ceramics
MONTHLY

Techno File: Glaze as Form

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Appears in the May 2025 issue of Ceramics Monthly. (https://ceramicartsnetwork.org/ceramics-monthly/ceramics-monthly-issue/may-2025)

Glaze as it has be known for many centuries, a glass coating covering a ceramic base, has been evolving to encompass a wider range of phases, including controlled drips, expanding surfaces, and

now you can explore these new ideas on your own.

Defining the Terms

CMC Gum: Carboxymethylcellulose (CMC), an organic gum used as a suspension/adhesion agent in glazes. A small amount of gum is added to a quart or so of warm water and left overnight. Once dissolved, this solution may be added in small doses to glazes, slips, and engobes to improve application performance.

Loss on Ignition (LOI): The loss in weight of clay or any other material expressed as a percentage of its dry weight when it is heated under specified conditions.

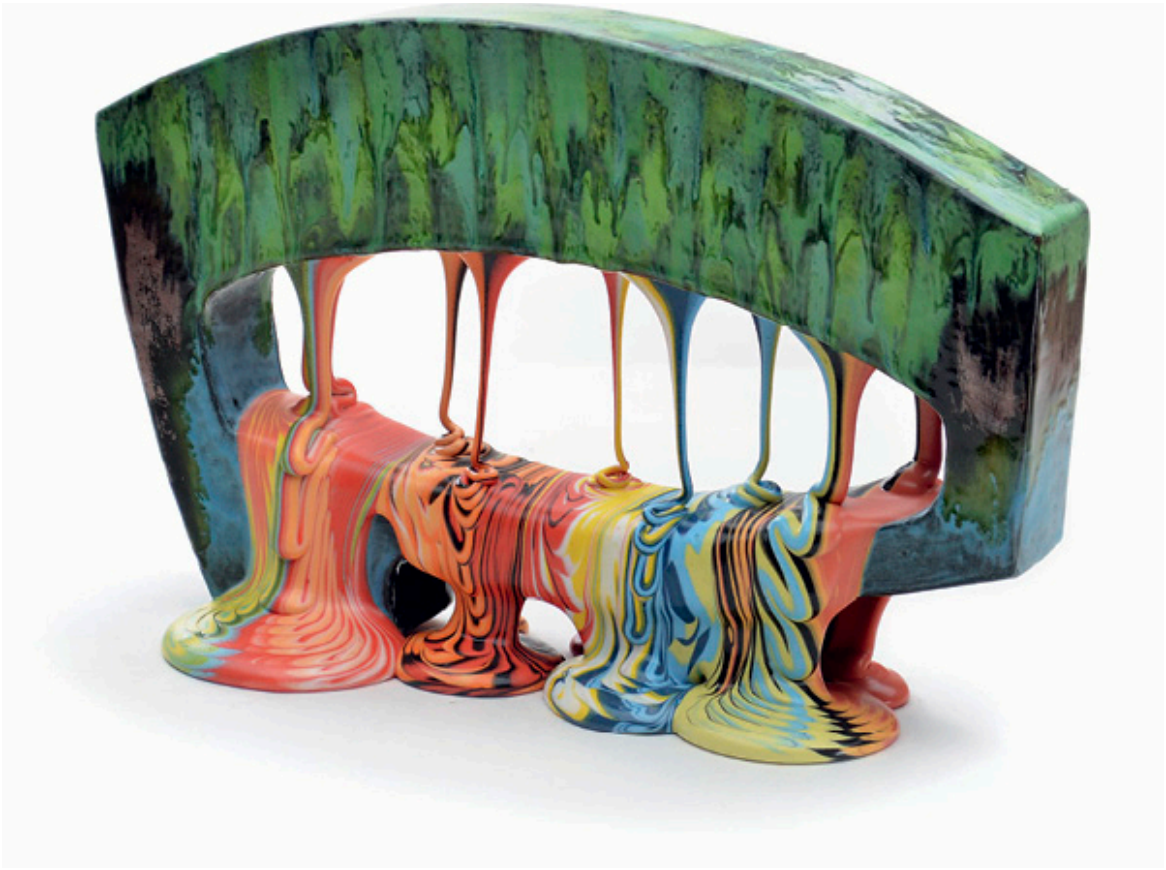
Surface Tension: The capacity of molecules of a liquid to bind together. Water has high surface tension.

Translucent: The property of a material that allows light to pass through it while also scattering it.

