




























## MATERIAL HAZARDS

# HAZARD SYMBOLS

## HAZARDS

Eye	 H  M  L
Nose	 H  M  L
Mouth	 H  M  L
Hand	 H  M  L
Poisonous	
Explosive	
Corrosive	
Carcinogen	
Flammable	
Fatal	
Narcotic	
Allergies	
DO NOT USE	
Toxic Gas	
Death	
Medical	
Toxic	
Cuts	
Burns	

## SAFETY PRACTICES

Wet Mop	
Ventilation	
Dustmask	
Gloves	
Wash hands	
Avoid Ingestion	
Proper Storage	
Goggles	
Avoid Flame	

# SCULPTURE

## GENERAL SCULPTURE

### 1. CERAMICS

Clay

Glaze

Stone

### 2. PLASTER

### 3. WOOD

### 4. WAX

Marble/Stone

Other Solid Media

### 5. MIXED MEDIA

Textile/Wood/ Metal/ Bone

Others

Others

### 6. PLASTER

Plaster

Plaster/ Stone/ Marble/ Wood/ Metal

Other Media

Others

Plaster/ Wood/ Metal/ Stone/ Others

Plaster/ Wood/ Metal/ Stone/ Others

## GENERAL SCULPTURE - PLASTER AND STONE

### 1. PLASTER

### 2. PLASTER

### 3. PLASTER

### 4. PLASTER

### 5. PLASTER

### 6. PLASTER

### 7. PLASTER

### 8. PLASTER

### 9. PLASTER

### 10. PLASTER

## GENERAL SCULPTURE - PLASTER AND STONE

### 1. PLASTER

### 2. PLASTER

### 3. PLASTER

### 4. PLASTER

### 5. PLASTER

### 6. PLASTER

### 7. PLASTER

### 8. PLASTER

## GENERAL SCULPTURE - PLASTER AND STONE

### 1. PLASTER

### 2. PLASTER

### 3. PLASTER

### 4. PLASTER

### 5. PLASTER

# SCULPTURE

Sculpture is design in three dimensions. It is an ADDITIVE, SUBTRACTIVE, or ASSEMBLING process.

One prime source of hazard is the inhalation of dust or powder created when carving, grinding, or sanding various sculpture media such as clay, wood, plaster of paris, and stone. The premixing of materials such as plaster, cement, and clay also creates dusts and powders which are inhalation hazards. These materials are breathed directly into the lungs and then move into the blood stream causing further physical injury beside the chemical dangers inherent in the materials themselves.

Stains, stripers, varnishes, and solvents used in the finishing of some sculptures are also inhalation irritants and should be used with care in a properly vented work space.




The inhalation hazards of the materials used in creating plastic sculpture are many. Epoxy, polyester resin, hardeners and casting agents frequently pose extreme health hazards. These types of materials should only be used in work spaces with adequate ventilation and then only with careful supervision and proper protective gear.

Chemicals which are used to make glazes may pose an additional health hazard. Care should be used when mixing dry glaze, to avoid inhalation of dusts and skin contact. Know what chemicals you are using and what their specific dangers are. It is safer to buy pre-mixed lead free glazes.










The sharp carving and cutting tools used in subtractive sculpture for removing wood, clay, or plaster pose a potential hazard. Keep work securely fastened to a stand or clamp. Keep fingers and hands away from tools. Smaller cuts help students keep greater control of their tool or knife.

Clean the studio by wet mopping or shop wet vacuum to avoid breathing dusts. All oily rags or rags used with solvents must be discarded daily into a metal container. Keep counters, tables, and floor free from shavings or dust to avoid a potential fire hazard. Make sure an appropriate fire extinguisher is available for immediate use.

SCULPTURE  
CERAMIC













MATERIAL	SYMBOL	HAZARD
<p><u>CERAMICS</u></p>		<p><u>GENERAL</u></p> <p>The long term inhalation of dusts from clays, glazes and colourants, as well as the fumes and gases produced during the firing process are the major problems when working with ceramics</p> <p>Children are more susceptible than adults to the hazards of fumes and dust</p>
<p><u>CLAYS</u> contain</p> <p><b>Silica</b></p> <p><b>Kaolin</b></p> <p><b>china clay</b></p>		<p>Mixing clay is very hazardous.</p> <p>Causes silicosis or Potters'Rot after extended exposure.</p> <p>May cause lung scarring</p>
<p><b>Talc</b></p> <p><b>asbestos</b></p> <p>Found in low fire clay and slip casting clays</p>		<p>Prolonged use causes lung cancer.</p>
<p><u>GLAZES</u> may contain free silica in the form of :</p> <p><b>Flint/silica</b></p> <p><b>Feldspar/talc</b></p>		<p><u>GENERAL</u></p> <p>Mixing of dry powders or spraying glazes may be extremely hazardous and may cause silicosis, lung cancer and severe respiratory disorders.</p>

