Technical Safety Information

following the format of the Safety Data Sheet according to 1907/2006/EC (REACh), Annex II

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

1.1 Product Identifier

Trade name: **AF32® eco**

General name	Inorganic Glass
CAS-number	65997-17-3
EC-number	266-046-0
Notation	"glass, oxide, chemicals"
REACH-Registration	This glass is not subject to registration.

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

identified uses:
Industrial and professional use:
Optical packaging material in semiconductor related applications.

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

Regulation	TRGS 900 - GERMAN OCCUPATIONAL EXPOSURE LIMIT VALUES (01/2006)
Value	0,3 mg / m^3 (EXPOSURE LIMIT VALUE) with reference to the respirable fraction.
peak limit	no information
teratogenic	There is no reason to fear a risk of damage to the developing embryo or foetus when limit value is adhered to

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 effectivity of the protective measures includes methods of measurements as described in "Technischen Regeln for 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

Appearance	
Physical state	solid
Colour	transparent or coloured
Odour	odourless
pH-value	not applicable
Boilling point/boilling range	not applicable
Melting point/melting range	717 °C Transformation temperature according to ISO 7884-8
Flashpoint	not combustible
Combustibility	not combustible
Ignition temperature	none
Auto flammability	none
Danger of explosion	none
Explosive limits upper / lower	none
Oxidizing characteristics	none
Vapour pressure	not applicable
Density (20 °C)	2,43 g/ccm
Water solubility	not applicable
Fat solubility	not applicable
n-octanol-water partition coefficient	not applicable
Other information	none

9.2 Other information none

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. 5.1

chemical name	CAS-No	proportion of weigth (%)	SVHC (REACH) (Y/N)	Reg. (Y/N)	OSHA PEL	ACGIH TLV	Carc. (Y/N)
Aluminum Oxide	1344-28-1	10 - 20	No	Yes	15 mg/m³	10 mg/m³	No
Boron Oxide	1303-86-2	10 - 20	Yes	Yes	15 mg/m³	10 mg/m³	No
Barium Oxide	1304-28-5	1 - 10	No	Yes	0.5 mg/m³	0.05 mg/m³	No
Calcium Oxide	1305-78-8	1 - 10	No	Yes	5 mg/m³	2 mg/m³	No
Magnesium Oxide	1309-48-4	1 - 10	No	Yes	10 mg/m³	10 mg/m³	No
Silica	14808-60-7	60 - 70	No	Yes	0.1 mg/m³	0.025 mg/m³	No
Tin Oxide	18282-10-5	< 1	No	Yes	2 mg/m³	2 mg/m³	No

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 WO_3 revised (effect on WO_3-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
Section15: United Nations Globally Harmonized System - Info added.

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.