

GUIDELINES FOR THE SAFE USE OF CERAMIC ART MATERIALS

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X.2.2 Scope - These safety guidelines are meant for use by ceramic artists and craftspeople who create, or recreate, in a limited number, largely by hand, works that may or may not have a practical use, but in which aesthetic considerations are paramount. These guidelines are meant for use in hobby and contemporary ceramic studios. Commercial manufacturing facilities may use these guidelines as a supplement to other safety information, such as material safety data sheets or OSHA hazard communication programs. However, these guidelines may not cover every safety concern found in commercial manufacturing facilities.

X.2.3 Definitions

X2.3.1 The term hobby ceramics refers to prepackaged, preformulated ceramic art materials which include clays, glazes, slips and other materials used in the production of hobby ceramics.

X.2.3.2 The term contemporary ceramics refers to the decoration of bisqueware using either lead-free underglaze or acrylic paint.

X2.4 Hazard and Safe Use labels - Read labels with care. In ceramics, as in all areas of human activity, proper usage of products ensures safety. Misuse of products may expose the ceramist to potentially harmful substances. Care should be taken to read all label

instructions before using a product. Labels will identify any hazardous ingredients and their hazards, provide first aid instructions and give recommendations on how to use safely and prevent excessive exposure. For an example of a label that may be used with lead-containing ceramic glazes, see section X2.11.7.

X2.5 Housekeeping - Common-sense cleanup and maintenance of the work area is a must for people working with ceramics. It is strongly recommended that the following rules be observed.

X2.5.1 Clean jar rims before closing to eliminate buildup of dried product.

X2.5.2 Dust Control - Dust control measures are necessary for any operation which may generate dust. Such operations include mixing of dry ceramic materials, grinding, drilling or sanding greenware or bisqueware.

X2.5.2.1 Keep working surfaces and shelves clean by wiping down with a wet sponge, rinsing the sponge frequently.

X2.5.2.2 Clean up spills when they occur. Do not allow to dry.

X2.5.2.3 Wet-mop floor to control dust; do not sweep.

X2.5.2.4 Vacuuming can be used for dust clean up but the vacuum should be equipped with HEPA-type exhausting filter that traps particles 0.3 micron in diameter or larger.

X2.5.2.5 For easy cleanup of spills, work over a linoleum or sealed floor. All work surfaces should be non-porous.

X2.5.2.6 In order to decrease dust production, clean greenware when damp. Alternately, use a down draft ventilated cleaning table exhausting dust out of doors.

X2.5.2.7 Work on newspaper or a paper towel for easy cleanup and disposal.

X2.6 Personal Hygiene - Ceramic products and materials can be handled very safely if we keep in mind that materials should not be ingested or dust inhaled. Do no smoke, eat or drink when working with potentially hazardous ceramic materials. Such practices can leave substances such as salt and oil on the work surfaces and thus ruin your glazes.

X2.6.1 Always wash hands thoroughly when you are through, even after removing gloves. Be sure to put away materials where small children cannot reach them. Do not use any utensils that will later be used in the kitchen. If there is an accidental ingestion, call a doctor or your local Poison Control Center, listed with emergency numbers in the front of may telephone books.

X2.6.2 Materials used to produce ceramics should not be handled when you have any cuts or open wounds.

X2.7 Personal Protective Equipment - For some areas of ceramics, simple forms of personal protective equipment are recommended. Remove jewelry and use vinyl or lined rubber work gloves when glaze dipping or loading kilns.

X.2.7.1 Protection Against Kiln Hazards.

X.2.7.1.1 Insulating gloves should be worn when handling a kiln after the venting period as the handle will be hot. Never touch the outside of a kiln (other than the control panel) when it is turned on as the kiln surface temperature may be very hot.

X2.7.1.2 Dark-shaded glasses from a safety supply house (shade number 1.7-3.0) are recommended when looking into kiln peepholes. Normal sunglasses are inadequate for this purpose. Using the proper glasses not only helps protect your eyes from the radiating heat but also allows you to see witness cones more clearly.

