

Safety Data Sheet

Chemical Substances and Company Information

Product name (Glass type) S-TIH23

Name of manufacturer Ohara Incorporated

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Hazards Identification

Optical glasses are physically and chemically stable and are not hazardous. However, the following danger hazardousness is concerned during processing of optical glasses.

Hazards : When dust inhales during dry processing and melting, may cause chronic or cumulative health impairment. And gas inhales during melting, may cause acute poisoning and chronic or cumulative health impairment including cancer.

Environmental effects : Pay attention to the concentrations of discharge density of gas during melting as they may damage the ecosystem.

| GHS classification(1 - 115) | | BaO | CaO | Sb ₂ O ₃ |
|--|---|--|---|---------------------------------|
| Physical hazards | Explosives | Not applicable | Not applicable | Not applicable |
| | Flammable / Flammable gases | Not applicable | Not applicable | Not applicable |
| | Flammable / Flammable aerosols | Not applicable | Not applicable | Not applicable |
| | Combustion support / Oxidizing gases | Not applicable | Not applicable | Not applicable |
| | Gases under pressure | Not applicable | Not applicable | Not applicable |
| | Flammable liquids | Not applicable | Not applicable | Not applicable |
| | Flammable solids | Not classified | Not classified | Not classified |
| | Self-reactive substances and mixtures | Not applicable | Not applicable | Not applicable |
| | Pyrophoric liquids | Not applicable | Not applicable | Not applicable |
| | Pyrophoric solids | Not classified | Not classified | Not classified |
| | Self-heating substances and mixtures | Not classified | Not classified | Not classified |
| | Substances and mixtures which, in contact with water, emits flammable gases | Not classified | Not classified | Not classified |
| | Oxidizing liquids | Not applicable | Not applicable | Not applicable |
| | Oxidizing solids | Classification not possible | Classification not possible | Classification not possible |
| | Organic peroxides | Not applicable | Not applicable | Not applicable |
| | Corrosive to metals | Classification not possible | Classification not possible | Classification not possible |
| | Health hazards | Acute toxicity(Oral) | Classification not possible | Category 5 |
| Acute toxicity(Skin) | | Classification not possible | Classification not possible | Classification not possible |
| Acute toxicity(Inhalation: Gas) | | Not applicable | Not applicable | Not applicable |
| Acute toxicity(Inhalation: Vapour) | | Classification not possible | Classification not possible | Classification not possible |
| Acute toxicity(Inhalation: Dust) | | Classification not possible | Classification not possible | Classification not possible |
| Acute toxicity(Inhalation: Mist) | | Not applicable | Not applicable | Not applicable |
| Skin corrosion / Irritation | | Category 3 | Category 1C | Classification not possible |
| Serious eye damage / Eye irritation | | Category 2B | Category 1 | Category 2B |
| Respiratory sensitization | | Classification not possible | Classification not possible | Classification not possible |
| Skin sensitization | | Classification not possible | Not classified | Classification not possible |
| Germ cell mutagenicity | | Classification not possible | Classification not possible | Not classified |
| Carcinogenicity | | Classification not possible | Classification not possible | Category 1B |
| Reproductive toxicity | | Classification not possible | Classification not possible | Category 1B |
| Specific target organ toxicity-Single exposure | | Category 1 (Heart, Digestive system, Muscle) | Category 1 (Respiratory system) | Category 1 (Heart) |
| | | Category 2 (Nervous system) | Category 2 (Systemic toxicity, Digestive organ) | Category 2 (Respiratory system) |
| | | Category 3 (Respiratory tract irritation) | | |
| Specific target organ toxicity-Repeated exposure | | Category 1 (Respiratory system) | Category 1 (Respiratory system) | Category 1 (Respiratory system) |
| Aspiration hazard | Classification not possible | Category 1 | Classification not possible | |
| Environmental Hazards | Hazardous to the aquatic environment (Acute) | Classification not possible | Not classified | Category 3 |
| | Hazardous to the aquatic environment (Chronic) | Classification not possible | Not classified | Category 3 |
| Symbols | | | | |
| | | | | |
| Signal Word | Danger | Danger | Danger | |

