

Helpful Glaze Hints

- One pint of water weighs about one pound. There are 454 grams per pound (dry materials).
- Screen glaze through a 30 or 60 mesh sieve after initial mixing to remove lumps.
- Allow glaze to dry before firing to avoid excess moisture in the kiln chamber.
- Stir glazes prior to application. Two thinner glaze applications are better than one thick one. Most glazes will be the consistency of light cream - apply two to three medium coats. If glaze application is too thick, the glaze may crack away from the ware before or during the firing. Another reason for such problems may be a dirty or oily bisque surface prior to glazing. If glaze cracking should occur prior to firing, wash off completely, letting bisque dry overnight, and re-glaze properly.
- Double dip application is approximately 3-4 brushed coats. Single dip application is equivalent to one brushed coat or a medium airbrush application (depending on thickness of glaze).
- Apply the second glaze coat just before the first dip loses its sheen; or the second coat may crack away before firing.
- Leftover glaze should be stored in relatively airtight containers so that the water will not evaporate resulting in an undetermined amount of water needed later. This is especially important for the transparent series at all temperature ranges.

Mason Stain Helpful Information

Mason Stains can be used to color glazes, slips, and clay bodies. They are fritted to insure color consistency from batch to batch. The fired color should be almost identical to the stain in its raw state. Mason stains can be used at all firing temperatures (except tin-antimony-lead yellows and pinks fire only to cone 02) but are formulated specifically for use in oxidizing atmospheres. Therefore, in oxidation firings to cone 10, the colors are reliable and consistent. Stains will vary in color, however, depending upon the medium into which they are mixed and firing temperature.

Stains in Clays and Slips

Best results can be expected when stains are added to a white clay body or slip base. Fire to normal maturation temperature. Percentages of stain added to clay or slip should be determined by testing.

Stains in Glazes

Stains can be used to color either transparent or opaque base glazes. Stains are generally added in amounts ranging from 1-10% of the glaze batch. The higher the percentage of stain, the deeper the fired color will be. The base glaze should contain a calcium carbonate content of 12-15% and have no zinc. Zinc can adversely affect colors, especially chrome-tin pinks, vanadium yellows, and cobalt blues. The percentage of stain plus opacifier should equal 15% of the total glaze batch

Example 1

Base glaze	100%
Zircopax	10%
Stain	5%

Example 2

Base glaze	100%
Tin Oxide	7%
Stain	8%

Testing is Recommended

Kiln Repair

If your kiln is not firing properly, inspect the plug and receptacle to make sure that they are in good condition. Turn the kiln on high for ten minutes, darken the room and open the kiln. Make note of the condition of the elements. If they are all glowing evenly, proceed with an inspection of the shutoff device. If the shutoff device is broken, it should be repaired before firing.

Know Your Voltage. If your kiln is not reaching temperature and all elements are glowing, compare the actual voltage you are receiving to the voltage listed on the kiln ID plate. Be aware that 240V and 208V outlets and wires look the same. DO NOT rely on hearsay, measure your voltage with a meter or call your power company (best to measure voltage at the outlet you are going to use).

When ordering replacement elements: **get the kiln model number, serial number, voltage, phase, and exact position of the element to be replaced.**

For service in the Twin Cities metropolitan area, please call 763-432-0875 to arrange for an appointment.

Firing

We can fire your pieces in our kilns. The cost is \$35.00 for as much as will fit in one of our two 7.0 cu. ft kilns.

Cone Temperature Charts

Temperature equivalents for Large Cones when heated at a rate of 270°F (150°C) per hour in an oxidizing atmosphere. Small size cones at approximately 25° higher based on 540°F (282°C) per hour.

	108°F per hour		270°F per hour	
	Temp. (F°)	Temp. (C°)	Temp. (F°)	Temp. (C°)
Cone 022	1087°F	586°C	1094°F	590°C
Cone 021	1112°F	600°C	1143°F	617°C
Cone 020	1159°F	626°C	1180°F	638°C
Cone 019	1252°F	678°C	1283°F	695°C
Cone 018	1319°F	715°C	1353°F	734°C
Cone 017	1360°F	738°C	1405°F	763°C
Cone 016	1422°F	772°C	1465°F	798°C
Cone 015	1456°F	791°C	1504°F	818°C
Cone 014	1485°F	807°C	1540°F	838°C
Cone 013	1539°F	837°C	1582°F	861°C
Cone 012	1582°F	861°C	1620°F	882°C
Cone 011	1607°F	875°C	1641°F	894°C
Cone 010	1657°F	903°C	1679°F	915°C
Cone 09	1688°F	920°C	1706°F	930°C
Cone 08	1728°F	942°C	1753°F	956°C
Cone 07	1789°F	976°C	1809°F	987°C
Cone 06	1828°F	998°C	1855°F	1013°C
Cone 05	1888°F	1031°C	1911°F	1044°C
Cone 04	1945°F	1063°C	1971°F	1077°C
Cone 03	1987°F	1086°C	2019°F	1104°C
Cone 02	2016°F	1102°C	2052°F	1122°C
Cone 01	2046°F	1119°C	2080°F	1138°C
Cone 1	2079°F	1137°C	2109°F	1154°C
Cone 2	2088°F	1142°C	2127°F	1164°C
Cone 3	2106°F	1152°C	2138°F	1170°C
Cone 4	2124°F	1162°C	2161°F	1183°C
Cone 5	2165°F	1185°C	2205°F	1207°C
Cone 6	2232°F	1222°C	2269°F	1243°C
Cone 7	2265°F	1239°C	2295°F	1257°C
Cone 8	2280°F	1249°C	2320°F	1271°C
Cone 9	2300°F	1260°C	2336°F	1280°C
Cone 10	2345°F	1285°C	2381°F	1305°C
Cone 11	2361°F	1294°C	2399°F	1315°C
Cone 12	2382°F	1305°C	2419°F	1326°C





