LAMPIRAN

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Lampiran 1. Data Hasil Pengujian Kandungan Fly Ash.

UNIVERSITAS NEGERI MALANG
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM
LABORATORIUM MINERAL DAN MATERIAL MAJU (LABORATORIUM SENTRAL)
Jalan Semarang 5, Malang 65145
Telp. 0341-551312 (psw 200)/ 574895/ 085106001088
E-mail : laboratoriumsentralum@yahoo.co.id
Website : central-laboratory.um.ac.id

LAPORAN HASIL UJI

No. LSUM.LHU.E.00110.2018

Nomor Pengujian	:	LSUM.P.00093.2018
Nomor Sampel	:	Fly Ash 1 (E 94)
Nama Pelanggan	:	M. Redianto
Instansi Pelanggan	:	UB
Jenis Karakterisasi	:	XRF
Sampel Diterima Tanggal	:	06 Februari 2018

Hasil

Compound	Conc (%)	Metode
Al	11	XRF
Si	23,8	
K	2,04	
Ca	19,6	
Ti	2,32	
V	0,11	
Cr	0,097	
Mn	0,36	
Fe	36,7	
Ni	0,049	
Cu	0,097	
Zn	0,03	
Sr	0,47	
Mo	2,5	
Ba	0,43	
Eu	0,3	
Re	0,38	

Keterangan :
1. Hasil analisa hanya berlaku untuk sampel yang diuji
2. Dilarang menggandakan sebagian laporan hasil pengujian tanpa persetujuan tertulis dari Laboratorium Mineral dan Material Maju.

Malang, 08 Februari 2018
a.n Dekan
Kepala Lab. Mineral dan Material Maju

Drs. Abdulloh Fuad, M.Si
NIP. 196302221988121002

Lampiran 2. Data Spesifikasi Silica Fume berdasarkan PT Sika Indonesia.

BUILDING TRUST

PRODUCT DATA SHEET
SikaFume®

CONCRETE ADDITIVE BASED ON SILICA FUME TECHNOLOGY

DESCRIPTION

SikaFume® is a concrete additive in powder form, based on silica fume technology.

USES

SikaFume® is used in shotcrete, structural concrete, pre-cast concrete and other fields of concrete construction where high demands are imposed on the quality of fresh and hardened concrete.

CHARACTERISTICS / ADVANTAGES

SikaFume® contains extremely fine latently reactive silicic dioxide.
The presence of this substance imparts greatly improved internal cohesion and water retention in the fresh concrete. The concrete becomes extremely pliable and pumpability is substantially improved. In the hardened concrete the latently reactive silica fume forms a chemical bond with the free lime ($Ca(OH)_2$). The additional formation of hydration products results in a significantly denser cement matrix.

With the use of SikaFume® the concrete will show the following properties:
- High stability of green concrete
- Highly increased durability
- Excellent frost and de-icing salt resistance if an air entraining agent is used at the same time
- Increased ultimate strengths
- Increased abrasion resistance
- Increased water tightness
- Increased gas tightness
- Reduced chloride penetration

SikaFume® does not contain any chlorides or other steel corrosion promoting substances, and can therefore be used without any restriction for reinforced and pre-stressed concrete construction.

APPROVALS / CERTIFICATES

SikaFume® confirms to EN 13263-1:2005 table 4.

PRODUCT INFORMATION

Chemical base	A blend of latently reactive ingredients.
Packaging	20 kg bag 1 000 bulk
Appearance / Colour	Powder / Grey
Shelf life	36 months shelf life from date of production if stored properly in undamaged, unopened, original sealed packaging.
Storage conditions	Storage in a dry environment, not sensitive to frost.
Density	~0.65 kg/L
Total Chloride Ion Content	< 0.3 M-%

TECHNICAL INFORMATION

Concreting Guidance	The standard rules of good concreting practice, concerning production and placing, are to be followed. Laboratory trials shall be carried out before concreting on site, especially when using a new mix design or producing new concrete components. Fresh concrete must be cured properly and curing applied as early as possible.
Concrete Mix Design	When using SikaFume® a suitable mix design has to be taken into account and local material sources shall be tested.
Concrete Mixing Time	SikaFume® is added with the cement and aggregates at the batching plant before the gauging water. Optimum wet mixing time: 60 seconds.

APPLICATION INFORMATION

Recommended Dosage	5 - 10 % by weight of cement.

BASIS OF PRODUCT DATA

All technical data stated in this Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

LOCAL RESTRICTIONS

Please note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Please consult the local Product Data Sheet for the exact product data and uses.

ECOLOGY, HEALTH AND SAFETY

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Safety Data Sheet (SDS) containing physical, ecological, toxicological and other safety-related data.

LEGAL NOTES

***Lampiran 3. Rincian Hasil Pengujian Density dan Void Ratio* Beton Segar**

NO	KODE MIX DESIGN	Alat ukur + benda uji	Berat alat ukur	Volume alat ukur	*Density*	Total volume absolut material	Kebutuhan NCA (Kg)	Kebutuhan RCA (Kg)	Air	FA (Kg)		SF (Kg)	C (Kg)	Massa total penyusun beton Ms (kg)	*Theoritical Density*	*Void Ratio*
		Mc (kg)	Mm (kg)	Vm (m3)	(D) kg/m3	Vs (m3)			(Kg)	10%	25%	7%			(*T*) kg/m3	(*U*)%
1	R0 F0S0	13,9	5,7	0,00522	1571,82	0,00320	6,413	0,000	0,31	0,00	0,00	0,00	1,372	8,099	2529,07	37,85
2	R0 F1S0	13,85	5,7	0,00522	1562,24	0,00324	6,413	0,000	0,31	0,21	0,00	0,00	1,235	8,169	2519,98	38,01
3	R0 F2S0	14,5	5,7	0,00522	1686,84	0,00330	6,413	0,000	0,31	0,00	0,52	0,00	1,029	8,274	2506,76	32,71
4	R0 F0S1	13,9	5,7	0,00522	1571,82	0,00321	6,413	0,000	0,31	0,00	0,00	0,09	1,276	8,096	2518,82	37,60
5	R0 F1S1	14	5,7	0,00522	1590,99	0,00325	6,413	0,000	0,31	0,21	0,00	0,09	1,139	8,166	2509,89	36,61
6	R0 F2S1	14,55	5,7	0,00522	1696,42	0,00331	6,413	0,000	0,31	0,00	0,52	0,09	0,933	8,272	2496,89	32,06
7	R1 F0S0	13,7	5,7	0,00522	1533,49	0,00318	3,207	2,887	0,31	0,00	0,00	0,00	1,372	7,779	2443,47	37,24
8	R1 F1S0	13,52	5,7	0,00522	1498,98	0,00322	3,207	2,887	0,31	0,21	0,00	0,00	1,235	7,849	2435,37	38,45
9	R1 F2S0	13,9	5,7	0,00522	1571,82	0,00328	3,207	2,887	0,31	0,00	0,52	0,00	1,029	7,954	2423,60	35,14
10	R1 F0S1	13,45	5,7	0,00522	1485,57	0,00319	3,207	2,887	0,31	0,00	0,00	0,09	1,276	7,777	2433,48	38,95
11	R1 F1S1	13,7	5,7	0,00522	1533,49	0,00323	3,207	2,887	0,31	0,21	0,00	0,09	1,139	7,847	2425,54	36,78
12	R1 F2S1	13,95	5,7	0,00522	1581,41	0,00329	3,207	2,887	0,31	0,00	0,52	0,09	0,933	7,952	2413,98	34,49
13	R2 F0S0	13,5	5,7	0,00522	1495,15	0,00316	0,000	5,774	0,31	0,00	0,00	0,00	1,372	7,459	2356,85	36,56
14	R2 F1S0	13,5	5,7	0,00522	1495,15	0,00320	0,000	5,774	0,31	0,21	0,00	0,00	1,235	7,529	2349,78	36,37
15	R2 F2S0	13,5	5,7	0,00522	1495,15	0,00326	0,000	5,774	0,31	0,00	0,52	0,00	1,029	7,634	2339,48	36,09
16	R2 F0S1	13,2	5,7	0,00522	1437,64	0,00317	0,000	5,774	0,31	0,00	0,00	0,09	1,276	7,457	2347,14	38,75
17	R2 F1S1	13,75	5,7	0,00522	1543,07	0,00321	0,000	5,774	0,31	0,21	0,00	0,09	1,139	7,527	2340,21	34,06
18	R2 F2S1	14,2	5,7	0,00522	1629,33	0,00327	0,000	5,774	0,31	0,00	0,52	0,09	0,933	7,632	2330,12	30,08

Lampiran 4. data hasil pengujian daya tahan aus

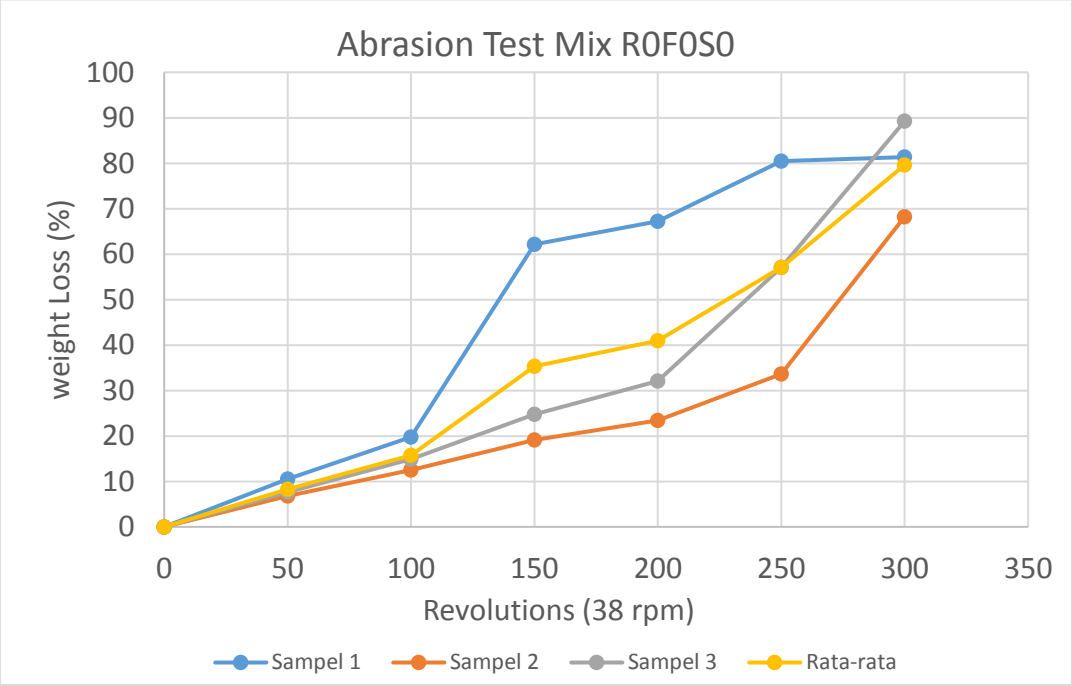
A. Daya Tahan Aus Beton Porus Normal

A.1 Daya Tahan Aus Beton Porus Normal variasi RCA 0%

Hasil Uji Daya Tahan Aus Beton Porous RCA 0% dengan Komposisi Semen FA 0% dan SF 0% (R0F0S0)

Kode mix :	R0F0S0			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	3638,90	3726,30	3704,30	0,00	0,00	0,00	0,00
50	3256,50	3474,00	3421,12	10,51	6,77	7,64	8,31
100	2920,50	3260,30	3151,60	19,74	12,51	14,92	15,72
150	1378,40	3012,90	2788,00	62,12	19,14	24,74	35,33
200	1191,40	2852,80	2515,50	67,26	23,44	32,09	40,93
250	709,90	2473,90	1589,60	80,49	33,61	57,09	57,06
300	678,80	1183,40	398,00	81,35	68,24	89,26	79,61

Hasil Uji Daya Tahan Aus Beton Porous RCA 0% dengan Komposisi Semen FA 0% dan SF 0% (R0F0S0)



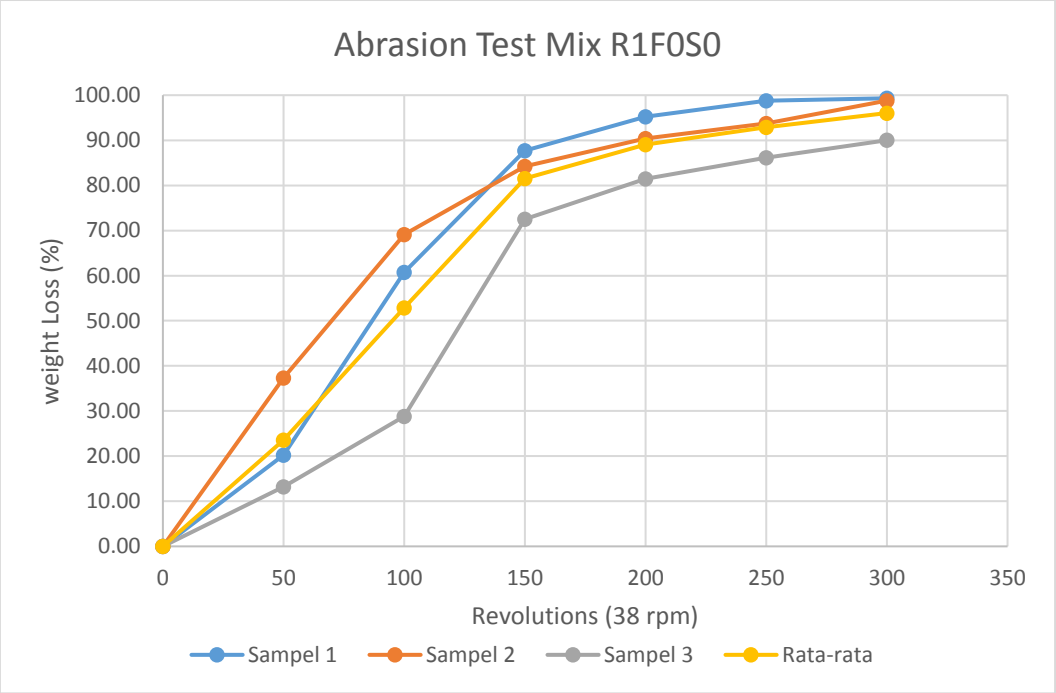
Hasil pengujian ketahanan abrasi 0% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 79,61 %. Mix desain ini **tidak** memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

