SAFETY DATA SHEET

according to Regulation (EC) 1907/2006 (REACH), as amended by 2020/878/EU

DIFFU - THERM® Magnetic-Particle-Suspension MPS - F2 (Aerosol)

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

1.1. Product identifier

Trade name: Magnet-Particle-Suspension fluorescence (oil based)

Article number: MPS - F2

UFI M943-M0ST-W007-9YYU

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

Application of the substance / the preparation

As Magnetic-Particle-Suspension at the Magnetic particle inspection
by acc. to EN ISO 9934-1 for finding surface cracks.

1.3. Details of the supplier of the safety data sheet

Manufacturer/Supplier

Helmut Klumpf
Technische Chemie GmbH & Co. KG
Industriestr. 15
D - 45699 Herten Phone.: +49(0)2366 1003 - 0 E-mail: info@diffu-therm.de

1.4. Emergency telephone number: a.m. or next Emergency phone:

2. Hazards identification

2.1. Classification of the substance or mixture

REGULATION (EC) No 1272/2008			
Hazard class	Category	Hazard class and category	Hazard statement
Aerosol	Category 1	--	H222, H229

The full text of the hazard statements listed in this section can be found in section 16.

2.1. **Labelling according to Regulation (EC) No 1272/2008**

The substance is classified and labeled according to the CLP regulation.

Hazard pictograms GHS02

Signal word Danger

Hazard statements

H222 Extremely flammable aerosol.
H229 Pressurised container: May burst if heated.

Precautionary statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P211 Do not spray on an open flame or other ignition source.
P251 Do not pierce or burn, even after use.
P271 Use only outdoors or in a well-ventilated area.
P410 + P412 Protect from sunlight. Do not expose to temperatures exceeding 50 °C.

2.3. Other hazards

Danger of electrostatic charge. Product can become statically charged, which can lead to an ignitable electrical discharge. The material can release fumes that can quickly form flammable mixtures.
Vapours can form an explosive mixture with air.

Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

Endocrine disrupting properties

Not listed.

3. Composition/information on ingredients

Chemical characterization: Aerosol: Mixture of the substances that require labeling as shown in the table and other components that do not require labeling.

Components:	Name of chemical	**weight %**
CAS: 106-97-8 EINECS: 203-448-7	n-Butane GHS02 Flam. Gas 1, H220; GHS04	5 - 20
CAS: 74-98-6 EINECS: 200-827-9	propane GHS02 Flam. Gas 1, H220; GHS04	5 - 20

4. First aid measures

Description of first aid measures

General advice:
Remove from exposure, lie down. Take off all contaminated clothing immediately. If symptoms call a physician.

After inhalation
Remove to fresh air. If breathing is irregular or stopped, administer artificial respiration. If unconscious place in recovery position. Consult a physician after significant exposure.

After skin contact
Wash off immediately with soap and plenty of water. If skin irritation persists, call a physician.

After eye contact
Rinse immediately with plenty of water, also under the eyelids, for at least 5 minutes. If eye irritation persists, consult a specialist.

After swallowing
Rinse mouth with water. Never give anything by mouth to an unconscious person. 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
Symptoms: Important or other important known symptoms and effects are described in the GHS labelling of the product (see section 2). labelling of the product (see section 2) and in section 11 (Toxicological information).

4.3. Indication of any immediate medical attention and special treatment needed
Treatment: Symptomatic treatment (decontamination, vital functions).

5. Firefighting measures

5.1. Extinguishing media:

Suitable extinguishing media:
Water mist, water spray jet and alcohol-resistant foam.
Dry extinguishing agents, CO2, sand and earth can only be used for small fires.

Unsuitable extinguishing media: High volume water jet

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting:
Highly flammable liquid and vapour. The vapour may be invisible, heavier than air and spread along ground.
Vapours may form explosive mixtures with air. Flash back possible over considerable distance.

Hazardous combustion products: Carbon monoxide, Carbon dioxide (CO2)

5.3. Advice for firefighters
In case of fire, wear self-contained breathing apparatus. Wear personal protective equipment.

Additional information's:
Cool containers at risk with water spray jet.
Danger for bursting of aerosols when heated for more than 50°C.
Aerosols that burst in fire can be mightily shot away.

