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

1.1 Product Identifier

Trade name

<table>
<thead>
<tr>
<th>General name</th>
<th>Inorganic Glass</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS-number</td>
<td>65997-17-3</td>
</tr>
<tr>
<td>EC-number</td>
<td>266-046-0</td>
</tr>
<tr>
<td>Notation</td>
<td>&quot;glass, oxide, chemicals&quot;</td>
</tr>
<tr>
<td>REACH-Registration</td>
<td>This glass is not subject to registration.</td>
</tr>
</tbody>
</table>

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

Identified uses:
Industrial and professional use:
AMIRAN® is an anti-reflective glass for glazing display windows and similar areas of application.

1.3 Details of the supplier of the Technical Safety Information

Manufacturer / Supplier | SCHOTT / Advanced Optics

Contact for technical information | Dr. Kristian Eichgrün
Quality Management Advanced Optics

Phone / Fax | +49 61 31 / 66 21 55 / +49 36 41 / 28 88 90 54
E-mail | ehs-compliance.ao@schott.com

1.4 Emergency telephone no. | +49 61 31 / 66 2393 (Mon to Fri, 7 am to 4 pm CET)

2. Hazards identification

2.1 Classification of the substance or mixture

Inorganic glass is not classified as dangerous.

2.2 Label elements

No labeling required.

2.3 Other hazards

Glass is not dangerous at normal usage.
Processing of glass, damage or breakage can result in sharp edges. This may cause cuts.

Processing of glass can result in glass dust.
Acute effects: Respiratory irritation.
Chronic effects: Possible pneumoconiosis effects.
Grinding debris and other waste of glass must be disposed consistent with applicable regulations.
## 3. Composition/information on ingredients

### 3.1 Substances
As the substance glass is not included in the candidate list of substances of very high concern, currently there are no information duties according to article 33 of REACH. However for the production of glass we may use substances, which are on the candidate list and had been included in Annex XIV of the REACH regulation or could be included in future. These powdery substances are not present as such in the final glass; they are fully integrated into the glass matrix through the melting process. Thus they loose their original characteristics.
The main components are listed as additional information in chapter 16.
For more information please refer to ehs-compliance.ao@schott.com.

### 3.2 Mixtures
Glass is classified as substance acc. to regulation (EC) No 987/2008 (amending of Reach-Reg.).

## 4. First aid measures

### 4.1 Description of first aid measures

**General information**
Glass is no hazardous substance. The following information refer to glass dust and glass splinter which may result from processing or breakage.

**After inhalation**
Supply fresh air; consult doctor in case of complaints

**After skin contact**
Normally not dangerous.
Consult doctor in case of complaints.

**After eye contact**
Rinse under running water.
Consult doctor in case of complaints.

**After swallowing**
Consult doctor

### 4.2 Most important symptoms and effects, both acute and delayed

- none known

### 4.3 Indication of immediate medical attention and special treatment needed

- none

## 5. Fire fighting measures

### 5.1 Extinguishing media

- no requirements

### 5.2 Special hazards arising from the substance or mixture

- none. Glass is noncombustible.

### 5.3 Advice for firefighters

- none

## 6. Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

- none

### 6.2 Environmental Precautions

- none

### 6.3 Methods and material for containment and cleaning up

- none

### 6.4 Reference to other sections

- none
7. **Handling and storage**

7.1 **Precautions for safe handling**

Avoid breakage because of injury risk by sharp edges.

7.2 **Conditions for safe storage, including any incompatibilities**

Store in dry environment. Avoid excessive humidity.

7.3 **Specific end use(s)**

see section 1.2

8. **Exposure controls / personal protection**

8.1 **Control parameters**

*In case of dust formation*, declaration for FUSED SILICA, CAS-No: 60676-86-0

<table>
<thead>
<tr>
<th>Regulation</th>
<th>TRGS 900 - GERMAN OCCUPATIONAL EXPOSURE LIMIT VALUES (01/2006)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>0.3 mg / m$^3$</td>
</tr>
<tr>
<td>peak limit</td>
<td>no information</td>
</tr>
<tr>
<td>teratogenic</td>
<td>There is no reason to fear a risk of damage to the developing embryo or foetus when limit value is adhered to</td>
</tr>
</tbody>
</table>

8.2 **Exposure controls**

Technical measures and appropriate work processes have higher priority than personal protective equipment. Provide adequate ventilation by local exhaust ventilation or ventilation in general. Adequate assessment tools for verification of effectiveness of the protective measures includes methods of measurements as described in "Technischen Regeln für Gefahrstoffe (TRGS) 402.

