Safety in the Kiln-Glass Studio

GENERAL CONSIDERATIONS

Good housekeeping and common sense go a long way to insuring safety in the glassforming studio. Practice good ventilation, keeping dust levels to a minimum, and confining hazardous materials within a limited area.

Avoid eating and drinking in the studio area. Toxins and dusts are readily ingested when you handle both food and kilnworking materials in the same space. Wash your hands upon leaving the studio and, if you cannot change clothes after a day in the shop, wear a smock or apron while working.

Physical condition and lifestyle choices can be factors when working with certain hazardous materials. Smoking has been proven to increase the rate at which many toxins are ingested. Pregnant women, children under twelve years of age, and persons on certain forms of medication may have increased susceptibility to some chemicals.

Some of the hazards specific to materials used in the kilnforming of glass are covered in the table on the following page. For a thorough introduction to hazards in the world of arts and crafts, see *The Artist's Complete Health and Safety Guide*, 3rd Ed., by Monona Rossol (Watson-Guptill Publications, 2001).

SAFE KILN USE

Read the manual.

Because firings can release vapors and fumes from glazes and other materials, kilns should be operated only in well-ventilated areas.

Burns can be avoided with protective clothing. Heat-resistant gloves should be worn whenever opening the kiln.

Never reach into a hot kiln (e.g., during glass combing or other manual forming) until first turning off the power.

Prolonged viewing into a hot kiln exposes the eyes to potentially damaging infrared light. Excessive exposure can cause cataracts. Wear safety glasses with protective ANSI shade 1.7 lenses. Didymium glasses which are used for flameworking do not provide protection from infrared light.

BASIC SAFETY EQUIPMENT

Safety glasses.
Make sure they have side shields.

Respirator.
NIOSH-approved* for specific process: fume, vapor or dust-trapping.

Heat-resistant gloves.
Non-asbestos Zetex or Kevlar.

Lightweight cotton gloves.
Protect skin from irritating dusts or fibers.

Bandages.
Cuts are inevitable but clean and rarely serious.

*National Institute of Occupational Safety and Health, **www.cdc.gov/niosh/homepage.html**

KILNFORMING HAZARDS TABLE

MATERIAL	HAZARD	PRECAUTION
Sheet glass Cullet Billets	Cuts, chips in the eyes during scoring and breaking, dusts created in grinding. If ground extremely fine or to a powder, the hazard of the glass depends on the solubility of any toxic metals it contains. Powders may irritate the eyes, skin, and respiratory system.	a) Always wear eye protection. Safety glasses should have side shields. Goggles are recommended during grinding. b) Gloves provide some protection against cuts but often hamper dexterity. Glass cuts are generally clean. Wash with hydrogen peroxide and bandage. c) During grinding or polishing, wear a NIOSH-approved* air purifying respirator designed to trap dusts, and consider using local ventilation. Change the replaceable filter cartridge regularly.
Glass frits	See above. Be cautious of frits from lead-bearing glasses. May be both irritating and toxic.	See c) above
Shelf primer Kiln wash	Inhalation of (silica) dust can cause respiratory irritation. Long-term exposure may cause silicosis.	Wear a particulate-trapping respirator when mixing dry powder. Wear a respirator while scraping fired shelves clean and do so with local ventilation.
Ceramic fiber products	Irritation of eyes, skin, and respiratory system, particularly when cut or torn. Fired fiber products readily release dusts that are dangerous to breathe.	Avoid contact with skin. Wear a respirator designed to filter particulates. Clean residual fiber from glass under water. Dispose of used materials in a sealed plastic bag.
ThinFire Shelf Paper	Disintegrates into a dusty tissue on firing.	See above precautions for ceramic fiber products. Avoid breathing residual dust. Vacuum out kiln using a High Efficiency Particulate Air (HEPA) filter vacuum* or remove from kiln shelf by saturating with water and collecting in a plastic bag.
Wax	Overheated and burning wax produces acrolein and aldehydes which are respiratory irritants and suspected human carcinogens.	Avoid overheating wax and steam wax out of molds instead of burning it out. There is no approved respirator that filters wax vapors.
Plaster	Skin, eye, and respiratory irritant. Contains mild alkalis and can produce burns.	Wear safety goggles and a particulate filter respirator while mixing investment, and while divesting molds, and consider using local ventilation. Use a protective cream and/or gloves for skin and hands.
Silica	Irritates respiratory system. Long-term exposure may cause silicosis.	Wear a NIOSH-approved* particulate respirator and consider using local ventilation.
Talc	Respiratory irritant. Dusts may irritate the eyes.	Wear safety goggles and a particulate filter respirator and consider using local ventilation.

*** Additional safety resources:**

1. National Institute of Occupational Safety and Health (NIOSH) website: **www.cdc.gov/niosh/homepage.html**

2. U.S. Environment, Safety, and Health (HEPA) website: **www.eh.doe.gov/hepa**

3. Your local safety supply store may be able to provide assistance in the proper fit of safety wear and additional advice on equipment purchase. In Portland, Sanderson Safety Supply, 1101 SE 3rd Avenue, (503) 238-5700, provides personal protective equipment, apparel, first aid supplies, and environmental protection.

4. Greg Rawls is a glass artist, an industrial hygienist, and certified safety professional with helpful information on his website relating to safety for the glass artist: **www.gregorieglass.com/Health_Safety_Menu.htm**

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