6. Accidental release measures

6.1. Personal precautions:
Keep away from heat and sources of ignition. Keep away unprotected persons. Use personal protective equipment.
Provide adequate ventilation. Avoid contact with skin and eyes. Do not breathe vapours or spray mist.

6.2. Environmental precautions:
Avoid contact with eyes and skin.
Ventilate affected rooms thoroughly.
Do not inhale vapour. Remove ignition sources. Do not smoke. Avoid sparks.

6.3. Methods and material for containment and cleaning up:
Absorb with liquid-binding material (e.g. sand, sawdust,
universal binding agent, diatomaceous earth).
Ensure adequate ventilation.
Dispose of in suitable containers.
Dispose of contaminated material as waste according to point 13.

6.4. Reference to other sections
See Section 8 for information on personal protective equipment.
See Section 13 for waste treatment information.

7. Handling and storage

7.1. Precautions for safe handling:

Advice on safe handling:
Ensure good ventilation/extraction at the workplace.
Avoid contact with eyes.

Hygiene measures:
Keep away from food, drink and animal feed. Do not eat, drink or smoke in the area of application. Wash hands before breaks and at the end of work. Remove soiled clothing immediately.

7.2. Conditions for safe storage, including any incompatibilities:

Requirements for storage areas:
Store in a solvent-proof place in the original container. Store on a floor.

Advice on protection against fire and explosion:
Keep away from sources of ignition - Do not smoke. Vapours may be invisible, heavier than air and spread along the ground. Vapours may form explosive mixtures with air. Take measures against electrostatic charging. Use only in a place with explosion-proof equipment.

Further information on storage conditions:
Keep tightly closed in a dry and cool place. Keep away from direct sunlight. Keep in a well-ventilated place.

Advice on common storage:
Incompatible with oxidizing agents. Do not store together with oxidizing and self-igniting products. Keep away from food, drink and animal feeding stuffs.

German storage class: 2B Aerosols flammable

8. Exposure controls/personal protection

Additional advice on system design:
The necessary protection measures and the type of controls necessary will vary depending upon potential exposure conditions.
Control measures to: ensure that the load limits are not exceeded, should be provided for adequate ventilation. Explosion-proof ventilation equipment.

8.1. Control parameters

Components with critical values that require monitoring at the workplace:	
106-97-8 butane (10 - 20%)	
WEL	2.400 mg/m³, 1.000 ml/m³; 4(II); DFG
74-98-6 propane (10 - 20%)	
WEL	1.800 mg/m³, 1.000 ml/m³; 4(II); DFG

PNEC

Freshwater:
A PNEC could not be derived as the substance did not show any toxic effects in studies conducted in the area of water solubility. solubility in water did not show any toxic effects. Negative ecological effects are not to be expected according to current knowledge.

Seawater:
A PNEC could not be derived, as the substance showed no toxic effects in studies carried out in the area of water solubility. solubility in water did not show any toxic effects. Negative ecological effects are not expected according to current knowledge.

Sporadic release:
A PNEC could not be derived as the substance did not show any toxic effects in studies carried out in the area of water solubility. solubility in water did not show any toxic effects. Negative ecological effects are not to be expected according to current knowledge.

Sewage treatment plant: 100 mg/l

Sediment (fresh water):
A PNEC could not be derived as the substance did not show any toxic effects in studies carried out in the area of water solubility. solubility in water did not show any toxic effects. Negative ecological effects are not expected according to current knowledge.

Soil: 0,865 mg/kg

Sediment (seawater):
A PNEC could not be derived, as the substance did not show any toxic effects in studies carried out in the area of water solubility. solubility in water did not show any toxic effects. Negative ecological effects are not to be expected according to current knowledge.

DNEL
Worker: Long-term exposure - systemic effects, dermal: 12,8 mg/kg
Worker: Long-term exposure - systemic effects, inhalation: 8,9 mg/m3
Consumer: Long-term exposure - systemic effects, dermal: 6,4 mg/kg
Consumer: Long-term exposure - systemic effects, inhalation: 2,2 mg/m3
Consumer: Long-term exposure - systemic effects, oral: 0,85 mg/kg

8.2. Exposure controls

Personal protective equipment

General protective and hygienic measures

The usual precautionary measures for handling chemicals must be observed. In addition to personal protective equipment, it is necessary to wear closed work clothing. is required.

