

CHAPTER 7.

APPENDIX

7.1. APPENDIX A

7.1.1. Tables

Table A.1. Dimensions of the dense medium cyclones employed by DSM.

D_c mm	D_i mm	D_o mm	D_u mm	α deg.	BI mm
200	40	85	60	20	120
250	50	110	75	20	165
350	70	150	100	20	230
400	80	170	120	20	250
500	100	215	150	20	295
550	110	235	160	20	330
600	120	260	180	20	355
650	130	280	190	20	385
700	140	300	210	20	395
750	150	320	225	20	440
800	160	350	240	20	470

Table A.2. Results obtained when characterizing overloading behaviour of the 45mm spigot.

D = 165mm; D_i = 30mm; D_o = 64mm; D_u = 45mm; α = 15°; BI = None.

P = 20kPa; Medium grade = F; d_{ore} = -1.8+0.8mm; ρ_{ore} = 2.65kg/l.

C_{vf}	Q_o	Q_u	C_{mvu}	Q_{os}	Q_{us}	R_m	ρ_{med}	ρ_{UF(Med)}·ρ_{OF(med)}	Q
(v/v%)	(l/hr ore)	(l/hr ore)	(v/v%)	(l/hr slurry)	(l/hr slurry)	(v/v)	(kg/l)	(kg/l)	(l/hr slurry)
0.4	0.00	37	1.6	8027	2291	0.22	1.32	0.58	10318
0.8	0.00	92	4.1	9741	2264	0.18	-	-	12005
4.9	0.0	564	17.3	8250	3254	0.25	1.29	0.43	11504
7.5	0.0	911	20.4	7717	4462	0.32	1.29	0.33	12179
7.9	0.0	934	22.4	7677	4170	0.30	1.29	0.34	11847
9.0	0.9	1174	22.2	7750	5300	0.35	1.28	0.09	13049
11.1	0.9	1328	29.8	7468	4456	0.30	1.26	0.14	11925
12.1	0.0	1491	25.3	6402	5885	0.41	1.29	0.26	12287
13.0	0.0	1762	17.0	3159	10359	0.73	1.27	0.08	13519
16.5	0.0	2002	29.4	5355	6815	0.47	1.29	0.19	12170
20.3	1.2	2729	27.9	3664	9769	0.66	1.24	0.04	13433
21.3	1.4	3033	31.0	4491	9790	0.60	1.28	0.03	14281
23.3	248.9	3187	50.5	8457	6313	0.28	1.27	0.01	14770
24.4	338.5	3176	50.2	8075	6322	0.29	1.28	0.01	14397
24.6	177.9	3290	51.4	7718	6406	0.29	1.24	-0.02	14124
26.0	532.1	3205	53.5	8364	5996	0.26	1.27	0.01	14360
26.1	522.9	3163	49.4	7742	6399	0.31	1.25	0.02	14141
26.5	545.1	3259	51.8	8084	6287	0.29	1.27	0.00	14371
27.5	646.7	3265	50.6	7770	6453	0.3	1.24	0.01	14223
29.7	1209.1	2934	50.3	8122	5836	0.30	1.27	0.01	13958
30.5	1062.2	3244	51.2	7785	6335	0.31	1.27	0.01	14120
30.6	884.1	3288	50.5	7145	6511	0.34	1.24	0.01	13656

Table A.3. Results obtained when characterizing overloading behaviour of the 34mm spigot.

 $D = 165\text{mm}; D_i = 30\text{mm}; D_o = 64\text{mm}; D_u = 34\text{mm}; \alpha = 15^\circ; \text{BI} = \text{None}.$
 $P = 20\text{kPa}; \text{Medium grade} = \text{F}; d_{\text{ore}} = -1.8+0.8\text{mm}; \rho_{\text{ore}} = 2.65\text{kg/l}.$

C_{vf}	Q_O	Q_U	C_{mvu}	Q_{OS}	Q_{US}	R_m	ρ_{med}	$\rho_{UF(Med)} \cdot \rho_{OF(med)}$	Q
(v/v%)	(l/hr ore)	(l/hr ore)	(v/v%)	(l/hr slurry)	(l/hr slurry)	(v/v)	(kg/l)	(kg/l)	(l/hr slurry)
2.1	0.0	256	13.6	10111	1880	0.14	1.28	0.70	11991
2.2	0.0	260	13.7	10099	1895	0.14	1.28	0.72	11994
3.9	0.0	473	21.9	9873	2165	0.15	1.29	0.65	12038
5.0	0.0	639	23.2	10015	2762	0.00	1.32	0.68	12777
7.6	459.2	725	48.8	14081	1487	0.05	1.29	0.05	15569
10.5	959.7	653	48.0	13949	1359	0.05	1.29	0.03	15308
11.3	981.8	675	49.0	13315	1377	0.05	1.29	0.05	14692
12.4	1323.5	669	48.0	14667	1393	0.05	1.28	0.03	16060
13.3	1269.7	629	46.6	12968	1350	0.06	1.25	0.03	14318
14.7	1751.3	651	47.1	14924	1382	0.05	1.29	0.03	16305
14.8	1587.6	673	49.1	13900	1370	0.05	1.28	0.00	15270
15.4	1720.8	663	49.9	14119	1329	0.05	1.28	0.02	15448
16.8	1946.2	659	45.8	14094	1437	0.06	1.28	0.01	15531
23.1	2265.5	1218	49.2	12626	2474	0.11	1.28	0.02	15099
32.9	2096.3	2061	49.8	8498	4140	0.25	1.24	0.02	12638

Table A.4. Results obtained when characterizing overloading behaviour of the 25mm spigot.

