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

1.1 Product identifier

perma FLEX PLUS / perma FLEX H2

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 +49 (0)9704-609-0
Fax +49 (0)9704-609-50
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 (No dispatch of safety data sheets)
Safety data sheets are available from the supplier.

1.4 Emergency telephone number

Company +49 (0) 9704-609-99 (Mo-Th 8:00-16:30, Fr 8:00-12:00)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture [REGULATION (GB) CLP]

Indication: The substances are encapsulated in the device.
Skin Corr. 1B: H314 Causes severe skin burns and eye damage.
Eye Dam. 1: H318 Causes serious eye damage.

2.2 Label elements

This product is an article and therefore it does not require labelling according to regulations REACH/CLP.
Requirements in accordance to directive for batteries must be observed.

2.3 Other hazards

Physico-chemical hazards The structural design prevents release of the hazardous media contained therein when the unit is used for its intended purpose.

Environmental hazards The contained dangerous materials are not freely available with foreseeable use.
Contains no ingredients with endocrine-disrupting properties.

Other hazards none

SECTION 3: Composition / Information on ingredients

3.1 Substances

not applicable

3.2 Mixtures

The product is an article.

Range [%]	Substance
18 - 44	Zinc
	CAS: 7440-66-6, EINECS/ELINCS: 231-175-3, EU-INDEX: 030-002-00-7
	GHS/CLP: Aquatic Chronic 1: H410 - Aquatic Acute 1: H400, M-Factor (acute): 1, M-Factor (chronic): 1
13 - 40	Manganese dioxide
	CAS: 1313-13-9, EINECS/ELINCS: 215-202-6, EU-INDEX: 025-001-003
	GHS/CLP: Acute Tox. 4: H302 H332
2 - <5	Copper
	CAS: 7440-50-8, EINECS/ELINCS: 231-159-6, EU-INDEX: 029-026-00-0
1 - 3	Potassium hydroxide
	CAS: 1310-58-3, EINECS/ELINCS: 215-181-3, EU-INDEX: 019-002-00-8
	GHS/CLP: Acute Tox. 4: H302 - Skin Corr. 1A: H314
	SCL [%]: >=0,5 - <2: Eye Irrit. 2: H319, >= 5: Skin Corr. 1A: H314, >=2 - <5: Skin Corr. 1A: H314, >=0,5 - <2: Skin Irrit. 2: H315

Comment on component parts

For full text of H-statements: see SECTION 16.
The structural design prevents release of the hazardous media contained therein when the unit is used for its intended purpose.
Potassium hydroxide solution will be set free only by a deliberate destruction of the button cells.
One or several components are named in PRTR Register (Pollutant Release and Transfer Register). See SECTION 3.
The concentrations of the ingredients are valid for gas generation cell. They are not for the complete system.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information

Measures are only valid for damaged lubrication systems.

Inhalation

Ensure supply of fresh air.
In the event of symptoms seek medical treatment.

Skin contact

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

Eye contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
Shield unaffected eye.

Ingestion

not applicable

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 your doctor.

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

Foam, dry powder, water spray jet, carbon dioxide.

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.
Bursting batteries can be forcibly projected from a fire.

5.3 Advice for firefighters

Do not inhale explosion and/or combustion gases.
Use self-contained breathing apparatus.

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

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

6.2 Environmental precautions

No special measures necessary.

6.3 Methods and material for containment and cleaning up

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

6.4 Reference to other sections

See SECTION 8+13

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Keep away from all sources of ignition - Refrain from smoking.

Wash hands before breaks and after work.

7.2 Conditions for safe storage, including any incompatibilities

No special measures necessary.

Do not store together with oxidizing agents.

Protect from heat/overheating.
Store in a dry place.

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 (UK)

Substance
Manganese dioxide
CAS: 1313-13-9, EINECS/ELINCS: 215-202-6, EU-INDEX: 025-001-003
Long-term exposure: 0,2 mg/m³, inhalable fraction, 0,05 respirable fraction (as Mn)
Potassium hydroxide
CAS: 1310-58-3, EINECS/ELINCS: 215-181-3, EU-INDEX: 019-002-00-8
Short-term exposure (15-minute): 2 mg/m³

Ingredients with occupational exposure limits to be monitored EU (2004/37/EG)

Substance / EC LIMIT VALUES
Manganese dioxide
CAS: 1313-13-9, EINECS/ELINCS: 215-202-6, EU-INDEX: 025-001-003
Eight hours: 0,2(1) 0,05(2) mg/m³, (1) Inhalable fraction. (2) Respirable fraction. (as Mn)