A.2 Daya Tahan Aus Beton Porus Normal variasi RCA 50%

Hasil Uji Daya Tahan Aus Beton Porous RCA 50% dengan Komposisi Semen FA 0% dan SF 0% (R1F0S0)

Kode mix :	R1F0S0			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	3591,8	3272,9	3714,5	0,00	0,00	0,00	0,00
50	2865,4	2050,1	3223,7	20,22	37,36	13,21	23,60
100	1410,5	1009,7	2644,9	60,73	69,15	28,80	52,89
150	441,7	514,9	1019,3	87,70	84,27	72,56	81,51
200	170,9	313,8	687,4	95,24	90,41	81,49	89,05
250	43,7	205,6	514,9	98,78	93,72	86,14	92,88
300	24,6	39,3	370,8	99,32	98,80	90,02	96,04

Hasil Uji Daya Tahan Aus Beton Porous RCA 50% dengan Komposisi Semen FA 0% dan SF 0% (R1F0S0)



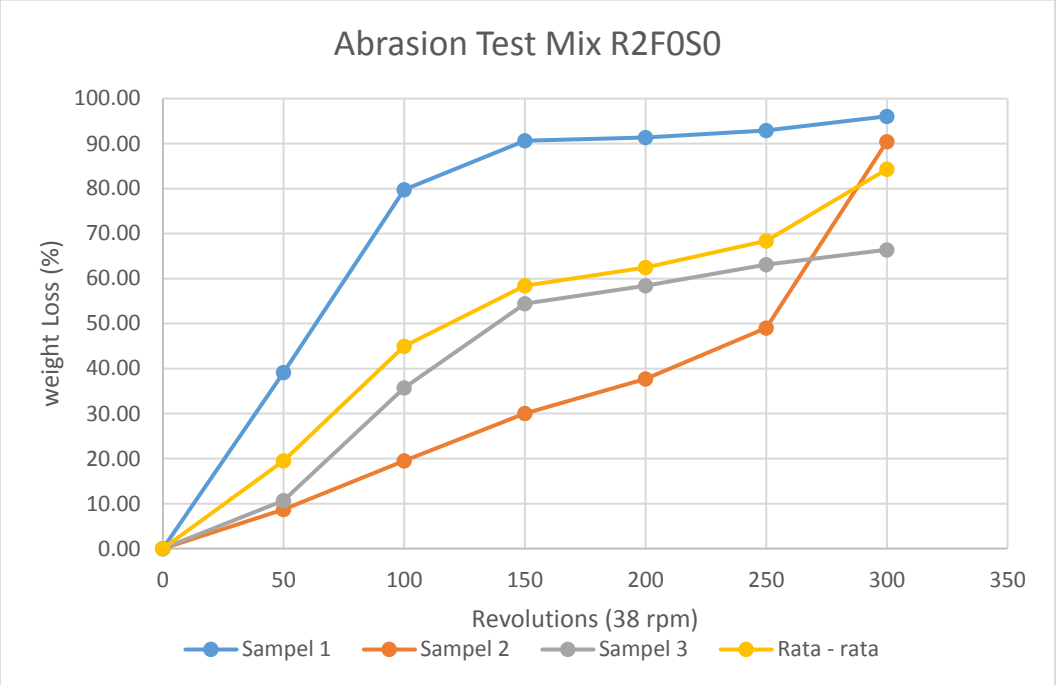
Hasil pengujian ketahanan abrasi 50% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 96,04 %. Mix desain ini **tidak** memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

A.3 Daya Tahan Aus Beton Porus Normal variasi RCA 100%

Hasil Uji Daya Tahan Aus Beton Porous RCA 100% dengan Komposisi Semen FA 0% dan SF 0% (R2F0S0)

Kode mix :	R2F0S0			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	3569,9	3574,9	3470,4	0,00	0,00	0,00	0,00
50	2173,3	3263,3	3098,8	39,12	8,72	10,71	19,52
100	722,5	2878,3	2230,1	79,76	19,49	35,74	45,00
150	332,9	2500,3	1581,1	90,67	30,06	54,44	58,39
200	309,6	2226,3	1443,2	91,33	37,72	58,41	62,49
250	251,7	1822,1	1279,2	92,95	49,03	63,14	68,37
300	140,5	342	1165,7	96,06	90,43	66,41	84,30

Hasil Uji Daya Tahan Aus Beton Porous RCA 100% dengan Komposisi Semen FA 0% dan SF 0% (R2F0S0)



Hasil pengujian ketahanan abrasi 100% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 84,3 %. Mix desain ini **tidak** memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

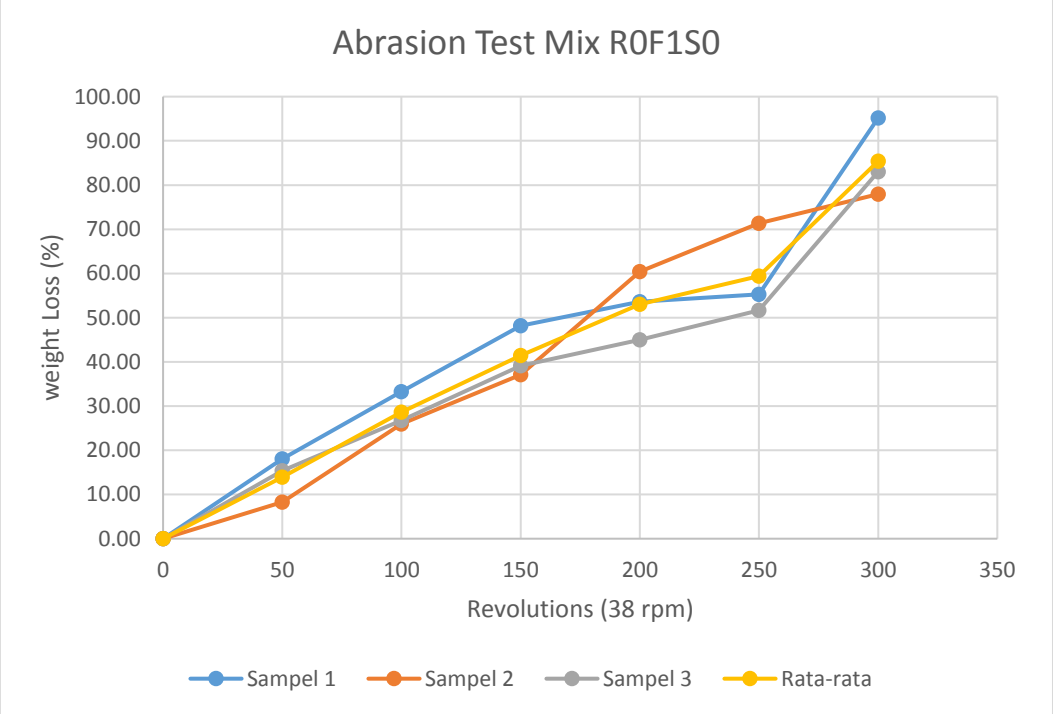
B. Daya Tahan Aus Beton Porus Campuran 10 % *fly ash*

B.1 Daya Tahan Aus Beton Porus Campuran 10 % *fly ash* variasi RCA 0%

Hasil Uji Daya Tahan Aus Beton Porous RCA 0% dengan Komposisi Semen FA 10% dan SF 0% (R0F1S0)

Kode mix :	R0F1S0			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	3502,8	3635,5	3562,4	0,00	0,00	0,00	0,00
50	2870,9	3333,5	3015,2	18,04	8,31	15,36	13,90
100	2338,9	2691,6	2610,5	33,23	25,96	26,72	28,64
150	1816	2286,3	2168,9	48,16	37,11	39,12	41,46
200	1624,3	1439,5	1959,1	53,63	60,40	45,01	53,01
250	1567,1	1041,5	1721,5	55,26	71,35	51,68	59,43
300	169,6	802,1	604,9	95,16	77,94	83,02	85,37

Hasil Uji Daya Tahan Aus Beton Porous RCA 0% dengan Komposisi Semen FA 10% dan SF 0% (R0F1S0)



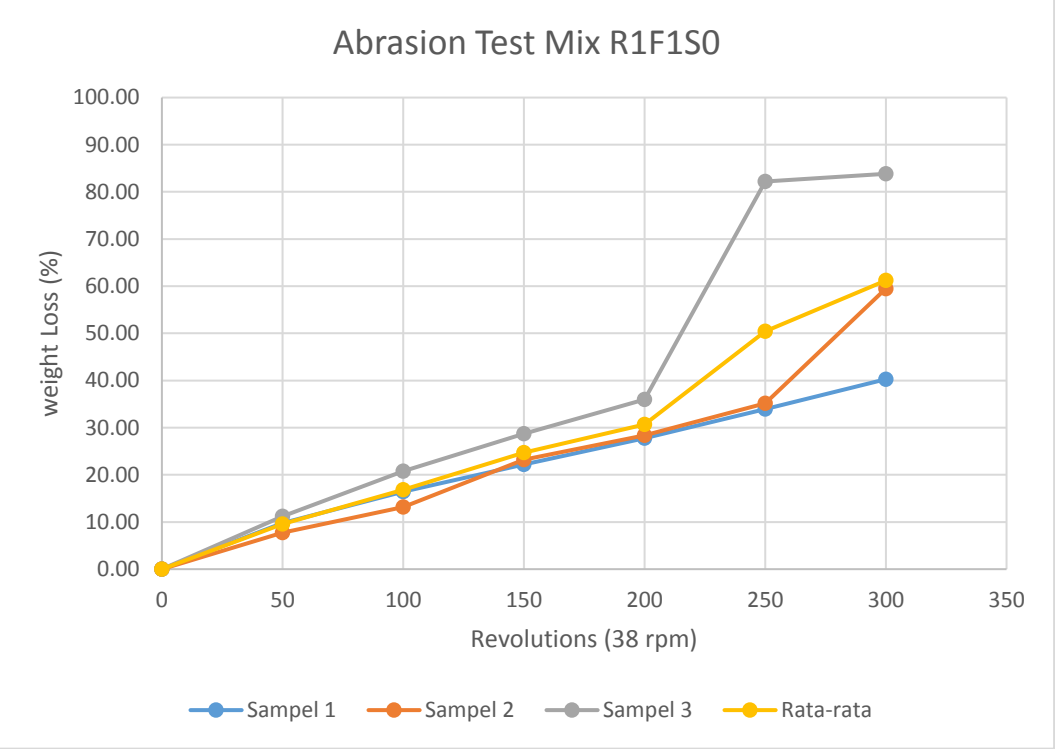
Hasil pengujian ketahanan abrasi 0% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 85,37 %. Mix desain ini **tidak** memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

B.2 Daya Tahan Aus Beton Porus Campuran 10 % *fly ash* variasi RCA 50%

Hasil Uji Daya Tahan Aus Beton Porous RCA 50% dengan Komposisi Semen FA 10% dan SF 0% (R1F1S0)

Kode mix :	R1F1S0			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	3559,5	3782,9	3559,7	0,00	0,00	0,00	0,00
50	3211,7	3490,6	3161,1	9,77	7,73	11,20	9,57
100	2973,9	3284,7	2819,7	16,45	13,17	20,79	16,80
150	2768,7	2905,3	2537,7	22,22	23,20	28,71	24,71
200	2571,7	2710,4	2280	27,75	28,35	35,95	30,68
250	2351,6	2453,3	632,9	33,93	35,15	82,22	50,43
300	2125,8	1532,2	575,4	40,28	59,50	83,84	61,20

Hasil Uji Daya Tahan Aus Beton Porous RCA 50% dengan Komposisi Semen FA 10% dan SF 0% (R1F1S0)



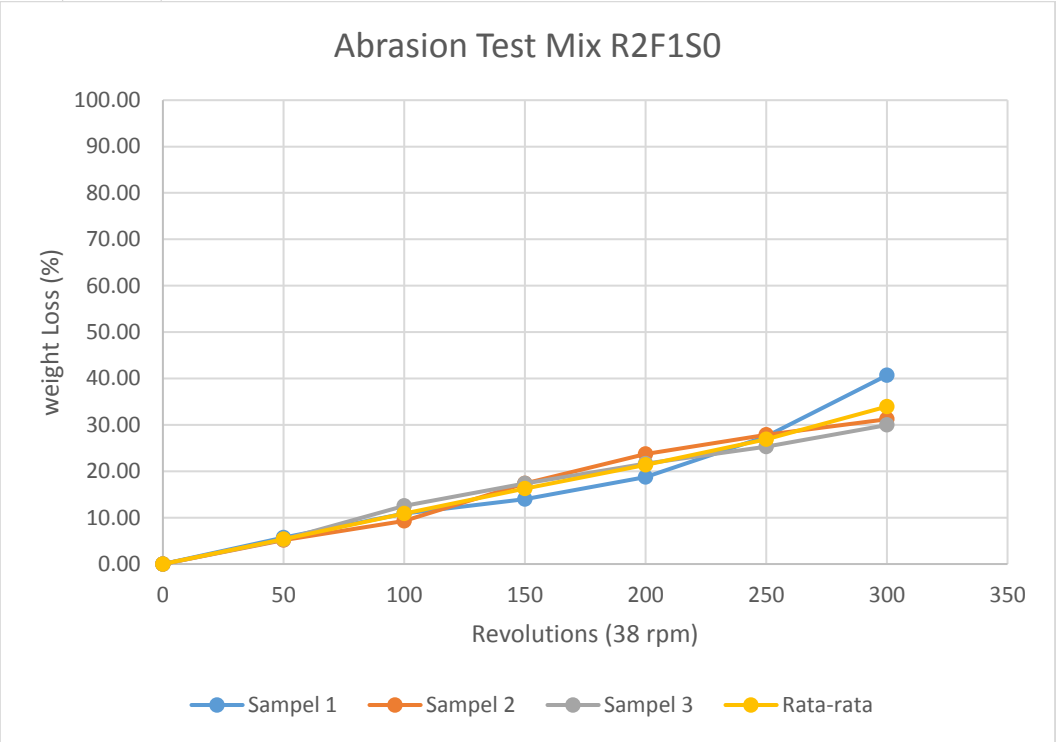
Hasil pengujian ketahanan abrasi 50% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 61,2 %. Mix desain ini **tidak** memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