 $D = 165\text{mm}; D_i = 30\text{mm}; D_o = 64\text{mm}; D_u = 25\text{mm}; \alpha = 15^\circ; \text{BI} = \text{None}.$
 $P = 20\text{kPa}; \text{Medium grade} = \text{F}; d_{\text{ore}} = -1.8+0.8\text{mm}; \rho_{\text{ore}} = 2.65\text{kg/l}.$

C_{vf}	Q_O	Q_U	C_{mvu}	Q_{OS}	Q_{US}	R_m	ρ_{med}	$\rho_{UF(Med)} \cdot \rho_{OF(med)}$	Q
(v/v%)	(l/hr ore)	(l/hr ore)	(v/v%)	(l/hr slurry)	(l/hr slurry)	(v/v)	(kg/l)	(kg/l)	(l/hr slurry)
2.2	0.0	249	19.5	10243	1275	9.10	1.25	0.34	11518
3.0	0.0	385	26.1	11515	1475	0.09	1.28	0.85	12990
3.4	0.0	403	26.2	10405	1538	9.83	1.28	0.75	11942
5.2	311.9	446	46.0	13650	970	3.77	1.29	0.07	14620
9.2	958.2	437	47.0	14203	930	3.59	1.29	0.05	15133
12.4	1346.0	432	45.2	13393	957	4.17	1.26	0.03	14349
13.3	1554.0	452	47.6	14114	950	3.81	1.29	0.04	15064
14.7	1901.6	421	45.2	14901	930	3.77	1.28	0.03	15832
15.2	1826.6	418	44.7	13829	935	4.13	1.25	0.02	14763
21.4	2656.8	422	45.1	13442	937	4.55	1.24	0.02	14379
25.7	3216.2	449	51.0	13368	881	4.08	1.29	0.08	14248
32.5	4191.0	408	44.9	13257	907	5.22	1.27	0.02	14164

Table A.5. The influence of spigot design on the spigot capacity.

The following conditions were constant during these tests:

- $D = 165\text{mm}$; $D_i = 30\text{mm}$; $D_U = 45\text{mm}$; $\alpha = 20^\circ$; $Bl = 200\text{mm}$.
- Medium Grade = F; $d_{\text{ore}} = -1.8+0.8\text{mm}$; $\rho_{\text{ore}} = 2.65 \text{ kg/l}$; $P = 20\text{kPa}$.

D_o (mm)	Cone type	ρ_{med} (ton/m ³)	Q_o (l/hr)	Q_{UM} (l/hr)	Q_{OS} (l/hr)	Q_{USM} (l/hr)	R_m (v/v)
64	B	1.29	126	3818	4149	8054	0.51
40	B	1.28	392	4100	5721	8639	0.46
64	A	1.28	192	3307	4460	6848	0.45
40	A	1.27	352	3506	4697	6999	0.45

Table A.6. The influence of medium density on the density differential.

The following conditions were constant during these tests:

- $D = 165\text{mm}$; $D_i = 30\text{mm}$; $D_o = 64\text{mm}$; $\alpha = 20^\circ$ (cone A); $Bl = \text{none}$.
- Medium grade = F; $\rho_{\text{ore}} = 2.65 \text{ kg/l}$; $d_{\text{ore}} = -1.8+0.8\text{mm}$.

	D_U (mm)	P (kPa)	ρ_{med} (kg/l)	$\rho_{UF(\text{Med})} - \rho_{OF(\text{med})}$ (kg/l)
a	34	25	1.27	0.02
	34	29	1.52	0.02
	34	33	1.73	0.00
b	34	30	1.27	0.03
	34	35	1.52	0.04
	34	39	1.76	-0.03
c	34	33	1.28	0.04
	34	42	1.54	0.13
	34	47	1.74	0.00
d	25	25	1.29	0.04
	25	29	1.66	0.05
	25	33	1.74	-0.01
e	25	30	1.29	0.06
	25	35	1.55	0.25
	25	39	1.77	0.10
f	25	33	1.29	0.08
	25	42	1.52	0.08
	25	47	1.75	0.01

Table A.7. The influence of ore size on the spigot capacity.

The following conditions were constant during these tests:

- $D = 165\text{mm}$; $D_i = 47\text{mm}$; $\alpha = 15^\circ$; $Bl = \text{none}$.
- $\rho_{\text{med}} = 1.7\text{RD}$; Medium grade = F; $\rho_{\text{ore}} = 2.65\text{ kg/l}$; $P = 25\text{kPa}$.

	D_o (mm)	D_u (mm)	d_{ore} (mm)	C_{mvu} (v/v%)	Q_{UM} (l/hr ore)	Q_{USM} (l/hr slurry)
a	64	25	-1.8 + 0.8	45.2	499	1104
	64	34	-1.8 + 0.8	46.4	793	1710
b	64	25	-5 + 3	44.4	524	1179
	64	34	-5 + 3	47.0	921	1960
c	40	25	-1.8 + 0.8	44.1	621	1406
	40	34	-1.8 + 0.8	46.5	1012	2174
d	40	25	-5 + 3	43.4	631	1455
	40	34	-5 + 3	46.9	1126	2401

Table A.8. The influence of ore size on the spigot capacity.

The following conditions were constant during these tests:

- $D = 165\text{mm}$; $D_i = 30\text{mm}$; $D_o = 64\text{mm}$; $\alpha = 15^\circ$; $Bl = \text{none}$.
- Medium grade = F; $\rho_{\text{ore}} = 2.65\text{ kg/l}$.

	D_u (mm)	ρ_{med} (ton/m ³)	P (kPa)	d_{ore} (mm)	C_{mvu} (v/v%)	Q_{UM} (l/hr ore)	Q_{USM} (l/hr)
a	45	1.26	20	-1.8 + 0.8	50.9	3201	6286
	34	1.28	20	-1.8 + 0.8	48.0	666	1387
	25	1.27	20	-1.8 + 0.8	45.7	430	939
b	45	1.29	20	-3+1	51.2	3020	5893
	34	1.29	20	-3+1	51.0	700	1371
	25	1.30	20	-3+1	47.7	406	851
c	45	1.46	22	-1.8 + 0.8	49.1	3063	6245
	34	1.46	22	-1.8 + 0.8	47.5	538	1131
	25	1.46	22	-1.8 + 0.8	46.3	358	773
d	45	1.49	22	-3+1	55.5	3054	5499
	34	1.50	22	-3+1	51.0	611	1197
	25	1.50	22	-3+1	50.0	370	740

7.1.2. Equations

(a) Throughput

Dense Medium Cyclones

Source: Upadrashta and Venkateswarlu (1982)

$$Q = K \left(\frac{P}{\rho_{med}} \right)^{0.41} (1 - C_v)^{0.12} (D_u^2 + D_o^2)^{0.302} D_i^{1.03} \quad (\text{Spray discharge}) \quad (\text{A.1})$$

$$Q = K \left(\frac{P}{\rho_{med}} \right)^{0.58} (1 - C_v)^{0.56} (D_u^2 + D_o^2)^{0.26} D_i^{1.8} \quad (\text{Rope discharge}) \quad (\text{A.2})$$

Source: DSM (1985)

$$Q = f \times D_i \times D_o \quad (\text{A.3})$$

with $f = f(D)$.