8.2 Exposure controls

Additional advice on system design	Ensure adequate ventilation on workstation.
Eye protection	Safety glasses. (EN 166:2001)
Hand protection	The details concerned are recommendations. Please contact the glove supplier for further information. > 0,7 mm: Butyl rubber, >120 min (EN 374-1/-2/-3).
Skin protection	Alkali-resistant protective clothing (EN 340)
Other	Measures are only valid for damaged lubrication systems. 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.
Respiratory protection	Breathing apparatus in the event of aerosol or mist formation. Respiratory protection mask in the event of high concentrations.
Thermal hazards	No information available.
Delimitation and monitoring of the environmental exposition	not determined

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	solid
Form	capsule
Color	not determined
Odor	not determined
Odour threshold	not applicable
pH-value	not applicable
pH-value [1%]	not determined
Boiling point or initial boiling point and boiling range [°C]	not determined
Flash point [°C]	not applicable
Flammability	not determined
Lower explosion limit	not applicable
Upper explosion limit	not applicable
Oxidising properties	no
Vapour pressure/gas pressure [kPa]	not determined
Density [g/cm³]	not determined
Relative density	not determined
Bulk density [kg/m³]	not applicable
Solubility in water	soluble (Liquid)
Solubility other solvents	No information available.
Partition coefficient n-octanol/water (log value)	not determined
Kinematic viscosity	not applicable
Relative vapour density	not determined
Melting point [°C]	not determined
Auto-ignition temperature [°C]	not determined
Decomposition temperature [°C]	not determined
Particle characteristics	No information available.

9.2 Other information

none

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.
Temperature: > 60°C

10.5 Incompatible materials

No information available.

10.6 Hazardous decomposition products

Hydrogen.

SECTION 11: Toxicological information

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

Acute oral toxicity not determined

Substance
Copper, CAS: 7440-50-8
LD50, oral, mouse, 0,7 mg/kg (IUCLID)
Zinc, CAS: 7440-66-6
LD50, oral, Rat, > 2000 mg/kg, OECD 401
Potassium hydroxide, CAS: 1310-58-3
LD50, oral, Rat, 333 mg/kg, OECD 425
Manganese dioxide, CAS: 1313-13-9
ATE, oral, 500 mg/kg (category 4)

Acute dermal toxicity not determined

Substance
Manganese dioxide, CAS: 1313-13-9
LD50, dermal, > 2000 mg/kg

Acute inhalational toxicity not determined

Substance
Zinc, CAS: 7440-66-6
LC50, inhalativ (dust), Rat, > 5410 mg/m³, OECD 403, 4h
Manganese dioxide, CAS: 1313-13-9
ATE, inhalativ (dust), 1,5 mg/l/4h (category 4)

Serious eye damage/irritation The contained ingredients can be harmful to humans, but are hermetically enclosed in article and can not be released.

Substance
Potassium hydroxide, CAS: 1310-58-3
OECD 405, Causes serious eye damage.
Manganese dioxide, CAS: 1313-13-9
no adverse effect observed

Skin corrosion/irritation The contained ingredients can be harmful to humans, but are hermetically enclosed in article and can not be released.

Substance
Potassium hydroxide, CAS: 1310-58-3
corrosive
Manganese dioxide, CAS: 1313-13-9
no adverse effect observed

Respiratory or skin sensitisation Based on the available information, the classification criteria are not fulfilled.

Substance
Potassium hydroxide, CAS: 1310-58-3
Guinea pig, non-sensitizing
Manganese dioxide, CAS: 1313-13-9
no adverse effect observed

Specific target organ toxicity — single exposure Based on the available information, the classification criteria are not fulfilled.

Specific target organ toxicity — repeated exposure Based on the available information, the classification criteria are not fulfilled.

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

Substance

Potassium hydroxide, CAS: 1310-58-3
Salmonella typhimurium, Ames test, negativ
in vitro, OECD 476, negativ

Reproduction toxicity Based on the available information, the classification criteria are not fulfilled.

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

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

General remarks

Information are only valid for damaged lubrication systems.
The toxicity data listed pertaining to the ingredients are intended for those working in the medicinal professions, experts for occupational health and safety and toxicologists.

11.2 Information on other hazards

11.2.1 Endocrine disrupting properties Does not contain a relevant substance that meets the classification criteria.

11.2.2 Other information none

SECTION 12: Ecological information

12.1 Toxicity

Substance
Copper, CAS: 7440-50-8
LC50, (48h), Gambusia affinis, 0,18 mg/L (IUCLID)
Zinc, CAS: 7440-66-6
LC50, (48h), Fish, < 1 mg/l
Potassium hydroxide, CAS: 1310-58-3
LC50, (24h), Gambusia affinis, 80 mg/l
LC50, (24h), Poecilia reticulate, 165 mg/l
EC50, (48h), Ceriodaphnia spec., 40,4 mg/l

12.2 Persistence and degradability

Behaviour in environment compartments not determined

Behaviour in sewage plant not applicable

Biological degradability not applicable

Substance
Zinc, CAS: 7440-66-6
The methods for determining the boilogical degradability are not applicable to inorganic substances.
Potassium hydroxide, CAS: 1310-58-3
The methods for determining the boilogical degradability are not applicable to inorganic substances.

