

# GENERAL CLAY INFORMATION



## AMACO® Clays

AMACO® has the most advanced system of clay handling and processing available to provide you with superior clays that are consistent with every batch. Eight cavernous silos, 40 to 65 feet high, with the storage capacity of nearly two million pounds, store dry clays and other raw materials. An electronic clay handling system automatically controls batching, blending, extruding and packaging of dry and de-aired moist clays.

With this clay handling system, AMACO® offers clays for use by everyone from the beginner to the professional potter. Their compositions have been exactly formulated to ensure exceptional quality and maximum plasticity along with a wide range of temperatures, textures and colors. Our experienced staff tests each clay body for shrinkage, absorption and proper firing range. Each clay listed in this section shows accurate figures for each of these tests to help the user attain the best results possible. So for consistent quality clays at their best, look to AMACO®.

## Aging of Clay

Aging is a very important step in improving workability and plasticity of clay bodies, because it takes time for water to penetrate between the clay particles and produce a good and permanent bond.

Bacterial growth also has a definite effect on improving plasticity of the clay. It is suggested that some old clay should be left in the container where new clay is added to accelerate bacterial growth in the clay.

The great Chinese potters have for centuries aged their clay in underground pits. It is said that potters would mix clay bodies for their children to use while they would use clay aged for them by their fathers.

In our fast paced modern world, AMACO® manufactured clay may vary in age, but bacterial gels (mold) will be noticed sometimes in a marbled pattern on the clay. Such clay has a very good feel when wedging. Clay should be wedged to achieve maximum plasticity and uniformity.

## Using Clay and Slip Safely

Silica, which occurs naturally in all ceramic clay products, including slip, has been linked to possible environmental health problems. These health problems may occur through long term respiratory exposure to dust from the dry clay or dry slip mix.

Clay in the moist or slip form is considered non-toxic. Always keep in mind to finish the work while the clay is still wet. Finish with a wet sponge: do not sand.

In order to use clay safely, dust producing procedures (dry mixing, sanding) should be avoided whenever mixing or working with clays. This can be done very efficiently in either small or large studio operations.

It is practically impossible to make slip from dry clay without producing dust. For this reason, premixed slip is not only safer but also well blended and quality controlled. Such a slip is ready-to-use; just shake or stir and pour into the mold.

If you have to mix slip from dry powder, make sure that the mixing tank is in a well ventilated area equipped with a mechanical air ventilation system. When dumping powder, use only a NIOSH approved particulate respirator for dust and replace it often. If the face side of the respirator gets dirty or contaminated, replace it immediately. A safety supply house is the best source of suitable equipment. For more detailed information about masks for protection against dust contact:

Department of Health & Human Services National Institute for Occupational Safety & Health (NIOSH)  
Mail Stop C-19  
4676 Columbia Parkway  
Cincinnati, OH 45226  
(800) 356-4674,  
(573) 533-8328 (outside U.S.)

To produce moist clay, do not mix large quantities from dry powder. You will find it very hard not to produce dust. Commercial moist clay which is well blended and de-aired is safer and more economical in the long run. Such a clay is ready to use. Just wedge and throw on the wheel or hand

model. If only small quantities of clay have to be mixed from dry powder, this may be achieved fairly easily. Put the dry powder (clay) carefully in a plastic bag, add water as needed and tie seal the bag. Wedge the clay while it is inside the bag. Once all the dry materials are mixed, the clay may be taken out and wedged on a plaster bat or added to a pugmill if one is available.

It is best to trim cast greenware before it dries hard. Use a fettling knife and cut off the excess trim and seam line; then, with a soft wet sponge, wipe smooth.

When you have to trim dry greenware, first spray the area that needs trimming with water. Do not soak it at one time. Spray lightly, let the water be absorbed into the clay, then spray again until it becomes fairly wet. When the clay is wet enough, cut away the trimmings and smooth out with a wet sponge.