| GHS classification(1 - 115) | | SiO ₂ | TiO ₂ | ZrO ₂ |
|--|---|---|-----------------------------|---|
| Physical hazards | Explosives | Not applicable | Not applicable | Not applicable |
| | Flammable / Flammable gases | Not applicable | Not applicable | Not applicable |
| | Flammable / Flammable aerosols | Not applicable | Not applicable | Not applicable |
| | Combustion support / Oxidizing gases | Not applicable | Not applicable | Not applicable |
| | Gases under pressure | Not applicable | Not applicable | Not applicable |
| | Flammable liquids | Not applicable | Not applicable | Not applicable |
| | Flammable solids | Not classified | Not classified | Not classified |
| | Self-reactive substances and mixtures | Not applicable | Not applicable | Not applicable |
| | Pyrophoric liquids | Not applicable | Not applicable | Not applicable |
| | Pyrophoric solids | Not classified | Not classified | Not classified |
| | Self-heating substances and mixtures | Not classified | Not classified | Not applicable |
| | Substances and mixtures which, in contact with water, emits flammable gases | Not classified | Not classified | Not classified |
| | Oxidizing liquids | Not applicable | Not applicable | Not applicable |
| | Oxidizing solids | Classification not possible | Not classified | Not classified |
| | Organic peroxides | Not applicable | Not applicable | Not applicable |
| | Corrosive to metals | Classification not possible | Classification not possible | Classification not possible |
| | Health hazards | Acute toxicity(Oral) | Classification not possible | Not classified |
| Acute toxicity(Skin) | | Classification not possible | Not classified | Not applicable |
| Acute toxicity(Inhalation: Gas) | | Not applicable | Not applicable | Not applicable |
| Acute toxicity(Inhalation: Vapour) | | Not applicable | Classification not possible | Classification not possible |
| Acute toxicity(Inhalation: Dust) | | Classification not possible | Not classified | Not applicable |
| Acute toxicity(Inhalation: Mist) | | Not applicable | Not applicable | Not applicable |
| Skin corrosion / Irritation | | Classification not possible | Not classified | Not classified |
| Serious eye damage / Eye irritation | | Classification not possible | Category 2B | Classification not possible |
| Respiratory sensitization | | Classification not possible | Classification not possible | Classification not possible |
| Skin sensitization | | Classification not possible | Classification not possible | Classification not possible |
| Germ cell mutagenicity | | Not classified | Not classified | Not applicable |
| Carcinogenicity | | Category 1A | Category 2 | Not applicable |
| Reproductive toxicity | | Classification not possible | Classification not possible | Classification not possible |
| Specific target organ toxicity-Single exposure | | Category 1 (Respiratory system) | Classification not possible | Category 3 (Respiratory tract irritation) |
| | | | | |
| Specific target organ toxicity-Repeated exposure | | Category 1 (Respiratory system, Kidney) | Classification not possible | Classification not possible |
| Aspiration hazard | | Classification not possible | Classification not possible | Classification not possible |
| Environmental Hazards | Hazardous to the aquatic environment (Acute) | Classification not possible | Classification not possible | Classification not possible |
| | Hazardous to the aquatic environment (Chronic) | Classification not possible | Category 4 | Classification not possible |
| Symbols | | | | |
| | | | | |
| Signal Word | Danger | Warning | Warning | |

Composition / Information on Ingredients

Substance / Mixture: Mixture

Ingredients and contents

| Chemical name | Chemical formula | Industrial Safety and Health Law | | Chemical Management Promotion Law (Responding to revised government ordinance of Oct 1, 2009) | | | | | | | Poisonous and Deleterious Substances Control Act |
|-------------------|--------------------------------|---|--------------------|--|---------------------------|-----------------------|-------------|---------------------------------------|---|---------------------------------------|--|
| | | Hazardous substances of which notification of names is required | Content (Weight %) | Names of designated chemical substances | Content (Weight %) Note 1 | Appended table number | Item number | Class 1 designated chemical substance | Specified Class 1 designated chemical substance | Class 2 designated chemical substance | |
| Silicon dioxide | SiO ₂ | Silica | 30 - 40 | — | — | — | — | — | — | — | — |
| Titanium dioxide | TiO ₂ | Titanium dioxide | 20 - 30 | — | — | — | — | — | — | — | — |
| Barium oxide | BaO | Barium and its water-soluble compounds | 10 - 20 | — | — | — | — | — | — | — | ○ |
| Zirconium oxide | ZrO ₂ | Zirconium compounds | 0 - 2 | — | — | — | — | — | — | — | — |
| Calcium oxide | CaO | Calcium oxide | 0 - 2 | — | — | — | — | — | — | — | — |
| Antimony trioxide | Sb ₂ O ₃ | Antimony and its compounds | 0 - 2 | Antimony and its compounds | 0.10 | Table 1 | 31 | ○ | — | — | ○ |

Note 1: Weight percentages of relevant substances are listed in accordance with the Chemical Management Promotion Law(Japan)

First Aid Measures

- Eye contact : If the grinding or polishing liquids come into contact with eyes, immediately rinse the eyes with clean water and obtain a medical diagnosis, if necessary. In the case of contact with dust from dry processing, be careful to avoid damaging the eyeballs and obtain a medical diagnosis.
- Mouth contact : If grinding and polishing liquids and dust enter the mouth, rinse with plenty of water. If ingestion occurs, give the patient plenty of water and induce vomiting, then obtain a medical diagnosis, if necessary.

