

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

Carbon dioxide.
Water spray jet.
Dry powder.
Foam.

Extinguishing media that must not be used

none

5.2 Special hazards arising from the substance or mixture

Risk of formation of toxic pyrolysis products.
Nitrogen oxides (NOx).
Hydrogen chloride (HCl).

5.3 Advice for firefighters

Use self-contained breathing apparatus.
Wear full protective suit.

Cool containers at risk with water spray jet.
Fire residues and contaminated firefighting water must be disposed of in accordance within the local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Keep people away and stay on the upwind side.
Use personal protective equipment.
Use breathing apparatus if exposed to vapours/dust/aerosol.
Lock off contaminated area.

6.2 Environmental precautions

Do not discharge leakages into the drains/surface waters/groundwater.

6.3 Methods and material for containment and cleaning up

Take up mechanically.
Dispose of absorbed material in accordance within the regulations.
Take up residues with absorbent material (e.g. sand, sawdust, general purpose binder, diatomaceous earth).

6.4 Reference to other sections

See SECTION 8+13

SECTION 7: Handling and storage

7.1 Precautions for safe handling

No special measures necessary if used correctly.

Wash hands before breaks and after work.

7.2 Conditions for safe storage, including any incompatibilities

No special measures necessary.

Do not store with combustible materials.

Protect from heat/overheating.
Keep container tightly closed.

7.3 Specific end use(s)

See product use, SECTION 1.2

SECTION 8: Exposure controls / personal protection

8.1 Control parameters

Ingredients with occupational exposure limits to be monitored (GB)

Substance
Sodium azide
CAS: 26628-22-8, EINECS/ELINCS: 247-852-1, EU-INDEX: 011-004-00-7
Long-term exposure: 0,1 mg/m³, Sk
Short-term exposure (15-minute): 0,3 mg/m³
Nickel sulphate
CAS: 7786-81-4, EINECS/ELINCS: 232-104-9, EU-INDEX: 028-009-00-5, Reg-No.: 01-2119439361-44-XXXX
Long-term exposure: 0,1 mg/m³, as Ni, Sk, Sen

Ingredients with occupational exposure limits to be monitored (EU)

Substance / EC LIMIT VALUES
Sodium azide
CAS: 26628-22-8, EINECS/ELINCS: 247-852-1, EU-INDEX: 011-004-00-7
Eight hours: 0,1 mg/m³, H
Short-term (15-minute): 0,3 mg/m³

8.2 Exposure controls

Additional advice on system design	Ensure adequate ventilation on workstation.
Eye protection	Measures are only valid for damaged lubrication systems. If there is a risk of splashing: Safety glasses. (EN 166:2001)
Hand protection	Not required under normal conditions. Measures are only valid for damaged lubrication systems. The details concerned are recommendations. Please contact the glove supplier for further information. > 0,4 mm: Butyl rubber, >480 min (EN 374-1/-2/-3).
Skin protection	Measures are only valid for damaged lubrication systems. Protective clothing.
Other	Personal protective equipment should be selected specifically for the working place, depending on concentration and quantity handled. The resistance of this equipment to chemicals should be ascertained with the respective supplier. Avoid contact with eyes. The contained dangerous materials are not freely available with foreseeable use.
Respiratory protection	If ventilation is insufficient, wear respiratory protection.
Thermal hazards	No information available.
Delimitation and monitoring of the environmental exposition	Comply with applicable environmental regulations limiting discharge to air, water and soil.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form	capsule
Odour threshold	not applicable
pH-value	8,3 - 8,8
pH-value [1%]	No information available.
Boiling point [°C]	No information available.
Flash point [°C]	not applicable
Flammability (solid, gas) [°C]	No information available.
Lower explosion limit	not applicable
Upper explosion limit	not applicable
Oxidising properties	no
Vapour pressure/gas pressure [kPa]	No information available.
Bulk density [kg/m³]	not applicable
Solubility in water	miscible (Liquid)
Partition coefficient [n-octanol/water]	No information available.
Viscosity	not applicable
Relative vapour density determined in air	No information available.
Evaporation speed	No information available.
Melting point [°C]	No information available.
Autoignition temperature [°C]	No information available.
Decomposition temperature [°C]	No information available.

9.2 Other information

No information available.

SECTION 10: Stability and reactivity

10.1 Reactivity

See SECTION 10.3.

10.2 Chemical stability

Stable under normal ambient conditions (ambient temperature).

10.3 Possibility of hazardous reactions

Reactions with acids and strong oxidizing agents.

10.4 Conditions to avoid

Strong heating.

10.5 Incompatible materials

No information available.

10.6 Hazardous decomposition products

No hazardous decomposition products known.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product
ATE-mix, oral, ~ 210 mg/kg bw.

