

Safety data sheet

according to 2020/878/EU,

Printing date 11.01.2024

Revision: 11.01.2024

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

- **1.1 Product identifier**
- **Trade name:** Tentingresist 1.5mil 304mm
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**
Industrial Use
Dry Film
Photoresist
- **Application of the substance / the mixture** Dry Film
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
Bungard Elektronik GmbH & Co KG Rilke Str. 1
51570 Windeck
++49(0)2292-928280 Info@bungard.de
Emergency Tel ChemTel Inc.: (800)255-3924, +1 (813)248-0585
- **Informing department:** Product safety department.
- **1.4 Emergency telephone number:**
Contact the nearest poison centre.

United Kingdom
NPIS National Poison Information Service 0344 892 0111
Centro Antiveleeni Niguarda Milano +39 02-6610-1029

SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



GHS07

Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2 H319 Causes serious eye irritation.
STOT SE 3 H335 May cause respiratory irritation.

Aquatic Chronic 3 H412 Harmful to aquatic life with long lasting effects.

- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008**
The product is classified and labelled according to the CLP regulation.
- **Hazard pictograms**



GHS07

- **Signal word** Warning

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- Hazard statements*H315 Causes skin irritation.**H319 Causes serious eye irritation.**H335 May cause respiratory irritation.**H412 Harmful to aquatic life with long lasting effects.***- Precautionary statements***P261 Avoid breathing dust/fume/gas/mist/vapours/spray.**P280 Wear eye protection / face protection.**P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.**P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.**P405 Store locked up.**P501 Dispose of contents/container in accordance with local/regional/national/international regulations.***- 2.3 Other hazards***The product does not contain substances with endocrine-disrupting properties in concentrations $\geq 0.1\%$.***- Results of PBT and vPvB assessment****- PBT:** Not applicable.**- vPvB:** Not applicable.**SECTION 3: Composition/information on ingredients****- 3.2 Mixtures****- Description:** Mixture of the substances listed below with harmless additions.**- Dangerous components:**

CAS: 122985-55-1	Methyloxirane-oxirane block copolimer dimethacrylate ⚠ Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335	25-50%
CAS: 25852-47-5	poly(oxy-1,2-ethanediy), α -(2-methyl-1-oxo-2-propen-1-yl)- ω -[(2-methyl-1-oxo-2-propen-1-yl)oxy]- ⚠ Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335	2.5-10%
CAS: 78-93-3 Reg.nr.: 01-2119457290-43-XXXX	2-butanone ⚠ Flam. Liq. 2, H225; ⚠ Eye Irrit. 2, H319; STOT SE 3, H336, EUH066	<1.5%
CAS: 95-14-7 Reg.nr.: 01-2119979079-20-xxxx	benzotriazole ⚠ Aquatic Chronic 2, H411; ⚠ Acute Tox. 4, H302; Eye Irrit. 2, H319	<1%

- Additional information For the wording of the listed hazard phrases refer to section 16.**SECTION 4: First aid measures****- 4.1 Description of first aid measures****- After inhalation***Supply fresh air.**In case of unconsciousness bring patient into stable side position for transport.***- After skin contact***Instantly wash with water and soap and rinse thoroughly.**If skin irritation continues, consult a doctor.***- After eye contact***Rinse opened eye for several minutes under running water. If symptoms persist, consult doctor.***- After swallowing***Rinse mouth with water**In case of persistent symptoms consult doctor.***- 4.2 Most important symptoms and effects, both acute and delayed** No further relevant information available.

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- **4.3 Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents**
CO₂, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.
Use firefighting measures that suit the environment.
- **5.2 Special hazards arising from the substance or mixture**
Can be released in case of fire
Carbon monoxide (CO)
Carbon Dioxide (CO₂)
Nitrogen Oxides (NO_x)
- **5.3 Advice for firefighters**
- **Protective equipment:**
Put on breathing apparatus.
No special measures required.

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
- **6.2 Environmental precautions:** Do not allow to enter drainage system, surface or ground water.
- **6.3 Methods and material for containment and cleaning up:**
Collect mechanically.
Ensure adequate ventilation.
Dispose of contaminated material as waste according to item 13.
- **6.4 Reference to other sections**
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for information on disposal.

SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**
Avoid contact with eyes, skin and clothes
Ensure that suitable extractors are available on processing machines
- **Information about protection against explosions and fires:** No special measures required.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and containers:**
Store in cool location.
Open only under good fluorescent or equivalent yellow safelight
- **Information about storage in one common storage facility:** Store away from foodstuffs.
- **Further information about storage conditions:**
Store container in a well ventilated position.
Store under dry conditions.
Protect from the effects of light.
Keep container tightly sealed.
- **7.3 Specific end use(s)** No further relevant information available.

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SECTION 8: Exposure controls/personal protection**- 8.1 Control parameters****- Components with limit values that require monitoring at the workplace:****78-93-3 2-butanone**

<i>IOELV (Unione Europea)</i>	Short-term value: 900 mg/m ³ , 300 ppm Long-term value: 600 mg/m ³ , 200 ppm
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<i>AGW (Germania)</i>	Long-term value: 600 mg/m ³ , 200 ppm <i>I(I);DFG, EU, H, Y</i>
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<i>TWA (Italy)</i>	Short-term value: 885 mg/m ³ , 300 ppm Long-term value: 590 mg/m ³ , 200 ppm <i>IBE</i>
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<i>VL (Italy)</i>	Short-term value: 900 mg/m ³ , 300 ppm Long-term value: 600 mg/m ³ , 200 ppm
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95-14-7 benzotriazole

<i>MAK (Germania)</i>	<i>vgl.Abschn. Xc, Dampf und Aerosol</i>
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- DNELs**95-14-7 benzotriazole**

<i>Dermal</i>	<i>Longterm</i>	<i>0.24 mg/Kg bw/day (Workers)</i>
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<i>Inhalative</i>	<i>Longterm</i>	<i>4.2 mg/m³ (Workers)</i>
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- PNECs**95-14-7 benzotriazole**

<i>Freshwater</i>	<i>97 microgr/l (Acquatic Organism)</i>
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<i>Marine water</i>	<i>9.7 microgr/l (Acquatic Organism)</i>
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<i>Soil</i>	<i>169 microgr/Kg (micro organismes)</i>
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- Ingredients with biological limit values:**78-93-3 2-butanone**

<i>BGW (Germania)</i>	<i>2 mg/l</i> <i>Untersuchungsmaterial: Urin</i> <i>Probennahmezeitpunkt: Expositionsende bzw. Schichtende</i> <i>Parameter: 2-Butanon</i>
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<i>IBE (Italy)</i>	<i>2 mg/l</i> <i>Campioni: urine</i> <i>Momento del prelievo: a fine turno</i> <i>Indicatore biologico: Metil etil chetone</i>
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- Additional information: The lists that were valid during the compilation were used as basis.**- 8.2 Exposure controls****- Appropriate engineering controls**

Engineering methods to prevent or control exposure are preferred. Methods include process or personnel enclosure, mechanical ventilation, and control of process conditions.

- Individual protection measures, such as personal protective equipment**- General protective and hygienic measures**

Keep away from foodstuffs, beverages and food.

Take off immediately all contaminated clothing

Wash hands during breaks and at the end of the work.

Avoid contact with the eyes and skin.

- Breathing equipment: Not necessary if room is well-ventilated.**- Hand protection** Protective gloves.**- Material of gloves**

Natural rubber, NR

Nitrile rubber, NBR

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The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

- Penetration time of glove material

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- Eye/face protection Not required.

SECTION 9: Physical and chemical properties**- 9.1 Information on basic physical and chemical properties****- General Information**

- Physical state	Solid.
- Colour:	Green
- Odour:	Characteristic
- Odour threshold:	Not determined.
- Melting point/freezing point:	Not determined
- Boiling point or initial boiling point and boiling range	Not determined
- Flammability	Not determined.
- Lower and upper explosion limit	
- Lower:	Not determined.
- Upper:	Not determined.
- Flash point:	Not applicable
- Decomposition temperature:	Not determined.
- pH	Not applicable.
- Viscosity:	
- Kinematic viscosity	Not applicable.
- dynamic:	Not applicable.
- Solubility	
- Water:	Unsoluble
- Partition coefficient n-octanol/water (log value)	Not determined.
- Vapour pressure:	Not applicable.
- Density and/or relative density	
- Density	Not determined
- Relative density	Not determined.
- Vapour density	Not applicable.
- Particle characteristics	See item 3.

- 9.2 Other information

- Appearance:	
- Form:	Solid.
- Important information on protection of health and environment, and on safety.	
- Self-inflammability:	Product is not selfigniting.
- Explosive properties:	Product is not explosive.
- VOC	
- Water:	x
- Change in condition	
- Evaporation rate	Not applicable.