# SCULPTURE CERAMIC






SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
   	<p><u>GENERAL</u></p> <p>Wear a NOISH-approved toxic dust respirator when mixing clay powders or glazes</p> <p>Proper ventilation system</p> <p>Wet-mop clean up</p> <p>Do not eat or drink in studio</p> <p>Wear aprons or coveralls and wash them frequently</p> <p>Use warm water and barrier cream</p>	<p>Always buy pre-mixed clay</p>
 	<p>Wear dust respirator</p> <p>Use proper ventilation</p> <p>Use proper ventilation</p>	
 	<p>Use proper ventilation</p> <p>AVOID use</p>	<p>USE: Asbestos-free talcs and/ or talc-free clay</p>
 	<p>Wear approved respirator</p> <p>Use a well-ventilated spray booth at all times if spraying</p>	<p>Use acrylic paint, tempera paint, stain or shoe polish</p> <p>Coat with polymer medium or liquid floor wax</p>

SCULPTURE

CERAMIC
















MATERIAL	SYMBOL	HAZARD
<u>GLAZES</u> <u>TOXIC METALS</u> <u>COLOURANTS</u> and <u>MATERIALS</u>  * Antimony	    H	* highly toxic- may cause cancer  Vomiting  Chronic exposure may cause liver damage
* Asbestos	 H	Stomach, lung, and intestinal cancer
* Barium		Chronic poisoning  Heart irregularities
* Berellium, Beryllia	 H	Lung damage  Severe pneumonia-like disease, frequently fatal
Bone ash	L	Irritant
Boric acid	 L  M	Skin rash  Chronic poisoning
* Cadmium	 H  H	Carcinogen  Kidney, liver , bone , and teeth damage
* Chromium compounds lead chromate zinc chromate iron chromate	 H  H	Lung cancer  Chromium and lead poisoning

## SCULPTURE CERAMIC

SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
	<p><u>GENERAL</u></p> <p><b>* AVOID USE</b></p> <p>All materials listed should be used with caution</p>	
	Use proper ventilation	
	Use approved respirator	
	Wear gloves	
	Wet mop cleanup	
	Do not eat or drink in studio	
	Wear apron or coveralls	
	Wash studio clothes separately from regular clothing	



SCULPTURE  
CERAMIC





















MATERIAL	SYMBOL	HAZARD
<b>GLAZES</b> <b>Cobalt</b>	 M  L	Asthma, fibrosis, vomiting, diarrhea
<b>Colemanite</b>		Gastric irritation Skin ulceration
<b>Copper carbonate</b>	 M  M	Anemia, skin allergies Ulceration of nasal cavity
<b>* Cryolite</b> <b>* Cornish stone</b>	 H   H 	Lung irritation Weight loss Bone and dental defects Poisonous fluorine gas released during firing
<b>* Feldspar</b>	 H  H	Silicosis
<b>* Flint</b>		Silicosis
<b>* Fluorspar</b>	 M  H	Skin irritant Poisonous fluorine gas released during firing
<b>* Lead compounds</b> <b>naples yellow</b> <b>raw</b> <b>fritted</b>	 L  H  M	Skin irritant Poisonous fluorine gas released during firing
<b>* Lithium</b>	 H	Mood-altering drug

SCULPTURE  
CERAMIC






SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
<div> <div> <div> <div> <div></div> <div></div> </div> <div> <div></div> <div></div> </div> <div> <div></div> <div></div> </div> <div> <div></div> <div></div> </div> </div> </div> </div>	<div> <div>GENERAL</div> <div>* AVOID USE</div> <div>All materials listed should be used with caution</div> <div>Use proper ventilation</div> <div>Use proper respirator</div> <div>Wear gloves</div> <div>Wet mop clean up</div> <div>Do not eat or drink in studio</div> <div>Wear aprons or coveralls</div> <div>Wash studio clothes separately from regular clothing</div> </div>	

SCULPTURE

CERAMIC










MATERIAL	SYMBOL	HAZARD
<b>GLAZES</b>  * Manganese carbonate * Manganese dioxide	 H  L	Poisoning  Nervous system disease
* Nickle	 M  M	Skin sensitizer / allergies  Lung and nasal cancer
* Plant ash	M	Free alkali causes burns
Potash	 M  H  M	Severe damage to mouth  Pulmonary edema
* Potassium dichromate	 H  M	Poisoning  Perforated septum
Pumice	 H  L	Silicosis
Soda ash	  M  H	Corrosive to eyes and skin  Pulmonary edema
Sodium silicate	 M  M	Skin irritation
* Uranium	 H	Lung cancer  Radioactive
* Vermiculite	 H  H  L	Stomach, intestinal, and lung cancer