Viscosity: The resistance to flow offered by a liquid. The opposite of fluidity.

Vitrification: Transformation by heat and fusion of a mixture of materials into a brittle, hard, non-crystalline glass.

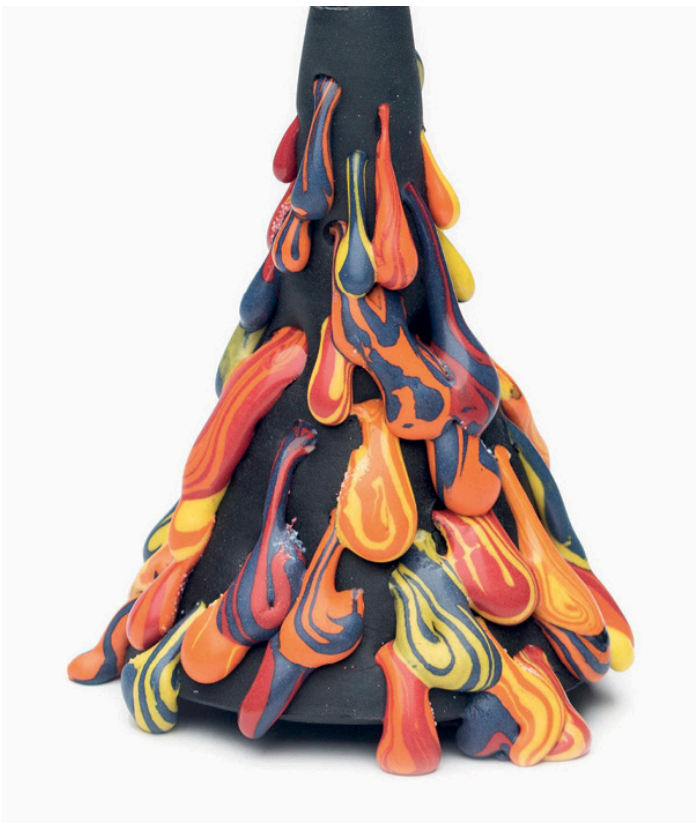
Humans have been making and firing ceramics since at least 28,000 BCE. Knowing this long history, I am surprised and impressed to see new ceramic advancements being made in my lifetime. Two of these that are becoming more popular are gloop, a three-dimensional glaze made into form, and Nerifoami, a similar glaze-clay hybrid that rapidly expands when firing. Both are sensitive to firing temperatures, requiring lots of testing to refine the formula. If you fire them too hot, they will completely melt and run all over your shelves. If fired too low, the materials fail to melt and nothing happens. Lauren Mabry's *Glazescape (Green Shade No. 3)* (1), exists within this beautiful tension harnessing the drips of gloop without turning into a glaze disaster.



1 Lauren Mabry's Glazescape (Green Shade No. 3).

Gloop

Max Henderson (2) talks about the importance of CMC gum in providing malleability to the recipe. Note that the EPK is the only particle in the recipe that is absorbent. Without CMC gum, the gloop would be extremely hard to work with. Henderson states, "Before adding dry materials to the water, completely dissolve the CMC gum in hot water until all granules disappear. Start with 25% H_2O (by weight) and, if needed, gradually add water until you have a clay consistency. I usually will make small batches of gloop with the maximum stain (8%) and a large batch of the base (no colorant/ stain). That way, I can wet mix to dilute the color to my liking, rather than making numerous batches of one stain at various percentages. For my work, I will roll out small sticks of glaze (between 2.5g to 8g) and let them completely dry before inserting them into the piece. For extra durability, I will sometimes bisque fire the sticks of glaze to cone 016 to reduce breakage during application."



2 Max Henderson's vessel.

3 Jolie Ngo's Gear Vessel in New Wave. Photo: Courtesy of the artist and R & Company.

Jolie Ngo uses the melting quality of gloop as a point of emphasis on her 3D printed *Gear Vessel in New Wave* (3). As you look at the artists included in this article, notice they all utilize gloop as a point of contrast within a more stable built-clay structure. This gives the gloop something to melt around, creating visual tension between hard and soft. I also want to point out Ngo's use of white gold luster only on the gloop. It punches up the "What is that?" factor that makes gloop so attractive.

