

**CONGRATULATIONS... ON THE PURCHASE OF YOUR NEW CERAMIC KILN.**

We would like to invite you to take this opportunity to review our Owner's Operating Manual to acquaint yourself with your new kiln and the proper method to operate and maintain it safely.

**RECEIVING YOUR KILN**  
**When receiving your kiln it is important to check for...**

**Visible Damage:** If there is damage to the carton (crushed, holes, ect.) remove the kiln shipping carton and check the kiln for damages to both the interior and exterior. Should any damage be discovered you have two options; (a) refuse the shipment and have it returned to the manufacturer or (b) Accept the shipment after having the driver note the damage on the Bill of Lading, then you must file a claim with the freight company.

**Shortages:** Check the Bill of Lading to insure that the correct number of packages were received. Note any shortages on the Bill of Lading and have the delivery person sign the copy.

**Hidden Damage:** If there were no signs of visible damage and you discover damage to your kiln after the delivery has been made, you must notify the shipper immediately and file a claim for the hidden damage.

**KILN PLACEMENT**

As your kiln will give off a considerable amount of heat during the firing and cooling cycles, it is imperative that consideration be given to the placement of your kiln prior to delivery. While the kiln should be located in a convenient and accessible place, certain safety factors must be taken into consideration prior to set-up. Due to the fact that fumes and vapors are released during the firing cycle, the kiln must be located in

a well-ventilated area, and should be placed at least 18 to 24 inches from walls and / or flammable materials. An exhaust type vent hood or window fan is helpful in eliminating any fumes or odors.

**THE KILN MUST BE INSTALLED ON THE METAL STAND!**

Now that the location has been determined, unpack and assemble the kiln stand. Place the stand on the floor. To ascertain whether the floor and stand are level, place a carpenter's level on the topside of the stand. If necessary, level the stand with non-flammable shims. Caution: An un-level kiln stand can damage your kiln. In addition, an uneven stand can make internal shelves uneven which could result in "accidents" to the ware, place strain and stress on bricks, elements, kiln floor and lid, and in general, reduce the productive life of your kiln. After the stand is assembled and level, assemble your kiln as it was crated. Remember, the kiln must be installed on the metal kiln stand.

**ELECTRICAL INFORMATION**

Each kiln should have its own electrical circuit. This is a requirement to insure trouble-free performance. A kiln is an electrical piece of equipment that has been engineered to operate at standard voltages of 120, 208 or 240 volts; however the amperage necessary for each model varies. Before each circuit is installed, you should be certain that correct size wire is being used and the amperage is sufficient to bring the kiln up to the desired temperature. This information is available from the dealer prior to purchase, and is shown on the nameplate of each kiln.

Any variance in voltage will affect the firing schedule of the kiln. If the voltage is high the kiln will fire off much faster; if the voltage is too low, the firing cycle will be much longer. Should your kiln appear to take an unusual length of time to fire, contact your power company and request a voltage reading.

The qualified electrician who wires your kiln outlet should be certain that the ground wire is properly connected. Should the ground wire not be of the proper size or in the proper location it could result in the burning out of the kiln's switches and elements. It could also present a dangerous shock hazard.

Our 240 volt kilns use a 3-wire single phase grounded neutral circuit. The grounded neutral is also grounded to the metal control panel of all 240 volt kilns as a safety factor. All of our 240 volt kilns will operate equally well on circuits derived from 208 volt three phase converted into a single phase circuit by using 2 of the three phase leads and the neutral. The neutral lead should be of the same gauge wire as the two "hot" phases.

Any electrical supply exceeding a distance of fifty (50) feet from the fuse box or multi-breaker requires a wire one size larger than that recommended in the Kiln Electric Requirement Chart shown on the inside back cover. Request that your electrician show you the location of the fuses or multiple breaker for your kiln and the proper manner of replacing or resetting these.

**PREPARATION FOR USE**

Your kiln comes to you completely assembled with the exception of the metal stand. The only preparation on your part is to vacuum the interior of the kiln to remove any dust particles and to apply a coat of high-fire kiln wash to the floor of the kiln and to the topside of all shelves. Also apply kiln wash to metal parts of the kiln sitter (if equipped) as required by the W.P. Dawson Kiln Sitter operation manual.

