CORNING

Safety Data Sheet

Product Identifier: MACOR **SDS ID: C-587**

* * * Section 1 - Identification* * *

Product Identifier: MACOR

Glass Code: 9657
Chemical Name: Glass ceramic
Recommended Use: Used in the manufacture of glass articles

Manufacturer Information

Corning SAS - Specialty Glass
Rue Saint Laurent
CS 10243 Bagneaux sur Loing
F - 77797 Nemours Cedex, France

Phone: 33 (0) 164 454 395

Emergency # 24 Hr. Chemtrec (International) (703) 527-3887
24 Hr. U.S. CHEMTREC: (800) 424-9300

General Comments

NOTE: CHEMTREC telephone number is to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals.

* * * Section 2 - Hazard(s)Identification * * *

Classification in accordance with 29 CFR 1910.1200.

No classification is assigned based on classification criteria.
Review the entire data sheet for any additional information which did not result in a classification.

GHS LABEL ELEMENTS

Symbol(s)

None

Signal Word

None

Hazard Statement(s)

None needed according to classification criteria.

Precautionary Statement(s)

Prevention

Avoid breathing dust. Wash thoroughly after handling.

Response

Get medical advice/attention if you feel unwell.

Storage

None needed according to classification criteria.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulation.

Hazard(s) Not Otherwise Classified

No additional information is available.

* * * Section 3 - Composition / Information on Ingredients * * *

CAS	Component	Percent
66402-68-4	Ceramic materials and wares, chemicals	100
Not Available	Aluminum Oxides (**See NOTE Below)	<20
Not Available	Fluorides (**See NOTE Below)	<7

Component Related Regulatory Information

This product may be regulated and have exposure limits as identified in Section 8.

Component Information/Information on Non-Hazardous Components

This glass article is a solid material produced by combining various raw materials (e.g. oxides, etc.), melting these components together, and cooling to a non-crystalline solid having its own unique properties.

Processing of this article may produce dusts or fumes which are considered hazardous under U.S. 29 CFR 1910.1200 (Hazard Communication) and the Canadian Controlled Product Regulations.

****NOTE:** This component is not a separate component and does not exist in the form of a free oxide, but is included in the glass product. The fluoride component is bound with calcium, potassium, magnesium or aluminum.

* * * Section 4 - First-aid Measures * * *

Description of Necessary Measures

Inhalation

If dust is causing irritation, move person to non-contaminated air. Call a physician if symptoms persist.

Skin Contact

Cuts or abrasions should be treated promptly with thorough cleansing of the affected area.

Eye Contact

Eye injuries from glass particles should be treated by a physician immediately.

Ingestion

The material is a glass article, and ingestion is unlikely.

Most Important Symptoms/Effects

Acute

No information on significant adverse effects.

Delayed

No information on significant adverse effects.

Indication of immediate Medical Attention and Special Treatment

Treat symptomatically and supportively.

* * * Section 5 - Fire-fighting Measures * * *

Suitable Extinguishing Media

Use methods for the surrounding fire.

Unsuitable Extinguishing Media

None known.

Specific Hazards Arising from the Chemical

Material is not a fire hazard. Material may give off metallic oxides if exposed to high temperatures.

Hazardous Combustion Products

Material may form irritating and toxic gaseous oxides at high temperatures.

Special Protective Equipment and Precautions for Firefighters

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire Fighting Measures

Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out.

* * * Section 6 - Accidental Release Measures * * *

Personal Precautions, Protective Equipment and Emergency Procedures

Avoid breathing dust. Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up

Avoid creating dusts. If glass is crushed and airborne dust can be generated then use a dust suppressant or HEPA vacuum. Place in a closed container. Regulations vary. Consult local authorities before disposal. Glass products may be recycled.

* * * Section 7 - Handling and Storage * * *

Precautions for Safe Handling

Obtain special instructions for handling glass before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Do not breathe dust. Avoid contact of dust with skin and eyes. Wash hands after handling. Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces.

Condition for Safe storage, Including any incompatibilities

Keep container closed when not in use. Store in a dry area. Store locked up.

Incompatibilities

None known.

* * * Section 8 - Exposure Controls / Personal Protection * * *

Exposure Limits

The OSHA air contaminants exposure limits (PELs) are those provided in the 1989 update to 29 CFR 1910.1000. These limits were vacated by OSHA and may not be enforceable.