Breathing equipment:

Respiratory protection in case of insufficient ventilation. Gas filter for organic gases/vapours (boiling point > 65 °C, e.g. EN 14387 type A).

Protection of hands:

suitable protective gloves.
The glove material has to be impermeable and resistant to the product.

Material of gloves

The selection of a suitable glove depends not only on the material, but also on other quality features and varies from manufacturer to manufacturer.
Positive experiences have been made with butyl gloves. Protective gloves should be replaced at the first signs of wear and tear. Recommended material thickness: ≥ 0.5 mm..

Penetration time of glove material

The exact breakthrough time must be obtained from the protective glove manufacturer and adhered to.

Eye protection:

Safety glasses. Tightly sealed safety glasses.

Body protection: Protective work clothing.

Limitation and supervision of exposure into the environment

Comply with the applicable environmental directives that limit discharges to air, water and soil. To protect the environment, apply suitable protective measures to limit or prevent emissions.

9. Physical and chemical properties

9.1. General Information

Form: Aerosol Colour: colourless - clear/brown Smell: weak, characteristic

Data relevant for safety: (Product without power gas)

Odour threshold:	Not determined	
Melting point/Melting range:	Not determined	
Boiling point or initial boiling point and boiling range:	232	°C
Flammability:	Not determined	
Flash point:	> 200	°C
Ignition temperature:	> 300	°C
Lower explosion limit:	Not relevant for classification and labelling of liquids. relevant for classification and labelling. The lower explosion point may be 5 °C to 15 °C below the flash point.	
Upper explosion limit:	Not relevant for classification and labelling of liquids. relevant for classification and labelling.	
Vapour pressure(20°C):	< 0.00001	Pa
Density (20°C):	0.93	g/cm³
Solubility in water (20°C):	not or only slightly miscible	
Viscosity		
Kinematic viscosity at 20 °C	Not determined	
dynamic:	17 – 21	mPa.s

9.2 Other information

The product is not explosive, but the formation of explosive vapor/air formation of explosive vapor/air mixtures is possible.

10. Stability and reactivity

10.1. Reactivity: This material is not reactive under normal ambient conditions.

10.2. Chemical stability: The material is stable under normal conditions.

10.3. Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.

10.4. Possibility of hazardous reactions:

In case of inadequate ventilation and/or during use, formation of explosive/highly flammable vapour/air mixtures possible. vapour/air mixtures possible.

10.5. Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Do not smoke.
Avoid electrostatic charging.

10.6. Incompatible materials: oxidisers

10.7. Hazardous decomposition products:

Reasonably anticipated hazardous decomposition products formed during use, storage, spillage and heating are not known. Hazardous combustion products: see section 5.

11. Toxicological information

11.1. Information on the hazard classes within the meaning of Regulation (EC) No. 1272/2008

Acute toxicity:

Practically non-toxic after a single oral intake.
Practically non-toxic after a single inhalation exposure.

Experimental/calculated data:

LD50 rat (oral): > 5,000 mg/kg (OECD guideline 401)
No mortality was observed.
LC50 rat (inhalation): > 5.7 mg/l 4 h (OECD Guideline 403)
No mortality was observed. The product has not been tested. The statement was made by
The statement was derived from substances/products of similar structure or composition. An aerosol was tested.

Skin corrosion/irritation: Not irritating to skin.

Serious eye damage/irritation: Not irritating to eyes.

Respiratory or skin sensitisation:

Skin sensitisation: Not classified as a skin sensitiser. (ECHA, OECD Guideline 406)

Experimental/calculated data:

Skin corrosion/irritation

Rabbit: Not irritating. (OECD Guideline 404)

Serious eye damage/irritation

Rabbit: Not irritating. (OECD Guideline 405)

Sensitisation of the respiratory tract:

Assessment Sensitisation:
Due to the chemical structure there is no suspicion of a sensitising effect.