For your convenience, a pint of Blue Diamond High-Fire Kiln Wash has been supplied with your furniture kit. Be very careful when applying the kiln wash to the floor of your kiln; do not let the wash come in contact with any of the kiln's electrical parts. A soft bristle brush

such as an inexpensive paint brush is ideal for the application of the kiln wash. Apply a heavy even coat, flowing in one direction only. Allow to dry completely, then apply a second coat cross-grained to the first coat. Tightly cap the remaining mixture for use at a later time.

used. The following charts are furnished through the courtesy of Bell Research.

1580	013	2175	4
1625	012	2200	5
1660	011	2246	6
1645	010	2280	7
1705	09	2300	8
1740	08	2345	9
1815	07	2380	10

Since kiln wash is your protection from glaze drip on the floor of the kiln or on shelves, the number of times you will need to re-apply kiln wash will depend upon the amount of use you give your kiln.

**BREAKING IN THE KILN PRIOR TO USE**

We recommend that a new kiln be fired the first time to a temperature equivalent of a Cone 4. This allows a protective oxidation to form on the elements which extends element life. Two #4 pyrometric cones are supplied with each new kiln equipped with a Dawson Kiln Sitter for this purpose. Caution: very carefully read the Dawson Operating Manual before turning on the power supply to the kiln.

**KILN ACCESSORIES**

Your kiln may be purchased with an automatic shut-off which will cut the power supply off when the firing cycle has been completed, or with a combination of an automatic shut-off and a timer. The additional advantage of a timer is a back-up safety for the regular shut-off.

**PYROMETRIC CONES**

A pyrometric cone is a device used to determine the temperature of the ware being fired. Cones, which come in larger sizes which are used when the kiln is operated manually, and small or junior sizes which are placed in the automatic shut-off are available in firing ranges from a cone 022 to cone 12. The material to be fired will determine the cone number to be used. Consult your distributor / dealer or check the manufacturer's recommendations to determine proper cone to be

**SUGGESTION FOR USE OF MINI BARS**

Glass	022
Gold / Silver	021
Platinum	020
	019
China Painting	018
Lusters	017
	016
Decals	015
Ceramic Bisque	07
And Glazes	06
	05
	04
	03
	02
	01
Porcelain Glazes	1
	2
	3
	4
	5
	6
	7
Crystaline Glazes	8
	9
	10

Note: Ceramic bisque should be fired two cones higher than the recommended glaze cone.

**MINI BARS ARE AVAILABLE IN THE FOLLOWING TEMPERATURES:**

Degree Temp. F	Cone	Degree Temp. F	Cone
1120	022	1860	06
1140	021	1905	05
1200	020	1940	04
1220	019	2040	03
1330	018	2055	02
1420	017	2095	01
1465	016	2120	1
1480	015	2130	2
1525	014	2140	3

**NEVER LEAVE YOUR KILN UNATTENDED**

**Kiln Wash:** High fire kiln wash, as previously mentioned under the heading "Breaking-In" is a protective coating for the floor of the kiln and the tops of the shelves to eliminate damage from dripping glazes and other possible mishaps.

**Shelves:** Shelves are available in both full size and half size for each of the kiln models with exception of our KeyStone model which utilizes two halves and rectangular refractory. The size and shape of each piece of ware you fire will determine how many and which size shelves you will need. A shelf is a flat slab of fire clay that has been fired to a higher temperature than will be reached in your kiln. Although they are very strong, they can be broken if dropped or improperly handled. Remember to kiln wash the top side only of each shelf you purchase.

**Posts:** Post are the supports used between the shelves and are generally of the same composition as the shelf. They are available in an assortment of heights from 1/2 inch to 12 inches. It is not recommended that you stack posts to form a height of more than 12 inches to eliminate danger of the shelf shifting or toppling.

**Stilts:** Stilts are supports placed under ware to be fired to prevent the ware from sticking to the floor of the kiln or the shelf on which it has been placed. These are also available in a variety of sizes and shapes. Care should be taken to use the proper type stilt for the ware being fired.

**Pyrometer:** A pyrometer is designed for measuring the firing progress. It is a helpful aid for use

in glass firing as well as in conjunction with pyrometric cones.

