Section 1: Designation of the substance or the mixture, and of the company

1.1 Product identifier
Name of substance / trade name: Test inks 30 – 48mN/m
Product number:
Ink 30: 100037593
Ink 32: 100037594
Ink 34: 100037595
Ink 36: 100037596
Ink 38: 100037597
Ink 40: 100037598
Ink 42: 100037599
Ink 44: 100037600
Ink 46: 100037601
Ink 48: 100037602

Other designations:
Test inks

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

Relevant identified uses:
Measuring the surface energy of components.
Materials such as: plastic, metal, glass, ceramics
Uses advised against:
Use on hot surfaces.

1.3 Information on the supplier who provides the Safety Data Sheet

Manufacturer / Supplier
Diener electronic GmbH & Co. KG

Address
Nagolder Str. 61

Country ID/PO code/town
72224 Ebhausen

Contact person for technical information
Mr Christof Diener

Phone / email:
+49 74 58 – 999 31 - 542 / info@plasma.com

1.4 Emergency phone

Section 2: Potential hazards

2.1 Classification of the substance or mixture
Classification pursuant to Directive (EC) No. 1272/2008

Not a hazardous substance or hazardous mixture pursuant to Directive (EC) No. 1272/2008.
2.2 Identifying elements

Identifying elements pursuant to Directive (EC) No. 1272/2008

Not a hazardous substance or hazardous mixture pursuant to Directive (EC) No. 1272/2008.

2.3 Other hazards

This substance/mixture does not contain any components in concentrations of 0.1% or higher which are classified as either Persistent, Bioaccumulative and Toxic (PBT) or very Persistent and very Bioaccumulative (vPvB).

Section 3: Composition/information on components

3.2 Mixtures

Name of substance: Dimethyl ether, dipropylene glycol monomethyl ether
EC No.: 252-104-2
CAS No.: 34590-94-8 Isomer mix
REACH registration no.: There is no registration number for this substance since the substance and its use are exempt from registration, no registration of the annual tonnage is required, or registration is planned for a later point in time.

Ratio of ink 30: 90%
Ratio of ink 32: 80%
Ratio of ink 34: 50%
Ratio of ink 36: 20%
Ratio of ink 38: 15%
Ratio of ink 40: 10%
Ratio of ink 42: 10%
Ratio of ink 44: 9%
Ratio of ink 46: 5%
Ratio of ink 48: 3%

Classification pursuant to Directive (EC) No. 1272/2008:
Not a hazardous substance or hazardous mixture pursuant to Directive (EC) No. 1272/2008.

Name of substance: Glycerine
EC No.: 200-289-5
CAS No.: 56-81-5
REACH registration no.: There is no registration number for this substance since the substance and its use are exempt from registration, no registration of the annual tonnage is required, or registration is planned for a later point in time.
**Section 4: First aid measures**

**4.1 Description of the first aid measures**

**In case of aspiration**
Due to the vapour pressure, which is low under normal conditions, exposition by inhalation is to be expected mainly if substance is heated. In case of aspiration, provide fresh air to the affected person. In case of respiratory arrest, give artificial respiration.

**In case of skin contact**
Skin contact is considered the most frequent type of exposition to test inks at the workplace. Wash skin with plenty of water and soap.

**In case of eye contact**
As a precaution, rinse eyes with plenty of water.

**In case of ingestion**
Never attempt to give anything by mouth to an unconscious person. Rinse mouth with water.

**4.2 Main acute and delayed symptoms and effects**
4.3 Information on immediate medical help or special treatments
No data available.

Section 5: Firefighting measures

5.1 Extinguishing agents
Suitable: Water spray jet, alcohol-resistant foam, carbon dioxide, solid extinguishing agent
Unsuitable: depending on environment

5.2 Special hazards posed by the substance or mixture
Carbon oxides. Pressure increase, risk of bursting if heated.

5.3 Notes for firefighting
If possible, remove the container from the hazard zone.

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Use the specified personal protective equipment. See sections 8. Avoid contact with eyes and skin.