SCULPTURE  
CERAMIC






SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
<div> <div>  </div> <div>  </div> <div>  </div> <div>  </div> <div>  </div> </div>	<div> <div> <div>GENERAL</div> <div>* AVOID USE</div> </div> <div> <div>All materials listed should be used with caution</div> <div>Use proper ventilation</div> <div>Use proper respirator</div> <div>Wear gloves</div> <div>Wet-mop clean up</div> <div>Do not eat or drink in studio</div> <div>Wear aprons or coveralls</div> <div>Wash studio clothes separately from regular clothing</div> </div> </div>	

SCULPTURE

CERAMIC









MATERIAL	SYMBOL	HAZARD
<b><u>GLAZES</u></b> * Zircon Zircopax	 H  L  L	Silicosis
<b><u>KILNS</u></b> <b>Fumes and Gases</b>  carbon monoxide chlorine fluorine formaldehyde ozone sulfur dioxide	 H	Highly toxic gases are released during the firing process of both bisque and glaze ware
<b>Infrared Radiation</b>	 M	Cataracts may be caused from continually looking through the peephole
<b><u>2. PLASTER</u></b> Plaster dust calcium sulfate	 L  M	Eye irritation  Respiratory problems
<b>Additives</b> burnt lime	 M  H	When making casts of hands or arms, you can be severely burned

SCULPTURE  
CERAMIC







SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
	See Glaze Safety procedure	
	All kilns must be ventilated, preferably with power exhaust over head hoods	
	Infrared goggles or a hand held infrared shield should be used when looking through kiln peephole	
  	Wear NIOSH-approved dust respirator when mixing large amounts of plaster  Wear gloves  Use caution when making plaster casts of body parts , especially with children  Wet-mop clean up  Hint: Cover work surface with wet newspapers to keep down dust and make cleanup easier  Keep plaster moist while carving	

SCULPTURE

STONE

MATERIAL	SYMBOL	HAZARD
<p><b>3. <u>STONE</u></b></p> <p><b><u>STONE DUST</u></b> from</p> <p><b>Amethyst</b>  <b>Brownstone</b>  <b>Granite</b>  <b>Jasper</b>  <b>Onyx</b>  <b>Opal</b>  <b>Quartz</b>  <b>Sandstone</b>  <b>Slate</b>  <b>Soapstone</b></p> <p><b>Greenstone</b>  <b>Serpentine</b>  <b>Soapstone</b></p>	<div> <div>  <div>H</div> </div> <div>  <div>L</div> </div> <div>  <div>L</div> </div> </div> <div> <div>  <div>H</div> </div> <div>  <div>H</div> </div> <div>  <div>L</div> </div> </div>	<p>Large amounts of free silica cause silicosis</p> <p>May contain asbestos,causing lung cancer ,  asbestosis,and mesothelioma</p>
<p><b><u>CHOPPING</u></b>  <b><u>GRINDING</u></b>  <b><u>CARVING</u></b></p>	<div> <div>  <div>H</div> </div> </div>	<p>Eye injury from flying chips</p>
<p><b><u>NOISE/VIBRATION</u></b>  From using  <b><u>PNEUMATIC TOOLS</u></b></p>	<div> <div>  <div>H</div> </div> </div>	<p>Noise can cause hearing loss</p> <p>Circulatory disease</p> <p>Vibration can cause circulatory diseases such as  white or dead fingers</p>










SCULPTURE  
STONE

SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
<div> <div>  </div> <div>  </div> <div>  </div> </div>	<div> <div>AVOID USE</div> <div>Wear respirator</div> <div>Avoid creating and inhaling dust</div> <div>Wet-mop cleanup</div> </div>	
<div> <div>  </div> </div>	<div> <div>AVOID USE</div> </div>	
<div> <div>  </div> <div>  </div> </div>	<div> <div>Wear protective goggle when chipping or grinding</div> <div>Wet mop-cleanup</div> </div>	
	<div> <div>Wear proper ear protection</div> <div>AVOID letting hands get chilled -have frequent breaks and have comfortable hand grips on tools</div> </div>	