Germ cell mutagenicity:

A mutagenic effect was not found in various tests on bacteria and mammalian cell cultures.
mammalian cell cultures. The substance showed no mutagenic properties in the test on mammals.
mutagenic properties. The product has not been fully tested. The statements
were partly derived from products of similar structure or composition.

Carcinogenicity:

Assessment of carcinogenicity:
In long-term studies in rats and mice, the substance did not have a carcinogenic effect when administered in feed.
The product was not tested. The statement was derived from substances/products of similar structure or composition.
composition.

Reproductive toxicity:

Reproductive toxicity assessment:
Tests on animals showed no evidence of adverse effects on fertility.
The product has not been tested. The statement was derived from substances/products of similar structure or composition.

Specific target organ toxicity after single exposure:

Assessment STOT simple:
Based on available information, single exposure is not expected to result in organ-specific toxicity.
organ-specific toxicity is not to be expected.

Specific target organ toxicity - repeated exposure

Repeated dose toxicity assessment:
Based on the available information, the product is not expected to be a target organ toxicant after repeated exposure. The product has not been tested. The statement was made by substances/products of similar structure or composition.

Aspiration hazard: No aspiration hazard to be assumed.

11.2. Information on other hazards:

Endocrine disrupting properties:

The substance has not been identified as having endocrine disrupting properties according to Regulation (EU) 2017/2100 or Regulation 2018/605 nor is it included in the candidate list of substances of very high Candidate List of Substances of Very High Concern according to EU REACH Article 59.

12. Ecological information

12.1. Toxicity

Aquatic toxicity (acute):

Very unlikely to be acutely harmful to aquatic organisms. If low concentrations are properly discharged into biological sewage treatment plants, interference with the degradation activity of activated sludge is not to be expected. Based on long-term studies very unlikely to be chronically harmful to aquatic organisms.

Fish toxicity:

LC50 (96 h) > 500 mg/l, Leuciscus idus (DIN 38412 part 15, static)
Nominal concentration.

Aquatic invertebrates:

EC50 (48 h) > 100 mg/l, Daphnia magna (Directive 79/831/EEC, static)
Nominal concentration. The product is slightly soluble in the test medium. The test was carried out with aqueous preparation prepared with the aid of solubilisers was tested.

Aquatic plants:

EC50 (72 h) > 100 mg/l (growth rate), Scenedesmus subspicatus (other, static)
Nominal concentration. The product is slightly soluble in the test medium. The test was carried out with aqueous preparation prepared with the aid of solubilisers was tested.

Microorganisms/effect on activated sludge:

EC20 (0.5 h) > 1,000 mg/l, activated sludge, municipal (DIN EN ISO 8192-OECD 209-88/302/EEC,T. C, aerobic)

Chronic toxicity fish:

Study not necessary for scientific reasons.

Chronic toxicity aquat. Invertebrates:

NOEC (21 d) > 0.77 mg/l, Daphnia magna (OECD guideline 202, part 2, semi-static)
The product has not been tested. The statement was derived from substances/products of similar structure or composition. No toxic effect in the area of water solubility.
Analogy: Assessment derived from chemically similar products.

Assessment of terrestrial toxicity:

Toxic effects were observed in tests with terrestrial organisms.

Soil living organisms:

LC50 (14 d) 865 mg/kg, Eisenia foetida (Directive 88/302/EEC, Part C, p. 95, artificial soil)
The product has not been tested. The statement was derived from substances/products of similar structure or composition.
Analogue: Assessment derived from chemically similar products.

Other terrestrial non-mammals:

Study not necessary for scientific reasons.

12.2. Persistence and degradability:

Elimination data:
> 90 % BOD of COD (28 d) (OECD 301F; ISO 9408; 92/69/EEC, C.4-D) (aerobic, activated sludge, municipal) Readily biodegradable.
Assessment Stability in water:
Hydrolysis is not expected due to the structure.

12.3. Bioaccumulative potential: Assessment Bioaccumulative potential: Does not accumulate in organisms.

Persistence: No data available.

Bioaccumulative potential:

Bioconcentration factor (BCF): 27 (28 d), Lepomis macrochirus (measured)
The product has not been tested. The statement was derived from substances/products of similar structure or composition.