Substance
Sodium azide, CAS: 26628-22-8
LD50, dermal, Rabbit: 20 mg/kg bw (RTECS).
LD50, oral, Rat: 27 mg/kg bw (RTECS).
Propylene carbonate, CAS: 108-32-7
LD50, oral, Rat: 29000 mg/kg.
LD50, dermal, Rabbit: > 20000 mg/kg.
nickel sulphate hexahydrate, CAS: 10101-97-0
LD50, oral, Rat: 361 mg/kg (OECD 425).
LD50, oral, Rat: 264 mg/kg (Lit.).
LC50, inhalativ (mist), Rat: 2,48 mg/l (OECD 403).
Manganese dioxide, CAS: 1313-13-9
ATE, inhalativ (dust), 1,5 mg/l/4h.
ATE, oral, 500 mg/kg.

Serious eye damage/irritation
Toxicological data of complete product are not available.
Irritant
Calculation method

Skin corrosion/irritation
Toxicological data of complete product are not available.
Irritant
Calculation method

Respiratory or skin sensitisation
Toxicological data of complete product are not available.
May cause an allergic skin reaction.
Calculation method

Specific target organ toxicity — single exposure
Toxicological data of complete product are not available.
May cause respiratory irritation.
Calculation method

Specific target organ toxicity — repeated exposure
Toxicological data of complete product are not available.
May cause damage to organs through prolonged or repeated exposure.
Calculation method

Mutagenicity
Toxicological data of complete product are not available.
No classification.
Calculation method

Reproduction toxicity
Toxicological data of complete product are not available.
No classification.
Calculation method

Carcinogenicity
Toxicological data of complete product are not available.
Does contain a relevant substance that meets the classification criteria.
Calculation method

Aspiration hazard
Based on the available information, the classification criteria are not fulfilled.

General remarks
The contained ingredients can be harmful to humans, but are hermetically enclosed in article and can not be released.

Toxicological data of complete product are not available.

SECTION 12: Ecological information

12.1 Toxicity

Substance
Sodium azide, CAS: 26628-22-8
LC50, (96h), Lepomis macrochirus: 0,7 mg/l (ECOTOX).
EC50, (48h), Daphnia pulex: 4,2 mg/l (ECOTOX).
Propylene carbonate, CAS: 108-32-7
LC50, (96h), Leuciscus idus: ~ 5300 mg/l.
EC50, (48h), Daphnia magna: 500 mg/l.
LC0, (96h), Cyprinus carpio: 1000 mg/l.
NOEC, (72h), Desmodesmus subspicatus: 900 mg/l.
EC10, Pseudomonas putida: > 10000 mg/l (17 h).
nickel sulphate hexahydrate, CAS: 10101-97-0
LC50, (96h), Oncorhynchus mykiss: 1,28 mg/l (ECOTOX Database).
EC50, (48h), Daphnia magna: 1 mg/l (OECD 202).
IC50, (72h), Pseudokirchneriella subcapitata: 0,75 mg/l (OECD 201).

12.2 Persistence and degradability

Behaviour in environment compartments	not determined
Behaviour in sewage plant	not applicable
Biological degradability	not applicable

12.3 Bioaccumulative potential

No information available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

No information available.

12.6 Other adverse effects

Ecological data of complete product are not available.
The contained ingredients can be harmful for the environment, but they are hermetically enclosed in article and can not be released.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Waste material must be disposed of in accordance with the Directive on waste 2008/98/EC as well as other national and local regulations. It is not possible to determine a waste code for this product in accordance with the European Waste Catalogue (EWC) since it is only possible to classify it according to how it is used by the customer. The waste code is to be determined within the EU in liaison with the waste-disposal operator.

Product

Dispose of as hazardous waste.
For recycling, consult manufacturer.

Waste no. (recommended) 150110*

Contaminated packaging

Uncontaminated packaging may be taken for recycling.
Packaging that cannot be cleaned should be disposed of as for product.

Waste no. (recommended) 150110*

SECTION 14: Transport information

14.1 UN number

Transport by land according to ADR/RID	3091
Inland navigation (ADN)	3091
Marine transport in accordance with IMDG	3091
Air transport in accordance with IATA	3091

14.2 UN proper shipping name

Transport by land according to ADR/RID	Lithium Metall Batteries contained in equipment (Not subject of ADR in accordance to special provisions 188)
Inland navigation (ADN)	Lithium Metall Batteries contained in equipment (Not subject of ADR in accordance to special provisions 188)
Marine transport in accordance with IMDG	Lithium Metall Batteries contained in equipment (Not subject of IMDG in accordance to special provisions 188)
Air transport in accordance with IATA	Lithium Metall Batteries contained in equipment (PI 970 Part II)

14.3 Transport hazard class(es)

Transport by land according to ADR/RID	9
Inland navigation (ADN)	9
Marine transport in accordance with IMDG	9
Air transport in accordance with IATA	9

14.4 Packing group

Transport by land according to ADR/RID

Inland navigation (ADN)

Marine transport in accordance with IMDG

Air transport in accordance with IATA

14.5 Environmental hazards

Transport by land according to ADR/RID

Inland navigation (ADN)

Marine transport in accordance with IMDG

Air transport in accordance with IATA

14.6 Special precautions for user

Relevant information under SECTION 6 to 8.