If working extensively on a piece like engraving a low relief design, try to keep it wet as long as your work is in progress by spraying it with water every so often or just

keeping it covered with a plastic bag during work breaks.

Slip trailing is an alternate, safer way for producing low relief designs. Take some slip in a jar or small container and add a dash of plaster (or any other thickener). When the slip becomes thicker, fill a slip trailer bottle and use it to apply your low relief design on the piece.

Trimmings from cast pots or engravings can be reconstituted in a safe way by avoiding drying them out. Collect them in a pail as they are produced then cover with water. These trimmings could be added to new slip mix, with minor adjustment to viscosity. When working in a small pottery operation, the easiest way to save the trimmings is to put them into a plastic bag (the same bag the clay came in) and depending on the dryness of the trimmings, a little water may be sprinkled into the bag and wedged while in the bag. Let this clay remain sealed for a week or two, then it is usually ready for use. Take it out of the plastic bag and wedge thoroughly. If it is too wet, wedge in

## Using Clay and Slip Safely (continued)

some fresh clay until a good throwing consistency is achieved. It is then ready to use again.

Of course if a pugmill is available, just add the trimmings into the pugmill adding fresh clay as needed.

Although different ways are used to salvage the trimmings, they all lead to the same purpose which is the ability to use all the purchased clay, not to generate any waste, and do it safely.

Any waste should be disposed of in accordance with Federal, State, and Local regulations. The above information references ASTM C1191, "Standard Guide for Using and Handling Clays and Slips Safely."

When using AMACO® moist or dry clays to make ceramic tiles, the following quantities can be expected: 100 lbs. of dry clay will make: 290 4"x4" tiles or 150 6"x6" tiles. 100 lbs of moist clay will make: 244 4"x4" tiles or 115 6"x6" tiles.



## Standard Packaging

Moist Clay in the 25-lb. carton is packed in a single polyethylene bag. Two 25-lb. bags of moist clay are packed in 50-lb. cartons.

**Casting Slip** (liquid) is packed in one gallon, polyethylene containers and shipped in fiber cartons.

**Dry Clays** in 50-lb. units of dry modeling and casting clays are supplied in multi-wall kraft bags.

## Preparing Dry Clays

To each pound of dry modeling clay, add in a polyethylene mixing bag, 4 to 5 ounces of water or 28% water by weight. Expel air in the bag and tie opening securely with string. Knead until clay and water are mixed thoroughly. Aging 24 hours or longer improves plasticity.

## Shipping Information

**Standard Shipping Units for Clay:** 25-M, 77-M, 67-M, 46-M, 48-M — 40 cartons (2,000 lbs.) of one number; 27-M, 20-M, 38-M, 480-M, 65-M, 58-M — 20 cartons (1,000 lbs.) of one number.

## General Firing Procedures for Stonewares and Porcelains

Firing procedures for all clays are listed in the copy for each clay body. However, for stonewares and porcelains, the following general information can be used:

(1) **Low Fire Bisque — High Fire Glaze:** Firing Stoneware clays at low temperatures of Cone 06-05 (1850°-1911°F, 1013°-1044°C), results in a porous bisque on which AMACO® High Fire Glazes are easy to apply. Then glazed pieces are fired to Cone 4 (2161°F, 1183°C) or higher depending upon the body. This is the method generally used for producing ware without crazing.

(2) **High Fire Bisque — Low Fire Glaze:** The bone dry greenware may be bisque fired to Cone 4 (2161°F, 1186°C), then glazed with any AMACO® glaze having a firing range of Cone 06-05 (1855°-1911°F, 1013°-1044°C). Glazes are rather difficult to apply on the hard, dense bisque, but sometimes this method is used when glazes of specific colors and textures not available in high fire glazes are desired.

(3) **Single Fire:** AMACO® High Fire Glazes can be applied to bone dry greenware and single fired to Cone 4 (2161°F, 1186°C). Although finished pottery can be obtained in one firing at a savings in firing costs, this is a hazardous procedure and greater loss may be expected if pots are not thoroughly dry after glazing.

