

**Safety Data Sheet**  
according to 1907/2006/EC, Article 31

Revision: JAN 2024

### 1 Identification of substance

· **Product details**

· **Trade name:** **Technovit 4002 powder**

· **Application of the substance / the preparation** Resin for metallographic testing

· **Manufacturer/Supplier:**

Heraeus Kulzer GmbH  
Grüner Weg 11, D-63450 Hanau  
Tel.: 06081 959-365 (Wehrheim)

· **Informing department:**

Stefan Schreier  
Tel.: +49 6081 959-367  
Fax: +49 6081 959-398  
email: stefan.schreier@heraeus.com

· **Emergency information:**

Call "Poisoning Emergency Center Berlin": +49 30 30686 790 (24 hours, support in english and german language)

### 2 Hazards identification

· **Hazard designation:**



Xi Irritant

· **Information pertaining to particular dangers for man and environment**

Product contains fine quartz powder. Longer inhalation may cause silicose.  
R 43 May cause sensitisation by skin contact.

· **Classification system**

The classification is in line with current EC lists. It is expanded, however, by information from technical literature and by information furnished by supplier companies.

### 3 Composition/information on ingredients

· **Chemical characterization**

· **Description:** -

· **Dangerous components:**

|                   |                        |                       |      |
|-------------------|------------------------|-----------------------|------|
| CAS: 94-36-0      | dibenzoyl peroxide     | Xi, E, O; R 3-7-36-43 | 0-5% |
| EINECS: 202-327-6 |                        |                       |      |
| CAS: 84-61-7      | dicyclohexyl phthalate |                       | 0-5% |
| EINECS: 201-545-9 |                        |                       |      |

· **Additional information** For the wording of the listed risk phrases refer to section 16.

### 4 First aid measures

- **After skin contact** Instantly wash with water and soap and rinse thoroughly.
- **After eye contact** Rinse opened eye for several minutes under running water.
- **After swallowing** Initiate vomiting and consult a doctor.

### 5 Fire fighting measures

· **Suitable extinguishing agents**

CO<sub>2</sub>, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.

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- **Special hazards caused by the material, its products of combustion or flue gases:**  
Formation of toxic gases is possible during heating or in case of fire.
- **Protective equipment:** No special measures required.
- **Additional information -**

### 6 Accidental release measures

- **Person-related safety precautions:**  
Avoid causing dust.  
Use breathing protection against the effects of fumes/dust/aerosol.
- **Measures for environmental protection:** No special measures required.
- **Measures for cleaning/collecting:** Send for recovery or disposal in suitable containers.
- **Additional information:**  
See Section 13 for information on disposal.  
See Section 7 for information on safe handling  
See Section 8 for information on personal protection equipment.

### 7 Handling and storage

- **Handling**
  - **Information for safe handling:**  
No special measures required.  
Prevent formation of dust.  
Provide suction extractors if dust is formed.
  - **Information about protection against explosions and fires:** No special measures required.
- **Storage**
  - **Requirements to be met by storerooms and containers:** No special requirements.
  - **Information about storage in one common storage facility:** Not required.
  - **Further information about storage conditions:** Store cool (not above 25 °C).

### 8 Exposure controls and personal protection

- **Additional information about design of technical systems:** No further data; see item 7.

- **Components with critical values that require monitoring at the workplace:**

#### 94-36-0 dibenzoyl peroxide

OES () Long-term value: 5 mg/m<sup>3</sup>

#### 13463-67-7 Titanium dioxide

OES () Long-term value: 10\* 4\*\* mg/m<sup>3</sup>  
\*total inhalable dust \*\*respirable dust

#### 84-61-7 dicyclohexyl phthalate

OES () Long-term value: 5 mg/m<sup>3</sup>

- **Additional information:** The lists that were valid during the compilation were used as basis.

- **Personal protective equipment**
  - **General protective and hygienic measures**  
Instantly remove any soiled and impregnated garments.  
Wash hands during breaks and at the end of the work.
  - **Breathing equipment:** Use a mask with particle filter in case of dust generation.
    - **Recommended filter device for short term use:**  
P2 (FFP 2 EN 149:2001) / P3 (FFP 3 EN 149:2001)

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· **Protection of hands:**

If skin contact cannot be avoided, protective gloves are recommended to avoid possible sensitization.