B.3 Daya Tahan Aus Beton Porus Campuran 10 % *fly ash* variasi RCA 100%

Hasil Uji Daya Tahan Aus Beton Porous RCA 100% dengan Komposisi Semen FA 10% dan SF 0% (R2F1S0)

Kode mix :	R2F1S0			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	3606,6	3585,5	3496,7	0,00	0,00	0,00	0,00
50	3400	3400,3	3312,2	5,73	5,17	5,28	5,39
100	3213,9	3252,8	3057,4	10,89	9,28	12,56	10,91
150	3101,3	2961,6	2889,9	14,01	17,40	17,35	16,25
200	2929,4	2735,4	2739,7	18,78	23,71	21,65	21,38
250	2613,2	2587,5	2611,3	27,54	27,83	25,32	26,90
300	2139,7	2466,1	2448,9	40,67	31,22	29,97	33,95

Hasil Uji Daya Tahan Aus Beton Porous RCA 100% dengan Komposisi Semen FA 10% dan SF 0% (R2F1S0)



Hasil pengujian ketahanan abrasi 100% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 33,95 %. Mix desain ini memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

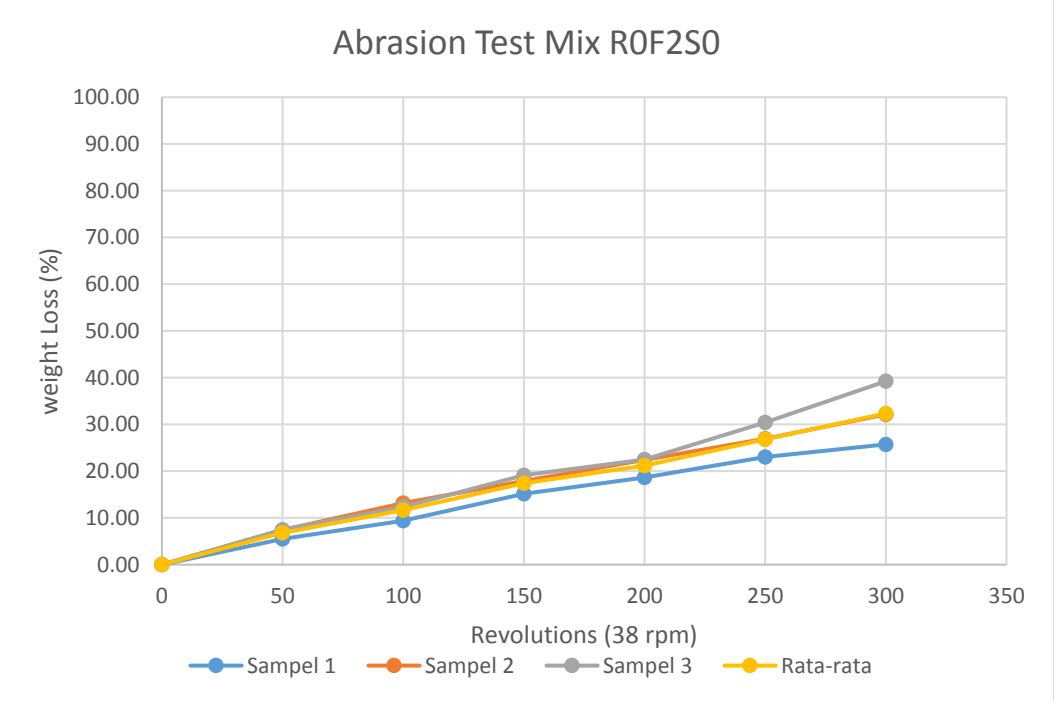
C. Daya Tahan Aus Beton Porus Campuran 25 % *fly ash*

C.1 Daya Tahan Aus Beton Porus Campuran 25 % *fly ash* variasi RCA 0%

Hasil Uji Daya Tahan Aus Beton Porous RCA 0% dengan Komposisi Semen FA 25% dan SF 0% (R0F2S0)

Kode mix :	R0F2S0			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	4050	3885,7	3997,6	0,00	0,00	0,00	0,00
50	3826,2	3597,3	3697,2	5,53	7,42	7,51	6,82
100	3670,2	3374,9	3503,2	9,38	13,15	12,37	11,63
150	3435,9	3189,3	3233,7	15,16	17,92	19,11	17,40
200	3294	3015,6	3098,5	18,67	22,39	22,49	21,18
250	3117,9	2839,9	2781,1	23,01	26,91	30,43	26,79
300	3008,1	2636,7	2429,2	25,73	32,14	39,23	32,37

Hasil Uji Daya Tahan Aus Beton Porous RCA 0% dengan Komposisi Semen FA 25% dan SF 0% (R0F2S0)



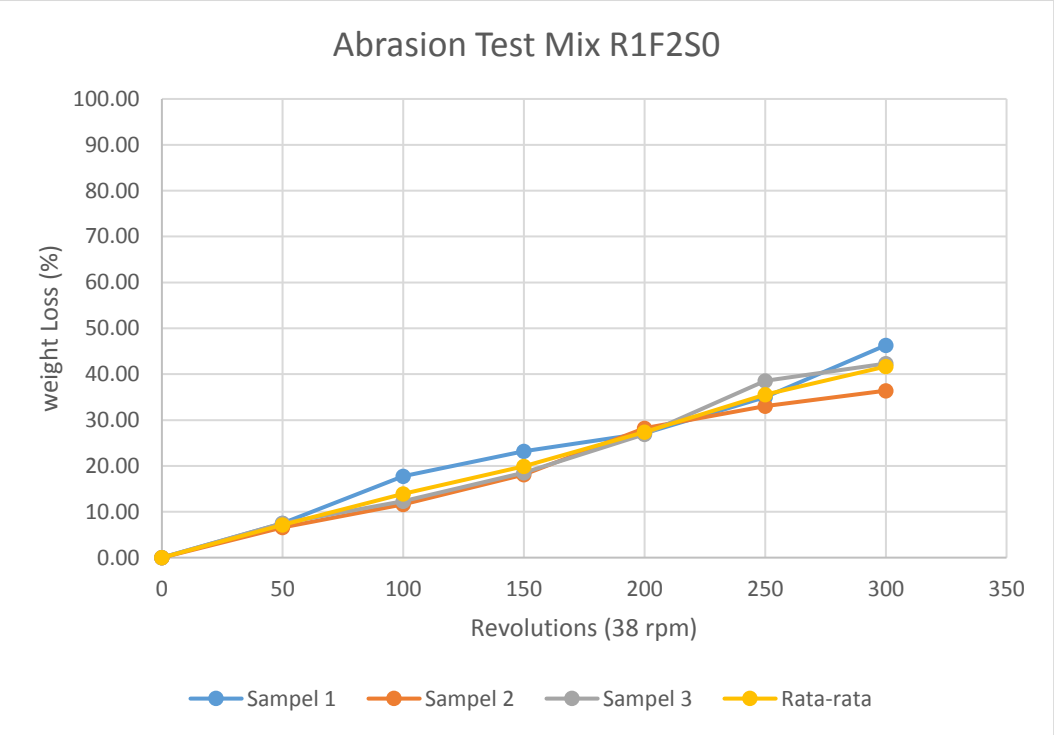
Hasil pengujian ketahanan abrasi 0% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 32,37 %. Mix desain ini memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

C.2 Daya Tahan Aus Beton Porus Campuran 25 % *fly ash* variasi RCA 50%

Hasil Uji Daya Tahan Aus Beton Porous RCA 50% dengan Komposisi Semen FA 25% dan SF 0% (R1F2S0)

Kode mix :	R1F2S0			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	3784,3	3842,6	3696,5	0,00	0,00	0,00	0,00
50	3502,1	3589,9	3419,8	7,46	6,58	7,49	7,17
100	3113,4	3396,5	3240,3	17,73	11,61	12,34	13,89
150	2906,6	3147,2	3013	23,19	18,10	18,49	19,93
200	2758,5	2757,7	2703,2	27,11	28,23	26,87	27,40
250	2461,4	2573,5	2270,8	34,96	33,03	38,57	35,52
300	2031,8	2443,7	2132,7	46,31	36,41	42,30	41,67

Hasil Uji Daya Tahan Aus Beton Porous RCA 50% dengan Komposisi Semen FA 25% dan SF 0% (R1F2S0)



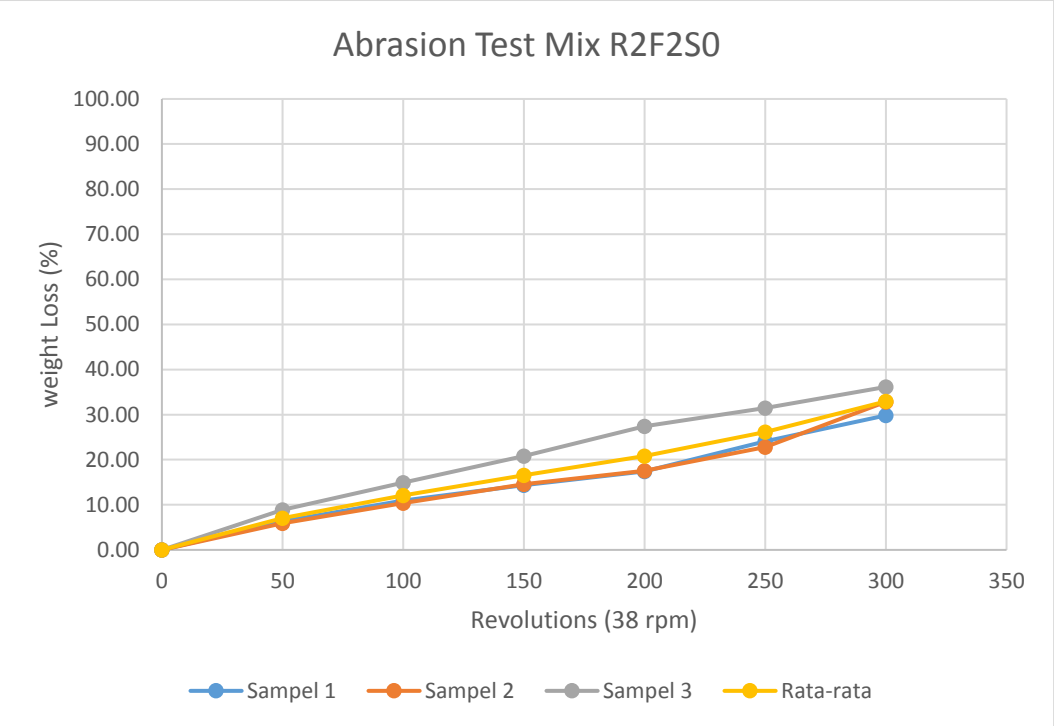
Hasil pengujian ketahanan abrasi 50% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 41,67 %. Mix desain ini memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

C.3 Daya Tahan Aus Beton Porus Campuran 25 % *fly ash* variasi RCA 100%

Hasil Uji Daya Tahan Aus Beton Porous RCA 100% dengan Komposisi Semen FA 25% dan SF 0% (R2F2S0)

Kode mix :	R2F2S0			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	3663,3	3650,3	3565	0,00	0,00	0,00	0,00
50	3430,9	3433,7	3249,2	6,36	5,93	8,86	7,05
100	3264,4	3272,5	3033,6	10,92	10,35	14,91	12,06
150	3139	3118,9	2822,4	14,35	14,56	20,83	16,58
200	3028,1	3009,7	2586,9	17,38	17,55	27,44	20,79
250	2782,6	2817,7	2444,1	24,10	22,81	31,44	26,12
300	2573,6	2451,8	2276,6	29,82	32,83	36,14	32,93

Hasil Uji Daya Tahan Aus Beton Porous RCA 100% dengan Komposisi Semen FA 25% dan SF 0% (R2F2S0)



Hasil pengujian ketahanan abrasi 100% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 32,93 %. Mix desain ini memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

