





















### LAMPIRAN FOTO ALAT YANG DIGUNAKAN

NO	NAMA ALAT	GAMBAR
1	Timbangan	
2	Saringan	
3	Kuas	
4	Cawan	





5	Sendok Spesi	
6	Density Spoon Besar	
7	Oven	
8	Piknometer	

9	Le Chatelir Flask	 A photograph showing several glass Le Chatelir flasks of various sizes and shapes, including round-bottomed and pear-shaped flasks, arranged on a white surface in a laboratory setting.
10	Kerucut Terpancung	 A photograph of a metallic, conical object with a flared top and a narrower base, resting on a dark, speckled surface. This is a truncated cone.
11	Batang Pendumbuk	 A photograph of a long, thin, cylindrical metal rod or pipe standing vertically on a textured, brownish surface.
12	Bejana Silinder	 A photograph of a large, dark, cylindrical metal container or vessel standing on a light-colored floor in a laboratory or industrial setting.

13	Batang Pematik	
14	Corong	
15	Alat Vicat	
16	Mixer	


17	Spatula	
18	Stopwacth	
19	Tromol	
20	Cincin Konik Dan Kaca	

21	Gelas Ukur	
22	Cetakan Silinder	
23	Palu Karet	
24	Mistar Siku	

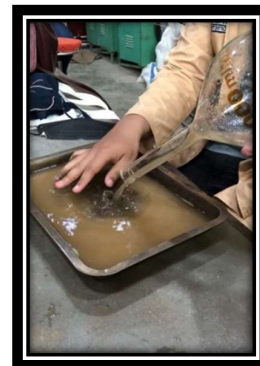
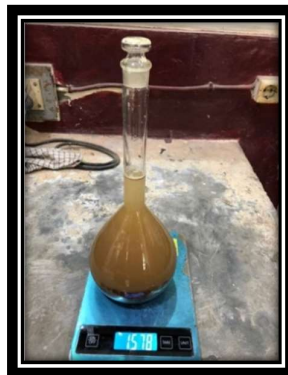
25	Kerucut Abram	 A cylindrical metal container with a metal frame around its middle and a handle at the top. It appears to be used for abrasive purposes.
26	Ember	 A simple, light-colored plastic bucket with a handle.
27	Plat Slump	 A square metal plate with a central circular indentation and four small handles or lugs at the corners.
28	Bejana Silinder Berkuping	 A cylindrical metal vessel with two handles, sitting on a tiled floor.