Nerifoami

Nerifoami is the technique of building objects with an expanding foam glaze. Stephen Creech (4) has been working with this material and says of the process: "Nerifoami can be made from glazes containing high LOI materials (loss on ignition), like silicon carbide. The materials off-gas at a point where the high viscosity surface tension of the glaze catches the gas. The resulting bubbles expand outward within the glaze. You

Ferro Frit 3124	55.0 %
EPK Kaolin	12.0
Silica	33.0
	100.0 %
Add: CMC Gum	0.2 %
Mason Stain	up to 8.0 %
Water	25.0–30.0 %

You can add up to 8% Mason stains, it does not need to be exactly 8%.

PATRICK COUGHLIN LOWFIRE GOOP
Cone 03

Ferro Frit 3134	40 %
EPK Kaolin	20
Silica	40
	100 %
Add: Stain	2 %

CONE 05 PORCELAIN #1
Cone 05

New Zealand Kaolin	50 %
Ferro Frit 3134	50
	100 %
Add: Veegum	3 %

Mason stains can be added for color from 1% to 4% of dry weight. Single fire only to cone 05 to create a satin surface.

CONE 05 PORCELAIN #2
Cone 05

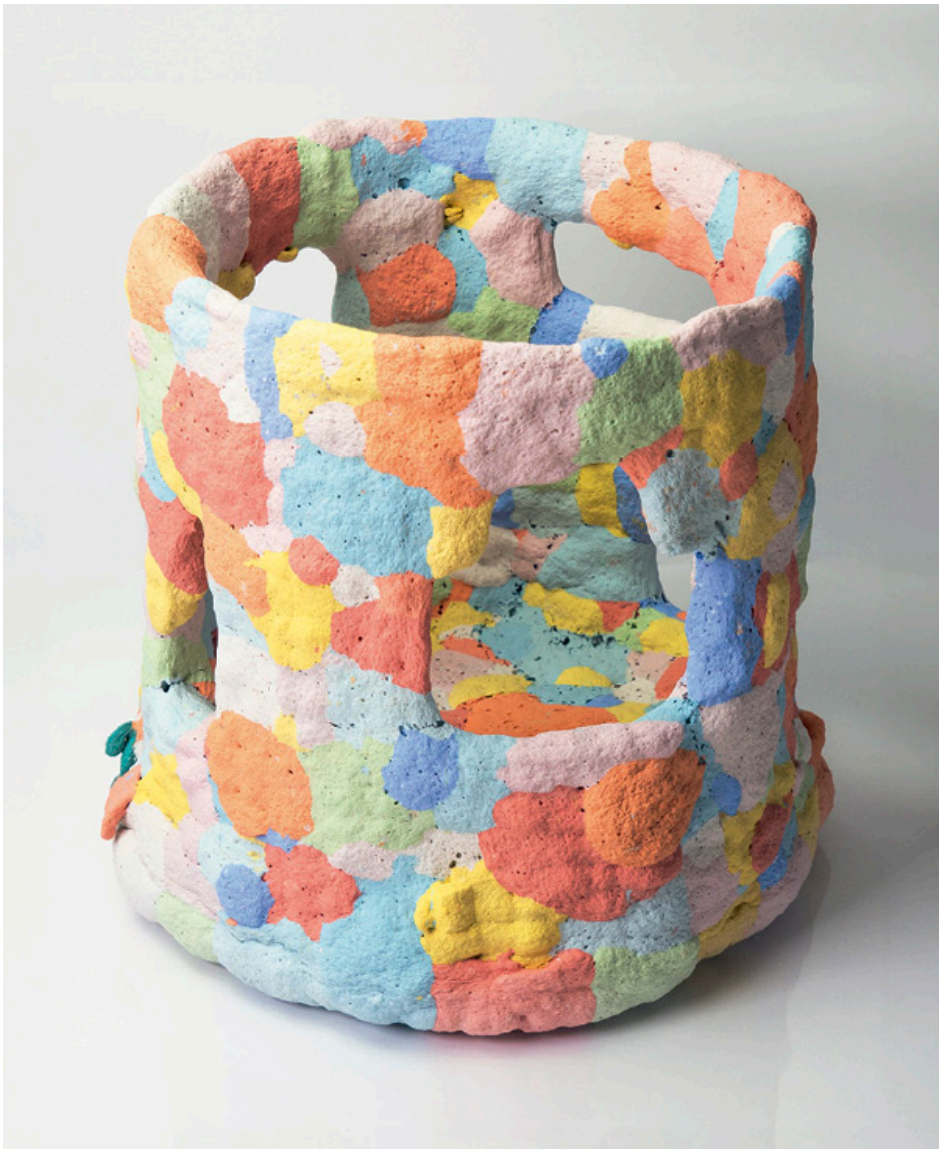
New Zealand Kaolin	50 %
Ferro Frit 3195	50
	100 %
Add: Veegum	3 %

Mason stains can be added for color from 1% to 4% of dry weight. Single fire only to cone 05 to create a gloss surface.