SCULPTURE

WAX/WOODWORKING









MATERIAL	SYMBOL	HAZARD
<p><b>4. <u>WAX</u></b></p> <p><b><u>NATURAL WAXES</u></b></p> <p><b>Beeswax</b>  <b>Paraffin</b>  <b>Petroleum waxes</b>  such as  <b>microcrystallin</b></p>	  H 	<p>Overheating may cause fire or decomposition into strong lung irritants such as acrolcin and formaldehyde</p> <p>Thermal burns</p>
<p><b><u>CHLORINATED WAXES</u></b></p> <p><b>Polychlorinated terphenyls</b>  Sometimes used in foundry casting waxes</p>	 H  H	<p>Chemically related to PCB'S - extremely dangerous carcinogen</p> <p>Severe skin disease, liver damage</p> <p>Possible damage to reproductive system</p>
<p><b><u>SOLVENTS</u></b></p> <p><b>Carbon tetrachloride</b>  Used to remove wax</p>	 H	<p>Extremely dangerous</p> <p>See PAINTING-solvents</p>
<p><b>5. <u>WOODWORKING</u></b></p> <p><b><u>TOXIC WOODS</u></b>  <b><u>WOOD DUST</u></b></p> <p><b>American mahogany</b>  <b>African mahogany</b>  <b>Beech</b></p>	  	<p><u>GENERAL</u>  Hardwood workers have a much higher risk of developing nasal and sinus cancer than the general population</p> <p>Respiratory disease</p> <p>Skin irritation and allergies</p>

SCULPTURE  
WAX/WOODWORKING











SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
	<p>Wax should never be heated with an open flame or on a hot plate with exposed element to avoid fire</p> <p>Use heat source with a fine temperature control and heat wax to lowest workable temperature to avoid formation of toxic gases</p> <p>Safe temperature range from 200 to 250 degrees F.</p>	
	<p>AVOID USE at all times</p>	
	<p>AVOID USE</p>	<p>Use mineral spirits or benzine instead of solvent</p> <p>Dry clean fabric</p> <p>Set iron on low heat</p>
	<p>AVOID inhalation of wood dust, especially from hard wood</p>	

SCULPTURE

WOODWORKING







MATERIAL	SYMBOL	HAZARD
<u>TOXIC WOODS</u> <u>WOOD DUST</u> Cocobolo Cork oak Ebony Grand Sequoia Iroko Maple woods Mansonia Redwood Rosewood Satinwood South American Boxwood Teak Walnut Western Red Cedar	  	Chronic inhalation of sawdust can cause chronic respiratory diseases  Handling many of these woods can cause skin irritation and allergies
<u>SOLVENTS</u> Paint strippers Finishers may contain benzene  methyl alcohol methylene chloride toluene	 H  H  H	Highly toxic when ingested, inhaled or absorbed through the skin  Causes leukemia
<u>TOXIC PRESERVATIVES</u> Arsenic compounds Creosote Penta chlorophenol	 H  H  M	Carcinogen  May cause problems with reproductive system

SCULPTURE  
WOODWORKING

SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
<div>  <p>Use proper ventilation</p>  <p>Wear respirator</p>  <p>Wear gloves or apply barrier creams before handling wood that causes skin allergies</p>  <p>Vacuum or damp-mop cleanup</p> <p>Do not sweep</p>  <p>Do not allow sawdust to accumulate, it can be extremely explosive</p> </div>		
<div>  <p>Good ventilation</p> <p>Exhaust fan</p>  <p>AVOID USE</p>  <p>No smoking or open flame to avoid fire or explosion</p>  <p>Dispose of solvent-soaked rags properly in self-closing container</p> </div>		<p>For finishing,use tung oil , linseed oil, or Swedish oil</p>
<div>  <p>AVOID USE</p> </div>		










SCULPTURE

WOODWORKING/PLASTICS











MATERIAL	SYMBOL	HAZARD
<p><b><u>WOODWORKING</u></b></p> <p><b><u>ADHESIVES</u></b>  Used for laminating wood</p> <p><b>Epoxy resins</b>  <b>Formaldehyde resin</b>  <b>Solvent-based contact glues</b></p>	<div>  </div> <div>  </div>	<p>Respiratory irritation</p> <p>Lung problems and allergies</p> <p>Skin allergies</p>
<p><b><u>6. PLASTICS</u></b>  Working with finished plastics</p> <p><b><u>ACRYLICS</u></b></p> <p><b>Methyl Methacrylate Monomer</b></p>	<div>  </div> <div>  </div>	<p><b><u>GENERAL</u></b></p> <p>Inhalation of dust created in sanding and cutting processes can cause lung problems. Dangerous toxic gases are released when plastics are heated</p> <p>Causes headaches, irritability, and narcosis when inhaled</p> <p>Skin irritant and sensitizer</p>
<p><b><u>POLYESTER RESIN</u></b>  <b><u>FIBERGLASS RESINS</u></b>  Used for molding, laminating and casting</p> <p><b>Styrene monomer</b>  <b>Methyl ethyl Ketone peroxide</b></p>	<div>  </div> <div>  </div>	<p>Aromatic hydrocarbons</p> <p>Powerful narcotic</p> <p>Liver and nerve damage from repeated exposure</p> <p>May cause blindness if splashed in eyes</p>