Source: Napier-Munn (1986)

$$Q \propto \left(\frac{P}{\rho_{med} g} \right)^{\frac{1}{\alpha}} \left(\frac{\rho_{med}}{\eta} \right)^{\frac{\beta}{\alpha}} \quad (\text{A.4})$$

where $\alpha = 1.7$ and $\beta \approx 0$ at low Reynolds numbers, and $\alpha > 2.0$ and $-\beta = 0.2 - 0.4$ at high Reynolds numbers. With Q in l/min, P in kPa, ρ_{med} in kg/m^3 and η the apparent viscosity of the medium in $\text{Nsm}^{-2} \times 10^3$.

Source: Wood et al. (1989)

$$Q = 0.064 D^{2.3} H^{0.45} \left(\frac{D_u}{D_o} \right)^{0.15} \quad (\text{A.5})$$

with Q in m^3/s , D_o in m, D_u in m, D in m and H in D.

Source: Clarkson and Wood (1993)

$$Q = 76 D^{1.93} H^{0.45} \left(\frac{D_u}{D_o} \right)^{0.15} \quad (\text{A.6})$$

Source: Verghese and Rao (1994)

$$Q = 7.547 D_o^{0.414} D_u^{0.185} \rho_{med}^{-2.168} CR^{0.4797} \quad (\text{A.7})$$

with Q in l/min, D_o in mm, D_u in mm, ρ_{med} in mg/cm^3 and CR the coal feed rate in kg/min.

Classification Cyclones

Source: Flintoff et al. (1987)

$$Q = \frac{KP^{0.56} D^{0.21} D_i^{0.53} h^{0.16} (D_u^2 + D_o^2)^{0.49}}{e^{0.0031(\%V_{SF})}} \quad (\text{A.8})$$

Source: Lynch and Rao (1975)

$$Q = 15.63 D_o^{0.68} D_i^{0.85} D_u^{0.16} P^{0.49} (-53\mu\text{m})^{-0.35} \quad (\text{A.9})$$

Source: Asomah and Napier-Munn (1997)

$$Q = KD^{0.739} \left(\frac{(D_o D_i)^{1.538} B l^{0.455} P}{\rho_p \left(1 - \frac{\%V_{SF}}{100}\right)^{0.435} \alpha^{0.246} e^{-0.113(\theta/180)}} \right)^{0.5} \quad (\text{A.10})$$

(b) Volume Split

Source: Flintoff et al. (1987)

$$S = \frac{K \rho_{ore}^{0.24} \left(\frac{D_u}{D_o}\right)^{3.31} h^{0.24} (D_u^2 + D_o^2)^{0.36} e^{0.0054(\%V_{SF})}}{D^{1.11} P^{0.24}} \quad (\text{A.11})$$

7.1.3. Pictures

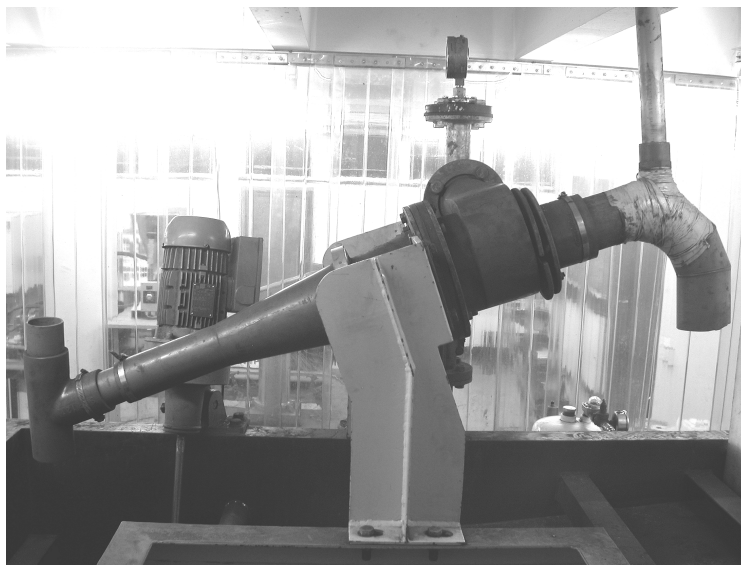


Figure A.1. The 165mm cyclone with the underflow elbow on.



Figure A.2. The pressure gauge used to measure the feed pressure.

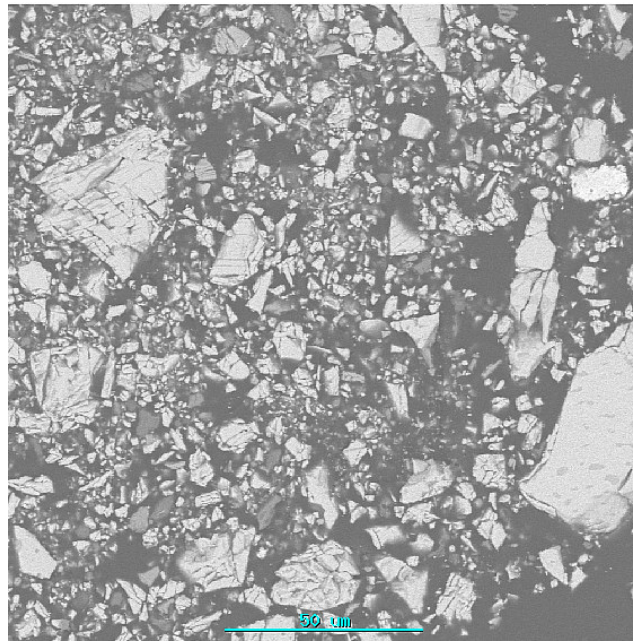


Figure A.3. SEM image of the magnetite employed during the test-work.



Figure A.4. A picture of the dense medium cyclone plant at Mintek, Randburg, South Africa.