- Information with regard to physical hazard classes

- Explosives	Void
- Flammable gases	Void
- Aerosols	Void
- Oxidising gases	Void

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- Gases under pressure	Void
- Flammable liquids	Void
- Flammable solids	Void
- Self-reactive substances and mixtures	Void
- Pyrophoric liquids	Void
- Pyrophoric solids	Void
- Self-heating substances and mixtures	Void
- Substances and mixtures, which emit flammable gases in contact with water	Void
- Oxidising liquids	Void
- Oxidising solids	Void
- Organic peroxides	Void
- Corrosive to metals	Void
- Desensitised explosives	Void

SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**
Use under W (Tungsten) or yellow light
Avoid high temperature
No decomposition if used and stored according to specifications.
- **10.3 Possibility of hazardous reactions** No dangerous reactions known
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:** No dangerous decomposition products known

SECTION 11: Toxicological information

- **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**
- **Acute toxicity** Based on available data, the classification criteria are not met.

- LD/LC50 values that are relevant for classification:**122985-55-1 Methyloxirane-oxirane block copolymer dimethacrylate**

Oral	LD50	>2,000 mg/kg
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78-93-3 2-butanone

Oral	LD50	3,300 mg/kg (rat)
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Dermal	LD50	5,000 mg/kg (rbt)
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- **Skin corrosion/irritation**
Prolonged contact may cause skin irritation
Causes skin irritation.
- **Serious eye damage/irritation** Causes serious eye irritation.
- **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity** Based on available data, the classification criteria are not met.
- **STOT-single exposure** May cause respiratory irritation.
- **STOT-repeated exposure** Based on available data, the classification criteria are not met.
- **Aspiration hazard** Based on available data, the classification criteria are not met.

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- 11.2 Information on other hazards**- Endocrine disrupting properties**

None of the ingredients is listed.

SECTION 12: Ecological information**- 12.1 Toxicity****- Aquatic toxicity:** No further relevant information available.**- 12.2 Persistence and degradability** No further relevant information available.**- 12.3 Bioaccumulative potential** No further relevant information available.**- 12.4 Mobility in soil** No further relevant information available.**- 12.5 Results of PBT and vPvB assessment****- PBT:** Not applicable.**- vPvB:** Not applicable.**- 12.6 Endocrine disrupting properties**

The product does not contain substances with endocrine disrupting properties.

- 12.7 Other adverse effects**- Additional ecological information:****- General notes:**

Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water.

Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.

SECTION 13: Disposal considerations**- 13.1 Waste treatment methods****- Recommendation**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Hand over to disposers of hazardous waste.

- Uncleaned packagings:**- Recommendation:** Disposal must be made according to official regulations.**SECTION 14: Transport information****- 14.1 UN number or ID number****- ADR, ADN, IMDG, IATA**

Void

- 14.2 UN proper shipping name**- ADR, ADN, IMDG, IATA**

Void

- 14.3 Transport hazard class(es)**- ADR, ADN, IMDG, IATA****- Class**

Void

- 14.4 Packing group**- ADR, IMDG, IATA**

Void

- 14.5 Environmental hazards:

Not applicable.

- 14.6 Special precautions for user

Not applicable.

- 14.7 Maritime transport in bulk according to IMO instruments

Not applicable.

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- UN "Model Regulation": Void

SECTION 15: Regulatory information- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**- **Directive 2012/18/EU**- **Named dangerous substances - ANNEX I** None of the ingredients is listed.- **DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II**

None of the ingredients is listed.

- **REGULATION (EU) 2019/1148**- **Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))**

None of the ingredients is listed.

- **Annex II - REPORTABLE EXPLOSIVES PRECURSORS**

None of the ingredients is listed.

- **Regulation (EC) No 273/2004 on drug precursors**

None of the ingredients is listed.

- **Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors**

None of the ingredients is listed.

- **National regulations**- **Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.**SECTION 16: Other information**

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

- **Department issuing data specification sheet:** Environment protection department.- **Version number of previous version:** 5- **Abbreviations and acronyms:**

ADR: Accord européen relatif au le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

DNEL: Derived No-Effect Level (REACH)

PNEC: Predicted No-Effect Concentration (REACH)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Flam. Liq. 2: Flammable liquids – Category 2

Acute Tox. 4: Acute toxicity – Category 4

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Irrit. 2: Serious eye damage/eye irritation – Category 2

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2

Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3