SCULPTURE








WOODWORKING/PLASTICS

SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
<div>    </div>	<div> <div>Use proper ventilation</div> <div>Wear gloves or barrier cream</div> <div>No smoking or open flame</div> </div>	<div> <div>Use water-based contact adhesives, casein glues or white glues</div> </div>
<div>     </div>	<div> <div>Wear goggles to avoid eye contact</div> <div>Wear gloves</div> <div>Use proper ventilation</div> <div>Wear dust mask</div> </div>	
<div>   </div>	<div> <div>Wear goggles</div> <div>Wear gloves when pouring and handling polyester resins</div> <div>Do not use styrene for cleanup</div> <div>Wear clothing that covers arms and legs. Remove contaminated clothing immediately and shower</div> </div>	

**SCULPTURE  
PLASTICS**





MATERIAL	SYMBOL	HAZARD
<b><u>PLASTICS</u></b>  <b><u>EPOXY RESINS</u></b> Used in laminating, casting, glues, lacquer coatings  <b>Uncured epoxy resin</b>  <b>Hardener</b>	 H   H	Overheating produces decomposition of products which may cause irritation  Suspected carcinogen  Strong sensitizer and skin irritant in minute quantities
<b><u>POLYURETHANES</u></b>  <b>Isocyanates</b> TDT MDI   <b>Catalysts</b>     <b>Fluorocarbon</b>	 H   H   H  H  H   H  H  H	Causes bronchitis, pulmonary edema, and severe asthma  Causes immediate skin irritation on contact  Lung irritant  May cause liver and kidney damage  Loss of feeling, heart arrhythmias and unconsciousness  Cardiac arrest under certain conditions
<b><u>VINYL POLYMERS</u></b> <b><u>THERMOPLASTICS</u></b>  <b>Polyvinyl chloride</b> P.V.C.		May cause liver cancer

SCULPTURE  
PLASTICS







SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
  	Use respirator Wear gloves AVOID skin contact Do not overheat	
  	Use local exhaust ventilation Use approved respirators Do not spray polyurethanes unless wearing a self-contained breathing apparatus. Particles remain suspended for several hours Do not overheat	
	AVOID inhaling fumes released from decomposition of PVC	



**SCULPTURE  
PLASTICS**

MATERIAL	SYMBOL	HAZARD
<p><b><u>POLYSTYRENES</u></b> <b><u>STYROFOAM</u></b></p> <p>Gases released during heating</p> <p><b>Methyl chloride gas</b></p> <p><b>Styrene monomer</b></p>	<div> H</div> <div></div>	<p>Suspected carcinogen</p> <p>Ingestion in small amounts causes drunkenness and in large amounts, dizziness , staggering or death</p> <p>Flammable Pentane gas released when using expanded polystyrene beads</p>
<p><b><u>ADDITIVES</u></b> <b><u>FILLERS</u></b></p> <p><b>Fiberglass</b></p> <p><b>free silica</b></p> <p><b>asbestos</b></p>	<div> M</div> <div> H</div>	<p>Irritating to lungs</p> <p>Causes fine cuts</p>

SCULPTURE  
PLASTICS

SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
  	<p>Use respirator</p> <p>Use proper ventilation</p> <p>AVOID open flames</p>	
  	<p>Use proper ventilation</p> <p>Wear gloves</p> <p>AVOID skin contact and inhalation of vapors or dusts</p>	

## **WELDED SCULPTURE**

**ELECTRIC ARC PROCESS  
OXYACETYLENE PROCESS  
SILVER BRAZING**

Oxyacetylene torches can produce temperatures as high as 3500 degrees C. or 6300 degrees F. and are used for welding or cutting metals.

Metal electrode arc welding and inert gas-shielded arc welding produce temperatures of 5000 degrees C. or 10000 degrees F..

Welding produces toxic gases such as carbon dioxide and carbon monoxide, ultraviolet light and infrared radiation from the heated and molten metal.

The fluxes used in welding may contain highly toxic fluorides. Use safer fluxes and respirators.

Use welder's goggles and welder's helmet to avoid eye damage from the intense light. Wear leather gloves, long sleeved shirts and leather apron for protection against flying sparks.

Store oxygen and acetylene cylinders valve end up and secure with chains to ensure they cannot fall over. Always use a pressure reducing regulator attached to the cylinder valve. Never use regulators, hoses or other apparatus from one type of gas with any other type of gas.

Keep work space clean and free from flammable materials. Have an appropriate fire extinguisher ready for immediate use.

Use a flint lighter to light torch. Shut down cylinder valves and release pressure when the welding operation is finished.

Beware of the types of metals and fluxes used and avoid those which release highly toxic fumes.





Ultraviolet light will react with chlorinated hydrocarbons to form PHOSGENE, a highly poisonous gas. Work in well ventilated work space.

Never allow metal electrode, metal part of electrode holder, or part of insulation to contact skin.