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 Endocrine disrupting properties

Does not contain a relevant substance that meets the classification criteria.

12.7 Other adverse effects

Information are only valid for damaged lubrication systems.
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

For recycling, consult manufacturer.
Waste disposal in accordance to 91/157/EEC ; 2006/66/EC

Waste no. (recommended) 150110* packaging containing residues of or contaminated by hazardous substances
200134

Contaminated packaging

Uncontaminated packaging may be taken for recycling.

Waste no. (recommended) 150110* packaging containing residues of or contaminated by hazardous substances

SECTION 14: Transport information

14.1 UN number or ID number

Transport by land according to ADR/RID not applicable

Inland navigation (ADN) not applicable

Marine transport in accordance with IMDG not applicable

Air transport in accordance with IATA not applicable

14.2 UN proper shipping name

Transport by land according to ADR/RID NO DANGEROUS GOODS

Inland navigation (ADN) NO DANGEROUS GOODS

Marine transport in accordance with IMDG NOT CLASSIFIED AS "DANGEROUS GOODS"

Air transport in accordance with IATA "NO RESTRICTED" SPECIAL PROVISION A123

14.3 Transport hazard class(es)

Transport by land according to ADR/RID not applicable

Inland navigation (ADN) not applicable

Marine transport in accordance with IMDG not applicable

Air transport in accordance with IATA not applicable

14.4 Packing group

Transport by land according to ADR/RID	not applicable
Inland navigation (ADN)	not applicable
Marine transport in accordance with IMDG	not applicable
Air transport in accordance with IATA	not applicable

14.5 Environmental hazards

Transport by land according to ADR/RID	no
Inland navigation (ADN)	no
Marine transport in accordance with IMDG	no
Air transport in accordance with IATA	no

14.6 Special precautions for user

Relevant information under SECTION 6 to 8.

14.7 Maritime transport in bulk according to IMO instruments

No information available.

SECTION 15: Regulatory information

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

EEC-REGULATIONS	2008/98/EG (2000/532/EC); 2010/75/EU; 2004/42/EG; (EG) 648/2004; (EC) 1907/2006 (REACH); (EU) 1272/2008; 75/324/EWG ((EC) 2016/2037); (EU) 2020/878; (EU) 2016/131; (EU) 2024/573; (EU) 2019/1148; (EU) 2019/1021, (EU) 2023/707
- Comment on component parts	Substances of Very High Concern - SVHC: substances are not contained or are below 0.1%.
- Annex XIV (REACH)	According to Annex XIV of Regulation (EC) 1907/2006 (REACH) the product does not contain any substances ≥ 0.1% that are subject to authorisation.
- Annex XVII (REACH)	According to Annex XVII of Regulation (EC) 1907/2006 (REACH) the product contains ≥ 0.1% of substances with the following restrictions. 27, 75 According to Annex XVII of Regulation (EC) 1907/2006 (REACH) the product is not subject to any restrictions.
TRANSPORT-REGULATIONS	ADR (2025); IMDG-Code (2025, 42. Amdt.); IATA-DGR (2025)
NATIONAL REGULATIONS (UK):	EH40/2005 Workplace exposure limits (Second edition, published December 2011); UK REACH; GB CLP.
- Observe employment restrictions for people	not applicable
- VOC (2010/75/CE)	not applicable

15.2 Chemical safety assessment

A chemical safety assessment is not yet available for this substance.

SECTION 16: Other information

16.1 Hazard statements (SECTION 3)

H302+H332 Harmful if swallowed or if inhaled.
H314 Causes severe skin burns and eye damage.
H302 Harmful if swallowed.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

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
EL50 = Median effective loading
ELINCS = European List of Notified Chemical Substances
EmS = Emergency Schedules
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
IVIS = In vitro irritation score
LC50 = Lethal concentration, 50%
LD50 = Median lethal dose
LC0 = lethal concentration, 0%
LOAEL = lowest-observed-adverse-effect level
LL50 = Median lethal loading
LQ = Limited Quantities
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 Indication: The substances are encapsulated in the device. (Calculation method)
Skin Corr. 1B: H314 Causes severe skin burns and eye damage. (Calculation method)
Eye Dam. 1: H318 Causes serious eye damage. (Calculation method)

Modified position 1.3, 3.2, 8.1, 9.1, 11.1, 11.2, 15.1, 16.2, 16.3

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