3D Printed Concrete Molds

Tools & ingredients

- Computer w/ Blender/Fusion360 & Cura
- 3D printer & PLA filament
- Waste board
- Silicone caulk
- Caulk gun
- Gaff tape and/or clamps
- Vaseline/cooking spray/WD-40
- Rag/cotton/cloth
- Respirator mask & rubber gloves
- Concrete mix
- Colander or sifter
- Bucket
- Electric drill
- Mixing paddle
- Spoon/chopstick
- Straight edge/putty knife
- Rubber mallet
- Water spray bottle
- Sandpaper

	Design the mold on your computer Pay attention to how it will ● print (how it'll fit on your print plate, how much filament it'll require, require support cleanup for overhangs etc.) ● hold thick liquid (often you'll pour into the mold upside-down and the open hole in the mold will end up the bottom) ● pull apart (interiors folded back on itself can't non-destructively demold) Consider engraving simple instructions into the design
	Print the mold on a 3d printer PLA works just fine and will be easier to print than many other filaments The more shells you use, the more reusable the mold will be
	Use Silicone Caulking to glue the majority of the plastic mold to a waste board Gluing to the board will allow us to vibrate the concrete to get air bubbles out and will help seal cracks You can use anything else for glue, but the caulking can be removed from the mold without damaging it
	Spread mold release on the interior of the mold You can use paper towels and forceps if there are small crevices. Vaseline worked well for me but cooking spray, or WD-40 probably would too. We likely only glued part of the mold in previous steps so that the mold release doesn't sit for a day while caulking cures
	Fully close up the mold Finalize caulking the mold to the waste board if needed Tape and/or clamp the mold together to make sure that the concrete won't leak out anywhere - including the mold seals
	Sift the concrete mix to remove larger pieces & pebbles/gravel **Wear a mask** so you don't inhale silica dust!

	Combine the concrete mix with water Use a metal paddle and electric drill to mix the concrete quickly if you're using a lot Mix inside a bucket with a spout so you'll be able to pour it precisely Add paint or pigment if you want the mix colored Wear gloves to avoid chemical burns & safety glasses	
	Pour the concrete Use a disposable spoon or chopstick or something to help direct pour around the mold	
	Vibrate the concrete to remove bubbles Tap your waste board (or gently drop the entire thing an inch) or use an un-bladed reciprocating saw or sander against the board	
	Flatten your pour hole Scrape across the top with a straight edge (or putty knife or anything else with a straight edge)	
	Clean your tools Clean the outside of the mold Throw away your disposable stick/spoon Before the remains of the concrete cure, clean your ● Bucket ● Mixing paddle ● Straight edge/putty knife ● Colander/sifter	Put away your ● Mask, safety glasses, gloves ● Caulk gun & caulk ● Tape ● Vaseline ● Forceps ● Colander/sifter ● Drill Wash Cloth and forceps
	Wait at least 24 hours - or until the concrete is partially cured Test with "the fingernail test" (if you can press a fingernail into the concrete and leave a mark, it hasn't cured enough)	
	Demold Pull the mold apart gently (by hand, if you can) Use a rubber mallet if you must and tap gently on the mold to loosen it from the concrete	
	Clean the result Sand rough edges & marks from seals	
	Await final curing for about a week & paint if you wish Maybe spritz it with water occasionally to help it cure (curing incorporates water into the concrete)	