Directions:

Coming from the Northwest: Take 94 S to 494 S. Follow 494 S for approximately 5 miles, and take the Highway 55 exit. Take a right onto Highway 55 heading West. Niagara Lane is the second stoplight heading west (less than 1 mile). Turn left onto Niagara, and make a U-Turn at the first intersection. (Note the sign for No U-Turn is for Trucks only) The entrance is the second turn on the right, we are down at the end of building with parking just outside the door.

Coming from the Northeast: Take 35W S to 694 W. Where 494 and 94 split follow 494S for approximately 5 miles, and take the Highway 55 exit. Take a right onto Highway 55 heading West. Niagara Lane is the second stoplight heading west (less than 1 mile). Turn left onto Niagara, and make a U-Turn at the first intersection. (Note the sign for No U-Turn is for Trucks only) The entrance is the second turn on the right, we are down at the end of building with parking just outside the door.

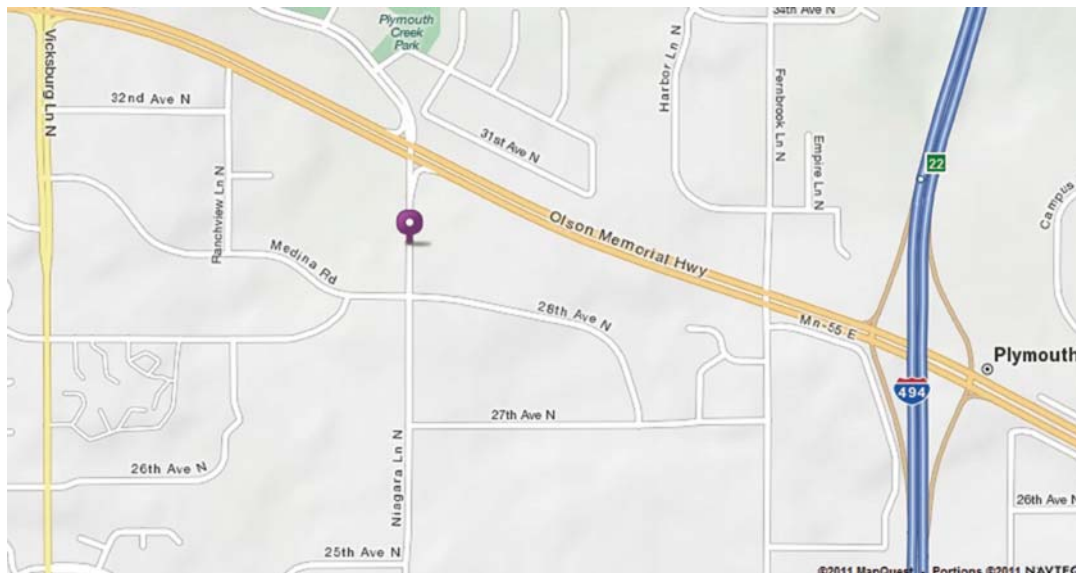
Coming from the South: Take 35W N to 494W. Follow 494 for approximately 18 miles to Highway 55. At the stop light take a left on to Highway 55 heading West. Niagara Lane is the second stoplight heading west (less than 1 mile). Turn left onto Niagara, and make a U-Turn at the first intersection. (Note the sign for No U-Turn is for Trucks only) The entrance is the second turn on the right, we are down at the end of building with parking just outside the door.

Retail Hours:

Monday-Friday 8:00 a.m. to 4:30 p.m.

Saturday 9:00 a.m. to 12 p.m.

