Problems With Clay Bodies

Problems with clay bodies can occur at any stage of pottery production. These clay body defects can usually, be avoided, however. For all of clay's versatility and incredible flexibility as a medium, it does need to be understood. Clay does make certain requirements of those who work with it, or problems will arise.

Carcking and Warping While Drying

Drying is actually potentially quite hard on clay objects. Common causes of cracking all center on the process of water being drawn out of the clay body. To avoid cracking during drying

- keep the clay walls and floors as even as possible
- do not dry greenware quickly. Allow a minimum of a week on the shelf. Check the ware to make certain it is bone dry before loading into a kiln.
- the thicker the ware, the longer the drying process should be
- dry objects evenly and from all sides. This is especially important with tiles and plates.

Part of the drying process includes your ware shrinking. For more on this, see Why Clay Bodies Shrink.

Cracking From Thermal Shock

When ware is heated or cooled too quickly, cracks can form as the stresses of expansion or contraction overcome the strength of the bonds within the clay body. To avoid thermal shock

- do not heat or cool the kiln too quickly
- do not allow cool air into the kiln too early, such as opening the kiln lid while the ware is still too hot.
- if you hear pinging from inside the kiln, the kiln is cooling too quickly. The pinging is the noise of cracking occurring. Close the lid or door, and shut any dampers.
- do not put fired ware (even ovenware) into an oven or microwave if the ware is damp, and
- do not put ware into an oven or microwave directly from the refrigerator or freezer.

Dunting

Dunting is the term used for cracks in the clay body that develop specifically due to rapid cooling at the end of the firing schedule. Dunting is most likely to occur in clay bodies that contain 25% or more silica.

Blackening, Bloating, and Carbon Coring

These closely related problems happen during the ware's first firing. They are caused when the naturally-occurring carbon in the clay is not able to burn off properly. To avoid all of these defects,

- raise the temperature slowly during the bisque firing, and
- if you are firing in a fuel-burning kiln, do not allow the kiln to go into reduction. Provide plenty of oxygen for the flame.

Blebbing

Blebs are air pockets that are caught in the clay body when the ware was being shaped. During firing, the air swells up like a balloon under the surface of the clay. To avoid blebbing

- wedge your clay thoroughly before using it, or use clay that has been processed in a de-airing pugmill, and
- if blebbing is an ongoing problem with a particular clay body, try adding grog (or change clay bodies).

Although blebs are a clay body fault, they also effect the glaze. Blebbing can cause glazes to pit, pinhole, and blister.

Deflocculation

When you are shaping damp clay, very rarely you may find that the clay may suddenly become so apparently wet as to be unworkable. In extreme cases, a handful of apparently normal clay, when shaken, will liquefy.

This is deflocculation; the clay particles have become ionized and are literally repelling each other. What do you do with this rare problem?

- if you are using a clay body containing nepheline syenite, use your clay within three months of mixing it with water
- if you are having trouble with a clay body high in the feldspars, talc, or frit, try adding 0.4% (by dry weight) epsom salts as you mix the clay.
- if you are working with a throwing clay body high in kaolin, try adding 0.5 - 1% (by dry weight) epsom salts as you mix the clay.

Clay - Glaze Fit

Problems occur when glazes and clays don't fit well with each other. Clay bodies with less than 10% silica may be hard to fit with glazes. If that is the case, consider raising the silica content.

For more on clay - glaze fit, see Why Glazes Go Bad.