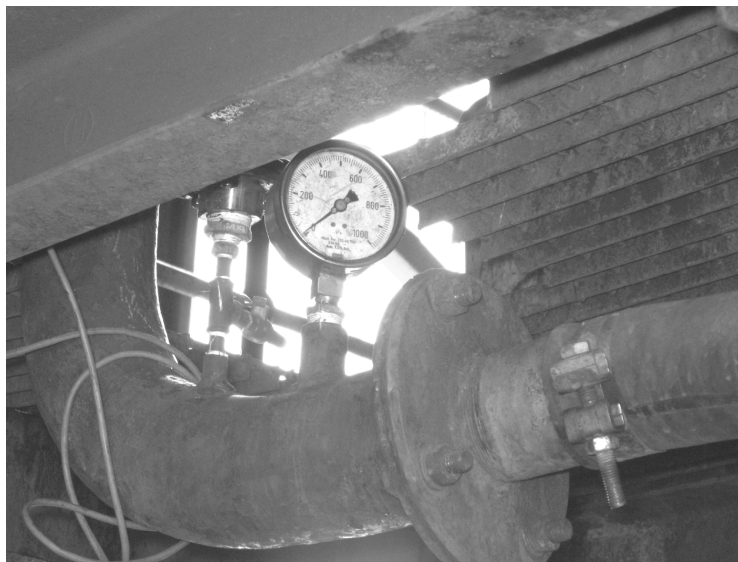


Figure A.5. The pressure gauge employed during the test-work with the 350mm cyclone. The pressure gauge was 0.915m below the feed inlet.



Figure A.6. The Marcy scale and 'density bottle' used to measure the medium density.



Figure A.7. The demagnetizing coil at the DMS plant.

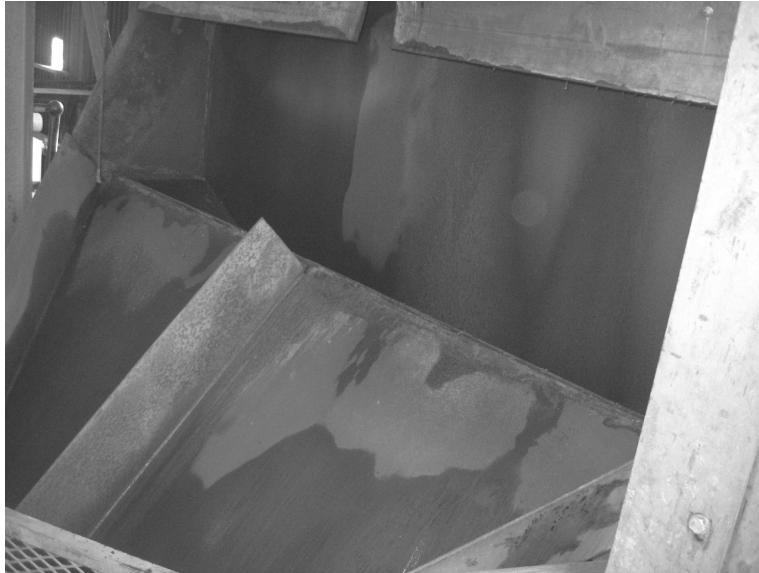


Figure A.8. The area where the sievebends, receiving the floats and sinks slurries, were removed.

7.1.4. Others

Sample No				
D_i (mm)	D_o (mm)	D_u (mm)	α (deg.)	BI (mm)
Grade	P kPa (Set-point)	P kPa(Observed)	ρ_{med} (kg/l)	Ore type
				Ore size (mm)
U/F Flow-Rate				
Time (s)	Total mass (kg)	Bucket mass (kg)	Flow (kg/s)	
Average				
O/F Flow-Rate				
Time (s)	Total mass (kg)	Bucket mass (kg)	Flow (kg/s)	
Average				
Comments				

Figure A.9. The log-sheet used during flow-rate measurements.

7.2. APPENDIX B: PROCESSED DATA AND EXPERIMENTAL CONDITIONS

7.2.1. Data for tests performed with 15° cone.

D = 165mm; 15° cone

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{ore} (kg/l)	d _{ore} (mm)	Med grade	C _{vf} (v/v%)	Q _O (l/hr ore)	Q _U (l/hr ore)	C _{mvu} (v/v%)	Q _{OS} (l/hr slurry)	Q _{US} (l/hr slurry)	R _m (v/v)	Q (l/hr)	ρ _{UF(med)} (kg/l)	ρ _{OF(med)} (kg/l)	ρ _{med} (kg/l)
A1	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	0.4	0.0	37.2	1.6	8027	2291	0.22	10318	1.77	1.20	1.32
A2	B	64	45	15	0	25	2.65	-1.8 + 0.8	F	0.7	0.0	78.2	3.4	8921	2269	0.20	11190	1.88	1.18	1.32
A3	B	64	45	15	0	30	2.65	-1.8 + 0.8	F	0.6	0.0	73.9	3.2	10568	2320	0.18	12888	2.15	1.18	1.35
A4	B	64	34	15	0	30	2.65	-1.8 + 0.8	F	0.7	0.0	87.9	4.8	11013	1829	0.14	12842	2.00	1.17	1.29
A5	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	0.2	0.0	25.6	1.0	8353	2565	0.23	10918	1.90	1.39	1.51
A6	B	64	45	15	0	25	2.65	-1.8 + 0.8	F	0.1	0.0	8.3	0.3	9318	2575	0.22	11893	1.97	1.37	1.50
A7	B	64	45	15	0	30	2.65	-1.8 + 0.8	F	1.1	0.0	141.7	5.3	10593	2677	0.19	13269	2.06	1.38	1.51
A8	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	0.0	0.0	3.0	0.1	8201	2645	0.24	10847	1.95	1.59	1.67
A9	B	64	45	15	0	25	2.65	-1.8 + 0.8	F	0.0	0.0	2.4	0.1	9616	2646	0.22	12262	2.04	1.59	1.69
A10	B	64	45	15	0	30	2.65	-1.8 + 0.8	F	0.3	0.0	39.6	1.5	10243	2704	0.21	12947	2.10	1.61	1.71
A11	B	64	20	15	0	20	2.65	-1.8 + 0.8	F	1.6	0.0	203	14	1466	11186	0.10	12652	1.73	1.17	1.23
A12	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	5.0	0.0	639	23	2762	10015	0.17	12777	1.88	1.20	1.32
A13	B	40	20	15	0	20	2.65	-1.8 + 0.8	F	0.8	0.0	60	5.7	6330	1051	0.14	7381	2.37	1.18	1.34
A14	B	40	34	15	0	20	2.65	-1.8 + 0.8	F	0.5	0.0	41	1.2	4847	3388	0.41	8234	1.54	1.15	1.31
A15	B	40	45	15	0	20	2.65	-1.8 + 0.8	F	3.1	0.0	277	4.5	2699	6150	0.69	8849	1.38	1.18	1.31
A16	B	53	20	15	0	20	2.65	-1.8 + 0.8	F	0.4	0.0	39	3.0	8679	1312	0.13	9991	2.08	1.20	1.31
A17	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	1.7	0.0	160	6.9	7260	2327	0.23	9588	1.73	1.15	1.28
A18	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	0.7	0.0	64	1.9	6364	3400	0.34	9764	1.64	1.16	1.33

NB: A-inlet – 70x25 mm² and B-inlet – 70x10mm².