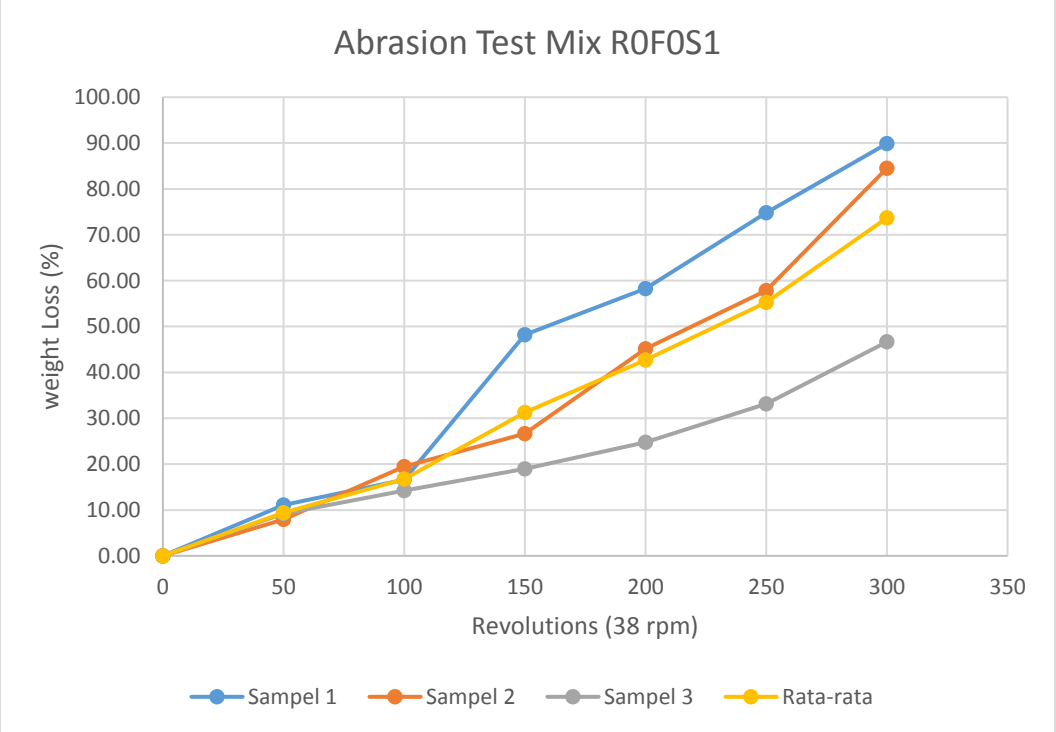
D. Daya Tahan Aus Beton Porus Campuran 7 % *Silica fume*

D.1 Daya Tahan Aus Beton Porus Campuran 7 % *Silica fume* variasi RCA 0%

Hasil Uji Daya Tahan Aus Beton Porous RCA 0% dengan Komposisi Semen FA 0% dan SF 7% (R0F0S1)

Kode mix :	R0F0S1			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	3846,1	3775,8	3841,1	0,00	0,00	0,00	0,00
50	3421,1	3476,5	3488,5	11,05	7,93	9,18	9,39
100	3208,5	3041,2	3293,8	16,58	19,46	14,25	16,76
150	1992,8	2770,5	3111,4	48,19	26,62	19,00	31,27
200	1604	2072,5	2891,2	58,30	45,11	24,73	42,71
250	969,2	1591,5	2568,8	74,80	57,85	33,12	55,26
300	389,8	585,6	2049,3	89,87	84,49	46,65	73,67

Hasil Uji Daya Tahan Aus Beton Porous RCA 0% dengan Komposisi Semen FA 0% dan SF 7% (R0F0S1)



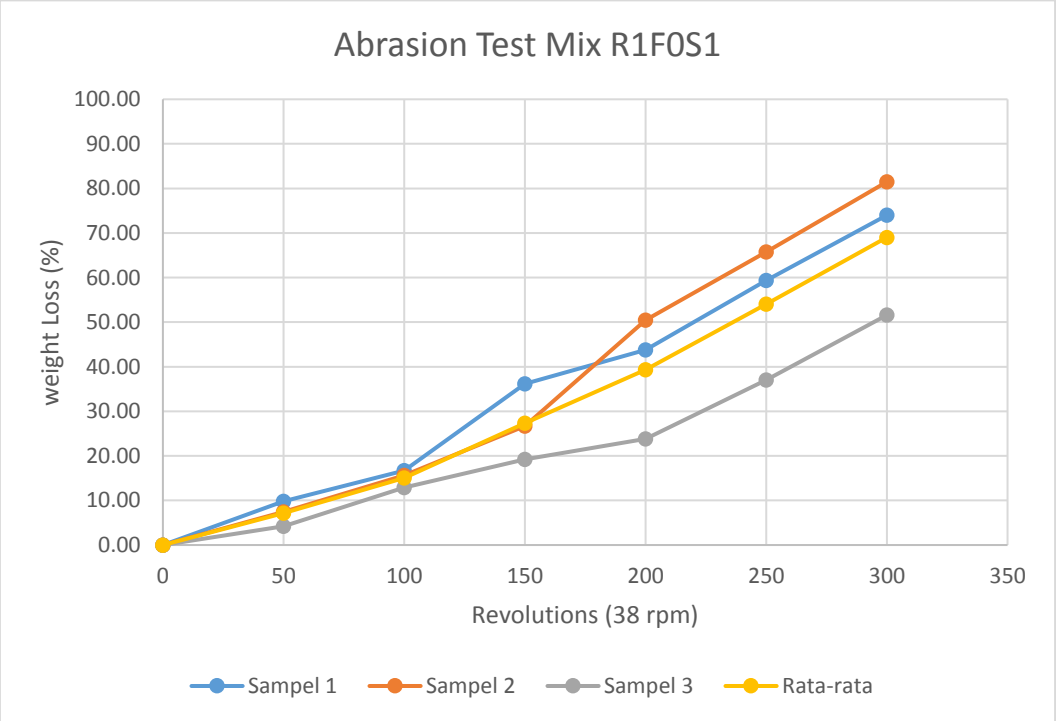
Hasil pengujian ketahanan abrasi 100% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 73,67 %. Mix desain ini **tidak** memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

D.2 Daya Tahan Aus Beton Porus Campuran 7 % *Silica fume* variasi RCA 50%

Hasil Uji Daya Tahan Aus Beton Porous RCA 50% dengan Komposisi Semen FA 0% dan SF 7% (R1F0S1)

Kode mix :	R1F0S1			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	3562,8	3715,8	3664	0,00	0,00	0,00	0,00
50	3212,6	3297,6	3413,2	9,83	7,44	4,20	7,16
100	2967,5	3007	3104,3	16,71	15,60	12,87	15,06
150	2273,7	2610,7	2878,8	36,18	26,72	19,20	27,37
200	2003,5	1764,7	2713,2	43,77	50,47	23,85	39,36
250	1447,9	1218,7	2242,8	59,36	65,79	37,05	54,07
300	926,5	659,7	1724,7	74,00	81,48	51,59	69,02

Hasil Uji Daya Tahan Aus Beton Porous RCA 50% dengan Komposisi Semen FA 0% dan SF 7% (R1F0S1)



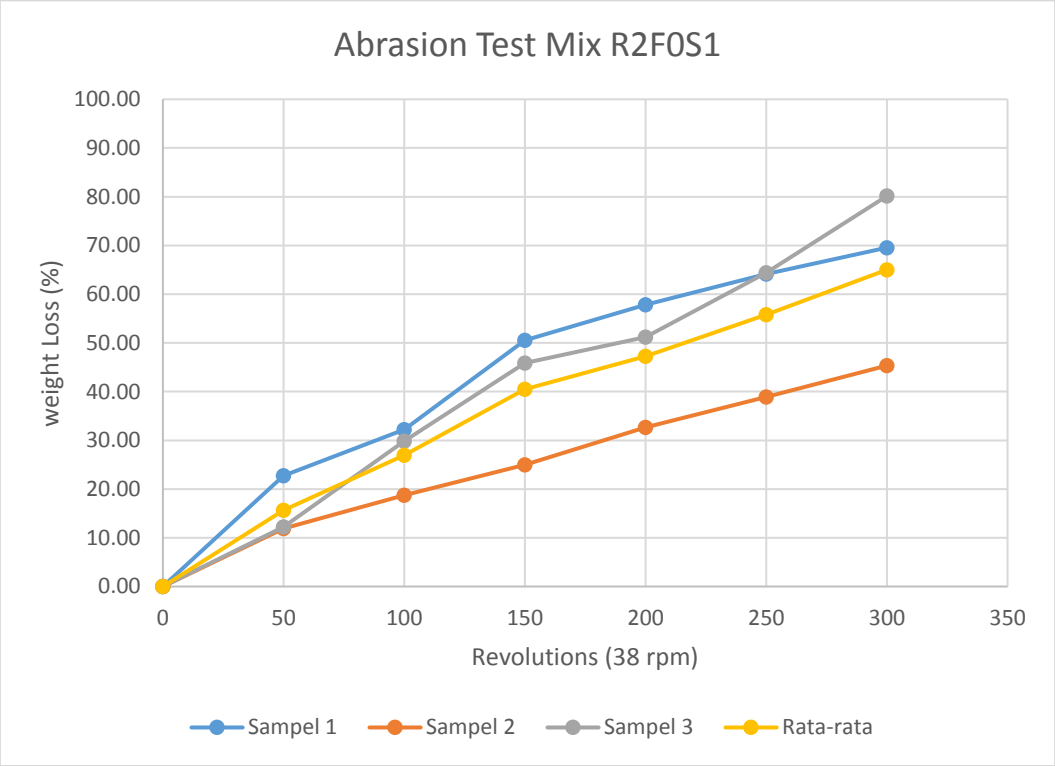
Hasil pengujian ketahanan abrasi 100% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 69,02 %. Mix desain ini **tidak** memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

D.3 Daya Tahan Aus Beton Porus Campuran 7 % *Silica fume* variasi RCA 100%

Hasil Uji Daya Tahan Aus Beton Porous RCA 100% dengan Komposisi Semen FA 0% dan SF 7% (R2F0S1)

Kode mix :	R2F0S1			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	3346,8	3475,5	3425,1	0,00	0,00	0,00	0,00
50	2831,3	3216,7	3130	22,77	11,88	12,20	15,62
100	2485,9	2967,5	2500,9	32,22	18,71	29,85	26,92
150	1815,4	2738,6	1928,7	50,57	24,98	45,90	40,48
200	1550,4	2457,7	1739,9	57,82	32,67	51,19	47,23
250	1320,4	2230,9	1268,7	64,12	38,88	64,41	55,80
300	1121,8	1995,1	707,9	69,55	45,34	80,14	65,01

Hasil Uji Daya Tahan Aus Beton Porous RCA 100% dengan Komposisi Semen FA 0% dan SF 7% (R2F0S1)



Hasil pengujian ketahanan abrasi 100% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 65,01 %. Mix desain ini **tidak** memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

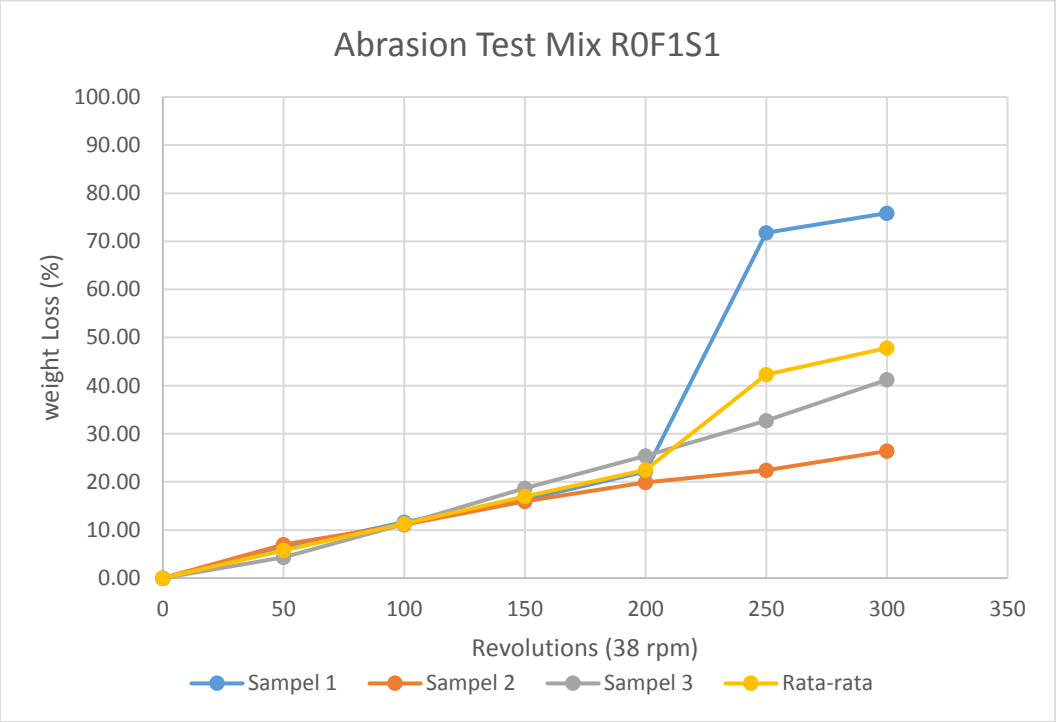
E. Daya Tahan Aus Beton Porus Campuran 10% *fly ash* dan 7% *Silica fume*

E.1 Daya Tahan Aus Beton Porus Campuran 10% *fly ash* dan 7% *Silica fume* variasi RCA 0%

Hasil Uji Daya Tahan Aus Beton Porous RCA 0% dengan Komposisi Semen FA 10% dan SF 7% (R0F1S1)

Kode mix :	R0F1S1			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	3830,8	3829,1	3773,3	0,00	0,00	0,00	0,00
50	3593,9	3562,8	3611,3	6,18	6,95	4,29	5,81
100	3384,8	3404,4	3349,1	11,64	11,09	11,24	11,33
150	3205,8	3218,5	3068,4	16,32	15,95	18,68	16,98
200	2981,7	3066,5	2815,6	22,17	19,92	25,38	22,49
250	1079,6	2969,9	2538	71,82	22,44	32,74	42,33
300	925	2818,2	2218	75,85	26,40	41,22	47,82