Component Exposure Limits

Ceramic materials and wares, chemicals (66402-68-4)

ACGIH:	10 mg/m3 TWA (inhalable particles, recommended); 3 mg/m3 TWA (respirable particles, recommended, related to Nuisance particulates)
OSHA:	15 mppcf TWA (respirable fraction); 5 mg/m3 TWA (respirable fraction); 50 mppcf TWA (total dust); 15 mg/m3 TWA (total dust, related to Nuisance particulates)
OSHA (Final):	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction, related to Nuisance particulates)
OSHA (Vacated):	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction, related to Nuisance particulates)
Alberta:	10 mg/m3 TWA (total); 3 mg/m3 TWA (respirable, related to Nuisance particulates)
British Columbia:	10 mg/m3 TWA (total dust); 3 mg/m3 TWA (respirable fraction, related to Nuisance particulates)
Manitoba:	10 mg/m3 TWA (inhalable particles, recommended); 3 mg/m3 TWA (respirable particles, recommended, related to Nuisance particulates)
New Brunswick:	3 mg/m3 TWA (particulate matter containing no Asbestos and <1% Crystalline silica, respirable fraction); 10 mg/m3 TWA (particulate matter containing no Asbestos and <1% Crystalline silica, inhalable fraction, related to Nuisance particulates)
NW Territories:	10 mg/m3 TWA (insoluble or poorly soluble, inhalable fraction); 3 mg/m3 TWA (insoluble or poorly soluble, respirable fraction, related to Nuisance particulates) 20 mg/m3 STEL (insoluble or poorly soluble, inhalable fraction); 6 mg/m3 STEL (insoluble or poorly soluble, respirable fraction, related to Nuisance particulates)
Nova Scotia:	10 mg/m3 TWA (inhalable particles, recommended); 3 mg/m3 TWA (respirable particles, recommended, related to Nuisance particulates)
Nunavut:	5 mg/m3 TWA (respirable mass); 10 mg/m3 TWA (total mass, related to Nuisance particulates)
Ontario:	10 mg/m3 TWA (inhalable); 3 mg/m3 TWA (respirable, related to Nuisance particulates)

Quebec:	10 mg/m3 TWAEV (including dust, inert or nuisance particulates, containing no Asbestos and <1% Crystalline silica, total dust, related to Nuisance particulates)
Saskatchewan:	10 mg/m3 TWA (insoluble or poorly soluble, inhalable fraction); 3 mg/m3 TWA (insoluble or poorly soluble, respirable fraction, related to Nuisance particulates) 20 mg/m3 STEL (insoluble or poorly soluble, inhalable fraction); 6 mg/m3 STEL (insoluble or poorly soluble, respirable fraction, related to Nuisance particulates)

Aluminum compounds (may apply to either metal, oxide, or insoluble compounds).

Note that the aluminum in this product is part of the glass product matrix.

ACGIH:	1 mg/m3 TWA (respirable fraction, related to Aluminum)
OSHA (Final):	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
OSHA (Vacated):	10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
NIOSH:	10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable dust, related to Aluminum)
Alberta:	10 mg/m3 TWA
British Columbia:	1.0 mg/m3 TWA (respirable, related to Aluminum)
Manitoba:	1 mg/m3 TWA (respirable fraction, related to Aluminum)
New Brunswick:	10 mg/m3 TWA (particulate matter containing no Asbestos and <1% Crystalline silica)
NW Territories:	10 mg/m3 TWA 20 mg/m3 STEL
Nova Scotia:	1 mg/m3 TWA (respirable fraction, related to Aluminum)
Nunavut:	10 mg/m3 TWA; 5 mg/m3 TWA (respirable mass); 10 mg/m3 TWA (total mass) 20 mg/m3 STEL
Ontario:	1 mg/m3 TWA (respirable, related to Aluminum)
Quebec:	10 mg/m3 TWAEV (containing no Asbestos and <1% Crystalline silica, as Al, total dust)
Saskatchewan:	10 mg/m3 TWA 20 mg/m3 STEL
Yukon:	30 mppcf TWA (Al2O3); 10 mg/m3 TWA (Al2O3) 20 mg/m3 STEL (Al2O3)

