

Section I: Identification

Trade Names: Kugler Colors in rods, grits, foil and powder.

Section II: Hazardous Ingredients

The glass may contain one or more of the hazardous components mentioned in the enclosed list. Enclosed please find a list of chemical compounds used in glass manufacture. Changes in the chemical compounds occur during glass formation.

Because this glass may be ground, polished, fused, reheated, or reformed, toxic substances in the glass may become bioavailable. Because Friedrich Farbglasshütte has no control over uses and processes, we are listing all toxic substances as if they are all 100% bioavailable.

Section III: Physical Data

Boiling Point:	Greater than 3000 degrees F
Specific Gravity:	2,5 - 3
Melting Point:	1300 degrees F softens, 1800 degrees F - 2000 degrees F melts
Vapor Pressure (mm Hg):	Not Applicable
Vapor density (air = 1):	Not Applicable
Evaporation Rate (Butyl Acetate = 1):	Not Applicable
Solubility in Water:	Negligible
Appearance:	In form of rods, grits, powder and cullets
Odor:	No odor

Section IV: Fire and Explosion Data

Flash Point (method used):	Not Applicable
Flammable Limits:	Non Flammable
LEL:	Not Applicable
UEL:	Not Applicable
Extinguishing Media:	Not Applicable
Special Fire Fighting Methods:	Not Applicable
Unusual Fire and Explosion Hazards:	May emit toxic fume at temperature above 1300 degrees F.

Section V: Reactivity Data

Stability:	Stable
Conditions to avoid:	Not Applicable

Silica in the glass will dissolve in hydrofluoric acid and produces a corrosive gas - silicon tetrafluoride. Hydrofluoric acid may also produce highly toxic hydrogen selenide gas from selenium and some selenium compounds.

Hazardous Decomposition or Byproducts: At temperatures above 1300 degrees F hazardous cadmiums and zinc selenide fume may be given off.

Hazardous Polymerization: Will not occur. Conditions to avoid? None

Section VI: Health Hazard Data

Routes of Entry: Inhalation? Yes Skin? Yes Ingestion? Yes

Health Hazards Acute and Chronic:

Acute: Skin Contact - Sharp edges and slivers of glass may cut or puncture the skin.

Ingestion - Ground glass or glass particles may cause internal bleeding requiring medical attention.

Inhalation - **DUST:** Glass dust may cause respiratory irritation.
FUME: When glass is reheated or melted hazardous fume may be given off which can cause nausea, gastric pain, irritation to the upper respiratory tract. A single exposure to CdO fume can cause acute poisoning with severe lung irritation and pulmonary edema, which can be fatal.

Chronic: Inhalation and Ingestion: Repeated inhalation of irritating glass dust may cause chronic respiratory diseases. Repeated inhalation or ingestion of glass dust or fume containing small amounts of one or more of the following toxic components: Selenium, Cadmium, Chromium, Fluoride, Zinc, may cause or contribute to the following chronic diseases.

Selenium: Selenosis. Compounds of selenium are an IARC Class 2 carcinogen.

Cadmium: Cd poisoning is characterized by lung injury (Emphysema), and Kidney dysfunction (proteinuria). Compounds of cadmium dust and fume are considered cancer agents. Cadmiums dusts and salts are IARC Class 2a, NTP class 2 carcinogens. Cadmium oxide fume is considered a human carcinogen by the ACGIH.

Chromium: Suspected cancer agent.

defects or other reproductive harm.

Zinc: Lung damage from inhalation of fume.

CARCINOGENICITY

Component	NTP	IARC	OSHA
Cadmium and its compounds (dusts)	yes	yes	no
Chromium (VI) compounds (chromates)	yes	yes	no
Selenium compounds	no	yes	no
Selenium sulfide	yes	yes	no

Symptoms and signs of over exposure:

DUST: Inhalation of large amounts of dust or powdered glass will cause shortness of breath and reduced pulmonary function. No toxic metal ingredients should be present in amounts sufficient to produce acute symptoms.

FUME: Inhalation of fume from the reheating or melting of the glass can cause Metal Fume Fever symptoms, metallic taste in mouth, shortness of breath, gastric pain and flu-like symptoms.

Medical conditions aggravated by overexposure:

Individuals with respiratory and cardiovascular disease. Exposure to toxic metal fumes may contribute to kidney dysfunction.

Emergency First Aid Procedures:

Eyes: Flush with running water, see an ophthalmologist.
Ingestion: Receive medical attention.
Inhalation: Dust - Move to fresh air.
Fume - Receive medical attention. Drink milk to counteract Metal Fume Fever.
Cut: Stop bleeding, clean wound, and apply a bandage.
See a doctor if necessary.

As in all medical emergencies report to your supervisor and receive follow-up medical attention for treatment, observation, and support as needed.

Section VII: Safe Handling and Use

Steps to be taken if material is released or spilled: Sweep, use measures to avoid creating dust.

Waste Disposal Methods: Follow Federal, State, and Local regulations for disposal of glass.

Precautions in Handling and Storage: Take precautions against bag breakage or spillage, avoid creating dust.

Other precautions: Use adequate ventilation and dust collection as needed. When cutting or grinding glass in a recycled water cooled system small amounts of sodium may dissolve and become concentrated in the

water as sodium hydroxide. When using a water cooled cutting or grinding system wear rubber gloves to protect hands and wear safety splash goggles.

Section VIII: Control Measures

Respiratory Protection: Use conventional particulate respiratory protection based on considerations of airborne concentrations and duration of exposure.

Ventilation

Local Exhaust: To meet PEL requirements

Mechanical (general): To meet PEL requirements

Eye Protection: Safety Glasses, Face Shield.

Other Protective Clothing: As appropriate in light of specific application.

Work Hygienic Practices: Avoid creating dust. Change clothes and shoes, shower at end of work day.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process. The information set forth herein is based on technical data that Friedrich Farbglasshütte GmbH believes to be reliable, but Friedrich Farbglasshütte GmbH extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of this information for any purchases use or for any consequences of its use in various processes.