### LOADING THE KILN

The first consideration to be given to your firing is to determine the proper cone for the ware to be fired (gold, glaze, bisque, ect.) Use the manufacturers' recommendations for clay bodies and glazes. The next items to be placed on the shelves are the pyrometric cones. Three sequential (i.e., 4,5,6 or 06,05,04) standard or large size (witness) cones should be placed in cone plaques made from Ni-chrome wires or clay base and should be placed three or four inches from the kiln wall directly in line with the peepholes as to be clearly visible through the peepholes.

After selecting the proper cones for the firing, place a cone (junior size only) in the kiln washed automatic shut-off so that the cone is equally spaced on the two metal cone supports, away from the refractory tube. *Caution: Be sure the three prongs (cone supports) of the Dawson shut-off are coated with kiln wash and dry before insertion of the cone.* This prevents the cone from sticking to the cone supports which could possibly result in an over fire of the ware. We recommend the straight bar (mini-bar) type cone over the pyramid shaped (junior size) cone as we have found that more consistent firing is obtained regardless of position of placement in the shut-off. Refer to the manual supplied by W. P. Dawson for instructions on activating and maintenance of the shut-off.

### WARE & SHELF PLACEMENT

In this section we will discuss ware and shelf placement to maximize heat flow and temperature balance for a more consistent firing. Shelves act as baffles and should be staggered or placed in a manner that will not block the normal heat flow. The

first shelf should never be placed lower than the second row of elements (4 to 4 ½ inches from the floor of the kiln). Improper placement can affect the over-all temperature by causing what is commonly referred to as "hot" or "cold" spots in the kiln. An empty kiln will have no "hot" or "cold" spots. Should a shelf be placed below the above mentioned level, you could possibly develop a "cold" section due to not having sufficient heat below the shelf. As heat has a tendency to rise instead of drop, you are completely dependent upon the element wires for heat in this area.

Do not place flat objects such as large trays or plates level with the kiln elements. Keep shelves at least one inch from the wall of the kiln; allow at least one inch above the tallest piece of ware on the shelf for placement of the next shelf.

Use a sufficient number of shelf supports (posts) for each shelf in order to provide adequate support and balance. This, of course, is dependent upon the size of both the shelf being used and the size of the kiln. Wipe dust off the bottom of each shelf prior to placement in the kiln to prevent foreign particles from dropping onto the ware below.

Care must also be taken in the placement of shelves near the automatic shut-off. Sufficient space must be allowed both above and below the shut-off to prevent possible malfunction of the shut-off. Ware placed on a shelf below the shut-off should not in any way touch the mechanism. Shelves must be supported on enough posts of appropriate size according to the ware being fired, and stilted ware must be balanced in order to prevent shifting of either during the first cycle.

### STILTING

Greenware which is to be bisque fired does not need to be supported on stilts as the clay body will not adhere to the shelves' kiln washed surface, however, care must be taken to allow sufficient space around and

between each object for proper heat circulation to assure that each piece will be properly matured during firing.

Ware to be glazed fired must either be placed on stilts or dry-footed. Dry-footed means to either not coat the bottom of the piece with glaze, or to carefully remove all traces of glaze from the bottom of the ware. To insure proper heat circulation, we recommend that, although the ware is dry-footed, it should be stilted. Before dry-footing a piece of ware, take into consideration the use to which the ware will be put. Although a decorative piece such as a figurine would not necessarily need to be glazed on the bottom, any object subjected to frequent washing, such as ashtrays, should be completely sealed with glaze. This would include the inside of a hollow piece of ware. Pottery clay bodies will absorb moisture if not completely sealed with a water proofing agent (glaze), washing of the piece will cause absorption of moisture which will result in it becoming crazed, unattractive and unsanitary. (This does not apply to stoneware or porcelain bodies which are vitreous when fired to maturity).

Stoneware or porcelain should never be stilted. A light coating of flint which has been mixed with water should be brushed onto the bottom of the ware. Be sure to flint coat such pieces as tops of boxes or jars.

Ware which is being fired to a low temperature such as luster, metallic, decal, or china paint, need not be stilted as the temperature for maturation is not great enough to cause the glaze surface to melt.