6.2 Environmental precautions
Absorb spilled liquids with universal binder (e.g. diatomaceous earth, vermiculite, sand) and dispose of according to regulations.
Clean soiled items and floors.
Not hazardous to water. Prevent release into the sewers or to the surface and ground water.

6.3 Methods and materials for containment and cleaning up
Absorb spilled liquids with absorptive agents, such as: sand, vermiculite or powdered limestone Place in suitable, sealed containers for disposal.

6.4 Reference to other Section
Disposal: see section 13
Section 7: Handling and storage

7.1 Precautions for safe handling
Do not leave bottles open. Avoid skin contact.
General hygiene:
- Do not eat, drink or smoke in areas where work is done.
- Wash your hands after using the substance.
- Remove contaminated clothing and protective equipment before entering areas where food is consumed.

For information on protective measures, refer to Section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Information on storage conditions
Only substances of the same storage class should be stored together.
Storage of the substance or mixture together or jointly with the following substances is prohibited:
- pharmaceuticals, food or forage, including their additives;
- infectious, radioactive and explosive substances;
- gases;
- heavily oxidising substances of storage class 5.1A;

Storing of the substance or mixture together or jointly with the following substances is permitted under certain conditions only (for details, refer to TRGS 510):
- other explosive substances of storage class 4.1A;
- pyrophoric substances;
- substances which release flammable gases when in contact with water;
- oxidising substances of storage class 5.1B;
- ammonium nitrate and preparations containing ammonium nitrate.
- organic peroxides and self-reactive substances.
The substance should not be stored together or jointly with substances with which hazardous chemical reactions are possible.

Storing together or jointly with test inks of storage class 8B is harmless.

Requirements in storage rooms and containers
Do not refill inks.
Keep containers tightly closed.
Storage at room temperature recommended.
Keep in a dry place.
Protect from overheating/warming.
Storage class (TRGS 510): 10: Flammable liquids

Storage class: 10

7.3 Specific end uses

Industry- and sector-specific guidelines
Please refer to our Technical Data Sheet for additional information.

Section 8: Limiting and monitoring exposure / personal protective equipment

8.1 Parameters to be monitored

Limit values for exposure at the workplace and/or biological limit values
Workplace limit values (Arbeitsplatzgrenzwerte, AGW) applicable in Germany

Name of substance: Dimethyl ether; CAS No.: 34590-94-8
Basis : TRGS 900 - Workplace limit values
Workplace limit value: 310mg/m³ / 50ppm
TWA value: 308mg/m³ / 50ppm

Name of substance: Glycerine; CAS No.: 56-81-5
Basis : TRGS 900 - Workplace limit values
Value : 200mg/m³

Relevant DNEL/DMEL/PNEC and other threshold values
• values relevant for human health

Name of substance: Dimethyl ether; CAS No.: 34590-94-8

<table>
<thead>
<tr>
<th>End point</th>
<th>Threshold value</th>
<th>Protection objective, exposure path</th>
<th>Use in</th>
<th>Duration of exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNEL</td>
<td>308mg/m³</td>
<td>Human, via inhalation</td>
<td>Employee</td>
<td>Chronic – systemic effects</td>
</tr>
<tr>
<td>DNEL</td>
<td>283 mg/kg</td>
<td>Human, via the skin</td>
<td>Employee</td>
<td>Chronic – systemic effects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>End point</th>
<th>Threshold value</th>
<th>Environmental compartment</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNEC</td>
<td>190 mg/L</td>
<td>Water</td>
</tr>
<tr>
<td>PNEC</td>
<td>19 mg/L</td>
<td>Sweet water</td>
</tr>
<tr>
<td>PNEC</td>
<td>1.9 mg/L</td>
<td>Sea water</td>
</tr>
<tr>
<td>PNEC</td>
<td>4.168 g/L</td>
<td>Sewage plant</td>
</tr>
<tr>
<td>PNEC</td>
<td>70.2 mg/kg</td>
<td>Sweet water sediment</td>
</tr>
<tr>
<td>PNEC</td>
<td>7.02 mg/kg</td>
<td>Sea sediment</td>
</tr>
<tr>
<td>PNEC</td>
<td>2.74 mg/kg</td>
<td>Ground</td>
</tr>
</tbody>
</table>