D = 165mm; 15° cone

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{ore} (kg/l)	d _{ore} (mm)	Med grade	C _{vf} (v/v%)	Q _O (l/hr ore)	Q _U (l/hr ore)	C _{mvu} (v/v%)	Q _{OS} (l/hr slurry)	Q _{US} (l/hr slurry)	R _m (v/v)	Q (l/hr)	ρ _{UF(med)} (kg/l)	ρ _{OF(med)} (kg/l)	ρ _{med} (kg/l)
B1	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	1.3	0.0	145	4.0	7360	3642	0.32	11002	1.56	1.15	1.28
B2	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.1	0.0	237	6.3	7298	3794	0.33	11091	1.55	1.15	1.28
B3	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	3.0	0.4	331	8.7	7221	3818	0.33	11038	1.56	1.15	1.29
B4	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	3.8	0.0	451	10.6	7669	4264	0.33	11933	1.55	1.16	1.29
B5	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	4.3	0.8	488	11.8	7354	4130	0.33	11484	1.55	1.16	1.29
B6	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	4.8	0.4	559	12.8	7253	4359	0.34	11612	1.54	1.16	1.29
B7	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	6.3	1.6	743	16.4	7375	4523	0.34	11897	1.54	1.15	1.28
B8	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	11.3	1.5	1426	25.3	7043	5631	0.37	12674	1.46	1.18	1.28
C1	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	4.9	0.0	564	17.3	8250	3254	0.25	11504	1.61	1.19	1.29
C2	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	7.9	0.0	934	22.4	7677	4170	0.30	11847	1.53	1.18	1.29
C3	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	7.5	0.0	911	20.4	7717	4462	0.32	12179	1.52	1.19	1.29
C4	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	12.1	0.0	1491	25.3	6402	5885	0.41	12287	1.44	1.19	1.29
C5	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	16.5	0.0	2002	29.4	5355	6815	0.47	12170	1.39	1.20	1.29
C6	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	13.0	0.0	1762	17.0	3159	10359	0.73	13519	1.29	1.22	1.27
C7	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	2.1	0.0	256	13.6	10111	1880	0.14	11991	1.88	1.19	1.28
C8	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	2.2	0.0	260	13.7	10099	1895	0.14	11994	1.91	1.18	1.28
C9	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	3.9	0.0	473	21.9	9873	2165	0.15	12038	1.84	1.19	1.29
C10	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	4.4	0.0	524	30.8	10289	1701	0.10	11990	1.89	1.21	1.28
C11	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	3.4	0.0	403	26.2	10405	1538	0.10	11942	1.96	1.21	1.28
D1	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	5.4	0.0	580	14.6	6742	3976	0.33	10718	1.52	1.14	1.26
D2	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	6.7	0.0	719	17.2	6581	4194	0.35	10775	1.52	1.14	1.27
D3	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	5.9	0.0	661	14.1	6496	4688	0.38	11184	1.50	1.14	1.28
D4	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	10.3	0.0	1216	22.6	6411	5379	0.39	11790	1.42	1.15	1.26
D5	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	13.7	0.0	1609	28.4	6086	5673	0.40	11758	1.43	1.15	1.26
D6	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	12.9	0.0	1600	17.7	3401	9031	0.69	12432	1.29	1.19	1.26
D7	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	8.2	424.2	729	45.3	12479	1609	0.07	14088	1.42	1.26	1.27

D = 165mm; 15° cone

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{ore} (kg/l)	d _{ore} (mm)	Med grade	C _{vf} (v/v%)	Q _o (l/hr ore)	Q _u (l/hr ore)	C _{mvu} (v/v%)	Q _{os} (l/hr slurry)	Q _{us} (l/hr slurry)	R _m (v/v)	Q (l/hr)	ρ _{UF(med)} (kg/l)	ρ _{OF(med)} (kg/l)	ρ _{med} (kg/l)
D8	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	4.6	0.0	507	15.8	7850	3208	0.26	11058	1.58	1.16	1.27
D9	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	2.6	0.0	271	10.5	7903	2592	0.23	10495	1.68	1.15	1.27
D10	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	1.6	0.0	166	6.8	8199	2448	0.22	10646	1.73	1.14	1.27
D11	B	53	25	15	0	20	2.65	-1.8 + 0.8	F	3.7	0.0	385	21.9	8711	1759	0.14	10471	1.84	1.17	1.26
E1	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	4.4	0.0	477	10.6	6403	4480	0.38	10884	1.39	1.20	1.27
E2	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	22.2	2.0	2922	27.5	2520	10627	0.75	13146	1.26	1.26	1.26
E3	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	24.8	355.8	3168	51.0	7998	6211	0.28	14209	1.27	1.26	1.26
E4	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	27.5	460.0	3321	50.4	7143	6590	0.33	13733	1.26	1.26	1.26
E5	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	25.7	559.6	3104	50.5	8113	6147	0.29	14260	1.26	1.25	1.25
E6	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	24.9	407.4	3152	51.3	8171	6149	0.28	14320	1.27	1.27	1.27
E7	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	23.7	70.1	3272	50.4	7590	6491	0.30	14081	1.27	1.26	1.26
E8	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	24.5	2.7	3282	32.8	3380	10005	0.67	13385	1.27	1.25	1.26
E9	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	16.3	1355.1	1026	49.4	12541	2078	0.09	14619	1.31	1.23	1.24
E10	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	28.0	1803.4	1972	47.4	9346	4157	0.22	13502	1.26	1.26	1.26
E11	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	33.7	2131.9	1956	47.8	8053	4088	0.26	12141	1.27	1.25	1.26
E12	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	20.0	1426.5	1537	48.8	11698	3147	0.14	14844	1.26	1.26	1.26
E13	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	9.6	0.0	1060	28.3	7316	3748	0.27	11063	1.40	1.25	1.29
E14	B	53	25	15	0	20	2.65	-1.8 + 0.8	F	32.0	3508.0	421	44.6	11337	943	0.06	12280	1.25	1.33	1.32
E15	B	53	25	15	0	20	2.65	-1.8 + 0.8	F	21.5	2575.4	423	45.4	13019	933	0.05	13952	1.27	1.27	1.27
E16	B	53	25	15	0	20	2.65	-1.8 + 0.8	F	16.2	1850.3	424	45.0	13086	943	0.04	14029	1.28	1.27	1.27
E17	B	53	25	15	0	20	2.65	-1.8 + 0.8	F	3.3	0.0	340	21.9	8722	1552	0.12	10274	1.45	1.25	1.27
F1	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	11.1	0.9	1328	29.8	7468	4456	0.30	11925	1.36	1.22	1.26
F2	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	24.6	177.9	3290	51.4	7718	6406	0.29	14124	1.23	1.24	1.24
F3	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	30.6	884.1	3288	50.5	7145	6511	0.34	13656	1.25	1.23	1.24
F4	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	26.1	522.9	3163	49.4	7742	6399	0.31	14141	1.26	1.24	1.25
F5	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	20.3	1.2	2729	27.9	3664	9769	0.66	13433	1.25	1.22	1.24