Analogy: Assessment derived from chemically similar products.

12.4. Mobility in soil:

Assessment Transport between environmental compartments:
Volatility: The substance gradually evaporates from the water surface into the atmosphere.
Adsorption to soils: Binding to the solid soil phase is to be expected.

12.5. Results of PBT and vPvB assessment:

According to the results of its assessment, this substance is neither a PBT nor a vPvB substance.

12.6. Endocrine disrupting properties:

The substance has not been identified as having endocrine disrupting properties according to Regulation (EU) 2017/2100 or Regulation 2018/605 nor is it included in the candidate list of substances of very high Candidate List of Substances of Very High Concern according to EU REACH Article 59.

12.7. Other adverse effects:

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

12.8. Additional information:

Other ecotoxicological information:
If low concentrations are properly discharged into adapted biological sewage treatment plants degradation activity of activated sludge is not to be expected. Do not allow product to enter product into water bodies without pre-treatment.

13. Disposal considerations

13.1. Waste treatment methods

Product	:	Disposal together with normal waste is not allowed. Special disposal required according to local regulations. Do not let product enter drains. Contact waste disposal services. This product shall be disposed of or recovered in compliance with Directive 2008/98/EC on waste as lastly amended.
Contaminated Packaging	:	Container must be completely emptied and must not be opened by force. Hand over to authorized disposal agency. Dispose of it in accordance with local regulations.
European Waste Catalogue Number	:	EAV: 15 01 10 term: Iron-metal containers with a contaminated rest of the contents

14. Transport information

14.1. UN number or ID number

1950

14.2. UN proper shipping name

ADR	DRUCKGASPACKUNGEN entzündbar
RID	DRUCKGASPACKUNGEN entzündbar
IMDG	Aerosols (Limited Quantities Only) (Package ≤ 30 kg)
ICAO-TI und IATA-DGR	Aerosols, flammable

14.3. Transport hazard class(es)

ADR-Class	:	2
shipment category	:	2
(Labels; Classification Code; Hazard Identification Number; Tunnel restriction code)	:	2.1; 5F; D
Labelling of the Package	:	UN 1950 AEROSOLE
Limited Quantities Only (LQ)	:	1L (Package ≤ 30 kg)
RID-Class	:	2.1; 5F
Labels; Classification Code; Hazard Identification Number)		
Labelling of the Package	:	UN 1950 AEROSOLE
Limited Quantities Only (LQ)	:	1L (Package ≤ 30 kg)
IMDG-Class	:	2.1
(Labels; EmS)	:	F-D, S-U
Limited Quantities Only (LQ)	:	1L (Package ≤ 30 kg)
ICAO-TI und IATA-DGR	:	2.1 Flammable gas
Labelling of the Package	:	UN 1950 AEROSOLE

14.4. Packaging group

ADR : --
RID : --
IMDG : --
IATA : --

14.5. Environmental hazards

Environmentally hazardous according to ADR : no
Environmentally hazardous according to RID : no
Marine Pollutant according to IMDG-Code : no

14.6. Special precautions for user

Not applicable.

14.7. Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

15. Regulatory information

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

Labelling according to Regulation (EC) No 1272/2008

The substance is classified and labelled according to the CLP regulation.

Other Information:

Observe employment restrictions under the law on the protection of mothers at work, in training and during studies (Maternity Protection Act - MuSchG).
Observe national regulations on the protection of young people in the workplace.

Directive 2012/18/EU

Named dangerous substances - ANNEX I Substance is not listed.

National regulations

Water hazard class: Water hazard class 1 (slightly hazardous for water).

15.2. Chemical safety assessment: A chemical safety assessment has been carried out for this substance

16. Other information

Full text of hazard statements in sections 2 and 3.

H220 Extremely flammable gas.
H222 Extremely flammable aerosol.
H229 Pressurised container: May burst if heated.

Department issuing data specification sheet:

Contact: Technische Chemie GmbH & Co. KG

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
GefStoffV: Gefahrstoffverordnung (Ordinance on Hazardous Substances, Germany)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent

These date are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally contractual relationship.