Hasil Uji Daya Tahan Aus Beton Porous RCA 0% dengan Komposisi Semen FA 10% dan SF 7% (R0F1S1)



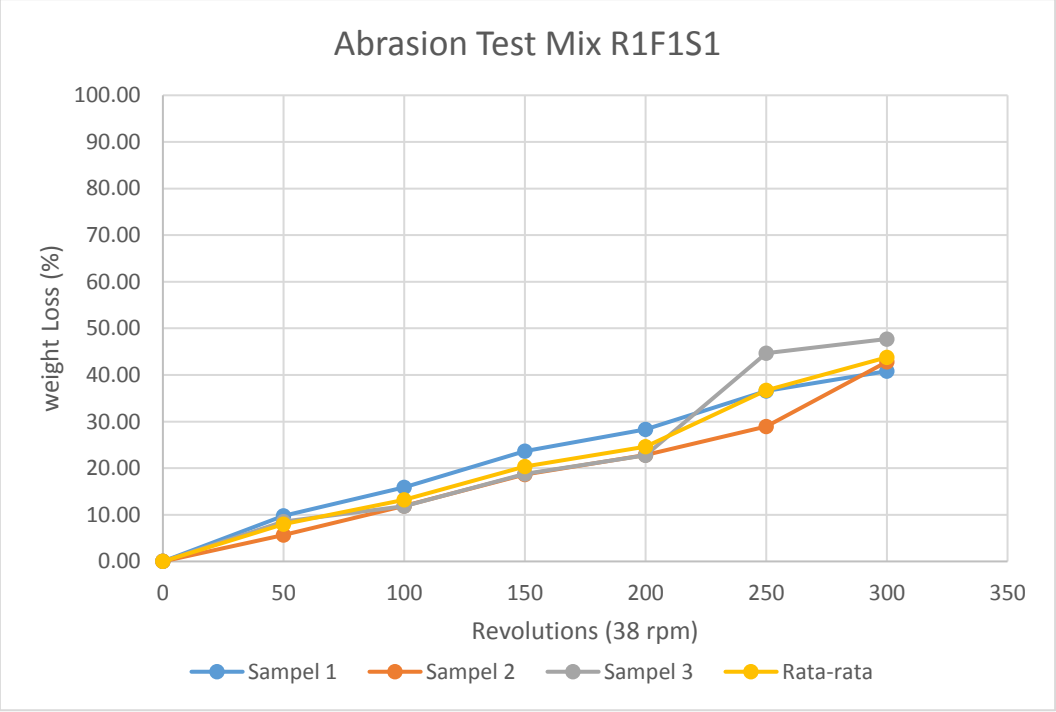
Hasil pengujian ketahanan abrasi 0% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 47,82%. Mix desain ini memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

E.2 Daya Tahan Aus Beton Porus Campuran 10 % *fly ash* dan 7 % *Silica fume* variasi RCA 50%

Hasil Uji Daya Tahan Aus Beton Porous RCA 50% dengan Komposisi Semen FA 10% dan SF 7% (R1F1S1)

Kode mix :	R1F1S1			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	3654,2	3697,5	3929,9	0,00	0,00	0,00	0,00
50	3297,3	3487,2	3594,2	9,77	5,69	8,54	8,00
100	3072,7	3257	3465,4	15,91	11,91	11,82	13,22
150	2789,5	3009,4	3192,8	23,66	18,61	18,76	20,34
200	2619,3	2853,5	3035	28,32	22,83	22,77	24,64
250	2318,7	2626,3	2173,9	36,55	28,97	44,68	36,73
300	2162,6	2114,3	2054,6	40,82	42,82	47,72	43,79

Hasil Uji Daya Tahan Aus Beton Porous RCA 50% dengan Komposisi Semen FA 10% dan SF 7% (R1F1S1)



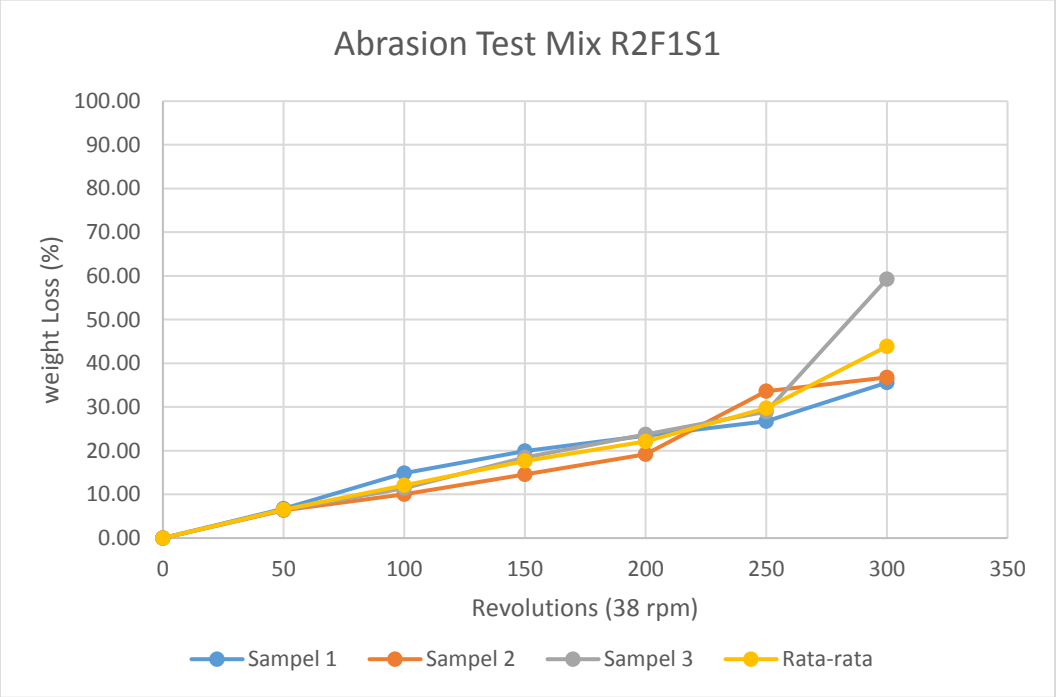
Hasil pengujian ketahanan abrasi 50% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 43,79%. Mix desain ini memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

E.3 Daya Tahan Aus Beton Porus Campuran 10 % *fly ash* dan 7 % *Silica fume* variasi RCA 100%

Hasil Uji Daya Tahan Aus Beton Porous RCA 100% dengan Komposisi Semen FA 10% dan SF 7% (R2F1S1)

Kode mix :	R2F1S1			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	3531,9	3678,9	3588,2	0,00	0,00	0,00	0,00
50	3293,8	3445,4	3357,8	6,74	6,35	6,42	6,50
100	3008	3309	3178,2	14,83	10,05	11,43	12,10
150	2828	3142	2926,2	19,93	14,59	18,45	17,66
200	2705,3	2973,5	2736,4	23,40	19,17	23,74	22,11
250	2587,5	2441,3	2550,3	26,74	33,64	28,93	29,77
300	2275,4	2326,1	1461,8	35,58	36,77	59,26	43,87

Hasil Uji Daya Tahan Aus Beton Porous RCA 100% dengan Komposisi Semen FA 10% dan SF 7% (R2F1S1)



Hasil pengujian ketahanan abrasi 100% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 43,87%. Mix desain ini memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

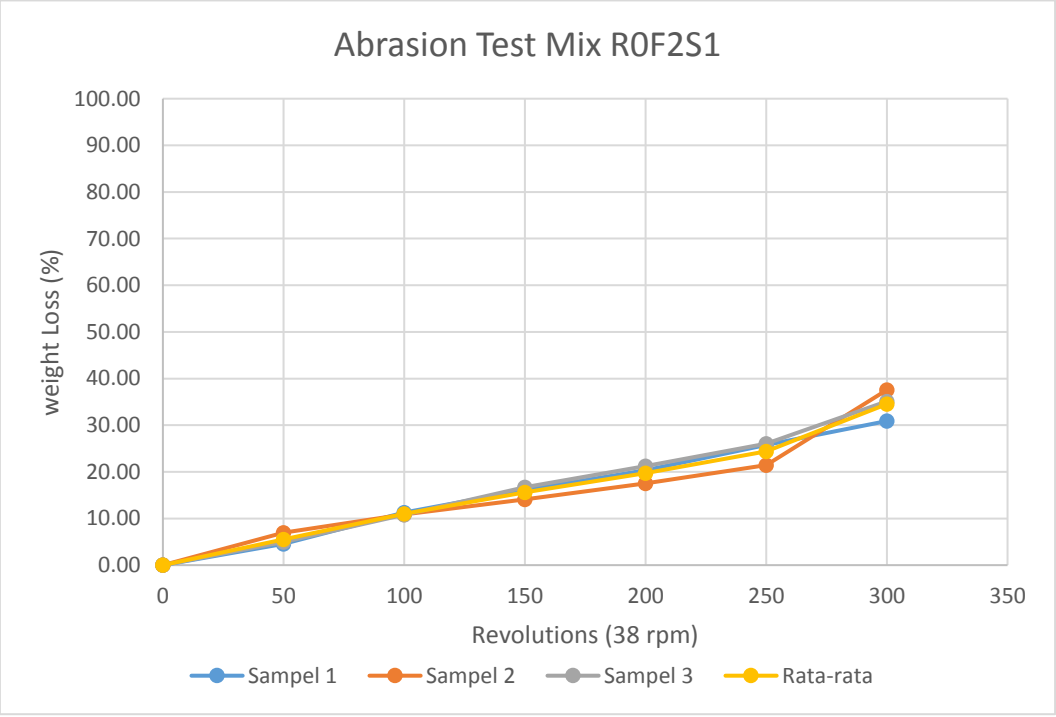
F. Daya Tahan Aus Beton Porus Campuran 25 % *fly ash* dan 7% *Silica fume*

F.1 Daya Tahan Aus Beton Porus Campuran 25 % *fly ash* dan 7 % *Silica fume* variasi RCA 0%

Hasil Uji Daya Tahan Aus Beton Porous RCA 0% dengan Komposisi Semen FA 25% dan SF 7% (R0F2S1)

Kode mix :	R0F2S1			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	3948,8	3990,8	3916,2	0,00	0,00	0,00	0,00
50	3768,3	3712,3	3721,5	4,57	6,98	4,97	5,51
100	3503,2	3558	3492,2	11,28	10,84	10,83	10,99
S150	3314,3	3427,7	3262,3	16,07	14,11	16,70	15,63
200	3145,4	3292	3085,1	20,35	17,51	21,22	19,69
250	2932	3134,5	2896,4	25,75	21,46	26,04	24,42
300	2728,8	2491,7	2541	30,90	37,56	35,12	34,53

Hasil Uji Daya Tahan Aus Beton Porous RCA 0% dengan Komposisi Semen FA 25% dan SF 7% (R0F2S1)



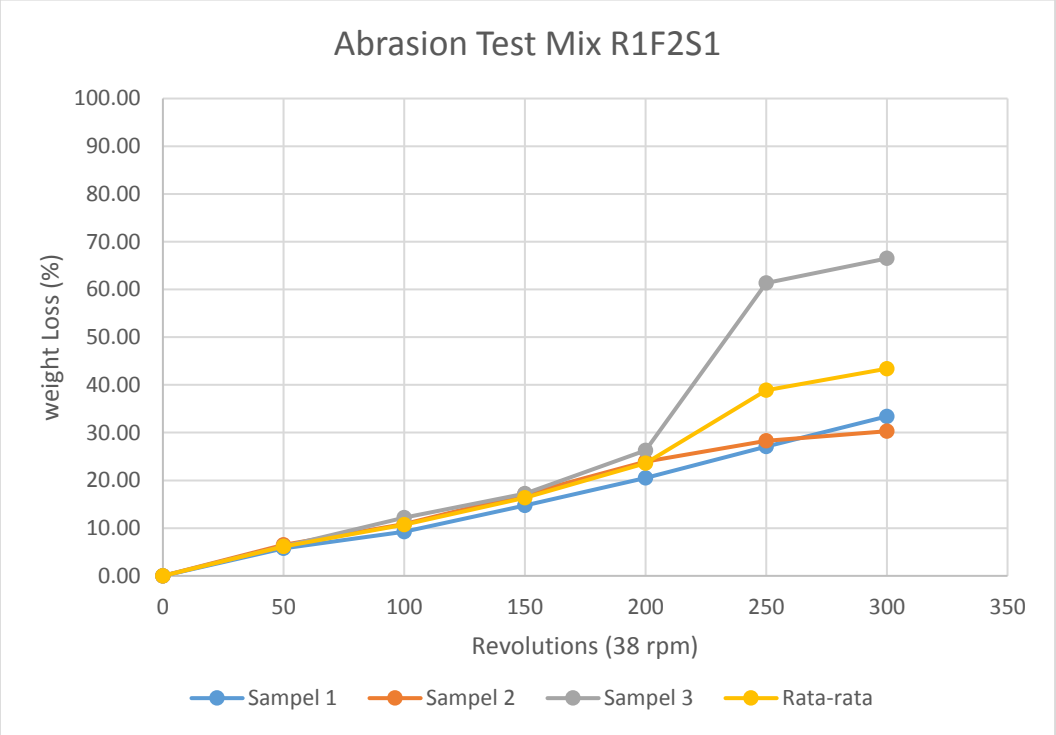
Hasil pengujian ketahanan abrasi 0% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 34,53%. Mix desain ini memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

F.2 Daya Tahan Aus Beton Porus Campuran 25 % *fly ash* dan 7 % *Silica fume* variasi RCA 50%

