

# Troubleshooting

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**MOST COMMON MISTAKES** – Even the most experienced pros make mistakes. It's part of learning, but the most common mistakes made by beginners are based on impatience. Trying to get too much done too quickly.

- ◆ Overfiring – especially with single layers
- ◆ Insufficient change of kiln wash. Trying to get “just one more time”.
- ◆ Mixed loads. So anxious to fill the kiln, you'll mixed items that shouldn't be fired together.
- ◆ Air Bubbles. Trying to fire too fast.

If there is one “skill” that is probably the single most important one to acquire for kilnforming, it's patience.

## TROUBLESHOOTING

**Bubbles** – air trapped either between the bottom glass and the kiln shelf or between layers of glass will expand as it's heated and can cause bubbles in the glass. Textured glass is especially likely to trap air. As is using glass of different thickness if you've capped it. For textured or varying thickness glass, it's safer to put it on a base with the texture of thickness variation facing up. An unlevel kiln shelf is also likely to trap air. The best way to prevent bubbles is to fire slower and introduce a “Bubble Soak” by firing slowly from 1000° to 1200° and allow a long soak (30 minutes or more) at 1200 to allow air to escape before the glass fuses. It can also help if you insert “chads” (small pieces of glass along the perimeter between the layers of glass. These hold the glass apart and force the glass to drop in the center before the edges.

**Spikes** are caused either by firing too hot or too long.

**Cracks** can be either a compatibility stress fracture (having used glass that isn't compatible) or from thermal shock. If the crack is sharp edged, it broke while the temperature was dropping. If the crack is smooth, or partly fused, it broke as the temperature was rising.

### Kiln wash stuck to glass

Residual moisture in kiln wash that hasn't been adequately dried, can create steam and cause the kiln wash to stick to the glass. Also, kiln wash that has deteriorated by having been used too many times will often stick to the glass. The higher the

temperature you fire to, the more likely kiln wash will stick. If you're only firing to slumping temperatures, it will stand up to a dozen or more firings. If you fire to tack fuse temperatures, you can usually get 3 or 4 reuses. If you fire to full fuse temperature, it's best to reapply the kiln wash for every firing. It isn't necessary to completely remove the kiln wash unless it's pitted or chipped. Just slightly sand the old kiln wash (your finger tips work well for this) and apply a couple of fresh coats.

### Removing stuck kiln wash

If it's just a small amount, it can usually be removed with a kitchen scrubber and a bit of elbow grease. If it's a lot and it's pitted into the glass, you can sometimes remove it by soaking in a strong vinegar and water solution. If that doesn't work, you'll have to sandblast it off. Removing stuck kiln wash is a lot of work. It's a good idea to take precautions to avoid having it happen.

### Distortion

Glass will change shape when fired in a kiln. The hotter you fire it, the more the shape will change. If you fire a square to slump temperatures, the change will be almost unnoticeable. If you fire it to tack fuse temperatures, the corners and edge will round off just a little. If you fire to full fuse temperature, the corners and edges will become completely rounded. You must anticipate how different temperatures will change the shape of the glass to produce the end results you want. If you place a small square of glass on another piece and fire to tack fuse, it'll come out still square. If you fire that same combination to full fuse, that square will end up close to round. In any kiln firing where you have a small area of shelf not being used, you should experiment with how different shapes and various layers respond to different firing temperatures.

### Devitrification