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

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.

· **For the permanent contact in work areas without heightened risk of injury (e.g. Laboratory) gloves made of the following material are suitable:**

Butyl rubber, BR

Fluorocarbon rubber (Viton)

Nitrile rubber, NBR

Natural rubber, NR

Chloroprene rubber, CR

· **For the permanent contact of a maximum of 15 minutes gloves made of the following materials are suitable:**

PVC or PE gloves

· **Eye protection:** not absolutely necessary

· **Body protection:** Light weight protective clothing

**9 Physical and chemical properties:**

· **General Information**

|                  |           |
|------------------|-----------|
| · <b>Form:</b>   | Powder    |
| · <b>Colour:</b> | White     |
| · <b>Smell:</b>  | Odourless |

· **Change in condition**

|                                       |                |
|---------------------------------------|----------------|
| · <b>Melting point/Melting range:</b> | Not determined |
| · <b>Boiling point/Boiling range:</b> | Not determined |

· **Flash point:** Not applicable

· **Self-inflammability:** Product is not selfigniting.

· **Danger of explosion:** Product is not explosive.

· **Density at 20°C** 2.560 g/cm<sup>3</sup>

· **Settled apparent density at 20°C** 900 kg/m<sup>3</sup>

· **Solubility in / Miscibility with**

· **Water:** Insoluble

· **Solvent content:**

· **Water:** 0.N%

· **Solids content:** 99.9 %

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### 10 Stability and reactivity

- **Conditions to be avoided:** No decomposition if used and stored according to specifications.
- **Dangerous reactions** No dangerous reactions known
- **Dangerous products of composition:** None

### 11 Toxicological information

- **Acute toxicity:**
  - **Primary irritant effect:**
    - **on the skin:** No irritant effect.
    - **on the eye:** No irritant effect.
  - **Sensitization:** Sensitization possible by skin contact.
- **Additional toxicological information:**  
Irritant  
The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version:
  - **Sensitisation** May cause sensitisation by skin contact.

### 12 Ecological information:

- **General notes:**  
Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.

### 13 Disposal considerations

- **Product:**
  - **Recommendation**  
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.  
Small quantities can be polymerized with the matching system component(s) and the cured solid material can be disposed of with the regular garbage. Larger quantities must be disposed of following the regulations of the local authorities.
  - **Waste disposal key number:** 31442
- **European waste catalogue**  
11 01 98 | other wastes containing dangerous substances
- **Uncleaned packagings:**
  - **Recommendation:** Packaging can be reused or recycled after cleaning.

### 14 Transport information

- **Land transport ADR/RID and GGVS/GGVE (cross-border/domestic)**
  - **ADR/RID-GGVS/E Class:** -
- **Maritime transport IMDG/GGVSea:**
  - **IMDG/GGVSea Class:** -
  - **Marine pollutant:** No
- **Air transport ICAO-TI and IATA-DGR:**
  - **ICAO/IATA Class:** -

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· **Transport/Additional information:** -

### 15 Regulatory information

· **Designation according to EC guidelines:**

*The product has been classified and labelled in accordance with EC Directives / Ordinance on Hazardous Materials (GefStoffV)*

· **Code letter and hazard designation of product:**

*Xi Irritant*

· **Hazard-determining components of labelling:**

*dibenzoyl peroxide*

· **Risk phrases:**

*43 May cause sensitisation by skin contact.*

· **Safety phrases:**

*24 Avoid contact with skin.*

*37 Wear suitable gloves.*

### 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.*

· **Relevant R-phrases**

*3 Extreme risk of explosion by shock, friction, fire or other sources of ignition.*

*36 Irritating to eyes.*

*43 May cause sensitisation by skin contact.*

*7 May cause fire.*

· **Contact:**

*Dr. Thiele Tel.: (+49) 6181 35-3012*

*email: ruediger.thiele@heraeus.com*

· **\* Data compared to the previous version altered.**

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### 1 Identification of the substance/mixture and of the company/undertaking

· **Product identifier**

· **Trade name:** **Technovit 4002 liquid**

· **Relevant identified uses of the substance or mixture and uses advised against**