<b>WELDED SCULPTURE</b> <b>ELECTRIC ARC PROCESS</b>
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MATERIAL	SYMBOL	HAZARD
<u>ELECTRODE COATINGS</u> Fluoride	⌋ H	Lung irritation Pulmonary edema Osteofluorosis
Manganese	⌋ H	Pulmonary edema Pneumonia Parkinson's-like disease
<u>ELECTRIC CURRENT</u>		Electric shock
<u>FOUND METALS</u> Unknown composition	⌋ H	Fumes may be highly toxic See METAL FUMES









<b>WELDED SCULPTURE</b> <b>ELECTRIC ARC PROCESS</b>
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SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
	<p>Use proper venting</p> <p>Work in well-ventilated area</p>	
	<p>Use proper venting</p> <p>Work in well-ventilated area</p>	
	<p>Be certain welding machine is properly grounded</p> <p>Be sure all joints in electric cable are properly insulated and all connections are tight</p> <p>Do not use cable with frayed, cracked or bare spots</p> <p>Never allow metal electrode or any part of the electrode holder to touch your bare skin or wet clothing</p> <p>Always wear dry welding gloves</p> <p>AVOID standing on wet surface when welding</p>	
	<p>Work in well-ventilated area</p> <p>Use proper venting</p>	











WELDED SCULPTURE  
ELECTRIC ARC PROCESS

MATERIAL	SYMBOL	HAZARD
<div> <div>FOUND METALS</div> <div>Unknown paint composition</div> </div>	<div>  </div>	<div>Fumes may be highly toxic</div>
<div> <div>HOT METAL PIECES</div> </div>	<div>  </div>	<div>Thermal burns</div>
<div> <div>HOT MOLTEN METAL</div> </div>	<div>  </div>	<div>Thermal burns to eyes and skin</div>
<div> <div>HOT SPARKS</div> </div>	<div>    </div>	<div>Thermal burns to eyes and skin</div> <div>Fire</div>
<div> <div>LIGHT RAYS</div> <div>Infrared</div> </div>	<div>  </div>	<div>Eye inflammation and cataracts</div>
<div> <div>Ultraviolet</div> </div>	<div>  </div>	<div>Welder's flash- blistering of eye surface</div> <div>Serious sunburn-type skin damage</div> <div>Skin cancer</div>

<b>WELDED SCULPTURE</b> <b>ELECTRIC ARC PROCESS</b>
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SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
	Work in well-vented area  Use proper venting	
	Wear welding gloves  Treat ALL metals as being hot	
 	Wear safety "flash" goggles under welding helmet  Wear welding gloves	
 	Wear safety "flash" goggles under welding helmet  Wear welding gloves  Wear suitable fire-resistant protective clothing  Keep welding area clear of all combustible materials	
 	Wear protective "flash" glasses under welding helmet  Never look at the electrode arc with naked eyes  Wear welding gloves and long sleeved clothing  Always work behind a protective fire resistant screen to protect the eyes of other students  Do not expose unprotected skin to rays	

WELDED SCULPTURE  
ELECTRIC ARC PROCESS

MATERIAL	SYMBOL	HAZARD
<u>METAL FUMES</u> <u>BERYLLIUM</u>	 H   M	Human carcinogen  Often fatal pneumonia-like disease  Skin ulcers
<u>BRASS</u>	 H   L	Metal fume fever, chills, shakes  Skin ulcers
<u>BRONZE</u>	 H   L	Metal fume fever  Skin allergies
<u>CADMIUM</u>	 H	Lung irritation  Pulmonary edema
<u>CHROMIUM</u>	 H	Respiratory irritation and allergies  Lung cancer  Skin allergies
<u>COPPER</u>	 M	Metal fume fever
<u>IRON</u>	 M	Metal fume fever



**WELDED SCULPTURE**  
**ELECTRIC ARC PROCESS**







SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
	AVOID USE	
	Work in well-vented area Use proper ventilation	
	Work in well-vented area Use proper ventilation	
	Work in well-vented area Use proper ventilation	
	Work in well-vented area Use proper ventilation	
	Work in well-vented area Use proper ventilation	
	Work in well-vented area Use proper ventilation	

WELDED SCULPTURE

ELECTRIC ARC PROCESS



MATERIAL	SYMBOL	HAZARD
<div>METAL FUMES</div> <div>LEAD</div>	<div> <div> <div> <div></div> <div></div> </div> <div>H</div> </div> </div>	<div>Lead poisoning</div> <div>Suspected mutagen</div>
<div>MANGANESE</div>	<div> <div> <div> <div></div> <div></div> </div> <div>H</div> </div> </div>	<div>Pulmonary edema and pneumonia</div> <div>Padkinson's- like disease</div>
<div>MILD STEEL</div>	<div> <div> <div> <div></div> <div></div> </div> <div>H</div> </div> </div>	<div>Metal fume fever</div>
<div>NICKLE</div>	<div> <div> <div> <div></div> <div></div> </div> <div>H</div> <div>↓</div> </div> </div>	<div>Lung or nasal cancer</div>
<div>STAINLESS STEEL</div>	<div> <div> <div> <div></div> <div></div> </div> <div>H</div> <div>↓</div> </div> </div>	<div>Lung or nasal cancer</div>
<div>ZINC</div>	<div> <div> <div> <div></div> <div></div> </div> <div>H</div> </div> </div>	<div>Metal fume fever</div>