D = 165mm; 15° cone

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{ore} (kg/l)	d _{ore} (mm)	Med grade	C _{vf} (v/v%)	Q _o (l/hr ore)	Q _u (l/hr ore)	C _{mvu} (v/v%)	Q _{os} (l/hr slurry)	Q _{us} (l/hr slurry)	R _m (v/v)	Q (l/hr)	ρ _{UF(med)} (kg/l)	ρ _{OF(med)} (kg/l)	ρ _{med} (kg/l)
F6	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	13.3	1269.7	629	46.6	12968	1350	0.06	14318	1.28	1.25	1.25
F7	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	15.2	1826.6	418	44.7	13829	935	0.04	14763	1.27	1.25	1.25
F8	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	12.4	1346.0	432	45.2	13393	957	0.04	14349	1.29	1.26	1.26
F9	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	2.2	0.0	249	19.5	10243	1275	0.09	11518	1.57	1.22	1.25
G1	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	27.5	646.7	3265	50.6	7770	6453	0.31	14223	1.25	1.24	1.24
G2	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	32.9	2096.3	2061	49.8	8498	4140	0.25	12638	1.25	1.24	1.24
G3	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	21.4	2656.8	422	45.1	13442	937	0.05	14379	1.27	1.24	1.24
G4	B	64	20	15	0	20	2.65	-1.8 + 0.8	F	17.6	2437.0	286	42.9	14812	667	0.03	15479	1.26	1.24	1.24
G5	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	29.6	884.3	3251	50.1	7473	6492	0.33	13965	1.25	1.24	1.25
G6	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	23.1	1721.5	1683	48.5	11238	3471	0.16	14710	1.26	1.24	1.24
G7	B	53	25	15	0	20	2.65	-1.8 + 0.8	F	19.4	2434.3	453	45.5	13893	996	0.05	14889	1.26	1.23	1.23
G8	B	53	20	15	0	20	2.65	-1.8 + 0.8	F	27.4	3357.3	280	43.0	12646	651	0.04	13297	1.25	1.24	1.24
G9	B	40	45	15	0	20	2.65	-1.8 + 0.8	F	29.0	679.7	3382	49.5	7148	6839	0.35	13986	1.25	1.25	1.25
G10	B	40	34	15	0	20	2.65	-1.8 + 0.8	F	35.5	2541.6	1895	47.2	8467	4015	0.26	12483	1.26	1.25	1.25
G11	B	40	25	15	0	20	2.65	-1.8 + 0.8	F	35.6	3811.7	559	44.7	11040	1250	0.09	12290	1.25	1.26	1.26
G12	B	40	20	15	0	20	2.65	-1.8 + 0.8	F	35.4	3937.8	376	42.8	11302	878	0.06	12180	1.27	1.29	1.29
H1	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	32.5	4191.0	408	44.9	13257	907	0.05	14164	1.29	1.27	1.27
H2	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	25.7	3216.2	449	51.0	13368	881	0.04	14248	1.36	1.29	1.29
H3	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	13.3	1554.0	452	47.6	14114	950	0.04	15064	1.33	1.29	1.29
H4	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	9.2	958.2	437	47.0	14203	930	0.04	15133	1.34	1.29	1.29
H5	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	5.2	311.9	446	46.0	13650	970	0.04	14620	1.36	1.29	1.29
H6	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	23.1	2265.5	1218	49.2	12626	2474	0.11	15099	1.29	1.27	1.28
H7	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	15.4	1720.8	663	49.9	14119	1329	0.05	15448	1.30	1.28	1.28
H8	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	14.8	1587.6	673	49.1	13900	1370	0.05	15270	1.28	1.28	1.28
H9	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	10.5	959.7	653	48.0	13949	1359	0.05	15308	1.31	1.28	1.29
H10	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	11.3	981.8	675	49.0	13315	1377	0.05	14692	1.34	1.29	1.29