X2.7.2 in order to prevent home contamination, a smock or apron should be worn when working with hobby ceramic materials. The smock or apron should be left in the work area. Either launder regularly or use a disposable vinyl apron.

X2.7.3 Protection Against Dust Exposure

X.2.7.3.1 The wearing of contact lenses is not recommended when working in dusty environments. dust particles may become trapped between the lens and the surface of the eye, and these small particles can scratch the eye.

X2.7.3.2 Respirators are recommended for glaze-spraying operations. Inexpensive disposable-type respirators which have been approved by the National Institute of Occupational Safety and Health (NIOSH) for use with mists or dusts are commonly available for use when spraying water-based glazes. For solvent-based materials use a NIOSH approved respirator with a cartridge specific for the solvent in question. Replace filter elements often. A safety supply house is the best source of dust masks and information. Please note that ordinary masks sold by paint and hardware stores do not offer adequate protection from glaze mists.

X2.7.3.3 For work with hazardous particulates, use NIOSH approved respirator for fumes.

X2.8 Kiln Safety - Electric hobby kilns should be installed in accordance with local electrical and fire safety codes and in accordance with manufacturers suggested installation instructions.

X2.8.1 For used kilns, contact manufacturers for installation instructions.

X2.8.2 Hobby kilns are electrical appliances used to heat the pieces to a very high temperature. It's possible to receive a shock or to be burned if the kiln is misused or abused.

Do not operate a kiln in a wet area. Do not allow children near the kiln.

X2.8.3 Do not plug in or unplug the kiln unless the circuit is off. Turn all switches to OFF before loading or unloading the kiln. Do not open the lid with the kiln turned on.

X2.8.4 Do not leave papers or combustibles around the kiln, or place objects on the kiln while firing. Always unplug the kiln while making any repairs.

X2.8.5 Do not try to unload the kiln until the outside of the kiln is cool to the touch and the pieces can be easily touched by hand. Removing hot pieces presents risks of burns or fires or crazing of glazed surfaces.

X2.8.6 When unloading a kiln, be careful of the stilt marks on glazed ceramic pieces. They can be sharp and should be smoothed as soon as possible with a grinding wheel or stone. Be sure to wear safety glasses while grinding off stilt marks.

X2.9 Ventilation to Control Dust and Fume Exposures

X2.9.1 Electric kilns should be properly ventilated. All indoor kilns should be used with an exhausting canopy type hood, down draft kiln vent or exhaust fan to assure adequate cross ventilation.

NOTE: Warning - Fossil fuel kilns (oil, gas, coal, wood, etc.) Must have outside ventilation. These kilns are not covered under X2.8.1 and the user should contact the kiln manufacturer and a local, licensed heating, ventilation and air-conditioning contractor for proper installation.

X2.9.2 All hoods and ventilation equipment should be installed by qualified professionals following manufacturers' installation procedures and directions. To determine the appropriate ventilation, it is recommended that a local licensed heating, ventilation and air-conditioning contractor be consulted.

X2.9.3 Hoods should be exhausted to out of doors. There should be good dilutional (general) ventilation and an adequate make up air source to assure efficient hood operation.

X2.9.4 Replace all spray booth filters often. For example, if glazes are sprayed for two hours a day, the filter should be replaced at least every week; if glazes are sprayed eight or more hours a day, the filter should be replaced daily. Use the same safety precautions during filter changes that you would use when handling dry glazes.

X2.9.5 The need for hood repair or filter changes can be checked by lighting a match at your work station in front of the hood. If ventilation is adequate, the hood draw should blow the match out. HAC mechanics have equipment for more accurate testing of the adequacy of hood ventilation.

X2.10.6 Always turn on your kiln hood or vent prior to loading to prevent ceramic glaze dust

exposure.

X2.10 Food-Safe (Dinnerware Safe) Glazes - Many glazes are formulated to be safely used on surfaces that come in contact with food or drink. These glazes are labeled food or dinnerware safe. The jar directions should be followed closely.