- **Respiratory Protection**
  - Technical measure: wet grinding/processing, avoid dust formation.
  - If glass dust or particulates are above the national exposure limits use a national approved respirator for dust and fibers.
- **Hand Protection**
  - Use protective gloves and safety wristbands for protection against cut injuries.
- **Eye Protection**
  - Use industrial safety glasses that meet national standards.
- **Personnel Protection**
  - Use safety skirting for protection from sharp edges.
  - Wear safety shoes.
9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>solid</td>
</tr>
<tr>
<td>Physical state</td>
<td>solid</td>
</tr>
<tr>
<td>Colour</td>
<td>transparent or coloured</td>
</tr>
<tr>
<td>Odour</td>
<td>odourless</td>
</tr>
<tr>
<td>pH-value</td>
<td>not applicable</td>
</tr>
<tr>
<td>Boiling point/boiling range</td>
<td>not applicable</td>
</tr>
<tr>
<td>Melting point/melting range</td>
<td>540 °C Transformed temperature according to ISO 7884-8</td>
</tr>
<tr>
<td>Flashpoint</td>
<td>not combustible</td>
</tr>
<tr>
<td>Combustibility</td>
<td>not combustible</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>none</td>
</tr>
<tr>
<td>Auto flammability</td>
<td>none</td>
</tr>
<tr>
<td>Danger of explosion</td>
<td>none</td>
</tr>
<tr>
<td>Explosive limits upper / lower</td>
<td>none</td>
</tr>
<tr>
<td>Oxidizing characteristics</td>
<td>none</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>not applicable</td>
</tr>
<tr>
<td>Density (20 °C)</td>
<td>2,45 g/ccm</td>
</tr>
<tr>
<td>Water solubility</td>
<td>not applicable</td>
</tr>
<tr>
<td>Fat solubility</td>
<td>not applicable</td>
</tr>
<tr>
<td>n-octanol-water partition coefficient</td>
<td>not applicable</td>
</tr>
<tr>
<td>Other information</td>
<td>none</td>
</tr>
</tbody>
</table>

9.2 Other information

10. Stability and Reactivity

10.1 Reactivity
Glass is a stable material. Glass is inert to many chemicals, but may react to hot, strong alkaline solutions and with hydrofluoric, fluorosilicic and phosphoric acids. When heated to temperatures above the melting point, metal oxide fumes may be emitted. Glass is an amorphous, inorganic, usually transparent or translucent substance consisting of a mixture of silicates or sometimes borates or phosphates as glass formers. With additions of modifiers a melt is produced at high temperatures, that cools to a solid state without crystallization.

10.2 Chemical stability
Glass is stable at normal environmental conditions.

10.3 Possibility of hazardous reactions
No hazardous reactions at intended use.

10.4 Conditions to avoid
see section 10.1

10.5 Incompatible materials
see section 10.1

10.6 Hazardous decomposition products
see section 10.1
### 11. Toxicological information

#### 11.1 Information on toxicological effects

Toxicological data are not available.

### 12. Ecological information

#### 12.1 Toxicity

unknown

#### 12.2 Persistence and degradability

unknown

#### 12.3 Bioaccumulative potential

unknown

#### 12.4 Mobility in soil

unknown

#### 12.5 Results of PBT and vPvB assessment

unknown

#### 12.6 Other adverse effects

unknown

### 13. Disposal considerations

#### 13.1 Waste treatment methods

Disposal according to local regulations

### 14. Transport information

#### 14.1 UN Number

no requirements

#### 14.2 UN Proper Shipping Name

no requirements

#### 14.3 Transport hazard class(es)

no requirements

#### 14.4 Packing group

no requirements

#### 14.5 Environmental hazards

no requirements

#### 14.6 Special precautions for user

see sections 6 to 8

#### 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

no requirements

### 15. Regulatory information

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

**REACH**

Under REACH glass is classified as a „Substance“. According to Appendix V Number 11 of the REACH regulation glass is exempted from registration if specified conditions are met. SCHOTT AG, Advanced Optics has examined this conditions for its products.

