



Studio Glaze Safety Information

Many of our members want to know, are our community glazes food safe? This is a great question, especially when you are creating functional ware, but (like many things in pottery) it has a complex answer.

Food Safety

What is food safety? According to Ron Roy and John Hesselberth, authors of *"Mastering Cone 6 Glazes: Improving Durability, Fit and Aesthetics"* there is no agreed on definition of what food safety is when it comes to glazes. In fact, the only legal requirement for glaze food safety according to the government is that it leaches less than a certain acceptable amount of lead or cadmium. According to the authors, "there have been no documented instances of anyone having been harmed by materials leaching from a ceramic glaze," with the exception of glaze containing lead. The authors go on to say that, "In North America, there are no other product-related regulatory requirements a potter must meet to make and sell pottery for use with food."

Lead is not present in most glaze ingredients/products these days, and our studio certainly does not have any lead in it. Nor do we stock cadmium. However, this does not mean that our glazes do not contain other ingredients that may be considered toxic, or that they might not alter over time if exposed to dishwashers or acidic foods/beverages. This is true of any store-bought glaze that has a food-safe label as well- the food safety label refers to lead and cadmium presence, but not necessarily the presence of any other ingredient that is considered toxic.

Toxic Ingredients and Leaching

The reality of glazes is that many of them have one or more potentially toxic ingredients in them, like cobalt or copper or lithium, and all glazes leach their ingredients in some quantity. The problem occurs when potentially toxic ingredients are able to leach in quantities that are higher than acceptable thresholds, either because there is too much of the ingredient or because the glaze body is not stable enough to contain them in sufficient quantities. Stability depends on how the glaze is mixed (the ratios of ingredients), whether or not it gets up to the intended temperature, and whether it fits the clay body well. Since the government has not set thresholds of acceptability for pottery for anything other than lead and cadmium, many potters base their "acceptable thresholds" on those set for drinking water.

Some glazes don't contain any ingredients that are considered toxic, so any leaching that occurs with them is fine. These glazes are great for lining functional ware. Some of our house glazes are like this (see the list at the end of this sheet).

Testing

Many potters subject their glazes to the "lemon test," in which they lay a slice of lemon on a glazed piece overnight to see if the acid visibly affects the glaze. If it does, this means the glaze is leaching pretty egregiously. Ware that "passes" the lemon test with no visible change might still be leaching however, just not as much.

It is possible to get glazed ware tested by labs to determine the amount of leaching of each toxic ingredient. We are considering testing some of our newer house glazes to get a better idea of their stability and durability. However, these tests would not ensure the safety of the same glazes if they are layered with each other (even if each glaze is determined to be safe on its own).

Temperature, Texture, and Fit

One component affecting the safety of glazes is whether they reach full maturity, i.e. they reach the temperature they are supposed to. One reality of kilns is that they tend to have hotter and cooler spots, for a lot of different reasons. If a glaze doesn't come out the way it's supposed to (perhaps it's matte when it should have been glossy), it might have been underfired.

Another component affecting glaze safety is texture. Glossy glazes are often more durable, and less susceptible to leaching. Matte glazes are sometimes softer and mark easily with cutlery. They can also stain more easily, or be less easy to clean. Not to say all matte glazes are unsafe, but it's something to think about. Layering glazes, or thick applications, can cause pitting and textural irregularities that can make a glaze less acceptable for functional ware.

Fit is the shrinkage of the glaze versus the shrinkage of the clay. If these don't match well, you can get tiny cracks (crazing) in your glaze or pockets that moisture can get into. If tiny cracks form, they can leach more or harbor unhealthy bacteria.

Reality Check

Glaze has come a long way in more recent years, and there is a lot less to be worried about than when people were storing acidic food items in lead-glazed pots for months. The ingredients we use in our studio comply with government food safety standards, and are used in most other ceramic studios anywhere. Most of our recipes come from John Britt's book *The Complete Guide to Mid-Range Glazes*, and he is also the source of most of the information in this info sheet. If you are interested in reading further about glaze and food safety, I highly recommend downloading his PDF "*Is It Food Safe*" [here](#), or reading the print out in the studio. The PDF costs \$2.00 to download, but it's 23 pages and a lot of information.

We know that it's frustrating to not have a solid yes or no answer, but this topic is complex and a simple answer just doesn't exist. If you are concerned, we encourage you to learn more about glazes, read safety data sheets on products and ingredients you use, and use your judgement.

We are happy to provide any information we can to help. There is a vast wide world of pottery out there!

House Glazes

At Alchemy, all of our clay is formulated to be fired to cone 6, and all of our glazes are formulated to be fired to cone 6. Our glazes are either Hansen-based glazes, or they came from John Britt's book *The Complete Guide to Mid-Range Glazes*. The only exception is Gunmetal, which came from Thrinley DiMarco, who was an excellent potter of functional ware.

House Glazes not recommended for functional ware:

Lalone Turquoise- This glaze contains copper carbonate and lithium carbonate, and has a softer matte texture that is not able to contain these materials safely. It is visibly altered when tested with a lemon.

Gunmetal- This glaze is beautiful, and it might very well be fine for functional ware, but it contains a somewhat higher amount of copper oxide. To be extra safe, until this glaze is tested, it might be best to avoid using this on parts of ware that will contact food.

Licorice- This glaze is supposed to be glossy black, but is instead a matte finish. Because of this inconsistency, it might be best to avoid using it on the inside of functional ware.

House glazes that contain potentially toxic ingredients:

- Jade
 - Hansen base but contains small amount of copper carbonate
- Hansen Blue
 - Hansen base, but contains cobalt
- Teal
 - Hansen base but contains cobalt and copper carbonate
- Deep Purple
 - Contains lithium carbonate, chrome oxide, and cobalt carbonate
- Blue Spruce
 - Contains cobalt carbonate and copper carbonate
- Falls Creek Shino
 - Contains lithium carbonate
- Indigo Float
 - Contains manganese and lithium carbonate

House Glazes that Contain no toxic ingredients:

- Hansen White
 - No toxic ingredients, good liner glaze
- Hansen Clear
 - No toxic ingredients, good liner glaze
- Busch Nutmeg
 - No toxic ingredients, good liner glaze

- Horsley Yellow
 - No toxic ingredients, could make good liner glaze (but matte surface might not be the best choice)

If you want to see complete ingredient lists for any of these glazes, let us know and we will send them to you!