X2.10.1 Do not mix lead-containing food-safe glazes, as the balance of ingredients in each glaze will be disrupted. Each mixture would have to be retested by an approved laboratory to determine if the mixture is also food safe. Non-lead containing food or dinnerware safe glazes can be mixed.

X2.10.2 Proper firing of food-safe glazes is critical. Pyrometric witness cones should be used on the kiln shelves to ensure that the pieces are fired hot enough, even if the kiln is electronically controlled or has an automatic kiln sitter. Always fire in accordance with manufacturers instructions. If crazed or underfired, these glazes may not be food safe. Improperly fired lead-containing glazes may leach excessive levels of lead.

X2.11 Lead and/or Cadmium Containing Glazes - Lead and cadmium are used in many ceramic glazes. The cadmium is essential to produce the brilliant reds and yellows. The lead gives a brilliance to the glaze and allows the glazes to mature in the hobby firing range.

X2.11.1 When excessive amounts of cadmium are inhaled, lung damage may occur. Excessive absorption may result in kidney damage, damage to the testes or risk to the developing fetus. Cadmium dust, when it is in a respirable form, is considered a human cancer agent.

X2.11.2 Excessive lead absorption may result in damage to the nervous system with weakness and difficulty in thinking, kidney damage or risk to the developing fetus. Children are particularly susceptible to absorbing lead and to adverse effects associated with lead absorption. Lead is an experimental cancer-causing agent. Health risk from the use of glazes containing lead and/or cadmium are minimized when these safety guidelines are followed.

X.2.11.3 Children (6th grade and under) should not use lead-containing glazes or other hazardous ceramic materials and should not be present where lead-containing glazes are used for dipping or where kiln loading occurs.

X.2.11.4 Studios using lead-containing glazes should not be in or attached to homes.

X.2.11.5 Dipping with lead-containing glazes and kiln work areas should be in a room or rooms separated from the studio area.

X.2.11.6 Pregnancy Issues

X.2.11.6.1 Women who are pregnant or considering pregnancy should only work with lead-containing glazes in a supervised hobby ceramics studio. Such individuals should avoid

dipping lead-containing glazes or kiln loading.

X.2.11.6.2 Pregnant women or women contemplating pregnancy who are active ceramists should notify the physician of their work with ceramic products.

X.2.11.7 Label for Lead-Containing Glazes - Labeling precautions for lead-containing glazes may include the following words:

WARNING: MAY BE HARMFUL IF SWALLOWED. CANCER AGENT BASED ON EXPERIMENTAL DATA. EXPOSURE MAY CAUSE HARM TO THE DEVELOPING FETUS. EXPOSURE MAY CAUSE DAMAGE TO THE TESTES OR DIFFICULTY WITH REPRODUCTION (CHILD BEARING). EXPOSURE MAY CAUSE NERVOUS SYSTEM, KIDNEY OR BONE MARROW DAMAGE.

CONTAINS: LEAD

PRECAUTIONS: Do not spray apply. Wash hands immediately after use. When using do not eat, drink or smoke. Wear a work apron. Keep in original container. AVOID USING IF PREGNANT OR CONTEMPLATING PREGNANCY. NOT FOR USE IN HEALTH CARE FACILITIES. KEEP OUT OF REACH OF CHILDREN.

FIRST AID: If swallowed, get prompt medical attention.

For further health information contact a poison control center.

X2.12 Sprays, Solvents & Overglazes - These products are easy to use safely and will present no problems as long as these three important rules are observed: keep out of reach of children, use in a well-ventilated area, and clean up after use. Prior to using spray aerosols, solvents or overglazes, read the warning labels and safe use instructions on the containers. Over exposure to solvent-containing ceramic materials can result in symptoms of eye or nose irritation, headaches, dizziness, nausea and confusion.

X.2.12.1 Containers should be kept tightly closed when not in use.