### FIRING YOUR KILN

Firing a kiln is a very simple matter. The feeling of satisfaction does not come at this point, but rather after the firing has been completed and the kiln has been allowed sufficient time for cooling. The "grand opening" is the time for that feeling of joy when you first see completed the one of a kind, never to be

duplicated results of your own handiwork.

To fire a kiln you must first know something of the clay and glaze that you will be firing. This is very important as it will help you to understand the occasional mishaps which occur. Do not let this discourage you; The percentage of mishaps is so small that you will rarely, if ever, be affected by them if you follow instructions properly.

When firing the kiln, the first and most important point to remember is to bring the heat up slowly. A true, never failing firing schedule cannot be offered; but we can give you an outline to guide you as to the many factors which can govern a kiln's firing cycle. The kiln also contains a certain amount of moisture, as does the greenware and / or glaze. This moisture must be driven out of the kiln and ware. The amount of moisture present in the kiln will depend upon the location of the kiln and the climate. The amount of moisture in greenware will depend upon the state of dryness of the greenware. The moisture in glazed ware will depend upon the amount of time that has elapsed since the application of the glaze.

**CAUTION!** Before operating your kiln, check these points of safety:

1. The kiln must be placed on a metal stand, not on a flammable surface.
2. Electrical supply must equal or exceed recommendation found in electrical chart\*.
3. Blue Diamond Kiln Company, LLC, will not assume any responsibility for damage to persons, property, merchandise, or equipment resulting from insufficient or improper electrical installation.
4. Kiln should be 18 inches to 24 inches from walls; must have sufficient ventilation, preferably with vent of exhaust fan for removal of vapors and fumes emitting from ware being fired –

these vapors may be harmful to health.

5. Do not operate kiln without proper instructions on use of kiln and kiln equipment.
6. Warn children that surfaces may be extremely hot and could result in burns if touched.
7. Blue Diamond will not assume damages resulting from over-firing of the kiln whether due to failure of the sitter / shut-off, electronic control or misuse.
8. Refer to the Dawson literature supplied with the kiln for instructions on proper usage of the kiln sitter, and / or refer to literature supplied for instructions on proper usage of the Bartlett electronic kiln controller.

#### **Over-firing may result from:**

1. Improper positioning of the cone in the sitter.
2. Improper adjustment of the counter-weight.
3. A shelf being placed so that it touches or blocks normal operation of the sitter.
4. Stilted ware shifting or falling during firing.
5. Any outside blockage of the counter-weight (such as an extra shelf not being used, left propped against the kiln) may prevent the counter-weight from falling and activating the shut-off.

#### **KILN CONTROL SYSTEMS**

Your new kiln will have one of three power / firing control options offered: Manual Control, TRU\*MAT\*TIC or EasyVue Digital control. Each control scheme has unique operational requirements.

#### **MANUAL CONTROL**

*After your kiln has been loaded...*

**Step 1:** Close the lid and place all peephole plugs in the kiln's peep holes.

This procedure maximizes the convection heating effect established thru the convection venting hole in the center of the kiln's lid. The convection heating vent should never be plugged or stopped.

**Step 2:** With power supply disconnected, check for tight and proper connections of your kiln's

power supply system. This would include inspection of all control box switches, receptacles, wiring cords and plugs. Check for loose switches, frayed / burnt cords, burnt / melted receptacles and oxidized plug spades. If any faults found, service kiln to perfect operational condition before use.

*Reminder: Always disconnect power before attempting repairs or maintenance of your kiln!*

**Step 3:** Check the Dawson Kiln Sitter for proper calibration (refer to W.P. Dawson Kiln Sitter Operation Manual) and properly position a pyrometric cone onto the kiln washed cone supports while activating the kiln sitter by raising the counter weight to latch with sitter's claw. Set the limit timer knob for desired firing time. Push in contact button to locked position on kiln sitter. Turn all switches on LOW for desired "soak" or drying time.

*CAUTION! Surface of kiln may cause severe burns if touched when hot. Kiln should not be used by or around unsupervised children.*

**Step 3:** Turn all switches on MEDIUM for 1 ½ hours.

**Step 4:** Turn all switches on HIGH. The kiln sitter will shut off power when the cone matures and bends or the limit timer counts down to "0".