(Except holiday Weekends-Call 800-252-9872 for specific holiday hours)



Mail Orders:
Minnesota Clay Co.
2960 Niagara Ln N
Plymouth, MN 55447

Phone Orders:
Local calls: 763-432-0875
Fax: 763-432-7675
Call Toll Free: 800-CLAY-USA

E-mail or Website Orders:
pam@mnclay.com
On-line ordering available at
<https://webstore.mnclay.com>

To Order

Use your purchase order or our convenient order form – either way, we MUST HAVE an authorized signature on the form. PRINT or TYPE name, bill to and ship to address (including zip code). **Please include your phone numbers on all orders.** When delivery address is different from billing address, include telephone number at delivery address together with complete delivery instructions and zip. Order by **Quantity, Product Code, and Description** (including model number when it is shown in catalog) and **Catalog Price**. The current catalog price is always at www.mnclay.com. Please indicate your account number as it appears on your previous invoice.

Telephone Orders

Orders may be placed for shipment using the Visa, MasterCard, Discover, American Express cards or UPS COD. Please use our Toll Free Number 800-CLAY-USA or locally 763-432-0875.

Order Processing

Orders will usually be filled in two to three days from the time we receive them.

Note: Minnesota Clay Co. USA, in offering these products for sale, makes no representations or warranties, expressed or implied, and physically disclaims any implied warranty of merchant ability and liability for any consequential damages arising out of the use of the products described herein. Any warranties extended to the purchasers and users hereof are solely those warranties that may be extended by the manufacturer of the particular product.

Returns

Items may be returned within **30** days from the date of sale, with proof of purchase (receipt, invoice, etc.). Only unopened/unused items may be returned. You may only return an item for the original form of payment tendered. Also you have the option of returning an item for store credit. If an item has been shipped in error, the return shipping will be free of charge; otherwise you must ship unwanted items to Minnesota Clay.

Bids

Based on particular item and quantity ordered, we have a liberal discount bidding policy for schools and other nonprofit organizations.

Frozen Clay

Whenever possible we request freeze protection from the carrier. However, if the clay is frozen upon delivery there may be a possibility for compensation if properly noted on freight bill. **UPS does not offer freeze protection on shipments.**

Minnesota Sales Tax

Orders picked up at our store or shipped to Minnesota addresses are charged 7.275% sales tax, unless accompanied by proof of tax exemption in Minnesota on Form ST-3 is already on file at Minnesota Clay Co. USA.

Visa/MasterCard/Discover/American Express

We accept the above charge cards. Please include your complete account number, expiration date, CVC code (the last three digits by your signature on the back of the card), name and address with your order.

Cash on Delivery Orders

We accept COD UPS orders. In addition to materials and shipping costs, there is a \$10.50 per box minimum COD charge. Truck shipments cannot be shipped COD-Materials are paid for in advance, shipping is prepaid and added to your invoice.

Advance Payment Orders

Except as noted above, all orders must be accompanied by full payment to cover merchandise and freight.

Note: This fee is waived for all preferred customers. In addition, orders to be shipped via UPS or Parcel Post must include funds to cover estimated prepaid shipping charges. Any overpayment is credited to your account or reimbursed upon request.

Shipping

We ship via UPS, parcel post or common freight carrier, depending on the size of each order and destination. All shipments are sent as economically as possible. We have discount programs with numerous freight companies and we pass the savings on to you. Freight charges will be prepaid and billed on your invoice. 'Freight collect' means that you pay the shipping charges when product is delivered, however our discount would not apply. Each truck line has various accessororial charges (such as residential) that may be unknown to us prior to delivery. It is your responsibility to unload your freight, however many drivers will assist you. If you request that the driver help you bring product inside, it is likely you will be charged for "inside delivery." All truck orders are shipped on pallets (approximately 2500 lbs. per maximum). **Pallets** will be billed at \$11.25 each and become your property. If you would like an estimated freight charge please contact us. **Schools please specify receiving days and hours.**

Damaged Shipments

When you receive an order that has shipped to you, first, confirm that all items are present and in good condition. Thoroughly check all items, including those packed inside of boxes. You must report any damaged or missing items immediately after delivery. Look for punctures, tears, dented boxes, water damage, etc. During winter months check the condition of the wet clay before signing for delivery. If the shipment is damaged please follow these steps: Note any damage on the packing slip when the shipment is signed for (This step is very important, it may be impossible to seek reimbursement if damages are not noted on the packing slip, and acknowledged by the driver's signature). If possible, take a picture of the damage with a digital camera. This is not needed, but it is helpful for reimbursement. All orders are shipped in good condition. Please remember that signing for a delivery legally means you have accepted the complete shipment "free-and-clear" in good condition, and everything is present and accounted for. Any damaged or missing items must be noted on the delivery receipt and acknowledged by the driver with a signature. This is necessary to support a freight claim. Filing and collecting claims is the responsibility under law, of you, the consignee. We will assist you.



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