Hasil Uji Daya Tahan Aus Beton Porous RCA 50% dengan Komposisi Semen FA 25% dan SF 7% (R1F2S1)

Kode mix :	R1F2S1			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	3726	3725,6	3644,6	0,00	0,00	0,00	0,00
50	3512	3482,7	3419,8	5,74	6,52	6,17	6,14
100	3382,8	3321,6	3200,9	9,21	10,84	12,17	10,74
150	3176,2	3089,7	3017,1	14,76	17,07	17,22	16,35
200	2962,2	2833	2687	20,50	23,96	26,27	23,58
250	2717,2	2670,5	1409,4	27,07	28,32	61,33	38,91
300	2481,1	2596,6	1221,1	33,41	30,30	66,50	43,40

Hasil Uji Daya Tahan Aus Beton Porous RCA 50% dengan Komposisi Semen FA 25% dan SF 7% (R1F2S1)



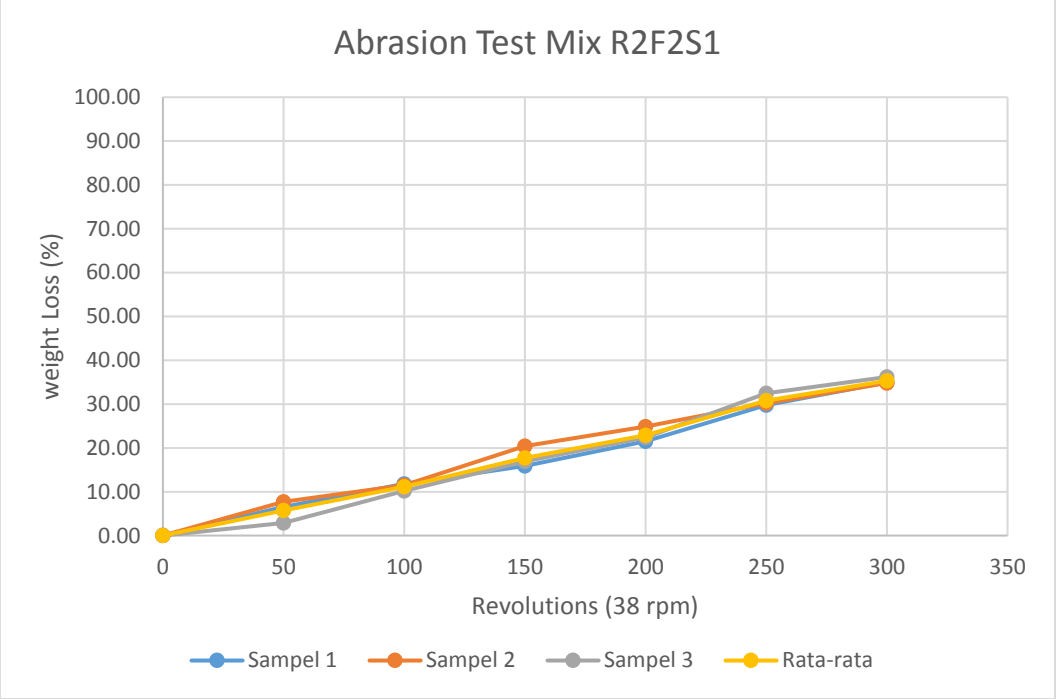
Hasil pengujian ketahanan abrasi 50% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 43,4%. Mix desain ini memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

F.3 Daya Tahan Aus Beton Porus Campuran 25 % *fly ash* dan 7 % *Silica fume* variasi RCA 100%

Hasil Uji Daya Tahan Aus Beton Porous RCA 100% dengan Komposisi Semen FA 25% dan SF 7% (R2F2S1)

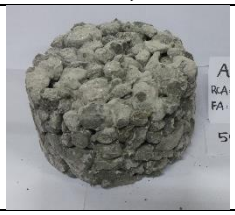
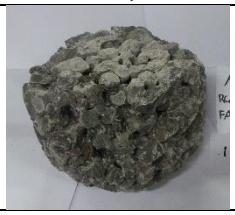
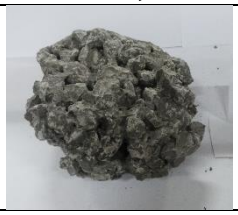
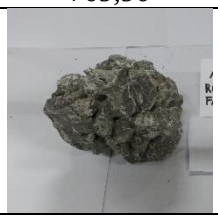
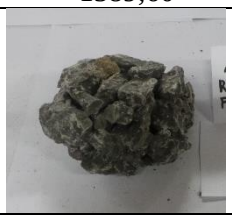
Kode mix :	R2F2S1			*UJI ABRASI CANTABRO TEST*			
Jumlah putaran	Berat benda uji (gram)			*Cantabro Loss (CL)* (%)			Rata-rata CL (%)
	1	2	3	1	2	3	
0	3680,8	3671	3766	0,00	0,00	0,00	0,00
50	3482	3439,4	3540,5	6,55	7,68	2,86	5,70
100	3286	3298,1	3272,9	11,81	11,47	10,20	11,16
150	3135,3	2964	3029,6	15,85	20,44	16,87	17,72
200	2923,7	2798,2	2829,7	21,53	24,89	22,36	22,93
250	2618,2	2600,7	2461	29,73	30,19	32,48	30,80
300	2424	2429,4	2326,2	34,94	34,79	36,17	35,30

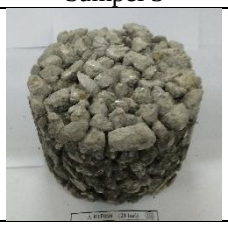
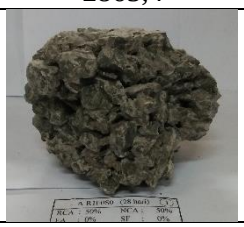
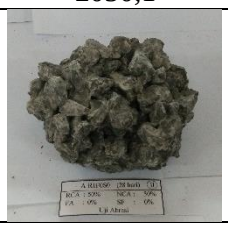
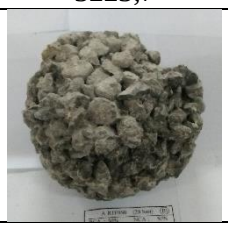
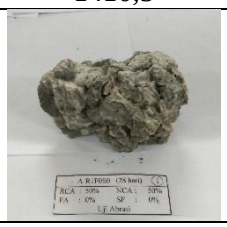
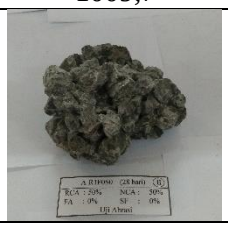
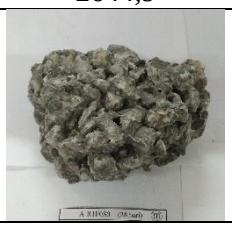
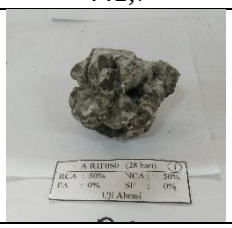
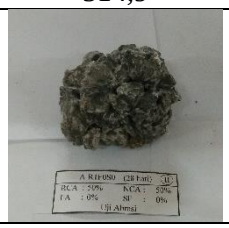
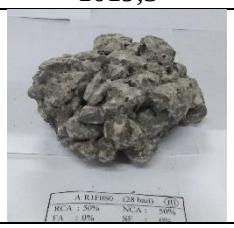
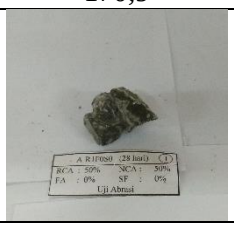
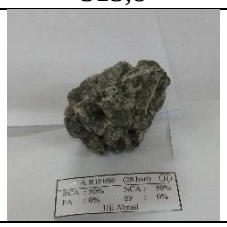
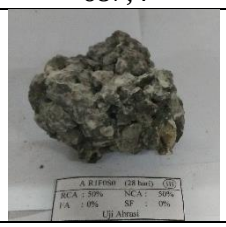
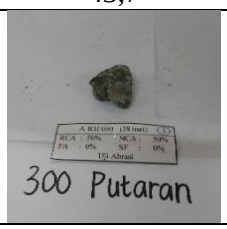
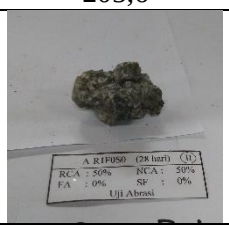
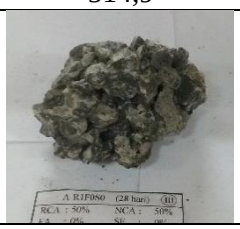
Hasil Uji Daya Tahan Aus Beton Porous RCA 100% dengan Komposisi Semen FA 25% dan SF 7% (R2F2S1)

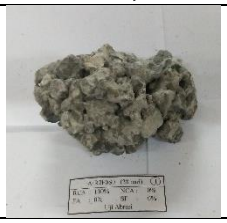
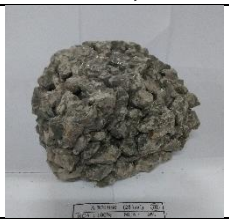
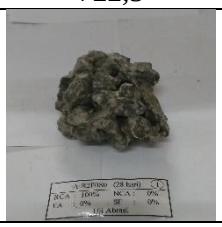
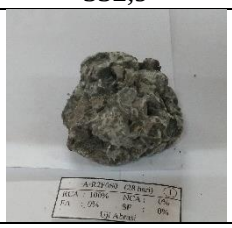
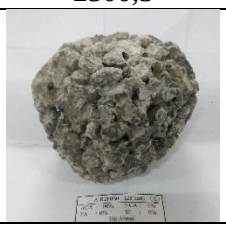
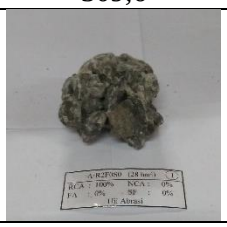
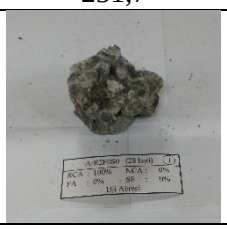
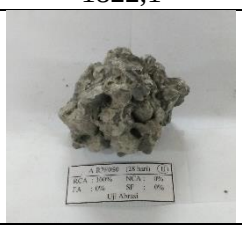


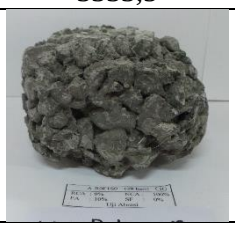
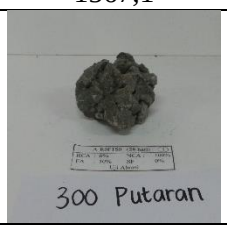
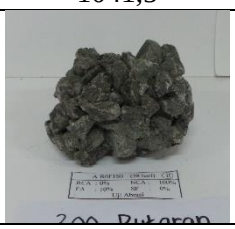
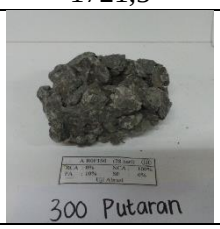
Hasil pengujian ketahanan abrasi 100% RCA (10-20) mm dapat terlihat bahwa dari ketiga sampel beton porous memiliki nilai rata-rata cantabro loss sebesar 35,3%. Mix desain ini memenuhi Standart ASTM C-33 dimana nilai maksimal ketahanan abrasi untuk perkerasan jalan adalah 50%.

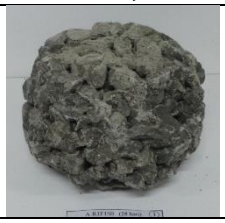
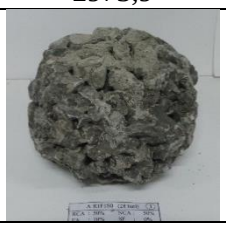
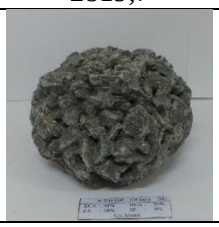
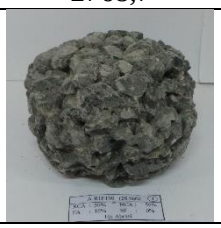
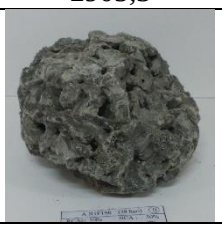
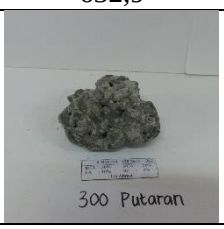
Lampiran 5. Dokumentasi Pengujian Keausan Beton Porous.