CONE 05 PORCELAIN #3
Cone 05

Whiting	9.6 %
Ferro Frit 3195 or 3134	45.9
New Zealand Kaolin	41.1
Silica	3.4
	100.0 %
Add: Veegum	2.9 %

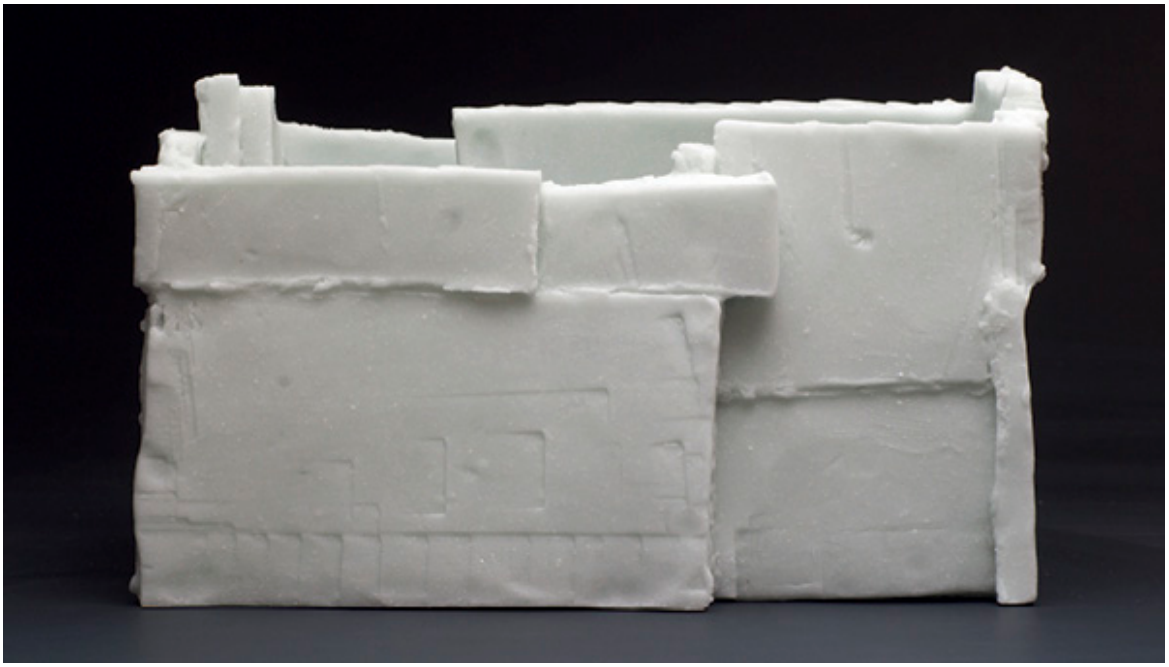
Mason Stains can be added for color from 1% to 4% of dry weight. Single fire only to cone 05 to create a matte surface.



4 Stephen Creech's vessel.

Low-Fire Porcelain

Goop and Nerifoami are used for sculpture, but a similar functional counterpart is low-fire porcelain. Bryan Hopkins (5) worked in high-fire porcelain for many years before he started testing an alternative that would be fully vitrified and translucent at low-fire temperatures. He continues to work with satin and gloss variations of the recipe, all using New Zealand Halloysite, or New Zealand Kaolin (NKZ) and



5 Bryan Hopkin's basket.

the author *Ben Carter is a studio potter and workshop instructor. He received an MFA in ceramics from the University of Florida. Ben's work has been featured in the* Australian Journal of Ceramics, Pottery Making Illustrated, *and* Ceramics Monthly. *Since 2012, he has been hosting and producing the popular podcast,* Tales of a Red Clay Rambler. *Find him online at* ***carterpottery.com*** *(****https://www.carterpottery.com/****) .*

Excerpted with permission from The Complete Guide to Low-Fire Glazes for Potters and Sculptors *(Quarry Books, an imprint of The Quarto Group, 2024) by Ben Carter.* The Complete Guide to Low-Fire Glazes for Potters and Sculptors *is available in the Ceramic Arts Network shop,* ***ceramicartsnetwork.org/shop*** *(****/shop****).*

Unfamiliar with any terms in this article? Browse our glossary of pottery terms (/Resources/Glossary) !