D = 165mm; 15° cone

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{ore} (kg/l)	d _{ore} (mm)	Med grade	C _{vf} (v/v%)	Q _o (l/hr ore)	Q _u (l/hr ore)	C _{mvu} (v/v%)	Q _{os} (l/hr slurry)	Q _{us} (l/hr slurry)	R _m (v/v)	Q (l/hr)	ρ _{UF(med)} (kg/l)	ρ _{OF(med)} (kg/l)	ρ _{med} (kg/l)
H11	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	7.6	459.2	725	48.8	14081	1487	0.05	15569	1.33	1.29	1.29
H12	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	29.7	1209.1	2934	50.3	8122	5836	0.30	13958	1.28	1.27	1.27
H13	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	30.5	1062.2	3244	51.2	7785	6335	0.31	14120	1.28	1.27	1.27
H14	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	24.4	338.5	3176	50.2	8075	6322	0.29	14397	1.28	1.27	1.28
H15	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	26.5	545.1	3259	51.8	8084	6287	0.29	14371	1.28	1.27	1.27
I1	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	14.7	1751.3	651	47.1	14924	1382	0.05	16305	1.32	1.29	1.29
I2	B	64	30	15	0	20	2.65	-1.8 + 0.8	F	15.3	1958.3	518	46.2	15096	1122	0.04	16218	1.33	1.29	1.29
I3	B	64	30	15	0	20	2.65	-1.8 + 0.8	F	15.6	1961.9	526	45.9	14844	1145	0.05	15990	1.33	1.29	1.30
I4	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	16.8	1890.1	713	46.9	13996	1521	0.06	15516	1.33	1.30	1.30
I5	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	13.2	1390.2	744	48.0	14560	1551	0.06	16112	1.33	1.30	1.30
I6	B	40	34	15	0	20	2.65	-1.8 + 0.8	F	16.8	1617.9	866	47.4	12935	1828	0.08	14763	1.33	1.30	1.30
I7	B	40	34	15	0	20	2.65	-1.8 + 0.8	F	17.7	1731.2	874	47.0	12884	1861	0.08	14745	1.32	1.29	1.30
I8	B	40	25	15	0	20	2.65	-1.8 + 0.8	F	17.0	1884.0	543	44.6	13018	1219	0.06	14238	1.33	1.30	1.30
J1	B	40	34	15	0	20	2.65	-1.8 + 0.8	F	12.6	721.0	953	47.1	11225	2025	0.09	13250	1.31	1.27	1.28
J2	B	40	34	15	0	20	2.65	-1.8 + 0.8	F	25.5	2188.2	1362	47.0	11022	2898	0.15	13919	1.27	1.26	1.27
J3	B	40	34	15	0	20	2.65	-1.8 + 0.8	F	25.8	1902.8	1682	46.3	10273	3632	0.19	13905	1.27	1.26	1.26
J4	B	40	34	15	0	20	2.65	-1.8 + 0.8	F	21.7	2116.4	848	46.1	11824	1838	0.09	13662	1.29	1.26	1.26
J5	B	40	45	15	0	20	2.65	-1.8 + 0.8	F	26.0	413.6	3356	49.9	7800	6727	0.31	14527	1.28	1.27	1.27
J6	B	40	30	15	0	20	2.65	-1.8 + 0.8	F	20.7	2185.7	676	45.5	12350	1485	0.07	13835	1.28	1.26	1.27
J7	B	40	30	15	0	20	2.65	-1.8 + 0.8	F	20.6	2176.7	692	45.5	12376	1520	0.08	13896	1.29	1.27	1.27
J8	B	64	30	15	0	20	2.65	-1.8 + 0.8	F	8.4	38.2	1306	48.1	13366	2715	0.10	16081	1.34	1.28	1.28
J9	B	64	30	15	0	20	2.65	-1.8 + 0.8	F	10.5	1052.9	541	46.3	14061	1169	0.05	15230	1.32	1.28	1.28
J10	B	64	30	15	0	20	2.65	-1.8 + 0.8	F	16.6	2077.5	527	46.4	14560	1134	0.05	15694	1.30	1.28	1.28
J11	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	14.7	1901.6	421	45.2	14901	930	0.04	15832	1.31	1.28	1.28
J12	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	12.4	1323.5	669	48.0	14667	1393	0.05	16060	1.30	1.28	1.28
J13	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	16.8	1946.2	659	45.8	14094	1437	0.06	15531	1.29	1.28	1.28

D = 165mm; 15° cone

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{ore} (kg/l)	d _{ore} (mm)	Med grade	C _{vf} (v/v%)	Q _o (l/hr ore)	Q _u (l/hr ore)	C _{mvu} (v/v%)	Q _{os} (l/hr slurry)	Q _{us} (l/hr slurry)	R _m (v/v)	Q (l/hr)	ρ _{UF(med)} (kg/l)	ρ _{OF(med)} (kg/l)	ρ _{med} (kg/l)
K1	B	64	45	15	0	20	2.65	-1.8 + 0.8	M	30.3	839.3	3347	51.2	7281	6537	0.33	13818	1.31	1.25	1.27
K2	B	64	34	15	0	20	2.65	-1.8 + 0.8	M	31.7	3632.6	654	48.6	12169	1343	0.07	13512	1.36	1.27	1.28
K3	B	64	25	15	0	20	2.65	-1.8 + 0.8	M	36.1	4166.4	393	44.9	11771	877	0.06	12647	1.36	1.27	1.27
K4	B	40	25	15	0	20	2.65	-1.8 + 0.8	M	27.0	2851.4	543	45.1	11383	1204	0.07	12587	1.34	1.27	1.28
K5	B	40	34	15	0	20	2.65	-1.8 + 0.8	M	26.8	2566.1	832	46.9	10917	1772	0.10	12689	1.35	1.27	1.28
K6	B	40	45	15	0	20	2.65	-1.8 + 0.8	M	26.3	254.8	3509	50.5	7338	6951	0.33	14289	1.30	1.26	1.28
K7	B	64	45	15	0	20	2.65	-1.8 + 0.8	M	31.4	984.9	3258	50.2	7037	6490	0.35	13527	1.39	1.35	1.36
K8	B	64	34	15	0	20	2.65	-1.8 + 0.8	M	32.0	3607.7	607	47.3	11893	1283	0.08	13177	1.44	1.35	1.36
K9	B	64	34	15	0	20	2.65	-1.8 + 0.8	M	27.1	3536.9	619	47.4	14008	1306	0.06	15314	1.45	1.35	1.35
K10	B	64	34	15	0	20	2.65	-1.8 + 0.8	M	17.6	2291.8	662	47.5	15421	1393	0.05	16815	1.53	1.36	1.37
K11	B	64	25	15	0	20	2.65	-1.8 + 0.8	M	18.1	2161.0	407	46.4	13305	878	0.04	14183	1.51	1.37	1.37
K12	B	64	25	15	0	20	2.65	-1.8 + 0.8	M	15.5	2055.4	428	46.1	15083	928	0.04	16012	1.52	1.37	1.38
K13	B	64	25	15	0	20	2.65	-1.8 + 0.8	M	6.2	644.6	454	46.3	16627	981	0.03	17608	1.56	1.37	1.37
K14	B	64	45	15	0	20	2.65	-1.8 + 0.8	M	39.2	2452.7	2678	43.6	6953	6144	0.44	13097	1.53	1.72	1.64
K15	B	64	34	15	0	20	2.65	-1.8 + 0.8	M	11.3	1325.4	567	52.7	15736	1076	0.03	16812	1.65	1.39	1.40
K16	B	64	34	15	0	20	2.65	-1.8 + 0.8	M	29.4	4227.9	623	46.9	15168	1327	0.06	16495	1.61	1.49	1.50
K17	B	64	34	15	0	20	2.65	-1.8 + 0.8	M	10.7	1170.9	635	46.8	15552	1357	0.05	16909	1.64	1.51	1.51
K18	B	64	25	15	0	20	2.65	-1.8 + 0.8	M	25.1	3234.1	337	45.8	13464	736	0.04	14200	1.61	1.50	1.51
L1	B	64	25	15	0	25	2.65	-1.8 + 0.8	F	10.9	1273.7	450	44.9	14853	1002	0.04	15855	1.36	1.29	1.29
L2	B	64	25	15	0	29	2.65	-1.8 + 0.8	F	13.2	1708.1	477	45.1	15524	1056	0.04	16580	1.36	1.29	1.29
L3	B	64	34	15	0	25	2.65	-1.8 + 0.8	F	11.2	1083.0	702	47.4	14459	1479	0.05	15938	1.34	1.28	1.29
L4	B	64	34	15	0	29	2.65	-1.8 + 0.8	F	10.1	1033.0	731	47.9	15900	1528	0.05	17427	1.34	1.29	1.29
L5	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	26.0	532.1	3205	53.5	8364	5996	0.26	14360	1.27	1.27	1.27
L6	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	23.3	248.9	3187	50.5	8457	6313	0.28	14770	1.28	1.27	1.27
L7	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	21.3	1.4	3033	31.0	4491	9790	0.60	14281	1.29	1.26	1.28
L8	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	9.0	0.9	1174	22.2	7750	5300	0.35	13049	1.34	1.25	1.28

