

Material Safety Data Sheet

according to Regulation (EC) No 1907/2006 (REACH)
according to Regulation (EC) No 453/2010



Trade name: IP-S Photoresist
Revision date: 11.05.2017
Print date: 15.05.2017

Version: EN 01/2017
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1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Article no. (Manufacturer/supplier): No article no. available
Name of the substance or mixture: IP-S Photoresist

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

UV-curable photoresist which can be used particularly for two-photon absorption lithography.

1.3 Details of the supplier of the safety data sheet

Supplier (manufacturer/importer/downstream user/dealer):

Manufacturer/supplier: Nanoscribe GmbH
Street/P.O. Box: Hermann-von-Helmholtz-Platz 1
Country/ZIP/Place: D-76344 Eggenstein-Leopoldshafen
Phone: +49 721 981 980 0
Fax: +49 721 981 980 130
Internet: <http://www.nanoscribe.de>

Point of contact for technical information: service@nanoscribe.de

1.4 Emergency telephone number

Emergency Phone: +49 (0) 761 / 19240
University Medical Center Freiburg (Poison Information Center)
Phone, technical information service: +49 721 60 82 88 40
The technical information service is only available during regular office hours:
Monday – Friday 08:00 – 16:00 UTC+1

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 Classification according to Directive (EC) No 1272/2008 [CLP]

H319 Eye irritation cat. 2
H317 Skin sensitisation cat. 1

2.2 Label elements

2.2.1 Labelling according to Directive (EC) No 1272/2008 [CLP]

Pictogram: 
Signal word: Warning

Hazard statement(s) / H-Phrases

H317: May cause an allergic skin reaction.
H319: Causes serious eye irritation.

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Precautionary statement(s) / P-Phrases

P261: Avoid breathing dust/fume/gas/mist/vapour/spray.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P302 + P352: IF ON SKIN: Wash with plenty of water.
P305 + P361 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333 + P313: If skin irritation or rash occurs: Get medical advice/attention.
P337 + P313: If eye irritation persists: Get medical advice/attention.

2.3 Other hazards

IP-S does not meet the criteria for PBT or VPB-substances.
Other hazards are not known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

This is an alloy, see section 3.2.

3.2 Mixtures

3.2.1 Description of the mixture

UV-curable photoresist.

3.2.2 Hazardous ingredients

Carbamate, methacrylate, mixture

EG-No.:

Index:

CAS no.:

Content:

> 95 %

Classification according to Directive (EC) No 1272/2008:

Skin sensitization, cat. 1, H317

Butyrolactone

EG-No.:

Index:

CAS no.:

Content:

< 5 %

Classification according to Directive (EC) No 1272/2008:

Acute toxicity, oral, cat. 4, H302

Eye damage, cat. 1, H318

STOT SE 3, H336

Photoinitiator based on aromatic ketones

EG-No.:

Index:

CAS no.:

Content:

< 1 %

Classification according to Directive (EC) No 1272/2008:

Skin irritation, cat. 2, H315

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Eye irritation, cat. 2, H319
STOT SE 3, H336
Acute aquatic toxic, cat. 1, H400

3.3 Additional information

Other components < 10 % are not subject to classification according to EC directives or respective national laws.

Specification of H phrases under 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

4.1.1 General information

Take medical advice when occurrence symptoms or in cases of doubt. Remove contaminated, soaked clothing immediately.

4.1.2 After inhalation

Remove to fresh air. Seek medical advice, if necessary.

4.1.3 After skin contact

Remove contaminated, soaked clothing immediately. Wash thoroughly with plenty of water. Seek medical advice, if necessary.

4.1.4 After eye contact

Rinse out with plenty of water for at least 10 minutes under running water with the eyelid held wide open. Consult an ophthalmologist.

4.1.5 After ingestion

Rinse mouth well. If swallowed, seek medical advice immediately and show this container or label.

4.1.6 Self-protection of the first aider

Keep in mind that first-aiders should consider their own safety first.

4.1.7 Notes for the doctor

No information available

4.2 Most important symptoms and effects, both acute and delayed

Seek medical advice in case of symptoms or if in doubt.

4.3 Indication of any immediate medical attention and special treatment needed

If a doctor is consulted, please take this safety datasheet with you.

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5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Use any means suitable for extinguishing surrounding fire.

5.1.1 Suitable extinguishing media:

Water spray, CO₂, alcohol-resistant foam, dry extinguishing media. Extinguish larger fires with water spray or alcohol-resistant foam.

5.1.2 Unsuitable extinguishing media that must not be used for safety reasons:

Water with full jet.