Name of substance: Glycerine; CAS No.: 56-81-5

<table>
<thead>
<tr>
<th>End point</th>
<th>Threshold value</th>
<th>Protection objective, exposure path</th>
<th>Use in</th>
<th>Duration of exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNEL</td>
<td>56mg/m³</td>
<td>Human, via inhalation</td>
<td>Employee</td>
<td>Chronic – local effects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>End point</th>
<th>Threshold value</th>
<th>Environmental compartment</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNEC</td>
<td>8.85 mg/L</td>
<td>Water</td>
</tr>
<tr>
<td>PNEC</td>
<td>0.885 mg/L</td>
<td>Sweet water</td>
</tr>
<tr>
<td>PNEC</td>
<td>0.088 mg/L</td>
<td>Sea water</td>
</tr>
<tr>
<td>PNEC</td>
<td>1,000 mg/L</td>
<td>Sewage plant</td>
</tr>
<tr>
<td>PNEC</td>
<td>3.3 mg/kg</td>
<td>Sweet water sediment</td>
</tr>
<tr>
<td>PNEC</td>
<td>0.33 mg/kg</td>
<td>Sea sediment</td>
</tr>
<tr>
<td>PNEC</td>
<td>0.141 mg/kg</td>
<td>Ground</td>
</tr>
</tbody>
</table>
8.2 Limiting and monitoring exposure

Suitable technical control equipment
When handling chemical agents, the usual precautions must be applied. Wash your hands before breaks and at the end of work.

Individual protective measures – personal protective equipment

Eye / face protection
Safety eyewear with frame and side protection pursuant to EN 166. Use only eyewear tested and approved according to official standards such as NIOSH (US) or EN 166 (EU).

This recommendation is considered an advice and must be evaluated by a safety expert who is familiar with the specific situation of the intended use.

Skin protection
Wear gloves for work. Check the gloves for intactness before putting them on. Remove them without touching the outside surface of the gloves to avoid skin contact with this product. Dispose of contaminated gloves after use in compliance with the statutory regulations and good laboratory practice. Wash and dry your hands.

The selected protective gloves must meet the specifications of the EC Directive 2016/425 and the derived standard EN 374.

Gloves

In case of full contact / spray contact:
Glove material: NBR, nitrile rubber
Coat thickness (mm): 0.11 mm
Permeation time (min.): 480 min (permeation level: 6)

In case of solution in or mixture with other substances or of conditions deviating from those described in EN 374, contact the supplier of CE-approved gloves. This recommendation is to be seen as a piece of advice; it must be assessed by an industrial hygiene specialist and a safety engineer who know the specific situation of the designated use by the customer in question. The recommendation cannot be interpreted as approval of any specific type of designated used.

Breathing protection
No breathing protection required.

Limiting and monitoring environmental exposure
No specific environmental protection measures required.
Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Optical appearance
- Aggregate state: Liquid
- Colour: Red

Odour: Mild ethereal smell

Odour threshold: Not determined

pH value: 6-7

Melting point / freezing point: Not determined

Initial boiling point and boiling range:
- Ink 30: > 160 °C
- Ink 32: 146 °C
- Ink 34: 133 °C
- Ink 36: 128 °C
- Ink 38: 124 °C
- Ink 40: 122 °C
- Ink 42: 120 °C
- Ink 44: 118 °C
- Ink 46: 115 °C
- Ink 48: 110 °C

Flash point: >60 °C

Evaporation rate: Not determined

Flammability (solid, gaseous): Not applicable

Upper/lower flammability or explosion limits: Not determined

Vapour pressure: Not determined

Vapour density: Not determined

Relative density:
- Ink 30: Not determined
- Ink 32: 0.98
- Ink 34: 1.073
- Ink 36: 1.142
- Ink 38: Not determined
- Ink 40: 1.169
- Ink 42: Not determined
- Ink 44: 1.175
- Ink 46: 1.187
- Ink 48: Not determined