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

No information available.

SECTION 15: Regulatory information

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

EEC-REGULATIONS	1991/689 (2001/118); 2010/75; 2004/42; 648/2004; 1907/2006 (REACH); 1272/2008; 75/324/EEC (2008/47/EC); (EU) 2015/830; (EU) 2016/131; (EU) 517/2014
TRANSPORT-REGULATIONS	DOT-Classification, ADR (2017); IMDG-Code (2017, 38. Amdt.); IATA-DGR (2018).
NATIONAL REGULATIONS (GB):	EH40/2005 Workplace exposure limits (Second edition, published December 2011).
- Observe employment restrictions for people	Observe employment restrictions for young people. Observe employment restrictions for women of child-bearing age, for mothers-to-be and nursing mothers and for young people.
- VOC (2010/75/CE)	not applicable

15.2 Chemical safety assessment

Chemical safety assessments for substances in this mixture were not carried out.

SECTION 16: Other information

16.1 Hazard statements (SECTION 03)

H372 Causes damage to organs through prolonged or repeated exposure.
H360D May damage the unborn child.
H350i May cause cancer by inhalation.
H341 Suspected of causing genetic defects.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.
H260 In contact with water releases flammable gases which may ignite spontaneously.
H314 Causes severe skin burns and eye damage.
H360FD May damage fertility. May damage the unborn child.
H332 Harmful if inhaled.
H225 Highly flammable liquid and vapour.
H302+H332 Harmful if swallowed or if inhaled.
H335 May cause respiratory irritation.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H272 May intensify fire; oxidiser.
H410 Very toxic to aquatic life with long lasting effects.
H400 Very toxic to aquatic life.
H300 Fatal if swallowed.

16.2 Abbreviations and acronyms:

ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route
RID = Règlement concernant le transport international ferroviaire de marchandises dangereuses
ADN = Accord européen relatif au transport international des marchandises dangereuses par voie de navigation intérieure
ATE = acute toxicity estimate
CAS = Chemical Abstracts Service
CLP = Classification, Labelling and Packaging
DMEL = Derived Minimum Effect Level
DNEL = Derived No Effect Level
EC50 = Median effective concentration
ECB = European Chemicals Bureau
EEC = European Economic Community
EINECS = European Inventory of Existing Commercial Chemical Substances
ELINCS = European List of Notified Chemical Substances
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC-Code = International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
IC50 = Inhibition concentration, 50%
IMDG = International Maritime Code for Dangerous Goods
IUCLID = International Uniform ChemicaL Information Database
LC50 = Lethal concentration, 50%
LD50 = Median lethal dose
LC0 = lethal concentration, 0%
LOAEL = lowest-observed-adverse-effect level
MARPOL = International Convention for the Prevention of Marine Pollution from Ships
NOAEL = No Observed Adverse Effect Level
NOEC = No Observed Effect Concentration
PBT = Persistent, Bioaccumulative and Toxic substance
PNEC = Predicted No-Effect Concentration
REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals
STP = Sewage Treatment Plant
TLV®/TWA = Threshold limit value – time-weighted average
TLV®STEL = Threshold limit value – short-time exposure limit
VOC = Volatile Organic Compounds
vPvB = very Persistent and very Bioaccumulative

16.3 Other information

Customs Tariff	not determined
Classification procedure	Ox. Liq. 2: H272 May intensify fire; oxidiser. (Calculation method) Acute Tox. 3: H301 Toxic if swallowed. (Calculation method) Skin Irrit. 2: H315 Causes skin irritation. (Calculation method) Eye Irrit. 2: H319 Causes serious eye irritation. (Calculation method) STOT SE 3: H335 May cause respiratory irritation. (Calculation method) STOT RE 2: H373 May cause damage to organs through prolonged or repeated exposure. (Calculation method) Carc. 1A: H350i May cause cancer by inhalation. (Calculation method) Aquatic Chronic 2: H411 Toxic to aquatic life with long lasting effects. (Calculation method) Repr. 1B: H360FD May damage fertility. May damage the unborn child. (Calculation method)
Modified position	none