**WELDED SCULPTURE**  
**ELECTRIC ARC PROCESS**

SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
	Work in well-vented area Use proper ventilation	
	Work in well-vented area Use proper ventilation	
	Work in well-vented area Use proper ventilation	
	Work in well-vented area Use proper ventilation	
	Work in well-vented area Use proper ventilation	
	Work in well-vented area Use proper ventilation	



WELDED SCULPTURE

ELECTRIC ARC PROCESS


MATERIAL	SYMBOL	HAZARD
<div><div>PHOSGENE GAS</div><div>Caused by reaction between CHLORINATED HYDROCARBONS and ULTRAVIOLET LIGHT e.g. perchloroethylene methylchloroform</div></div>	<div> H</div>	Phosgene gas poisoning
<div><div>SHARP EDGED METAL PIECES</div></div>	<div></div>	Cuts and skin abrasions

WELDED SCULPTURE

ELECTRIC ARC PROCESS

SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
	Do not place hydrocarbons where ultraviolet light can reach item	
	Wear welding gloves	









**WELDED SCULPTURE**  
**OXY-ACETYLENE PROCESS**

MATERIAL	SYMBOL	HAZARD
<p><b><u>ACETYLENE</u></b></p> <p>Oxy-acetylene torches can reach temperatures of 3500 degrees C</p> <p>Used for cutting or welding metals</p> <p>Oxygen and acetylene come in cylinders under high pressure</p> <p>The welding process produces gases, intense visible and ultraviolet light and the molten metals produce infrared radiation</p>		<p>Fire and explosion</p>

**WELDED SCULPTURE  
OXY-ACETYLENE PROCESS**







SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
	<p>Call acetylene by its name and not by the word 'gas'</p> <p>Store and use acetylene with the valve end up</p> <p>A pressure-reducing regulator must be attached to cylinder when using acetylene</p> <p>The acetylene cylinder valve outlet should always point away from the oxygen cylinder</p> <p>When opening acetylene cylinder do not turn valve more than 1-1/2 revolutions</p> <p>Cylinder valve key must always be attached to cylinder for emergency shut off</p> <p>Never use acetylene at 15 P.S.I. or above</p> <p>Always use the proper wrench for opening and closing acetylene cylinder</p> <p>Be sure all connections are clean and gas tight</p> <p>Always close valves on the acetylene cylinder and release pressure from regulator and hose when leaving the work area for any extended period or when work is completed</p> <p>Always have cap on acetylene cylinder when moving it</p> <p>Never attempt to use acetylene apparatus with any other gas</p>	

WELDED SCULPTURE  
OXY-ACETYLENE PROCESS















MATERIAL	SYMBOL	HAZARD
<u>ACETYLENE</u> Oxy-acetylene torches can reach temperatures of 3500 degrees C  Oxygen and acetylene come in cylinders under high pressure  Used for cutting or welding metal	 	Fire and explosion
<u>CARBON DIOXIDE</u>	 H	In concentration, can cause asphyxiation
<u>CARBON MONOXIDE</u>	 H	Carbon monoxide poisoning
<u>FOUND METALS</u> Unknown composition	 H	Fumes may be highly toxic See metal fumes
<u>FOUND METALS</u> Coated with unknown paint composition	 H	Fumes may be highly toxic
<u>HOT METAL PIECES</u>  <b>Infra-red radiation</b> <b>Molten metal</b>	 H  	Eye inflammation and cataracts  Thermal burns to skin












**WELDED SCULPTURE**  
**OXY-ACETYLENE PROCESS**

SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
	<p>Always protect the hose from rupture, mechanical damage, sparks or open flame</p> <p>Always keep cylinder at least 5 feet away from welding or oxy-acetylene cutting operation</p> <p>Keep work area free from all combustibile material</p> <p>Do not force connections which do not fit</p> <p>In the event of leakage from an acetylene cylinder move it out in the open air and call the distributor</p>	
	Work only in well-ventilated area	
	Work only in well-ventilated area	
	Work only in well-ventilated area	AVOID USE
	Work only in well-ventilated area	
 	<p>Wear proper goggles</p> <p>Wear sleeves and welding gloves</p> <p>Treat all metal as if it were hot</p>	