Solubility: Soluble in water

Distribution coefficient: Not determined

n-Octanol/water: 
Section 9: Physical and Chemical Properties

9.2 Other data
Surface tension 30 - 48 mN/m at 20 °C

Section 10: Stability and reactivity

10.1 Reactivity
No data available.

10.2 Chemical stability
Under regular ambient conditions (room temperature, 1013hPa), the test ink is chemically stable.

10.3 Risk of hazardous reactions
When used as intended, no hazardous reactions are to be expected.

10.4 Conditions to be avoided
Heat, flames, sparks and hot surfaces

10.5 Incompatible materials
Strong oxidizing agents, strong acids

10.6 Hazardous decomposition products
Hazardous decomposition products may be generated in case of fire. – Carbon oxides
No other decomposition products – No data available
Section 11: Toxicology

11.1 Information on toxicological effects

Acute toxicity

**Dimethyl ether; CAS No. 34590-94-8**
LD$_{50}$ (oral, rat): 5,000 mg/kg (published value, ECHA)

**Glycerine, CAS No. 56-81-5**
LD$_{50}$ (oral, rat): 12,600 mg/kg (literature value)\(^1\)

ATE mix LD$_{50}$ oral - rat
Ink 30 5,300mg/kg
Ink 32 6,200mg/kg
Ink 34 9,000mg/kg
Ink 36 20,000mg/kg
Ink 38 31,800mg/kg
Ink 40 38,400mg/kg
Ink 42 47,600mg/kg
Ink 44 55,500mg/kg
Ink 46 90,900mg/kg
Ink 48 142,800mg/kg

\(^1\) Federation Proceedings, Federation of American Societies for Experimental Biology. Vol. 4, Pg. 142, 1945

**Dimethyl ether; CAS No. 34590-94-8**
LD$_{50}$ (by skin, rabbit): 9,510 mg/kg (published value, ECHA)

**Glycerine, CAS No. 56-81-5**
LD$_{50}$ (by skin, rabbit): >10,000 mg/kg (literature value)\(^2\)

ATE mix LD$_{50}$ by skin - rabbit
Ink 30 10,100mg/kg
Ink 32 11,800mg/kg
Ink 34 17,200mg/kg
Ink 36 38,000mg/kg
Ink 38 60,500mg/kg
Ink 40 73,100mg/kg
Ink 42 90,500mg/kg
Ink 44 105,600mg/kg
Ink 46 172,900mg/kg
Ink 48 271,700mg/kg


Burning/irritating effect on the skin
The mixture has not been classified. The mixture does not contain any substances classified as skin irritant.

Severe eye damage/irritation
The mixture has not been classified. The mixture does not contain any substances classified as eye irritant.
Sensitising of the respiratory tract/skin
The mixture has not been classified. The mixture does not contain any substances classified as sensitising.

Germ cell mutagenicity
The mixture has not been classified. The mixture does not contain any substances classified as mutagenic.

Carcinogenicity
The mixture has not been classified. The mixture does not contain any substances classified as carcinogenic.

Toxicity to reproduction
The mixture has not been classified. The mixture does not contain any substances classified as toxic to reproduction.

Specific target organ systemic toxicity with single exposure
The mixture has not been classified. The mixture contains no substances classified as specifically target organ systemic toxic with single exposure.

Specific target organ systemic toxicity with multiple exposure
The mixture has not been classified. The mixture contains no substances classified as specifically target organ systemic toxic with multiple exposure.

Aspiration hazard
The mixture has not been classified.

Section 12: Ecological information

12.1 Toxicity

Dimethyl ether; CAS No. 34590-94-8
Toxicity to fish (LC50, 96h) 1-10 g/L
Toxicity to invertebrate aquatic animals (LC50, 72h) 1 g/L (NOEC, 22 days) 500 µg/L
Toxicity to algae (EC50, 72h) 969 mg/L (NOEC, 72h) 969 mg/L

Glycerine, CAS No. 56-81-5
Toxicity to fish (LC50, 96h) 54 g/L
Toxicity to invertebrate aquatic animals (EC50, 24h) 10 g/L

12.2 Persistence and degradability
Biological aerobic – exposition time 2 - 28 days degradability Result: 76 - 90% - Readily biodegradable.
Notes: (ECHA)

12.3 Bioaccumulative potential
No data available.

12.4 Mobility in the soil
No data available.

12.5 Results of PBT and vPvB assessment
In accordance with the available data, the criteria for classification as PBT or vPvB are not met
12.6 Other adverse effects
No information available

Section 13: Disposal considerations

13.1 Waste treatment methods
Have residual volumes and non-reusable solutions disposed of by a recognized disposal company.