· **Application of the substance / the preparation** Resin for metallographic testing

· **Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**

Heraeus Kulzer GmbH  
Grüner Weg 11, D-63450 Hanau  
Tel.: 06081 959-365 (Wehrheim)

· **Informing department:**

Stefan Schreier  
Tel.: +49 6081 959-367  
Fax: +49 6081 959-398  
email: stefan.schreier@heraeus.com


· **Emergency telephone number:**

Call "Poisoning Emergency Center Berlin": +49 30 30686 790 (24 hours, support in english and german language)


### 2 Hazards identification

· **Classification of the substance or mixture**

· **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**

 Xn; Harmful

R20: Harmful by inhalation.

 Xi; Irritant

R36/37/38: Irritating to eyes, respiratory system and skin.

 Xi; Sensitising

R43: May cause sensitisation by skin contact.

 F; Highly flammable

R11: Highly flammable.

· **Information concerning particular hazards for human and environment:**

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

· **Classification system:**

The classification is in line with current EC lists. It is expanded, however, by information from technical literature and by information furnished by supplier companies.

· **Label elements**

· **Labelling according to EU guidelines:**

The product has been classified and labelled in accordance with EC Directives / Ordinance on Hazardous Materials (GefStoffV)

· **Code letter and hazard designation of product:**

Xn Harmful  
F Highly flammable

· **Hazard-determining components of labelling:**

methyl methacrylate  
styrene

· **Risk phrases:**

11 Highly flammable.

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- 20 Harmful by inhalation.  
36/37/38 Irritating to eyes, respiratory system and skin.  
43 May cause sensitisation by skin contact.

**Safety phrases:**

- 9 Keep container in a well-ventilated place.  
1 Keep away from sources of ignition - No smoking.  
23 Do not breathe gas/fumes/vapour/spray (appropriate wording to be specified by the manufacturer).  
24 Avoid contact with skin.  
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
37 Wear suitable gloves.

**Other hazards**

**Results of PBT and vPvB assessment**

- **PBT:** Not applicable.
- **vPvB:** Not applicable.

### 3 Composition/information on ingredients

**Chemical characterization: Mixtures**

· **Description:** Product based on methacrylates

**Dangerous components:**

|                                    |  |        |
|------------------------------------|--|--------|
| CAS: 80-62-6<br>EINECS: 201-297-1  | methyl methacrylate<br>Xi R37/38; Xi R43; F R11<br>Flam. Liq. 2, H225; Skin Irrit. 2, H315; Skin Sens. 1, H317; STOT SE 3, H335  | 50-75% |
| CAS: 100-42-5<br>EINECS: 202-851-5 | styrene<br>Xn R20; Xi R36/38<br>R10<br>Flam. Liq. 3, H226; Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2, H319   | 10-25% |
| CAS: 121-69-7<br>EINECS: 204-493-5 | N,N-dimethylaniline<br>T R23/24/25; Xn R40; N R51/53<br>Carc. Cat. 3<br>Acute Tox. 3, H301; Acute Tox. 3, H311; Acute Tox. 3, H331; Carc. 2, H351; Aquatic Chronic 2, H411 | < 1%   |

· **Additional information** For the wording of the listed risk phrases refer to section 16.

### 4 First aid measures

**Description of first aid measures**

**General information**

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

· **After inhalation** Supply fresh air; consult doctor in case of symptoms.

· **After skin contact** Instantly wash with water and soap and rinse thoroughly.

**After eye contact**

Rinse opened eye for several minutes under running water. If symptoms persist, consult doctor.

**After swallowing**

Rinse out mouth and then drink plenty of water.

In case of persistent symptoms consult doctor.