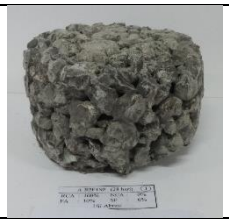
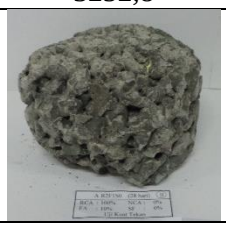
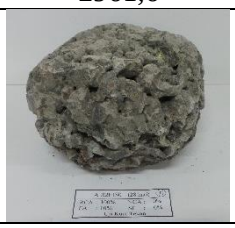
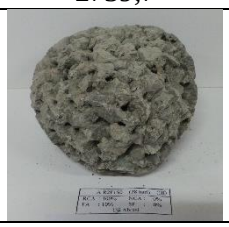
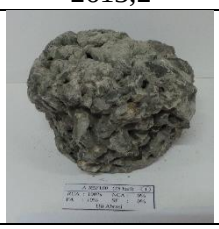
Spesifikasi mix desain	Putaran	Dokumentasi dan berat benda uji (gr)		
		Sampel 1	Sampel 2	Sampel 3
1. Kode Mix: R0F0S0 Agregat: RCA 0% Fly Ash: 0% Silica Fume: 0% Tanggal Uji: 26/3/2018	0			
		3638,90	3726,30	3704,30
	50			
		3256,50	3474,00	3421,12
	100			
		2920,50	3260,30	3151,60
	150			
		1378,40	3012,90	2788,00
	200			
		1191,40	2852,80	2515,50
	250			
		709,90	2473,90	1589,60
	300			
		678,80	1183,40	398,00

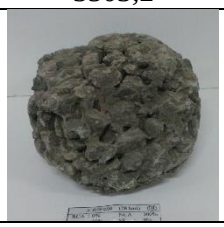
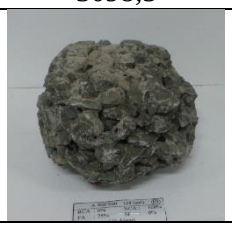
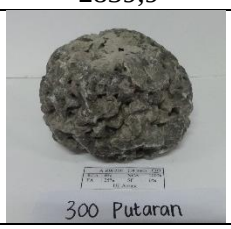
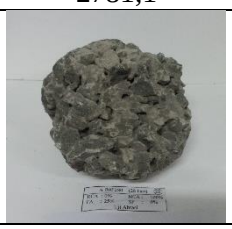
Spesifikasi mix desain	Putaran	Dokumentasi dan berat benda uji (gr)		
		Sampel 1	Sampel 2	Sampel 3
2. Kode Mix: R1F0S0 Agregat: RCA 50% Fly Ash: 0% Silica Fume: 0% Tanggal Uji: 27/3/2018	0			
		3591,8	3272,9	3714,5
	50			
		2865,4	2050,1	3223,7
	100			
		1410,5	1009,7	2644,9
	150			
		441,7	514,9	1019,3
	200			
		170,9	313,8	687,4
	250			
		43,7	205,6	514,9
	300			
		24,6	39,3	370,8

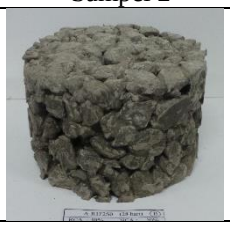
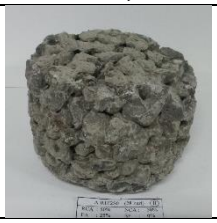
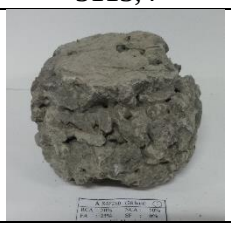
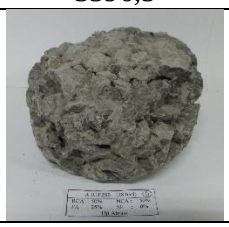
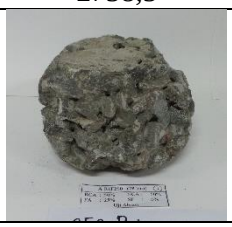
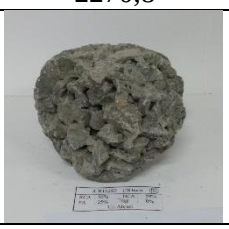
Spesifikasi mix desain	Putaran	Dokumentasi dan berat benda uji (gr)		
		Sampel 1	Sampel 2	Sampel 3
3. Kode Mix: R2F0S0 Agregat: RCA 100% Fly Ash: 0% Silica Fume: 0% Tanggal Uji: 27/3/2018	0			
		3569,9	3574,9	3470,4
	50			
		2173,3	3263,3	3098,8
	100			
		722,5	2878,3	2230,1
	150			
		332,9	2500,3	1581,1
	200			
		309,6	2226,3	1443,2
	250			
		251,7	1822,1	1279,2
	300			
		140,5	342	1165,7

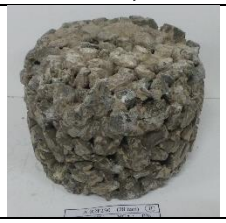
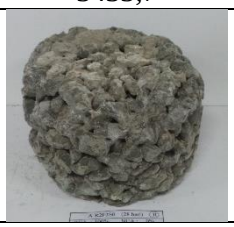
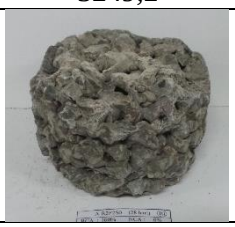
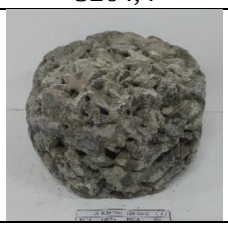
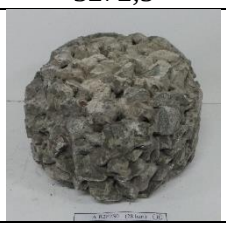
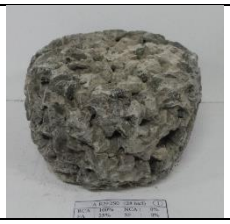
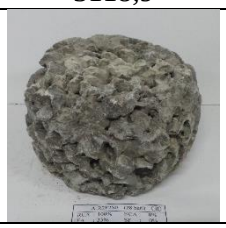
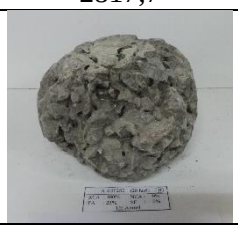
Spesifikasi mix desain	Putaran	Dokumentasi dan berat benda uji (gr)		
		Sampel 1	Sampel 2	Sampel 3
4. Kode Mix: R0F1S0 Agregat: RCA 0% Fly Ash: 10% Silica Fume: 0% Tanggal Uji: 28/3/2018	0			
		3502,8	3635,5	3562,4
	50			
		2870,9	3333,5	3015,2
	100			
		2338,9	2691,6	2610,5
	150			
		1816	2286,3	2168,9
	200			
		1624,3	1439,5	1959,1
	250			
		1567,1	1041,5	1721,5
	300			
		169,6	802,1	604,9

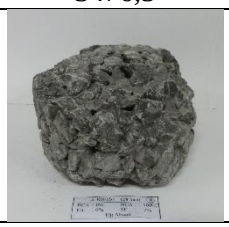
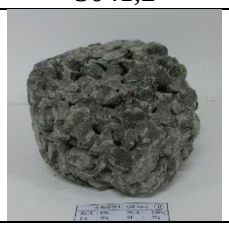
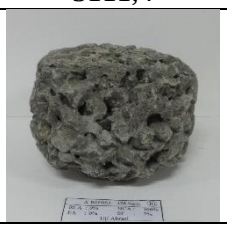
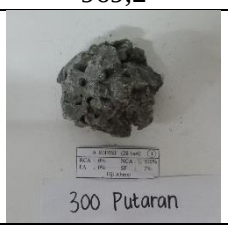
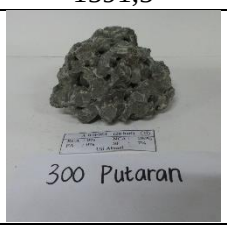
Spesifikasi mix desain	Putaran	Dokumentasi dan berat benda uji (gr)		
		Sampel 1	Sampel 2	Sampel 3
5. Kode Mix: R1F1S0 Agregat: RCA 50% Fly Ash: 10% Silica Fume: 0% Tanggal Uji: 28/3/2018	0			
		3559,5	3782,9	3559,7
	50			
		3211,7	3490,6	3161,1
	100			
		2973,9	3284,7	2819,7
	150			
		2768,7	2905,3	2537,7
	200			
		2571,7	2710,4	2280
	250			
		2351,6	2453,3	632,9
	300			
		2125,8	1532,2	575,4

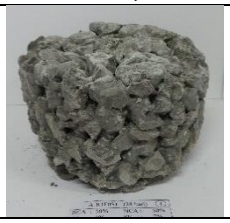
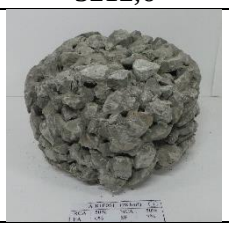
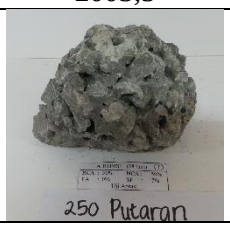
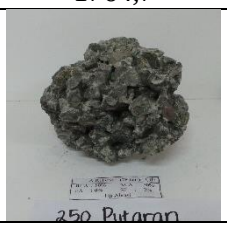
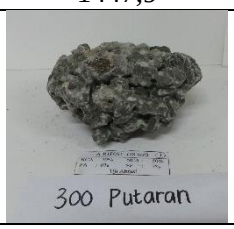
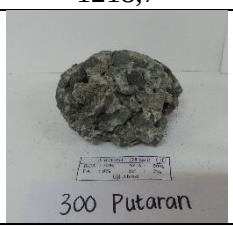
Spesifikasi mix desain	Putaran	Dokumentasi dan berat benda uji (gr)		
		Sampel 1	Sampel 2	Sampel 3
6. Kode Mix: R2F1S0 Agregat: RCA 100% Fly Ash: 10% Silica Fume: 0% Tanggal Uji: 3/4/2018	0			
		3606,6	3585,5	3496,7
	50			
		3400	3400,3	3312,2
	100			
		3213,9	3252,8	3057,4
	150			
		3101,3	2961,6	2889,9
	200			
		2929,4	2735,4	2739,7
	250			
		2613,2	2587,5	2611,3
	300			
		2139,7	2466,1	2448,9

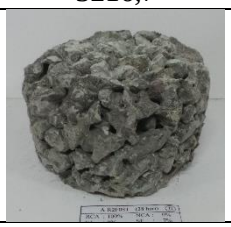
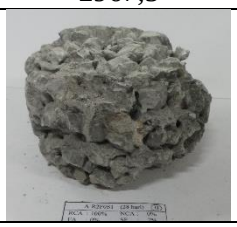
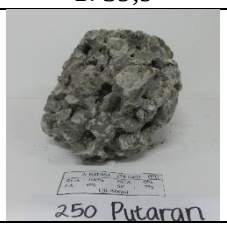
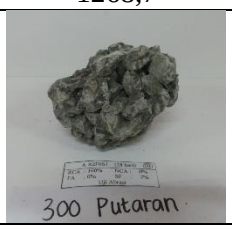
Spesifikasi mix desain	Putaran	Dokumentasi dan berat benda uji (gr)		
		Sampel 1	Sampel 2	Sampel 3
7. Kode Mix: R0F2S0 Agregat: RCA 0% Fly Ash: 25% Silica Fume: 0% Tanggal Uji: 29/3/2018	0			
		4050	3885,7	3997,6
	50			
		3826,2	3597,3	3697,2
	100			
		3670,2	3374,9	3503,2
	150			
		3435,9	3189,3	3233,7
	200			
		3294	3015,6	3098,5
	250			
		3117,9	2839,9	2781,1
	300			
		3008,1	2636,7	2429,2

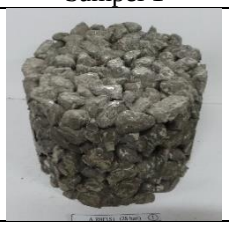
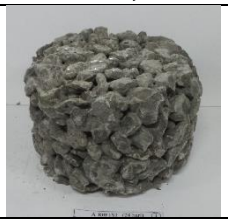
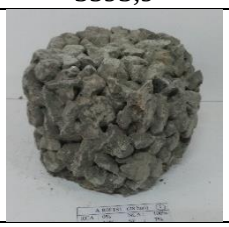
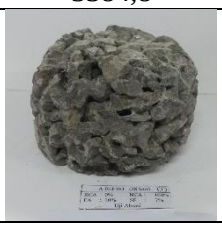
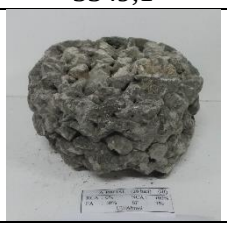
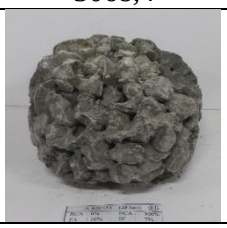
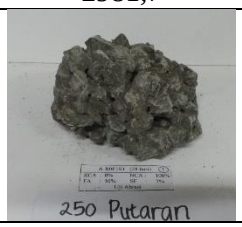
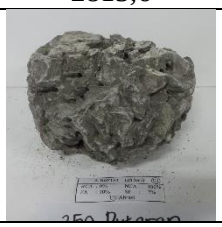
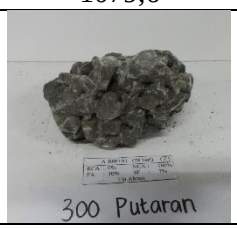
Spesifikasi mix desain	Putaran	Dokumentasi dan berat benda uji (gr)		
		Sampel 1	Sampel 2	Sampel 3
8. Kode Mix: R1F2S0 Agregat: RCA 50% Fly Ash: 25% Silica Fume: 0% Tanggal Uji: 2/4/2018	0			
		3784,3	3842,6	3696,5
	50			
		3502,1	3589,9	3419,8
	100			
		3113,4	3396,5	3240,3
	150			
		2906,6	3147,2	3013
	200			
		2758,5	2757,7	2703,2
	250			
		2461,4	2573,5	2270,8
	300			
		2031,8	2443,7	2132,7