Treatment of contaminated packages
Rinse glass bottle and dispose of with waste glass. Dispose of the rinse fluid in the same way as of the mixture. Recommended cleaning agent: water

Waste code according to List of Wastes Regulation (LoW)
Discuss the exact waste code with the waste disposal contractor.

Section 14: Transport information

14.1 UN number

14.2 UN proper shipping name
ADR/RID

IMDG Code / ICAO-TI / IATA-DGR

14.3 Transport hazard classes

14.4 Packing group

14.5 Environmental hazards
Identification of environmentally hazardous substances
ADR/RID / IMDG code / ICAO-TI / IATA-DGR: ☐ yes / ☒ no
Marine Pollutant: ☐ yes / ☒ no

14.6 Special precautions for user

14.7 Transport in bulk according to Appendix II of the MARPOL Convention and the IBC Code
Contamination category (X, Y or Z):
Vessel type (1, 2 or 3):

Section 15: Regulatory information

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

Water hazard class
WGK: 1, Slightly hazardous to water pursuant to AwSV Annex 1 No. 5
ID no. glycerine: 116
ID no. dimethyl ether: 5,087

Solvents Regulation (31. BImSchV)
VOC ratio: 0%

Other relevant regulations
Protection measures pursuant to TRGS 500 have been complied with.
Storage class pursuant to TRGS 510: 10 (Flammable liquids)

15.2 Chemical safety assessment
No chemical safety assessment has been carried out for this product.

Section 16: Other data

Revisions compared to last version
No revisions made

Literature references and sources for data

Regulations

Internet
GESTIS-Stoffdatenbank (dguv.de)
www.baua.de
www.gischem.de

Wording of the hazard statements and/or safety statements referred to in Sections 2 to 15

Information on training
Working with this hazardous substance does not require any mandatory training.
Please contact Diener electronic for information on proper handling of these test inks.
Safety Data Sheet pursuant to Directive (EC) No. 1907/2006

Prepared on: 2021-03-19
Revised on: 
Valid from: 03/2021
Version: 1

Replaces version: -

Legend

ADR  European Agreement concerning the International Carriage of Dangerous Goods by Road
AwSV  German Ordinance on Installations for the Handling of Substances Hazardous to Water
BImSchV  German Air Pollution Control Act
CAS  Chemical Abstracts Service
DIN  Standard by Deutsches Institut für Normung
EC  Effective Concentration
EC  European Community
EN  European Standard
IATA-DGR  International Air Transport Association-Dangerous Goods Regulations
IBC Code  International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
ICAO-TI  International Civil Aviation Organization-Technical Instructions
IMDG Code  International Maritime Code for Dangerous Goods
ISO  Standard by International Standards Organization
IUCLID  International Uniform Chemical Information Database
LC  Lethal Concentration
LD  Lethal Dose
log Kow  octanol-water partition coefficient
MARPOL  International Convention for the Prevention of Pollution from Ships
OECD  Organisation for Economic Co-operation and Development
PBT  Persistent, bioaccumulative, toxic
RID  Regulations concerning the International Carriage of Dangerous Goods by Rail
TRGS  Technical Rules for Hazardous Substances
UN  United Nations
VOC  Volatile Organic Compounds
vPvB  very persistent and very bio-accumulative
VwVwS  German Administrative Regulation Regarding Water Pollutants
WGK  Water Hazard Class

Additional information

Disclaimer
To our best knowledge, the specifications in this Safety Data Sheet correspond to the state of know-how at the time of printing. The information is intended to provide guidance on the safe handling of the product specified in this Safety Data Sheet during storage, processing, transport and disposal. The information cannot be applied to other products. Insofar as the product is mixed, blended or processed with other materials or subjected to treatment, the information in this Safety Data Sheet cannot be transferred to the new material thus produced, unless expressly stated otherwise herein.