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### 5 Firefighting measures

- **Extinguishing media**
  - **Suitable extinguishing agents** CO<sub>2</sub>, sand, extinguishing powder. Do not use water.
  - **For safety reasons unsuitable extinguishing agents** Water.
- **Special hazards arising from the substance or mixture**
  - Can form explosive gas-air mixtures.
  - Formation of toxic gases is possible during heating or in case of fire.
- **Advice for firefighters**
  - **Protective equipment:** Put on breathing apparatus.
- **Additional information** -

### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
  - Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:** Prevent material from reaching sewage system, holes and cellars.
- **Methods and material for containment and cleaning up:**
  - Absorb with liquid-binding material (diatomite, universal binders, for small amounts tissues).
  - Dispose of contaminated material as waste according to item 13.
  - Do not flush with water or aqueous cleansing agents
  - Send for recovery or disposal in suitable containers.
- **Reference to other sections**
  - See Section 13 for information on disposal.
  - See Section 8 for information on personal protection equipment.
- 

### 7 Handling and storage

- **Handling**
  - **Precautions for safe handling**
    - Keep containers tightly sealed.
    - Ensure good ventilation/exhaustion at the workplace.
    - Prevent formation of aerosols.
  - **Information about protection against explosions and fires:**
    - Keep ignition sources away - Do not smoke.
    - Protect against electrostatic charges.
- **Conditions for safe storage, including any incompatibilities**
  - **Storage**
    - **Requirements to be met by storerooms and containers:** Store in cool location.
    - **Information about storage in one common storage facility:** Not required.
    - **Further information about storage conditions:**
      - Store cool (not above 25 °C).
      - Store in cool, dry conditions in well sealed containers.

### 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**

· **Components with critical values that require monitoring at the workplace:**

**80-62-6 methyl methacrylate**

|        |   |
|--------|---|
| OES () | Short-term value: 416 mg/m <sup>3</sup> , 100 ppm |
|        | Long-term value: 208 mg/m <sup>3</sup> , 50 ppm   |

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**100-42-5 styrene**

MEL () Short-term value: 1080 mg/m<sup>3</sup>, 250 ppm  
Long-term value: 430 mg/m<sup>3</sup>, 100 ppm

**121-69-7 N,N-dimethylaniline**

OES () Short-term value: 50 mg/m<sup>3</sup>, 10 ppm  
Long-term value: 25 mg/m<sup>3</sup>, 5 ppm  
Sk

· **Additional information:** The lists that were valid during the compilation were used as basis.

· **Exposure controls**· **Personal protective equipment**· **General protective and hygienic measures**

Keep away from foodstuffs, beverages and food.  
Instantly remove any soiled and impregnated garments.  
Wash hands during breaks and at the end of the work.  
Avoid contact with the eyes and skin.

· **Breathing equipment:**

Not necessary with efficient local exhaust. If exposition to vapours is possible, use breathing protective mask (filter A).

· **Protection of hands:**

If skin contact cannot be avoided, protective gloves are recommended to avoid possible sensitization.

Solvent resistant gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

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.

· **For the permanent contact in work areas without heightened risk of injury (e.g. Laboratory) gloves made of the following material are suitable:**

PVA gloves

· **For the permanent contact of a maximum of 15 minutes gloves made of the following materials are suitable:**

Butyl rubber, BR

Fluorocarbon rubber (Viton)

Nitrile rubber, NBR

Chloroprene rubber, CR

· **Eye protection:** Protective goggles are recommended.

· **Body protection:** Light weight protective clothing

\* **9 Physical and chemical properties**

· **Information on basic physical and chemical properties**· **General Information**· **Appearance:**

· **Form:** Fluid

· **Colour:** Green

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|   |  |
|---|--|
| · <b>Smell:</b>                           | Characteristic   |
| · <b>Change in condition</b>              |  |
| · <b>Melting point/Melting range:</b>     | Not determined   |
| · <b>Boiling point/Boiling range:</b>     | 100°C  |
| · <b>Flash point:</b>                     | 13°C   |
| · <b>Ignition temperature:</b>            | 430°C  |
| · <b>Self-inflammability:</b>             | Product is not selfigniting.   |
| · <b>Danger of explosion:</b>             | Product is not explosive. However, formation of explosive air/vapour mixtures is possible. |
| · <b>Critical values for explosion:</b>   |  |
| · <b>Lower:</b>                           | 1■Vol %  |
| · <b>Upper:</b>                           | 1■Vol %  |
| · <b>Steam pressure at 20°C:</b>          | 47 hPa   |
| · <b>Density at 20°C</b>                  | 1■0 g/cm <sup>3</sup>  |
| · <b>Solubility in / Miscibility with</b> |  |
| · <b>Water:</b>                           | Not miscible or difficult to mix   |
| · <b>Viscosity:</b>                       |  |
| · <b>dynamic at 20°C:</b>                 | 200 mPas   |
| · <b>Solvent content:</b>                 |  |
| · <b>Solids content:</b>                  | 20.0 %   |

## 10 Stability and reactivity

- **Reactivity**
  - **Chemical stability**
    - **Conditions to be avoided:** No decomposition if used and stored according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known
- **Hazardous decomposition products:** None
- **Additional information:**  
If stored longer than recommended and/or above recommended temperature, product may polymerize generating heat.