**Step 5:** Once the power shuts off, allow kiln to slowly cool to room temperature before opening and handling ware and furniture. Premature or fast cooling may cause damage (thermal shock) to ware, furniture or kiln walls, floor or lid surfaces.

#### **TRU\*MAT\*TIC CONTROL**

**Step 1:** Use same instructions as MANUAL CONTROL operation with the following considerations:

**A.** Never force or turn a TRU\*MAT\*TIC switch counter clockwise to the left, as it will short out the switch and voids its

warranty. *Always Turn the TRU\*MAT\*TIC switch clockwise to the right only.*

**B.** Turn all switches to “START”. The switch then automatically advances from “START” LOW (3 Hours) to MED (1 Hour) then to HIGH (till shut-off by Dawson sitter). If longer periods are needed in a firing cycle, simply advance the *TRU\*MAT\*TIC switch clockwise* to the desired setting for longer time at that power setting. For example, if 6 hours are wanted for LOW power drying, simply advance from the end of the 3 hour LOW setting, when the switch advances to MED, clockwise to “START” for another 3 hours of LOW power.

### **EASYVUE DIGITAL CONTROL Bartlett Model V6-CF**

Digital control offers the stability of pre-programmed firing. The Bartlett Instruments Model V6-CF Vary-Fire controller on Blue Diamond Kiln’s EasyVue models offers flexibility for dynamic kiln use. Glass, ceramics and metal treatment firing schedules are all possible with the digital control schemes possible. Only the imagination limits the EasyVue Kiln’s use.

Each EasyVue Model has an operational manual that describes “how to” instructions for the simplest use or most complex firing arrangements.

The EasyVue control has two programming modes or methods. The cone fire method is the easiest to program. The vary fire or ramp hold method allows for more complicated profiles and more firing freedom. Vary fire programs are used for firing such things as glass, jewelry, and crystalline glazes.

The controller uses a thermocouple (T/C) to sense the temperature in the kiln. The temperature is measured at the tip

of the T/C so it is important that the tip be 1 ½” to 2” inside the kiln wall.

When “START” is pressed, the controller reads the kiln temperature and uses that temperature as a starting point from a traveling set-point (also called the local set-point). The controller then calculates how much power is needed to keep the temperature equal to the traveling set-point and cycles the electricity to the elements so the correct amount of power is applied. As the firing progresses, the controller moves the temperature at the new traveling set-point. This sequence continues until the final temperature is reached and the controller turns off the kiln. For the controller to turn off the kiln both the temperature and the traveling set-point must reach the final temperature.

The controller is used to control temperature, it is not a safety device. Do not operate the controller in temperatures above 125 F.

Never leave your kiln unattended at the end of a firing.

Always check the position of the thermocouple probe before starting a firing. The current temperature displayed on the controller is measured at the end of the thermocouple which must be in the firing chamber.

Always review the current program before firing to ensure the correct profile is programmed.

The length of time required for your kiln to complete any firing cycle is dependent upon several factors; voltage supply, amount and placement of load, amount of moisture present at the beginning of the firing cycle, and the temperature to which the kiln is being fired. No set rule can be given for firing by time alone. Using Pyrometric (witness) cones or a pyrometer are methods of determining when the proper temperature has been reached. After you have fired your kiln several times you will be able to

estimate the amount of time necessary to complete the firing after the switches have been turned to high position.

*Allow the kiln to cool to room temperature before opening.*

A little bit of time and care taken in the loading and firing of any type ware is well spent. Results are evident when the finished ware is removed from the kiln.

### **FIRING OVERVIEW & POINTS TO REMEMBER:**

Read and follow all safety labels on the kiln and instruction manuals.

Small pyrometric bars or junior size cones should be placed in the sitter which has been kiln washed with high fire wash, with the number of the cone visible on the upper side and should be equally divided or balanced under the sitter’s rod.

Be sure the kiln floor and the tops of each shelf used has a sufficient coating of high fire kiln wash for protection of these parts from glaze drops. Care should be exercised to avoid any kiln wash coming into contact with the elements when being applied.