Fluorides

ACGIH:	2.5 mg/m3 TWA (as F, related to Fluorides and Hydrogen fluoride)
OSHA (Final):	2.5 mg/m3 TWA (as F); 2.5 mg/m3 TWA (dust, related to Fluorides and Hydrogen fluoride)
OSHA (Vacated):	2.5 mg/m3 TWA (related to Fluorides and Hydrogen fluoride)
Alberta:	2.5 mg/m3 TWA (as F, related to Fluorides and Hydrogen fluoride)
British Columbia:	2.5 mg/m3 TWA (as F, related to Fluorides and Hydrogen fluoride)
Manitoba:	2.5 mg/m3 TWA (as F, related to Fluorides and Hydrogen fluoride)
New Brunswick:	2.5 mg/m3 TWA (as F, related to Fluorides and Hydrogen fluoride)
Nova Scotia:	2.5 mg/m3 TWA (as F, related to Fluorides and Hydrogen fluoride)
Nunavut:	2.5 mg/m3 TWA (as F, related to Fluorides and Hydrogen fluoride) 5 mg/m3 STEL (as F, related to Fluorides and Hydrogen fluoride)
Ontario:	2.5 mg/m3 TWA (as F, related to Fluorides and Hydrogen fluoride)
Quebec:	2.5 mg/m3 TWAEV (as F, related to Fluorides and Hydrogen fluoride)
Saskatchewan:	2.5 mg/m3 TWA (as F, related to Fluorides and Hydrogen fluoride) 5 mg/m3 STEL (as F, related to Fluorides and Hydrogen fluoride)
Yukon:	2.5 mg/m3 TWA (as F, related to Fluorides and Hydrogen fluoride)

2.5 mg/m3 STEL (as F, related to Fluorides and Hydrogen fluoride)

Appropriate Engineering Controls

If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits.

Individual Protection Measures, such as Personal Protective Equipment

Eyes/Face Protection

Wear safety glasses with side shields.

Skin Protection

Wear cut resistant gloves when handling glass and appropriate clothing to keep dust from skin.

Respiratory Protection

Not normally needed. If permissible levels are exceeded, use appropriate NIOSH approved dust respirator.

Gloves recommendations

Wear cut resistant gloves when handling and appropriate clothing to keep dust from skin

General Information

Use good hygiene practices when handling this material including changing and laundering work clothing after use.

* * * Section 9 - Physical and Chemical Properties * * *

Appearance:	White solid	**Odor:**	None
Physical State:	Glass	**pH:**	Not applicable
Vapor Pressure:	Not applicable	**Vapor Density:**	Not applicable
Boiling Point:	Not applicable	**Melting Point:**	Not applicable
Solubility (H2O):	Not applicable	**Freezing Point:**	Not applicable
Softening Point:	Not available	**Molecular Weight:**	Not applicable
Density:	2.52 g/cm3	**Flash Point:**	Not applicable
Flash Point Method:	Not applicable	**Auto Ignition:**	Not applicable
Lower Flammability Limit:	Not applicable	**Upper Flammability Limit:**	Not applicable

* * * Section 10 - Stability and Reactivity * * *

Reactivity

No hazard expected.

Chemical Stability

Stable.

Possibility of Hazardous Reactions

Will not occur.

Conditions to Avoid

None known.

Incompatible Materials

None known.

Hazardous Decomposition Products

At very high temperatures irritating and toxic gaseous metallic oxides can be formed.

* * * Section 11 - Toxicological Information * * *

Acute Toxicity

Overexposure to dusts of this product may produce eye irritation including redness, scratching of the cornea, and tearing. Mechanical irritation from inhalation of product dust may cause coughing, soreness of throat and nose, and sneezing. Very high exposures may cause difficulty in breathing, congestion, tightness of chest and hemorrhage. Fluoride ingestion may cause acute systemic poisoning. Fluoride has been reported to effect gastric, intestinal, circulatory, respiratory, and nervous systems, as well as skin rashes and complaints related to bones, joints and muscles.

Component Analysis - LD50/LC50

No LD50/LC50's are available for this product's components.

Chronic Toxicity

Repeated inhalation of dust of this product in very large amounts may cause damage to the lung.

ROUTES OF EXPOSURE

Inhalation

Dusts of this product may cause irritation of the nose, throat, and respiratory tract.

Ingestion

May cause temporary irritation of the throat, stomach, and gastrointestinal tract.

Skin

Dust or powder may irritate the skin. Mechanical rubbing may increase skin irritation. No components in this product are known to be absorbed through the skin.

Eyes

Dust or powder may irritate eye tissue. Rubbing may cause abrasion of cornea.

Immediate Effects

respiratory tract irritation, skin irritation, eye irritation

Delayed Effects

No information on significant adverse effects.

Medical Conditions Aggravated by Exposure

Irritation/Corrosivity Data

respiratory tract irritation, skin irritation, eye irritation

Respiratory Sensitization

No information available for the product.

Dermal Sensitization

No information available for the product.

Germ Cell Mutagenicity

No information available for the product.