Fire-Fighting Measures

Since optical glasses are nonflammable, any extinguishing media may be used.

Spillage Countermeasures

- Grinding and polishing liquids : Stop the flow with sandbags or the like to prevent the spill from contaminating soil or being absorbed into wastewater systems such as sewers. Collect as much of the released liquid as possible into an empty container.
- Dust : Prevent dust from contaminating soil or being absorbed into wastewater systems such as sewers, and collect as much of the released dust as possible into an empty container. Be sure to remain upwind and wear a dust mask when dealing with dust spills.

Handling and Storage

Since optical glasses are physically and chemically stable, no precautions are required in handling and storage.

During grinding, polishing, and dry processing

- * When handling, be careful to prevent grinding and polishing liquids, grinding and polishing waste, and dust from dry processing from escaping and contaminating the environment; and
- * Gargle and wash hands thoroughly after work.

Exposure Control / Personal Protection

Although there is no potential hazard in exposure to optical glass due to its physical and chemical stability, exposure to the mist scattered during wet processing and the scattered dust created during dry processing may result in injury.

- During wet processing : Prevent mist from scattering by providing the processing machine with a protective cover or the like.
- During dry processing : Prevent dust from scattering by installing a local exhaust system or the like. Wear a dust mask. Wear eye protection, if necessary.

Control concentrations of chemical substances

| | |
|-------------------------|-------------------------|
| Chemical substance name | Dust |
| Control concentration | E=3.0 mg/m ³ |

Physical and Chemical Properties

| | | |
|--|---|---|
| Physical state | : | Solid |
| Color | : | Pale yellow, transparent or colorless and transparent |
| Odor | : | Odorless |
| pH | : | Not applicable |
| Temperature of changing physical state (Yield point) | : | 635°C |
| Specific gravity | : | 3.30 |
| Solubility | : | Low |

Stability and Reactivity

| | | |
|------------------------|---|------------------------|
| Stability | : | Stable |
| Reactivity | : | Normally unobservable |
| Decomposition products | : | Normally unpredictable |

Toxicological Information

Since optical glasses are physically and chemically stable, they do not have acute toxicity or local effects.
Grinding and polishing liquids and grinding and polishing waste and dust have:

| | | |
|------------------|---|---|
| Acute toxicity | : | No information |
| Carcinogenicity | : | No information |
| Chronic toxicity | : | Cumulative chronic toxicity through inhalation and skin contact |

Ecological Information

Since optical glasses are physically and chemically stable, they have no ecological effects.
Gas generated during melting does not have hazardousness to the ozone layer.

Disposal Considerations

Commission disposal to approved and licensed waste disposers in accordance with the relevant laws and regulations concerning the disposal and handing of wastes.

Transport Information

None

Regulatory Information(Japan)

Industrial Safety and Health Law, enforcement ordinance of the same, bylaw of the same
Pneumoconiosis Law, enforcement regulations of the same
Ordinance on the Prevention of Dust Hazard
Ordinance on the Prevention of Lead Poisoning
Ordinance on the Prevention of Hazards due to Specified Chemical Substances
Working Environment Measurement Law, enforcement ordinance of the same, enforcement bylaw of the same, standard of the same, standards for working environment evaluation
Water Pollution Control Law, enforcement ordinance of the same, enforcement bylaw of the same, prefecture and ministry ordinances, notifications, and the like stipulating effluent standards
Chemical Management Promotion Law
Soil Contamination Countermeasures Act, enforcement ordinance of the same, enforcement regulations of the same.
Poisonous and Deleterious Substances Control Act, enforcement ordinance of the same, enforcement regulations of the same.
Waste Disposal and Public Cleansing Law, enforcement ordinance of the same, enforcement bylaw of the same

- Please confirm applicability of laws and regulations depending upon the site scale, installed capacity, and the like.
- Make sure you are aware of and adhere to all applicable local regulations.

Other Information

Contact us if you wish to melt down glass for recycling or other purposes.