Position the bottom shelf in the kiln above the level of the second row of elements to allow for proper heat circulation in the lower portion of the kiln.

Do not overcrowd pieces being placed in the kiln. Heat must be able to bathe & circulate around, under, and above each piece. Allow at least an inch above the tallest piece on the shelf when positioning posts for the next shelf.

For safety, posts should not be stacked to more than approximately 12 inches in height. Take care to use enough shelf supports (posts) to safely hold both the shelf and the weight of the pieces to be fired.

Pieces to be bisque or to be low fired (metallic, lusters, ect.) need not be stilted. All glaze pieces, even those dry-footed, should be placed on stilts to allow proper heat circulation.

Porcelain and stoneware must never be stilted. A thin coat of flint mixed with water should be brushed on the bottom of each piece. When firing pieces which have compliment pieces such as lids, stoppers, ect.; a coat of the flint mixture should be brushed onto both sections where the pieces make contact. Glazes should never be placed on these areas.

Never place plates, trays, or other flat pieces directly in line with an element. Adjust shelf height to fall either above or below the element.

Do not force cool the kiln. Allow cooling to room temperatures. Best results are obtained when kiln temperatures are raised and lowered slowly.

### **A BIT ABOUT HOBBY CERAMICS**

Ceramics is a craft that has been used to man's advantage and for his pleasure in almost every section of the globe for thousands of years. Archeologists have found that the use of clay for making functional items predates recorded human history and pottery fragments that have been unearthed are an important and major record of past civilizations.

Even the very earliest pottery was decorated in some fashion, if by nothing more than a pattern scratched with a stick or impressed by the potter's fingers. The next known form of decoration was the addition of separately modeled ornaments and finely painted designs.

The first "kilns" were merely fires into which the sun-dried clay objects were placed, while more

sophisticated versions were depressions or holes dug into the earth and covered by pyramids of sticks, grasses or dung, and set ablaze.

A craft born of necessity, ceramics has led to what is today one of the most popular and rewarding pastimes...hobby ceramics. With a virtually endless variety of greenware, colors, and tools available, the hobbyist today has at his fingertips the ingredients for an infinite variety of techniques limited only by the boundaries of his creativity and knowledge of the products.

While it would be literally impossible to cover all aspects of the hobby ceramic field, we will take a look at the most popular areas.

### **GREENWARE**

Greenware is available in three basic clay bodies: pottery (or ceramic), stoneware and porcelain. The studio has all information and supplies necessary to complete the piece of your choice in the proper manner. Most studios offer classes and workshops to insure your having knowledge of the materials available. If you prefer to pour your own greenware, you may purchase molds and the various types of slip (clay body of pouring consistency). Modeling clay is available for hand building and some types of slip decorating.

### **CLEANING CERAMIC GREENWARE**

Cleaning ceramic greenware is the process by which you remove mold seam lines or other unwanted imperfections on a cast piece by using a clean-up tool.

Before you start, be sure your hands and the work area around you are free of oil, hand lotion, salt or grease.

The average piece of greenware may be cleaned with the cleanup tool by rubbing the tool across the seam line running through a detailed area, care should be taken not to ruin or remove the detail from the piece.

For projects using stains of one-stroke underglazes, gently sponge greenware with a mixture of two cups hot water and one tablespoon of vinegar. This will prevent "hot" or "hard" spots from rejecting the stains or one-strokes.

### **UNDERGLAZES**

Opaque underglazes are traditionally used for covering large areas of ceramic ware with solid opaque color. Opaque means that the underglaze will completely block out the greenware surface or any other underglaze color when it is applied. Following the manufacturer's application instructions, the underglaze is then fired which "sets" the color. Generally a cover glaze is applied and the piece is again fired which gives the ware a durable lasting finish. It is characteristic of opaque underglazes to exhibit a slight color change after the cover glaze has been fired. All underglazes are water soluble and can be intermixed which lends them to limitless color combinations.

### **TRANSLUCENT ONE-STROKE UNDERGLAZE**

Translucent One-Stroke Underglazes require only a one-coat application to achieve the desired finish. The family of products is used for design work and one-coat opaque coverage of small areas. These products may be used alone or in combination with opaque underglaze or translucent one-strokes. Once applied, the color is fired and then generally a cover glaze is applied and the ware refired.