This glass is not subject to registration.

**RoHS**

This glass does not contain - according to our knowledge - materials in concentrations, whose placing on the market is forbidden in accordance to the current requirements of the European Directive 2011/65/EU.

**United Nations Globally Harmonized System (UN-GHS) related to safety information.**

This information considers also the requirements of the UN-GHS related to safety information.
15.2 Chemical Safety Assessment
A Chemical Safety Assessment has not been carried out.

16. Other information

16.1 Composition of mixture according to raw materials, based on the oxides.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No</th>
<th>Proportion of weight (%)</th>
<th>SVHC (REACH) (Y/N)</th>
<th>Reg. (Y/N)</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
<th>Carc. (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica</td>
<td>14808-60-7</td>
<td>&lt; 1</td>
<td>No</td>
<td>Yes</td>
<td>0.1 mg/m³</td>
<td>0.025 mg/m³</td>
<td>No</td>
</tr>
<tr>
<td>Titanium Oxide</td>
<td>13463-67-7</td>
<td>&lt; 1</td>
<td>No</td>
<td>Yes</td>
<td>15 mg/m³</td>
<td>10 mg/m³</td>
<td>No</td>
</tr>
<tr>
<td>Floatglass</td>
<td>65997-17-3</td>
<td>90 - 100</td>
<td>No</td>
<td>Yes</td>
<td>15 mg/m³</td>
<td>10 mg/m³</td>
<td>No</td>
</tr>
</tbody>
</table>

The classification and limiting values are valid for the raw materials, see section 3.
Glass is not a substance of very high concern (SVHC).

Explanations to the data in the table

SVHC (REACH) The raw material is listed in the candidate list of the substances of very high concern.
Reg. Regulated chemical substance per list OSHA Regulations (Standards - 29 CFR) Subpart 1910.1000 Tables Z1 to Z3 Limits for Air Contaminants.
OSHA / PEL Permissible exposure limit – for chemical materials, issued by the OSHA.
ACGIH / TLV Threshold limit value - chemical substances classification by the ACGIH.
OSHA Occupational Safety and Health Administration, an organization of the US. Department of Labor (www.osha.gov).
ACGIH American Conference of Governmental Industrial Hygienists (ACGIH), an member-based organization that advances occupational and environmental health.
Carc. Chemical substance classified as carcinogen.
16.2 Disclaimer
This information is based on our present knowledge, and believed to be correct at the date of publication. However, no representation is made concerning its accuracy and completeness. It is intended as guidance only, and is not to be considered a warranty or quality specification. All materials may present unknown hazards, and should be used with caution. Although certain hazards are described, we cannot guarantee that these are the only hazards which exist.

16.3 Changes
Changes against the previous version are marked at the right-hand margin. The number of the new version is indicated.

Changes in version 5.2
Section 16.1 CAS-No Fluorine revised (effect on fluoride-containing glasses only)

Changes in version 5.1
Section 16.1 CAS-No WO₃ revised (effect on WO₃-containing glasses only)

Changes in version 5
Section 1.4 Update

Changes in version 4.1
Section 16.1: Update

Changes in version 4
Section 1 and 15: REACh-Information updated
Section 1: e-mail address updated

Changes in version 3.0
Section 15.1: Now referring to recast of RoHS directive 2011/65/EU.

Changes in version 2.0
The Safety Data Sheet was adapted according to the requirements of regulation (EC) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 (REACh-Regulation) with regard to Annex II. Most adaptions are editorial amendments. They are not marked at the margin.

Changes of content:
Section 8.1: Exposure Limit Value for dust added.
Section 15.1: Note regarding review added.
Section 16.1: PEL und TLV of US-Organizations added.