

Seminar Course - *Breaking the mould* - Seminar #3

FLUID FORM

“everything flows” [Heraclitus (53 – 475 BC)]



Robert Smithson, Glue pour

Lava flow, Hawaii

KEY WORDS: *Slump, yield stress, viscosity, consistency, rheology, deformation, blob, amorphous*

Assignment 03: Fluid form

- **Work in groups** (max 3 people) **or individually**
- **Each group will produce at least one model**

The consistency of fresh concrete depends on the water ratio and the addition of chemical admixtures, such as super plasticizers. The building industry requires concrete mixes with different fluid behaviors depending on the handling and processing of the material; pumping concrete requires high flowability (low viscosity) while concrete that is used in slip forming have a firmer consistency (high viscosity).

For the assignment this week we want you to capture the fluid form of concrete. You can experiment with the consistency of the material as well as with the forces that you expose it to over time until the concrete starts setting. A simple apparatus could be constructed as part of the model to initiate flow and direct the forming process. We have provided a recipe for a concrete mix that has a clay-like consistency. If you want to increase the fluidity of the mix, carefully add water until you have reached a consistency that you want to work with (make sure to document how much water you add).

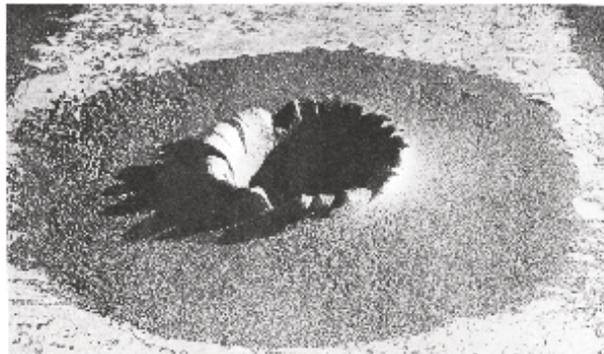
The 'fluid form' default mix design is:

	Mass	Parts	Percent from cement mass	
Cement	0.250 kg	1	-	
Sand (0-4mm)	0.539 kg	2.15	215 %	
Fly ash	0.070 kg	0.28	28%	
Silica	0.035 kg	0.14	14%	
Water	0.100 kg	0.4	40%	
Super plasticizer	0.005 kg	0.02	2%	
Pigment is optional (black or red)	-	-	-	-
Total:	Approx. 1 kg	3.99		

Add a little bit of water if you want to increase the fluidity (make sure to document how much)

Add a little bit of cement if you want to decrease the fluidity (make sure to document how much)

Take pictures of your fluid forms and post them on the blog, write a short description of the forces at play, put a tag with your group number and subject name, tag all the participants of the group.



Permanent splashes left where a projectile has entered an amorphous plate,
A Study of Splashes by Arthur Worthington (1908)