### **GLAZES**

By definition a glaze is any fired glassy coating on a piece of ceramic ware. There are several families of glazes, each with its own distinctive characteristics.

### **GLOSS GLAZES**

Gloss glaze constitute one of the largest families of glazes. A gloss glaze gives a rich, smooth, shiny surface after it has been fired. Gloss glazes can be transparent, semi-transparent, semi-opaque or opaque.

A transparent or clear glaze is normally used over a fired underglaze color to enrich the quality of the finished product.

A semi-transparent glaze when used as a cover glaze will slightly alter the underglaze color because of the slight coloration of the fired surface. Semi-transparent glazes are self-highlighting and are excellent choices for use on detailed surfaces.

An opaque glaze is designed for solid color coverage of a specific color.

#### **DINNERWARE GLOSS GLAZES**

Dinnerware gloss glazes have been specifically developed with dinnerware items in mind. They have been tested in accordance with the method approved by the United States Potter's Association and meet F.D.A. health requirements for lead release if used and fired according to label instructions. Although designed with dinnerware in mind, they also work as well on decorative ceramic pieces.

#### **DINNERWARE MATTE GLAZES**

Dinnerware matt glazes have also been tested and meet the F.D.A. health requirements for lead release if they are applied and fired according to label instructions. These glazes give a soft sheen, matt appearance for the ceramist who prefers a softer appearing finish. Since they have little flowing action, they can be used for design and can be used next to each other as well as on top of each other with beautiful results.

#### **SPECKLED GLAZES**

This very popular family of glazes includes an attractive variety of gloss and matt glazes with tiny complimentary specks of color. Some are transparent or semi-transparent and add a new

dimension to design work when used over fired underglaze colors.

#### **ART GLAZES**

The art glaze family is an exciting group of colors that when fired give a multi-hued color in both matt and gloss finishes. These glazes are affected by the firing time and temperature, the thickness of application, and even the weather. Therefore, no two firings will produce exactly the same results. This adds to the excitement of this family of colors.

#### **CRYSTAL GLAZES**

A crystal glaze provides a jewel-like variation of colors as pieces or "chunks" of crystals are applied to the ceramic ware in combination with the application of the glaze base. When fired, the crystals flow through and combine with the base glaze to create a varied and unusual finish. Because it is characteristic of a crystal glaze to flow "move" during the firing process, it is important to avoid placing a heavy concentration of crystals near the bottom of the piece, also to distribute the crystals evenly over the ware.

#### **SPECIALTY GLAZES**

Specialty glazes include a group of glazes used to create a variety of "special" effects. Generally they are used over, in-between or under other glazes for an added dimension to the glaze finish. Some may be used alone and other must be used in combination with other glazes to work properly. Some of the effects created with these glazes include raised textures, snow effects, rock-like textures, marbling, cascading effects and other exciting textual effects.

#### **UNFIRED FINISHES**

Unfired colors are applied to bisque and are not fired after application. They are best used for design work on decorator items such as plaques, Christmas ornaments, figurines, ect. Final finishes should be sealed with brush-on or spray sealers in either matt or gloss finishes for added durability.

#### **OPAQUE STAINS**

These fast drying opaque colors are suitable for used on bisque, plasterware, wood, fabric and other porous surfaces. Their opaque nature allows for one coat coverage in most cases. They are intermixable and clean up with water.

#### **TRANSLUCENT STAINS**

Translucent stains are excellent for antiquing and rouging over opaque stains. They may also be used for water color or china paint type techniques, and they are also excellent for airbrush techniques.

#### **PEARL FINISHES**

Pearls provide an assortment of water-thinnable colors in shimmering iridescent hues. Most are suitable for one coat coverage on bisque. They will provide an iridescent translucent effect when applied over a base coat of opaque stains.

#### **MINERAL SPIRIT STAINS**

Mineral Spirit Stains are translucent colors generally used for antiquing, rouging and creating a china paint effect. They are suitable for use on bisque, porcelain bisque, some glaze finishes and over opaque stains. The thick, creamy consistency of the colors make them excellent for brushing, sponging or spattering techniques. A solvent based Thinner / Cleaner is used for cleaning brushes, wiping down antiqued ware and if necessary for thinning Mineral Spirit Stains.