## 11 Toxicological information

- **Information on toxicological effects**
  - **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

### 100-42-5 styrene

|            |          |                  |
|------------|----------|------------------|
| Oral       | LD50     | 5000 mg/kg (rat) |
| Inhalative | LC50/4 h | 24 mg/l (rat)    |

- **Primary irritant effect:**
  - **on the skin:** Irritant for skin and mucous membranes.
  - **on the eye:** Irritant effect.
- **Sensitization:** Sensitization possible by skin contact.
- **Additional toxicological information:**  
Harmful  
Irritant

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The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version:

### 12 Ecological information

- **Toxicity**
  - **Acquatic toxicity:** No further relevant information available.
- **Additional ecological information:**
  - **General notes:**  
Do not allow product to reach ground water, water bodies or sewage system.  
Danger to drinking water if even small quantities leak into soil.
- **Results of PBT and vPvB assessment**
  - **PBT:** Not applicable.
  - **vPvB:** Not applicable.

### 13 Disposal considerations

- **Waste treatment methods**
  - **Recommendation**  
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.  
Small quantities can be polymerized with the matching system component(s) and the cured solid material can be disposed of with the regular garbage. Larger quantities must be disposed of following the regulations of the local authorities.

- **European waste catalogue**

|          |  |
|----------|--|
| 11 01 98 | other wastes containing dangerous substances |
|----------|--|

- **Uncleaned packagings:**
  - **Recommendation:** Disposal must be made according to official regulations.

### 14 Transport information

- **Land transport ADR/RID and GGVS/GGVE (cross-border/domestic)**



- **ADR/RID-GGVS/E Class:** 3 (F1) Flammable liquids.
- **Kemler Number:** 339
- **UN-Number:** 1866
  - **Packaging group:** II
  - **Label:** 3
- **UN proper shipping name:** 1866 RESIN SOLUTION, special provision 640D

- **Maritime transport IMDG/GGVSea:**



- **IMDG/GGVSea Class:** 3
- **UN Number:** 1866
- **Label:** 3

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· **Packaging group:** II  
 · **EMS Number:** F-E, S-E  
 · **Marine pollutant:** No  
 · **Correct technical name:** RESIN SOLUTION

· **Air transport ICAO-TI and IATA-DGR:**



· **ICAO/IATA Class:** 3  
 · **UN/ID Number:** 1866  
 · **Label:** 3  
 · **Packaging group:** II  
 · **Correct technical name:** RESIN SOLUTION

· **Special precautions for user** Warning: Flammable liquids.

· **Transport/Additional information:** -

### 15 Regulatory information

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### 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.

· **Relevant phrases**

H225 Highly flammable liquid and vapour.  
 H226 Flammable liquid and vapour.  
 H301 Toxic if swallowed.  
 H311 Toxic in contact with skin.  
 H315 Causes skin irritation.  
 H317 May cause an allergic skin reaction.  
 H319 Causes serious eye irritation.  
 H331 Toxic if inhaled.  
 H332 Harmful if inhaled.  
 H335 May cause respiratory irritation.  
 H351 Suspected of causing cancer.  
 H411 Toxic to aquatic life with long lasting effects.

R10 Flammable.  
 R11 Highly flammable.  
 R20 Harmful by inhalation.  
 R23/24/25 Toxic by inhalation, in contact with skin and if swallowed.  
 R36/38 Irritating to eyes and skin.  
 R37/38 Irritating to respiratory system and skin.  
 R40 Limited evidence of a carcinogenic effect.  
 R43 May cause sensitisation by skin contact.  
 R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.