Carcinogenicity

None identified.

Component Carcinogenicity

Fluorides (See NOTE Below) (Not Available)**

ACGIH: A4 - Not Classifiable as a Human Carcinogen (related to Fluorides and Hydrogen fluoride)

Reproductive Toxicity

No information available for the product.

Specified Target Organ Toxicity - Single Exposure

No target organs identified.

Specified Target Organ Toxicity - Repeated Exposure

No target organs identified.

Aspiration Hazard

No data available.

Other Toxicological Information

Under normal conditions of use for glass products, the likelihood of inhaling or ingesting amounts necessary for these effects to occur is very small.

* * *Section 12 - Ecological Information* * *

Ecotoxicity

No information available.

Component Analysis - Ecotoxicity - Aquatic Toxicity

No ecotoxicity data are available for this product's components.

Environmental Fate

No information available.

Persistence & Degradability

No information available for the product.

Bioaccumulation

No information available for the product.

Mobility

No information available for the product.

* * * Section 13 - Disposal Considerations * * *

Disposal Methods

You must test your waste using methods described in 40 CFR Part 261 to determine if it meets these or other applicable definitions of hazardous wastes. Waste must be handled in accordance with all applicable regulations. Glass products may be recycled.

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

US EPA Waste Number & Descriptions

You must test your waste using methods described in 40 CFR Part 261 to determine if it meets these or other applicable definitions of hazardous wastes.

Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

Disposal of Contaminated Packaging

Reuse or recycle if possible. If recycling is not practicable, dispose of in compliance with local regulations. Dispose in accordance with all applicable local regulations.

* * * Section 14 - Transport Information * * *

US DOT Information

Not regulated as a hazardous material.

TDG Information

Not regulated as a dangerous good.

IATA Information

Not regulated as dangerous good.

* * * Section 15 - Regulatory Information * * *

U.S. Federal Regulations

This product contains metal(s), which as dusts, fumes or particulates, is subject to the reporting requirements of Section 313 of SARA and its associated regulations. If the physical form and usage meets the definition of an article, no reporting is necessary.

Component Analysis

None of this product's components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).

SARA 311/312 Hazardous Categories (40 CFR 370 Subparts B and C)

Acute Health No **Chronic Health** No **Fire** No **Pressure** No **Reactive** No

U.S. State Regulations

Other state regulations may apply. Check individual state requirements.

Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
Aluminum Oxides	Not Available	Yes	Yes	Yes	No	Yes
Fluorides ([1]related to: Fluorides and Hydrogen fluoride)	Not Available	Yes[1]	No	Yes[1]	Yes[1]	No

Not regulated under California Proposition 65.

Canadian WHMIS Information

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all information required by CPR.

WHMIS Classification:

This product is exempt as an article.

Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Aluminum Oxides (Not Available)

1 %

Additional Regulatory Information

Inventory

Component	CAS #	TSCA	DSL	EINECS
Ceramic materials and wares, chemicals	66402-68-4	Yes	Yes	Yes
Aluminum Oxides	Not Available	Yes	Yes	Yes

* * * Section 16 - Other Information * * *

NFPA Ratings: Health: 1 **Fire:** 0 **Reactivity:** 0 **Other:** 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

HMIS Ratings: Health: 1* **Fire:** 0 **Physical Hazard:** 0 **Pers. Prot.:** Gloves/glasses

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists; CAS = Chemical Abstracts Service; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; CFR = Code of Federal Regulations; CPR = Controlled Products Regulations; DOT = Department of Transportation; DSL = Domestic Substances List; EINECS = European Inventory of Existing Commercial Chemical Substances; EPA = Environmental Protection Agency; IARC = International Agency for Research on Cancer; IATA = International Air Transport Association; mg/Kg = milligrams per Kilogram; mg/L = milligrams per Liter; mg/m3 = milligrams per Cubic Meter; MSHA = Mine Safety and Health Administration; NA = Not Applicable or Not Available; NIOSH = National Institute for Occupational Safety and Health; NJTSR = New Jersey Trade Secret Registry; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; SARA = Superfund Amendments and Reauthorization Act; TDG = Transport Dangerous Goods; TSCA = Toxic Substances Control Act; WHMIS = Workplace Hazardous Materials Information System.

SDS History

Revision 2.0000, 27-AUG-2015: Updated to OSHA GHS format.
Revision 1.0000, 24-OCT-2011: New MSDS.

Other Information

Reasonable care has been taken in the preparation of this information, but Corning makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. Corning makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use.

End of Sheet C-587