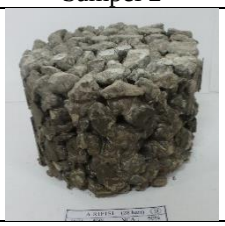
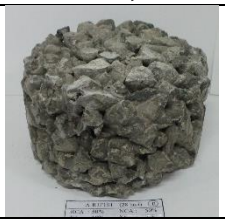
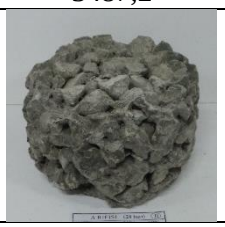
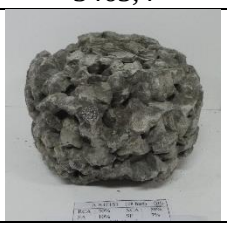
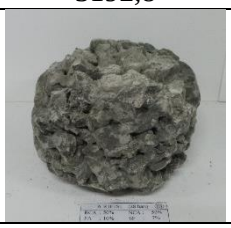
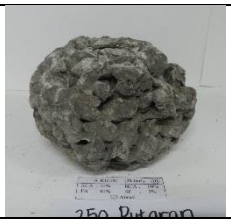
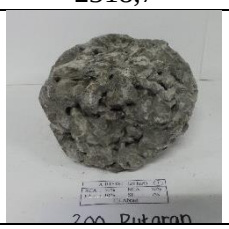
Spesifikasi mix desain	Putaran	Dokumentasi dan berat benda uji (gr)		
		Sampel 1	Sampel 2	Sampel 3
9. Kode Mix: R2F2S0 Agregat: RCA 100% Fly Ash: 25% Silica Fume: 0% Tanggal Uji: 5/4/2018	0			
		3663,3	3650,3	3565
	50			
		3430,9	3433,7	3249,2
	100			
		3264,4	3272,5	3033,6
	150			
		3139	3118,9	2822,4
	200			
		3028,1	3009,7	2586,9
	250			
		2782,6	2817,7	2444,1
	300			
		2573,6	2451,8	2276,6

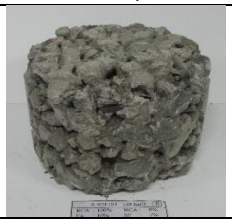
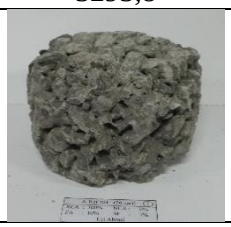
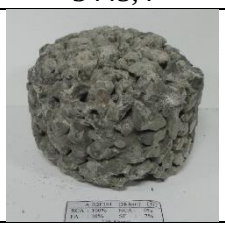
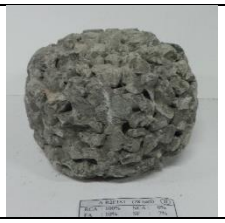
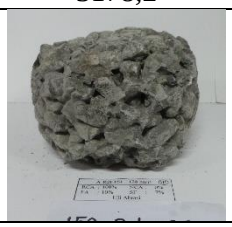
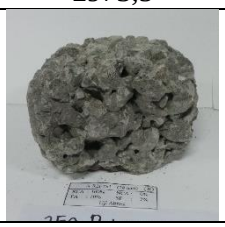
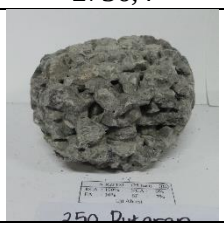
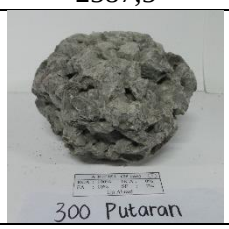
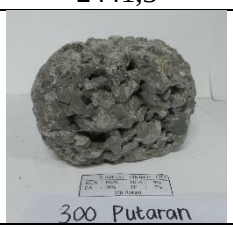
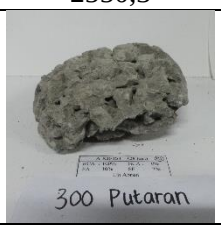
Spesifikasi mix desain	Putaran	Dokumentasi dan berat benda uji		
		Sampel 1	Sampel 2	Sampel 3
10. Kode: R0F0S1 Agregat: RCA 0% Fly Ash: 0% Silica Fume: 7% Tanggal Uji: 2/4/2018	0			
		3846,1	3775,8	3841,1
	50			
		3421,1	3476,5	3488,5
	100			
		3208,5	3041,2	3293,8
	150			
		1992,8	2770,5	3111,4
	200			
		1604	2072,5	2891,2
	250			
		969,2	1591,5	2568,8
	300			
		389,8	585,6	2049,3

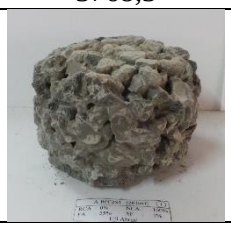
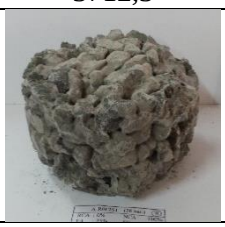
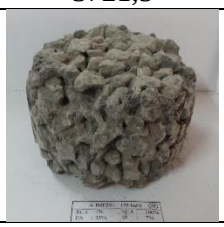
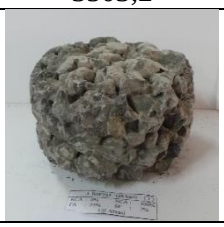
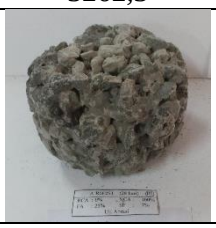
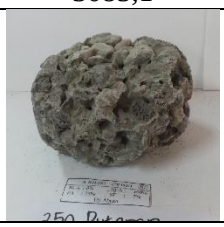
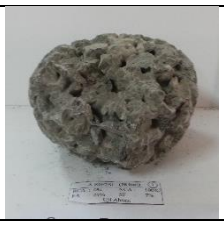
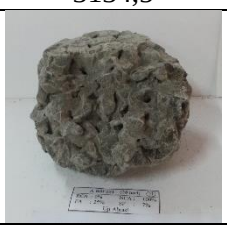
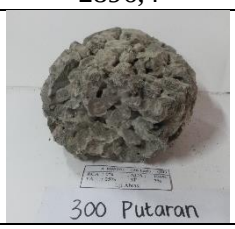
Spesifikasi mix desain	Putaran	Dokumentasi dan berat benda uji		
		Sampel 1	Sampel 2	Sampel 3
11. Kode: R1F0S1 Agregat: RCA 50% Fly Ash: 0% Silica Fume: 7% Tanggal Uji: 4/4/2018	0			
		3562,8	3715,8	3664
	50			
		3212,6	3297,6	3413,2
	100			
		2967,5	3007	3104,3
	150			
		2273,7	2610,7	2878,8
	200			
		2003,5	1764,7	2713,2
	250			
		1447,9	1218,7	2242,8
	300			
		926,5	659,7	1724,7

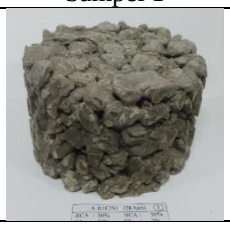
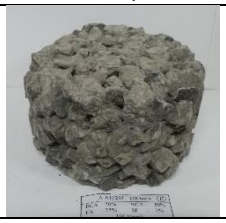
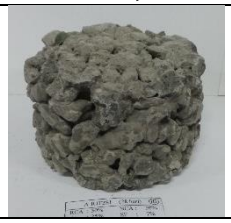
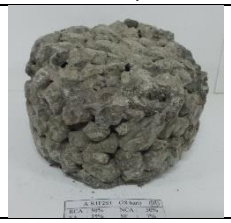
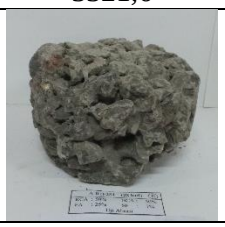
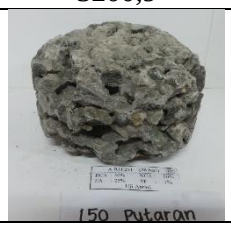
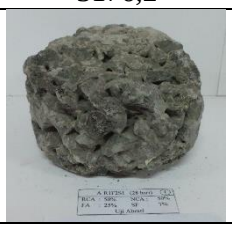
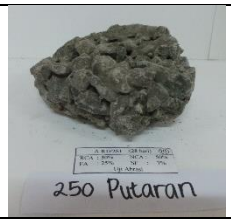
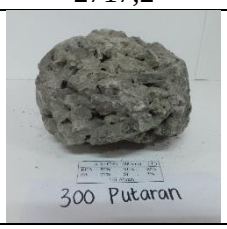
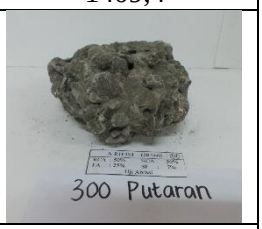
Spesifikasi mix desain	Putaran	Dokumentasi dan berat benda uji (gr)		
		Sampel 1	Sampel 2	Sampel 3
12. Kode: R2F0S1 Agregat: RCA 100% Fly Ash: 0% Silica Fume: 7% Tanggal Uji: 5/4/2018	0			
		3346,8	3475,5	3425,1
	50			
		2831,3	3216,7	3130
	100			
		2485,9	2967,5	2500,9
	150			
		1815,4	2738,6	1928,7
	200			
		1550,4	2457,7	1739,9
	250			
		1320,4	2230,9	1268,7
	300			
		1121,8	1995,1	707,9

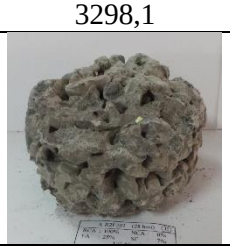
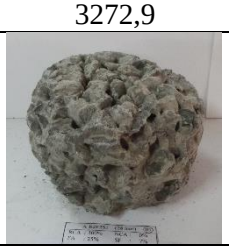
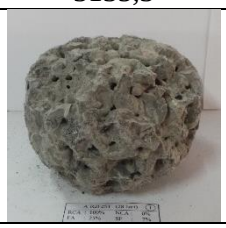
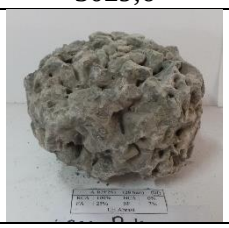
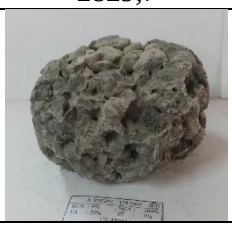
Spesifikasi mix desain	Putaran	Dokumentasi dan berat benda uji (gr)		
		Sampel 1	Sampel 2	Sampel 3
13. Kode: R0F1S1 Agregat: RCA 0% Fly Ash: 10% Silica Fume: 7% Tanggal Uji: 5/4/2018	0			
		3830,8	3829,1	3773,3
	50			
		3593,9	3562,8	3611,3
	100			
		3384,8	3404,4	3349,1
	150			
		3205,8	3218,5	3068,4
	200			
		2981,7	3066,5	2815,6
	250			
		1079,6	2969,9	2538
	300			
		925	2818,2	2218

Spesifikasi mix desain	Putaran	Dokumentasi dan berat benda uji (gr)		
		Sampel 1	Sampel 2	Sampel 3
14. Kode: R1F1S1 Agregat: RCA 50% Fly Ash: 10% Silica Fume: 7% Tanggal Uji: 4/4/2018	0			
		3654,2	3697,5	3929,9
	50			
		3297,3	3487,2	3594,2
	100			
		3072,7	3257	3465,4
	150			
		2789,5	3009,4	3192,8
	200			
		2619,3	2853,5	3035
	250			
		2318,7	2626,3	2173,9
	300			
		2162,6	2114,3	2054,6

Spesifikasi mix desain	Putaran	Dokumentasi dan berat benda uji (gr)		
		Sampel 1	Sampel 2	Sampel 3
15. Kode: R2F1S1 Agregat: RCA 100% Fly Ash: 10% Silica Fume: 7% Tanggal Uji: 6/4/2018	0			
		3531,9	3678,9	3588,2
	50			
		3293,8	3445,4	3357,8
	100			
		3008	3309	3178,2
	150			
		2828	3142	2926,2
	200			
		2705,3	2973,5	2736,4
	250			
		2587,5	2441,3	2550,3
	300			
		2275,4	2326,1	1461,8

Spesifikasi mix desain	Putaran	Dokumentasi dan berat benda uji (gr)		
		Sampel 1	Sampel 2	Sampel 3
16. Kode: R0F2S1 Agregat: RCA 0% Fly Ash: 25% Silica Fume: 7% Tanggal Uji: 7/4/2018	0			
		3948,8	3990,8	3916,2
	50			
		3768,3	3712,3	3721,5
	100			
		3503,2	3558	3492,2
	150			
		3314,3	3427,7	3262,3
	200			
		3145,4	3292	3085,1
	250			
		2932	3134,5	2896,4
	300			
		2728,8	2491,7	2541

Spesifikasi mix desain	Putaran	Dokumentasi dan berat benda uji (gr)		
		Sampel 1	Sampel 2	Sampel 3
17. Kode: R1F2S1 Agregat: RCA 50% Fly Ash: 25% Silica Fume: 7% Tanggal Uji: 7/4/2018	0			
		3726	3725,6	3644,6
	50			
		3512	3482,7	3419,8
	100			
		3382,8	3321,6	3200,9
	150			
		3176,2	3089,7	3017,1
	200			
		2962,2	2833	2687
	250			
		2717,2	2670,5	1409,4
	300			
		2481,1	2596,6	1221,1

	Putaran	Dokumentasi dan berat benda uji (gr)		
		Sampel 1	Sampel 2	Sampel 3
18. Kode: R2F2S1 Agregat: RCA 100% Fly Ash: 25% Silica Fume: 7% Tanggal Uji: 7/4/2018	0			
		3680,8	3671	3766
	50			
		3482	3439,4	3540,5
	100			
		3286	3298,1	3272,9
	150			
		3135,3	2964	3029,6
	200			
		2923,7	2798,2	2829,7
	250			
		2618,2	2600,7	2461
	300