X2.12.2 Aerosol sprays, solvents and solvent-based overglazes should be used out of doors, in a locally exhausting hood or spray booth or with a window exhaust fan to assure adequate cross ventilation.

X2.12.3 Flammable Materials - If solvents, spray aerosols or solvent-based overglazes are flammable, they should not be used near a heat source or open flame, or close to the kiln.

X.2.12.3.1 Rags and paper towels or tissues used with these products should be placed in a metal container designed for disposal of flammable materials. Alternately contaminated materials can be washed or placed under water until final disposal.

X.2.13.3.2 If the solvents are know to be flammable, an explosion-proof fan should be used in any exhaust unit.

X2.13 Quartz-Containing Ceramic Materials - As with any finely ground substance, dust control is the primary safety factor to be remembered by those who customarily mix

powdered slips, clays or ceramic glazes. Slips, clays, and some ceramic glazes contain quartz. Dust exposures also occur when cutting, sanding, grinding or drilling ceramic materials.

X2.13.1 Excessive inhalation of quartz dust can result in chronic lung damage. Quartz dust, when it is in a respirable (breathable) form, is considered a human cancer agent.

X2.13.2 When activities potentially generate ceramic dust, use a NIOSH-approved mask for fumes and mix the materials under a locally exhausting hood.

X2.13.2.1 When ever possible use pre-prepared liquid glazes to decrease risks of glaze dust exposure.

X2.13.3 Dry glazes containing lead or cadmium should not be used in hobby or contemporary ceramic studios.

X2.14 Spraying Glazes - When spraying glazes, use extreme caution and follow these safety "musts". Lead or cadmium-containing glazes should not be sprayed in hobby or contemporary ceramic studios.

X2.14.1 Use a spray booth equipped with a strong fan that exhausts all glaze mists outside of the work area.

X2.14.2 Use a NIOSH-approved mask appropriate for the type of glaze being sprayed.

X2.14.3 Wear protective clothing including hair covering that is removed before eating, drinking, smoking or leaving work. Wash hands thoroughly immediately after spraying and removing protective clothes. Do not smoke or eat in the work area.

X.2.14.4 For further information on safe spraying of ceramic glazes, see ASTM Standard Practice C1192¹

X2.15 Medical Supervision - Regular blood lead testing should be done for any individual who works routinely dipping with lead-containing glazes or loading kilns.

X2.16 Keep these common-sense safety rules in mind and remember to observe them. Make sure to observe them. Make sure your students, clients and employees read this booklet and provide them with any necessary safety equipment. Post a simple list of safety rules in classrooms and work areas. A list of classroom studio safety rules might include some, or all, of these pointers:

Keep work surfaces and shelves clean by wiping down with a wet sponge.

¹ Available from ASTM, 100 Barr Harbor Dr., W. Conshohocken, PA 19428-2959

- ! **Clean up spills when they occur. Do not allow to dry.**
- ! **Work on a newspaper or paper towel for easy cleanup and disposal.**
- ! **Do no smoke, eat or drink with working with hazardous ceramic materials.**
- ! **Wash your hands thoroughly when you are through working.**
- ! **Use a smock when working with ceramic materials.**
- ! **Keep children away from kilns and out of glaze dipping rooms.**
- ! **Children should not use lead-containing glazes or other hazardous ceramic materials.**
- ! **Do not mix lead-containing food-safe glazes.**
- ! **If pregnant or contemplating pregnancy, tell your physician about your work with ceramics.**
- ! **When using solvent-containing ceramic materials:**
 - work out of doors, in a locally exhausting hood or with an exhaust fan.
 - do not use or store near kilns, other heat sources or an open flame.
 - dispose of used rags in a metal container or under water.
- ! **When spray applying glazes:**
 - work in a spray booth.
 - use a NIOSH-approved respirator for mists.
- ! **When work generates ceramic dust:**
 - use a NIOSH-approved respirator for fumes.
 - work in a locally exhausting hood.