5.2 Special hazards arising from the substance or mixture

Fire class: B (liquid or liquefying ingredients)

5.3 Advice for fire-fighters

5.3.1 Special protective equipment for fire fighting:

Do not stay in dangerous zone without self-contained breathing apparatus. In order to avoid contact with skin, keep a safety distance and wear suitable protective clothing. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

5.3.2 Special hazards from the substance or preparation itself, combustion products or resulting gases:

Development of hazardous combustion gases or vapours is possible in the event of fire. The following may develop in the event of fire: carbon oxide, carbon dioxide.

5.4 Additional information

No special measures are necessary.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear protective clothing.

Keep unprotected persons away.

Avoid substance contact.

Safety measures as mentioned in chapter 7 and 8.

6.2 Environmental precautions

Prevent product from entering soil, surface water, or ground water.

Do not let the product enter the sewerage system.

6.3 Methods and material for containment and cleaning up

Absorb with liquid-binding and neutralizing material (sand, universal binders). Transfer to a closable, labelled salvage container for disposal according to local regulations. Clean up affected area. TRGS 201: classification and labelling of waste for disposal at handling.

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6.4 Reference to other sections

Information on safe handling see chapter 7.

Information regarding personal protective equipment see chapter 8.

Information for the disposal see chapter 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

7.1.1 Information for safe handling / Technical measures

Do not leave open jars.

Leak-proof equipment with chemical fume hood required when filling and refilling substance. To be filled into labelled container only.

Do not transport with incompatible substances.

Ensure good ventilation of the working area.

Washing facilities should be provided at place of work.

Eye shower should be provided and distinctly marked.

Provide emergency showers when handling larger quantities.

7.1.2 Information on general hygiene measures in the workplace

Comply with minimum standards according to TRGS 500.

These include general hygiene measures such as:

- Keep working place clean.

- Do not eat, drink, and smoke in working areas.

- After use, wash hands thoroughly with plenty of water.

- Remove contaminated clothing and protective equipment before entering other areas.

7.1.3 Information about protection against explosions and fire

Substance is combustible.

Fire extinguishers should be kept at hand.

Keep away from sources of ignition – Do not smoke.

7.1.4 Other information

No further relevant information available.

7.2 Conditions for safe storage in consideration of incompatibilities

7.2.1 Requirements for storage rooms and containers

Container should be labelled clearly.

Store in original container.

Keep container tightly closed.

Store in a cool dry place.

Store in well ventilated area.

Store in the dark.

Store away from water.

7.2.2 Information about storage conditions

Do not store together with:

- Pharmaceuticals, food, and animal feed.
- Infectious, radioactive, and explosive substances.
- Oxidizing substances of group 1, TRGS 510

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7.2.3 Further information about storage conditions

Please follow the manufacturers' instructions. The substance should not be stored together with substances where risk of hazardous reactions may occur.

7.2.4 Storage group (VC)

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7.2.5 Specific final application

See also Technical Information Sheet and user manual.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

8.1 Control parameters

Components with critical values that require monitoring at the workplace:
Not applicable

8.2 Exposure controls

8.2.1 Individual protection measures, such as personal protective equipment

General protective and hygienic measures:

Keep away from food, beverages, and animal feed.
Instantly remove any soaked, contaminated garments.
Wash hands before breaks and at the end of work.
Do not smoke during work time.
Avoid contact with the eyes and skin.
Use skin protection cream for preventive skin protection.

Respiratory protection

Necessary when aerosols are generated.
Respiratory protection: Gas filter P2 or P3
Colour code: white

Hand protection

The protective gloves to be used must comply with the specifications of EC directive 89/686/EEC and the resultant standard EN374.
Glove material: Nitril rubber and Butyl rubber
Layer thickness: 0.5 mm
Breakthrough: ≥ 8 h

This recommendation applies only to the product stated in the safety data sheet and supplied by us as well as to the purpose specified by us. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves.

Eye protection

Tightly fitting safety goggles according to EN166:2001.
Provide eye shower.

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Frame goggles with side protection.

Body protection

Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical protection suit.