29	Mesin Penekan dan Hidrolic Pump	
30	Sikat Kawat	
31	Plat Kaca	



32	Sekop	
33	Alat Penggetar	
34	Sarung Tangan	
35	Density Spoon Kecil	

Pengujian Berat Jenis dan Penyerapan Agregat





Pengujian Kadar Air dan Kadar Lumpur



Pengujian Bobot Isi Padat dan Bobot Isi Gembur Agregat



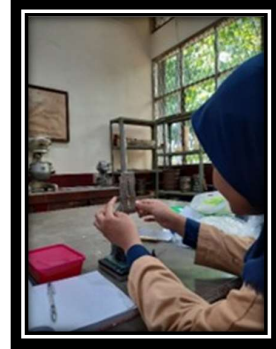
### Pengujian Berat Jenis Semen



### Pengujian Waktu Ikat Semen



## Pengujian Konsistensi Semen



## LAMPIRAN FOTO PELAKSANAAN PENGUJIAN BETON



Pembuatan Benda uji



Pengujian Slump



Pengujian Bobot Isi beton



Perawatan Benda Uji



Pembongkaran Cetakan



Pencetakan Benda Uji



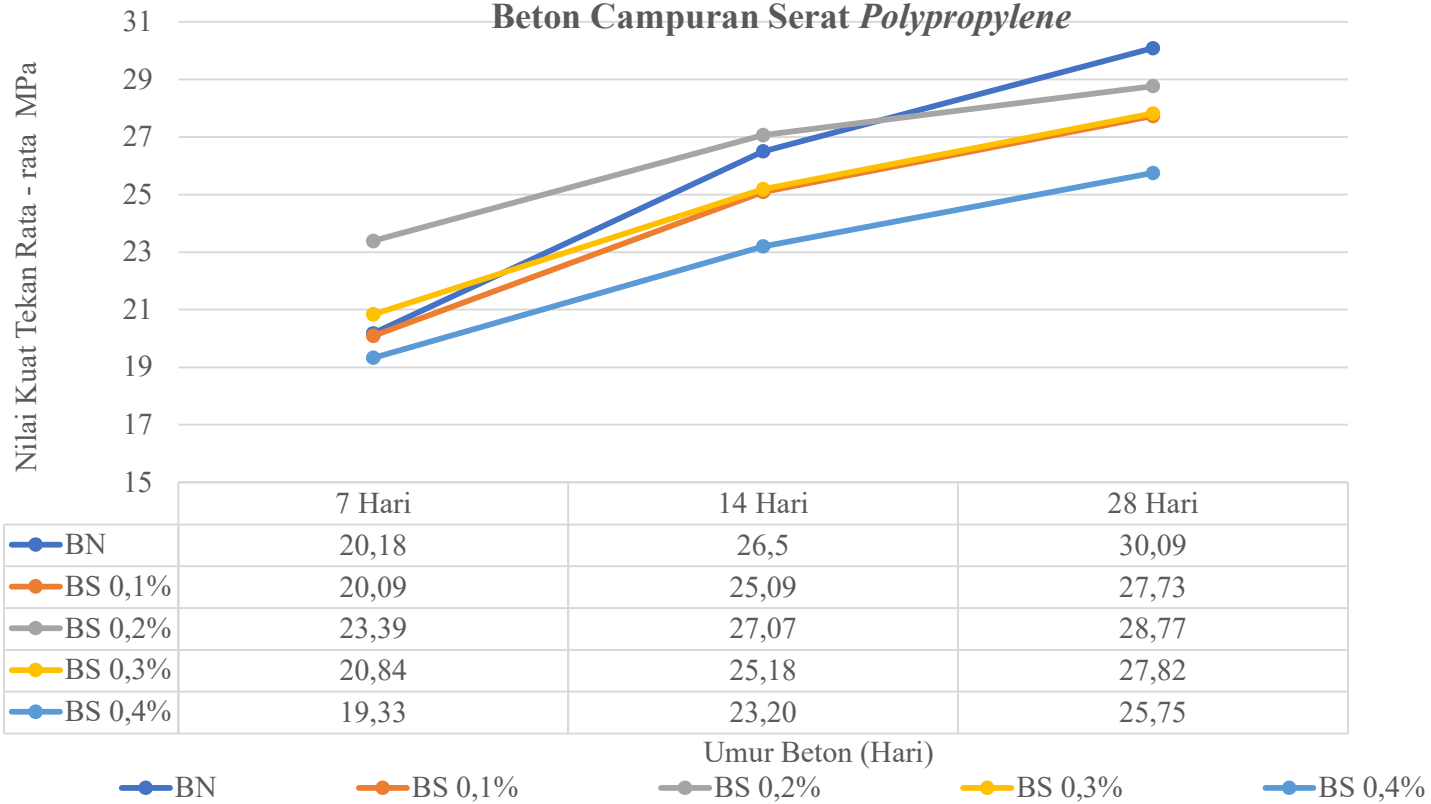
Pengujian Kuat Tekan



Pengujian Kuat Tekan



**Grafik Perbandingan Hasil Pengujian Kuat Tekan Rata - rata Beton normal dan Beton Campuran Serat *Polypropylene***



(Sumber : Hasil Pengujian di Laboratorium Pengujian Bahan Teknik Sipil, 2022)

Umur Benda Uji (hari)	Rata – Rata Kuat Tekan Benda Uji (MPa) dan Presentase Peningkatan Terhadap Beton								
	Rata – rata Kuat Tekan BN (MPa)	BS 0,1%		BS 0,2%		BS 0,3%		BS 0,4%	
		Rata-rata Kuat Tekan (MPa)	Persentase (%)	Rata-rata Kuat Tekan (MPa)	Persentase (%)	Rata-rata Kuat Tekan (MPa)	Persentase (%)	Rata-rata Kuat Tekan (MPa)	Persentase (%)
7	20,18	20,09	-0,45	23,39	13,72	20,84	3,17	19,33	-4,40
14	26,5	25,09	-5,62	27,07	2,11	25,18	-5,24	23,20	-14,22
28	30,09	27,73	-8,51	28,77	-4,59	27,82	-8,16	25,75	-16,85

(Sumber : Hasil Pengujian di Laboratorium Pengujian Bahan Teknik Sipil, 2022)