#### **METALLIC STAINS**

These brilliant metallic colors are suitable for decorative work on metal, glass, fired glaze, or opaque stains, They dry to a durable finish but are not recommended for use on utility items.

#### **SPECIALIZED PRODUCTS**

##### **SEALERS**

Both brush-on and spray sealers are used over dried opaque stains and mineral spirit stained pieces to provide a protective coating. They

dry quickly to an even, durable finish.

### BRUSHES

The selection of a brush is an important process in the decoration of your ceramic ware. Brushes are designed for specific strokes, techniques or applications. Your brush, when used properly, will make your decorating easier and more fun while helping you to improve the quality of your finished work.

There are two basic types of "hair" used in the construction of a brush, natural animal hairs and synthetic fibers. Brushes are offered in many shapes, sizes and styles and it is important for each user to understand the designed purpose of the brushes before buying and using them.

### PORCELAIN

Porcelain is a high fire (cone 5-6) clay body that will produce a durable, vitrified surface when properly prepared and fired. Fired porcelain produces a finished product with natural beauty in both a decorated or undecorated state. Before firing, many decorators will choose to use translucent opaque one-strokes to create artistic designs. After firing many will use china paints (a low fire, cone 018-019, color product) to decorate the surface of the ware. Note: China paint may be used either on the porcelain bisque or over a glazed porcelain surface. Those who prefer to decorate using non-fired products may choose from a wide selection of mineral spirit stains to produce a non-fired finish that is very similar to the fired china paint.

### DECALS

Decals are specially prepared overglaze prints that are designed for application on a fired glaze

surface and subsequently refired to a lower temperature (cone 015-019 according to the manufacturer's instructions).

In order to insure correct application and firing of a decal the following instructions should be followed.

1. Prepare the surface to which the decal will be applied by cleaning the area with warm water.
2. Trim the decal to correctly fit the area, taking care not to cut or damage the protective cover coat film.
3. Pre-moisten the surface where the decal is to be applied.
4. Place the trimmed decal in room temperature or slightly warm clean water. The decal will "roll up" after being in the water for a few seconds.
5. Remove the decal from the water after 30-60 seconds or before the decal "relaxes" or unwinds. Place the decal on an absorbent, lint free cloth until it unrolls and is ready for application.
6. Position the decal on the piece and gently pull out the paper backing. Once the backing is removed the film can then be adjusted to position the decal on the ware.
7. Using a decal squeegee, begin to smooth the water and air bubbles from beneath the surface of the decal.

Note: Failure to remove all moisture and air from beneath the surface will result in imperfections after the decal has been fired. Start the process from the center of the decal and smooth outward toward the edges pushing the moisture and air from beneath the decal's surface.

Allow 12-24 hours of drying before firing.

8. Slow fire in a well ventilated kiln to the manufacturer's suggested cone temperature (normally 015-019).

### METALLICS AND LUSTERS

Liquid metallics and lusters are overglaze mediums which are applied to a glazed surface then refired to cone 018-019. The principle overglaze metallics are gold, platinum, palladium and copper. The liquid metallic products after being applied and fired will give a metal finish correspondent with the metallic that was applied. A metallic overglaze will also adopt the surface characteristic over which it is applied, i.e., a gloss glazed surface – a glossy metallic finish, a matt glazed surface – a matt metallic finish. Metallic overglazes may be used for overall surface coverage or for highlighting trim and accent areas. The brush used should be soft bristled and a suitable size to suit the area to be covered. Once the project is completed the brush should be cleaned thoroughly and marked to insure that it is not used for the application of any other overglaze product.

Lusters are generally applied to a piece either to give a bright colored metallic finish or a finish of multicolored fluorescent hues. The most popular lusters are Mother of Pearl (MOP) and Rainbow Opal. Lusters may be applied to a glazed surface or over a metallic overglaze that has previously been fired. Lusters traditionally are fired to cone 019. Again the brush should be soft bristled and after use and cleaning clearly marked for future product applications. This identification precaution is taken to reduce the risk of product contamination which could result in a less attractive finished piece.