Topics: Glaze Chemistry (/search-results?Categories=c835cfdb-7776-4df6-ba7a-45a78c5d3feb)

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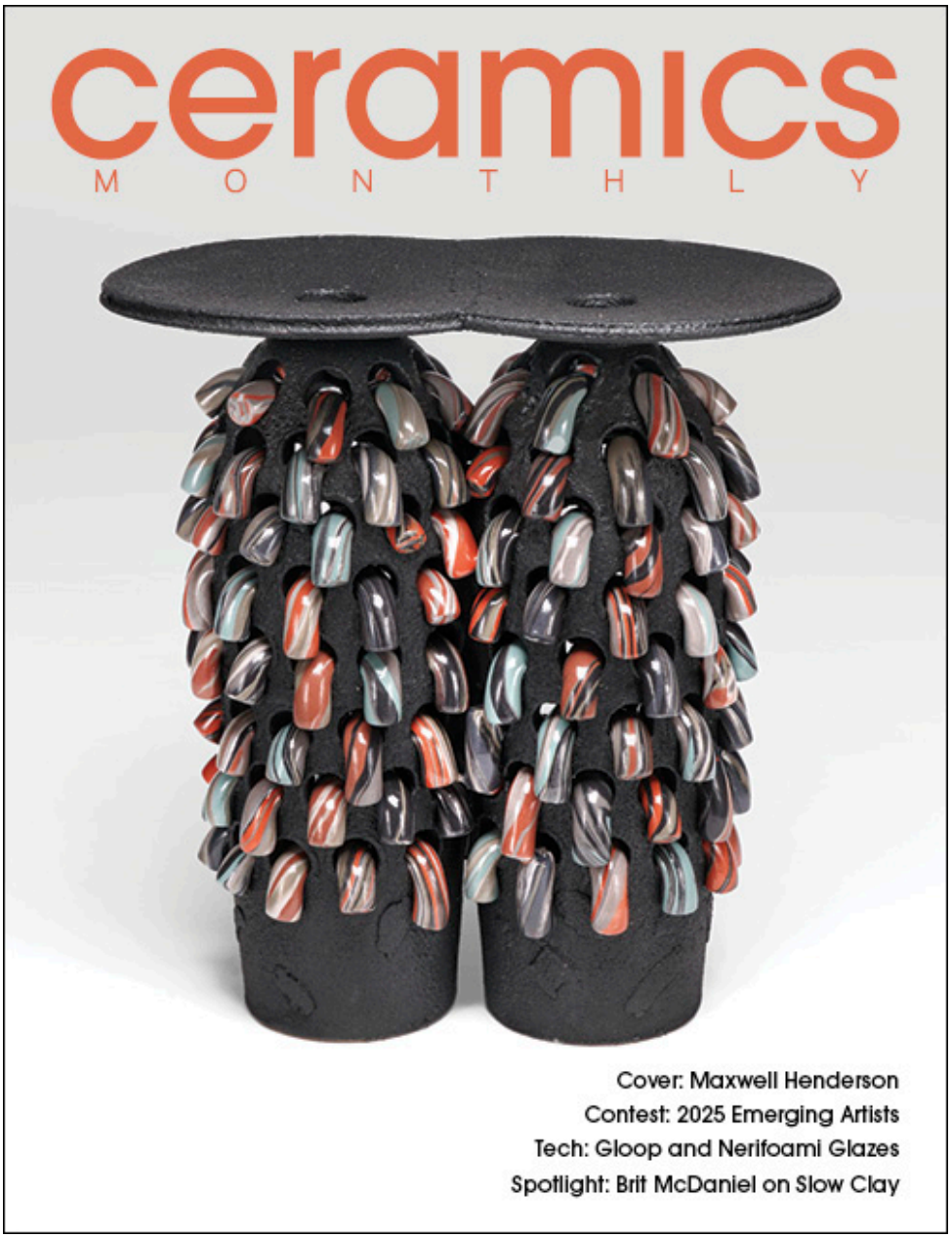

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