8.2.2 Environment exposure control measures

Do not allow it to enter the sewage system or water.
see chapter 7. No more extensive measures necessary.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Important health, safety and environmental information

9.1.1 Appearance

Form:	liquid
Colour:	yellowish
Odour:	characteristic

9.1.2 Safety relevant basic data

Type	Value	Method	Comment
Melting point / range (°C):	non-applicable	--	
Ignition temperature (°C):	non-applicable	--	
Lower explosive limit:	not explosive	--	
Upper explosive limit:			
Vapour pressure (mbar at °C):	non-applicable	--	
Density (g/cm ³):	1.11	DVA	
Water solubility (20 °C in g/l):	insoluble	--	
pH-value (20 °C):	non-applicable	--	
Viscosity, dynamic (mPas/20 °C):	13600	DVA	
Boiling point (°C):	non-applicable	--	
Bulk density (kg/m ³):	non-applicable	--	
Flash point (°C):	> 110	--	
n-octanol-water partition factor (log Pow):	non-applicable	--	

9.2 Other information

No other information available

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10. STABILITY AND REACTIVITY

10.1 Reactivity

Reacts with oxidants and acids. Curing with UV light.

10.2 Chemical stability

No decomposition if used and stored according to specifications.

10.3 Possibility of hazardous reactions

No data available.

10.4 Conditions to avoid

Keep away from water and moisture because of the hygroscopic property of the preparation. Keep away from light and lighting sources.

10.5 Incompatible materials

Avoid contact with strong oxidising agents and acids.

10.6 Hazardous decomposition products

In the event of fire: Carbon monoxide and carbon dioxide.

11. TOXICOLOGICAL INFORMATION

11.1 General information

11.2 Information on toxicological effects

There are no toxicological trials from animal testing available for the preparation. The following characteristics can be expected based on the components of the preparation:

Acute toxicity

Ingredients that may contribute to the acute oral toxicity.

Butyrolactone (< 5 %),

LD 50 (oral): ATE 500 mg/kg

Calculated value: acute toxicity

ATE (mix): 34365 mg/kg

Corrosive/irritant to skin

Relevant ingredients:

Photoinitiator based on aromatic ketones (< 1 %) not additive

Substance classification: category 2

SCL: Category 2: 10 % (universal threshold value)

Severe damaging/irritation of eyes

Relevant ingredients:

Butyrolactone (< 5 %) additive,

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Substance classification: category 1

SCL: Category 1: 3 % (universal threshold value)
Category 2: 10 % (universal threshold value)

Photoinitiator based on aromatic ketones (< 1 %) not additive,

Substance classification: category 2

SCL: Category 2: 10 % (universal threshold value)

Result: The composite is classified as category 2.

Sensitisation of skin

Relevant ingredients:

Carbamate-, methacrylate, mixture (> 95 %),

Substance classification: category 1

SCL: Category 1: 1 % (universal threshold value)

Result: The composite is classified as category 1.

Specific target organ toxicity (single exposure): respiratory tract irritation

Relevant ingredients:

Photoinitiator based on aromatic ketones (< 1 %),

Substance classification: category 3

SCL: Category 3: 20 % (universal threshold value)

The composite is not classified in this hazard category.

Specific target organ toxicity (single exposure): anesthetic effect

Relevant ingredients:

Butyrolactone (< 5 %),

Substance classification: category 3

SCL: Category 3: 20 % (universal threshold value)

The composite is not classified in this hazard category.

11.2.1 Toxicological tests for the product component

Butyrolactone

Acute toxicity	Species	Value	Approach	Comment
LD50	Rat	1540 mg/kg	Oral	
Acute toxicity	Species	Value	Approach	Comment
LC50	Rat	5100 mg/m³	Inhale	4h
Acute toxicity	Species	Value	Approach	Comment
LD50	Guinea pig	5000 mg/kg	Dermal	

Irritation/ Cauterization:

No information available

Sensitisation:

No information available

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Subacute to chronic toxicity:
No information available

Subacute oral toxicity:

Subacute inhalative toxicity:

Carcinogenicity, mutagenity and reproduction toxicity

Carcinogenicity:
This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.
IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans

Mutagenity:
No information available

Reproduction toxicity:
No information available

Specific target organ toxicity - single exposure:
May cause drowsiness or dizziness.

Additional Information:
RTECS: LU3500000
An anesthetic effect on the central nervous system characterized by a loss of sensation. Preliminary excitement is the initial effect followed by relaxation, stupor, or sleep, Nausea, Dizziness, Headache.

Liver - Irregularities - Based on Human Evidence

There is no sufficient substance-specific information available for additional ingredients.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No data available.

12.2 Persistence and degradability

No data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No data available.

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12.5 Results of PBT and vPvB assessment

IP-Q does not meet the criteria for PBT or vPvB- substances.

12.6 Other adverse effects

No data available.

12.7 Additional information

The composite is not classified in this hazard category.
WGK 1 (low water-dangerous)

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Dispose of according to local and / or national regulations.