WELDED SCULPTURE  
OXY-ACETYLENE PROCESS

MATERIAL	SYMBOL	HAZARD
<u>HOT SPARKS</u>	 H  H 	Thermal burns to eyes and skin  Fire
<u>METAL FUMES</u>  BERRYLIUM	 H ↓  M	Berylliosis, often fatal pneumonia- like diaease  Carcinogen  Skin ulcers
BRASS	 H  L	Metal fume fever, chills, shakes  Skin allergies
<u>BRONZE</u>	 M  L	Metal fume fever  Skin allegeries
<u>CADMIUM</u>	 H	Lung irritation possible pulmonary edema
<u>CHROMIUM</u>	 H  M	Lung cancer , allergies, respiratory irritation  Skin allergies
<u>COPPER</u>		
<u>IRON</u>	 M	Metal fume fever
<u>LEAD</u>	 H	Lead poisoning  Suspected mutagen

**WELDED SCULPTURE**  
**OXY-ACETYLENE PROCESS**






SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
	Wear proper goggles Wear fire resistant clothing, cuffles pants, ankle boots,and welding gloves  Keep area clean of combustable materials	
	Work only in well-ventilated area	AVOID USE
	Work only in well-ventilated area	
	Work only in well-ventilated area	
	Work only in well-ventilated area	AVOID if possible
	Work only in well-ventilated area	
	Work only in well-ventilated area	
	Work only in well-ventilated area	
	Work only in well-ventilated area	

WELDED SCULPTURE





OXY-ACETYLENE PROCESS

MATERIAL	SYMBOL	HAZARD
<u>MANGANESE</u>	☞ M	Pulmonary edema , pneumonia Parkinson's like disease
<u>NICKLE</u>	☞ H	Lung or nasal cancer  Pulmonary edema from gases formed in oxy-acetylene process
<u>MILD STEEL</u>	☞ M	Metal fume fever
<u>STAINLESS STEEL</u>	☞ M	Lung or nasal cancer  Pulmonary edema from gases formed in oxy-acetylene process
<u>ZINC</u>	☞ M	Metal fume fever





WELDED SCULPTURE  
OXY-ACETYLENE PROCESS

SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
	Work only in well-ventilated area	AVOID USE
	Work only in well-ventilated area	
	Work only in well-ventilated area	
	Work only in well-ventilated area	
	Work only in well-ventilated area	

WELDED SCULPTURE  
OXY-ACETYLENE PROCESS

MATERIAL	SYMBOL	HAZARD
<u>OXYGEN</u>		Fire and explosion
<u>PHOSGENE GAS</u> Caused by reaction between Chlorinated Hydro-carbons such as Perchloroethylene and Methyl Chloroform and Ultraviolet Light		Phosgene gas poisoning
<u>TORCH GLARE</u>		Eye damage leading to early cataracts
<u>UNBURNED ACETYLENE</u>		In concentration can cause asphyxiation

<b>WELDED SCULPTURE OXY-ACETYLENE PROCESS</b>
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SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
	<p>Never use oxygen near flammable materials</p> <p>Do not store oxygen and acetylene cylinders together</p> <p>Do not permit oil or grease to come into contact with oxygen cylinders, valves, regulators, hoses or fittings</p> <p>Do not attempt to use anything but oxygen apparatus with oxygen equipment</p> <p>Open oxygen valves slowly</p> <p>Do not use oxygen for ventilation or as compressed air substitute</p> <p>Do not saturate clothing with oxygen</p> <p>Do not attempt to use oxygen from the cylinder without attaching the pressure reducing regulator</p>	
	<p>Do not place chlorinated hydrocarbons where ultraviolet light from welding process can reach them</p>	
	<p>Always wear goggles with at least shade #4 lens</p>	
	<p>Work only in well-ventilated area</p>	

WELDED SCULPTURE  
SILVER BRAZING

MATERIAL	SYMBOL	HAZARD
<u>CADMIUM</u>		Lung irritation Pulmonary edema Kidney damage
<u>Gas</u> Propane  Liquified gases		Fire and explosion
<u>HOT METAL PIECES</u>		Thermal burns
<u>SHARP EDGED METAL</u>		Cuts and skin abrasions.
<u>TORCH GLARE</u> Infrared radiation		Eye damage leading to early cataract.



WELDED SCULPTURE  
SILVER BRAZING

SYMBOL	SAFETY PRACTICE * CLEAN-UP	ALTERNATIVES
	<p>Work only in well-ventilated area</p> <p>AVOID using silver solder containing cadmium</p>	
 	<p>Store cylinders securely away from other flammable materials</p> <p>AVOID using torch near flammable materials</p>	
	<p>Wear welding gloves</p> <p>Treat all metal as being hot</p>	
	<p>Wear welding gloves</p> <p>Wear protective clothing</p>	
	<p>Always wear welders goggles with at least shade# 4 lens</p>	