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

1.1 Product identifier
Name of substance / trade name: Test inks 50 – 62mN/m
Product number:
Ink 50: 100037603
Ink 52: 100037604
Ink 54: 100037605
Ink 56: 100037606
Ink 58: 100037607
Ink 60: 100037608
Ink 62: 100037609
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/this 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 Mixture

<table>
<thead>
<tr>
<th>Name of substance:</th>
<th>Ethanol</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC No.:</td>
<td>200-578-6</td>
</tr>
<tr>
<td>CAS No.:</td>
<td>64-17-5</td>
</tr>
<tr>
<td>REACH registration no.:</td>
<td>01-2119457610-43-xxxx</td>
</tr>
</tbody>
</table>

| Ratio of ink 50: | 7% |
| Ratio of ink 52: | 6% |
| Ratio of ink 54: | 5% |
| Ratio of ink 56: | 7% |
| Ratio of ink 58: | 5% |
| Ratio of ink 60: | 4% |
| Ratio of ink 62: | 3% |

Classification pursuant to Directive (EC) No. 1272/2008:

Signal word: Danger
GHS02, GHS07
Flam. Liq. 2 H225
Eye Irrit. 2 H319
(For the wording of the mentioned hazard statements, refer to Section 16)

<table>
<thead>
<tr>
<th>Name of substance:</th>
<th>Glycerine</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC No.:</td>
<td>200-289-5</td>
</tr>
<tr>
<td>CAS No.:</td>
<td>56-81-5</td>
</tr>
<tr>
<td>REACH registration no.:</td>
<td>This is not available 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.</td>
</tr>
</tbody>
</table>

| Ratio of ink 50: | 48% |
| Ratio of ink 52: | 48% |
| Ratio of ink 54: | 49% |
| Ratio of ink 56: | 8%  |
| Ratio of ink 58: | 8%  |
| Ratio of ink 60: | 8%  |
| Ratio of ink 62: | 8%  |
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
No data available.

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: Ethanol; CAS No.: 64-17-5
Basis: TRGS 900 - Workplace limit values
 Workpl ace limit value:
 Shift average: 960mg/m³ / 300ppm
 Short term exposure value: 1,920mg/m³ / 1,000ppm

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: Ethanol; CAS No.: 64-17-5**

<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>1,900mg/m³</td>
<td>Human, via inhalation</td>
<td>Employee</td>
<td>Acute – systemic effects</td>
</tr>
<tr>
<td>DNEL</td>
<td>343 mg/kg</td>
<td>Human, via the skin</td>
<td>Employee</td>
<td>Chronic – systemic effects</td>
</tr>
<tr>
<td>DNEL</td>
<td>950mg/m³</td>
<td>Human, via inhalation</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>0.79mg/ cm³</td>
<td>Sea water</td>
</tr>
<tr>
<td>PNEC</td>
<td>2.75mg/ cm³</td>
<td>Air</td>
</tr>
<tr>
<td>PNEC</td>
<td>3.6mg/ cm³</td>
<td>Sweet water sediment</td>
</tr>
<tr>
<td>PNEC</td>
<td>580mg/ cm³</td>
<td>Sewage plant</td>
</tr>
<tr>
<td>PNEC</td>
<td>0.63mg/ cm³</td>
<td>Ground</td>
</tr>
<tr>
<td>PNEC</td>
<td>0.96mg/ cm³</td>
<td>Sweet water</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
9.2 Other data

Surface tension 50 - 62 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

**Ethanol, CAS No. 64-17-5**
LD₅₀ (oral, rat): 7,060 mg/kg (published value, ECHA)

**Glycerine, CAS No. 56-81-5**
LD₅₀ (oral, rat): 12,600 mg/kg (literature value) [¹]

ATEₐₐₐ, LD₅₀ oral - rat
Ink 50 26,300mg/kg
Ink 52 26,000mg/kg
Ink 54 25,700mg/kg
Ink 56 155,500mg/kg
Ink 58 153,600mg/kg
Ink 60 151,800mg/kg
Ink 62 151,800mg/kg


**Glycerine, CAS No. 56-81-5**
LD₅₀ (by skin, rabbit): >10,000 mg/kg (literature value) [²]

ATEₐₐₐ, LD₅₀ by skin - rabbit
Ink 50 20,800mg/kg
Ink 52 20,600mg/kg
Ink 54 20,400mg/kg
Ink 56 123,400mg/kg
Ink 58 122,000mg/kg
Ink 60 120,400mg/kg
Ink 62 120,400mg/kg

Ethanol, CAS No. 64-17-5
LC50 (by inhalation, rat, 4h): 95.6 mg/L (published value, ECHA)

ATEmix LC50 Inhalation - rat
Ink 50  1,300mg/kg
Ink 52  1,500mg/kg
Ink 54  1,900mg/kg
Ink 56  1,400mg/kg
Ink 58  1,900mg/kg
Ink 60  2,300mg/kg
Ink 62  3,100mg/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
12.2 Persistence and degradability

Biological aerobic – exposition time 2 d
degradability Result: 95% - 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
14.3 Transport hazard classes

14.4 Packing group

14.5 Environmental hazards

14.6 Special precautions for user

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

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. ethanol: 96

Solvents Regulation (31. BImSchV)
VOC ratio: 3-7%

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

H225 Highly flammable liquid and vapour
H319 Causes severe eye irritation

**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.

**Legend**

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