Proper disposal / product

Recommendation:

Do not allow it to enter the sewage system or water. Contaminated packages are to be treated in the same way as the substance. Waste and containers must be disposed in a safe manner. Disposal according to EC directives 75/442/EEC and 91/689/EEC on waste and hazardous waste in their applicable versions.

Disposal / waste (Product)

Do not dispose as sewage. Contaminated packaging should be properly disposed of together with remaining product or completely emptied and cleaned. Water is recommended for cleaning contaminated packaging with detergents added as necessary

EAK / AVV waste:

The waste key number according to AVV is dependent on the origin of the waste and therefore can vary by industry or process. Due to the ingredients, the waste is hazardous. In Germany, the disposal requires verification.

Proposals for waste determination EAKV:

08 01 11 paint and varnish containing organic solvents or other dangerous substances

Proper disposal / Packaging

Recommendation:

The disposal of the packaging has to be in accordance with regulations. Contaminated packaging is considered hazardous waste.

Waste codes / waste description

15 01 10 Packaging that contains residues of dangerous substances or is contaminated by dangerous substances.

Unless expressly regulated otherwise, cleaned and uncontaminated packaging may be recycled without special verification.

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13.2 Additional information

The waste producer is responsible for the classification of the waste according to the European Waste Catalogue. The mentioned waste codes are recommendations according to the prospective use of this product. Other waste codes may potentially be referred to, depending on the user's special application and disposal circumstances.

14. TRANSPORT INFORMATION

No hazardous material in the sense of transport regulations.

15. REGULATORY INFORMATION

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

15.1.1 EU regulations

REACH regulation (EG) no. 1907/2006
Regulation (EG) no. 1272/2008
Regulation (EC) No 2037/2000 (substances that deplete the ozone layer): Not applicable
Regulation (EC) No 850/2004 (Persistent Organic Pollutants): Not applicable
Regulation (EC) No 689/2008 (export and import of dangerous chemicals): Not applicable
Regulation (EC) No 648/2004 (detergents Ordinance): Not applicable

15.1.2 National regulations

Restriction of occupation:
Employment restrictions concerning young persons must be observed to §22 ArbSchG!
Employment restrictions concerning pregnant and lactating mothers according to §4 and 5 MuSchRiv note!

Accident reporting ordinance

12. BImSchV (StörfallV): --

Water hazard class:

WGK 1 (low water-dangerous)

Industrial Safety Regulation / Betriebssicherheitsverordnung (BetrStichV).

not relevant

TA-Luft (Technical instructions on air quality control)

Chapter 5.2.5 Organic Substances
Organic substances, except dusts.
The following values, specified as overall carbon, are in all not allowed to be exceeded in exhaust gas:
Mass flow: 0.50 kg/h or
Mass concentration: 50 mg/m³

Other regulations, restrictions and prohibition ordinances:

German regulations for occupational insurance schemes (BGR)
Technical rules for hazardous substances (TRGS)

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Chemicals Prohibition Ordinance: --

VCI-Storage class (TRGS 510):
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15.2 Chemical Safety Assessment

Evaluation of safety has not been carried out for substances in this preparation.

16. OTHER INFORMATION

Hazard warnings referred to in sections 2 and 3

According to Directive (EC) No 1272/2008 [CLP]:

Hazard statement(s) / H-Phrases

H317: May cause an allergic skin reaction.
H319: Causes serious eye irritation.

Precautionary statement(s) / P-Phrases

P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P302 + P352: IF ON SKIN: Wash with plenty of water.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333 + P313: If skin irritation or rash occurs: Get medical advice/attention.
P337 + P313: If eye irritation persists: Get medical advice/attention.

Training advice

Briefing and instruction of employees according to the German Ordinance of Hazardous Substances (GetStoffV).

Indication of changes

Conversion to GHS/CLP.
Updating safety relevant basic data.

Data origin:

ADR European Agreement concerning the international carriage of dangerous goods by road.
www.daua.de
<http://www.dguv.de/ifa/de/gesis/stoffdb/index.jsp>

Further information

The particulars given in the Material Safety Data Sheet only apply to the described product in connection with its appropriate use. These particulars are based on the latest state of our knowledge and information. In particular, they serve the purpose of describing our product under the aspect of hazards caused by such product and pertaining to safety precautions. They do not constitute any guarantee of product quality and/or quality features. The particulars given in this Material Safety Data Sheet are required in accordance with article 31 and annex II of the Regulation (EC) No 1907/2006. The copying or quotation of contents is prohibited, even in extracts.