D = 165mm; 15° cone

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{ore} (kg/l)	d _{ore} (mm)	Med grade	C _{vf} (v/v%)	Q _o (l/hr ore)	Q _u (l/hr ore)	C _{mvu} (v/v%)	Q _{os} (l/hr slurry)	Q _{us} (l/hr slurry)	R _m (v/v)	Q (l/hr)	ρ _{UF(med)} (kg/l)	ρ _{OF(med)} (kg/l)	ρ _{med} (kg/l)
L9	B	64	40	15	0	20	2.65	-1.8 + 0.8	F	21.8	1087.5	2131	49.0	10426	4350	0.19	14776	1.28	1.28	1.28
L10	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	27.2	812.9	3126	50.2	8274	6226	0.29	14500	1.38	1.38	1.38
L11	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	34.7	4115.2	593	48.5	12337	1222	0.07	13559	1.40	1.37	1.38
L12	B	64	34	15	0	25	2.65	-1.8 + 0.8	F	30.2	3933.9	635	48.9	13836	1298	0.06	15135	1.40	1.38	1.38
L13	B	64	34	15	0	29	2.65	-1.8 + 0.8	F	12.0	1293.4	709	48.6	15235	1458	0.05	16693	1.44	1.39	1.39
L14	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	23.7	2866.2	392	47.5	12911	825	0.04	13736	1.41	1.38	1.39
L15	B	64	25	15	0	25	2.65	-1.8 + 0.8	F	22.6	3094.6	408	46.4	14605	878	0.04	15483	1.41	1.39	1.39
L16	B	64	25	15	0	29	2.65	-1.8 + 0.8	F	10.9	1338.8	448	46.8	15431	958	0.03	16389	1.43	1.39	1.39
M1	B	64	45	15	0	20	2.65	-3 + 1	F	22.9	306.7	3031	51.3	8644	5908	0.26	14552	1.30	1.28	1.29
M2	B	64	45	15	0	20	2.65	-3 + 1	F	25.9	634.0	3009	51.2	8188	5878	0.28	14066	1.30	1.28	1.29
M3	B	64	34	15	0	20	2.65	-3 + 1	F	27.1	2981.1	700	51.0	12229	1371	0.07	13600	1.33	1.29	1.29
M4	B	64	34	15	0	25	2.65	-3 + 1	F	17.1	1932.3	694	50.2	13983	1383	0.05	15366	1.38	1.30	1.30
M5	B	64	25	15	0	20	2.65	-3 + 1	F	21.7	2553.3	406	47.7	12796	851	0.04	13647	1.36	1.30	1.30
M6	B	64	25	15	0	20	2.65	-3 + 1	F	23.8	2649.2	394	47.9	11976	823	0.04	12799	1.43	1.37	1.37
M7	B	64	34	15	0	29	2.65	-3 + 1	F	12.7	1439.9	692	50.8	15377	1363	0.05	16740	1.47	1.37	1.37
M8	B	64	34	15	0	25	2.65	-3 + 1	F	25.7	3108.2	680	50.1	13389	1357	0.06	14746	1.42	1.37	1.37
M9	B	64	34	15	0	20	2.65	-3 + 1	F	21.8	2319.6	637	50.1	12263	1271	0.06	13534	1.42	1.37	1.37
M10	B	64	45	15	0	20	2.65	-3 + 1	F	29.3	1018.2	2995	50.1	7730	5978	0.31	13709	1.38	1.36	1.37
M11	B	64	45	15	0	20	2.65	-3 + 1	F	27.4	678.7	3054	55.7	8144	5486	0.25	13630	1.51	1.49	1.50
M12	B	64	34	15	0	30	2.65	-3 + 1	F	24.8	3196.5	663	51.3	14261	1294	0.05	15555	1.54	1.50	1.50
M13	B	64	34	15	0	27	2.65	-3 + 1	F	27.4	3473.2	630	50.7	13731	1243	0.06	14974	1.54	1.49	1.50
M14	B	64	34	15	0	22	2.65	-3 + 1	F	23.1	2661.1	611	51.2	12953	1194	0.05	14147	1.54	1.51	1.51
M15	B	64	25	15	0	22	2.65	-3 + 1	F	29.2	3564.9	370	50.1	12745	738	0.04	13483	1.54	1.51	1.51
M16	B	64	20	15	0	22	2.65	-3 + 1	F	26.3	3383.2	215	47.0	13229	458	0.02	13687	1.55	1.51	1.51
M17	B	64	30	15	0	22	2.65	-3 + 1	F	24.0	2892.1	473	50.7	13067	932	0.04	13999	1.55	1.51	1.51
M18	B	64	40	15	0	22	2.65	-3 + 1	F	19.5	1051.9	1652	54.1	10818	3055	0.13	13873	1.53	1.51	1.51

D = 165mm; 15° cone

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{ore} (kg/l)	d _{ore} (mm)	Med grade	C _{vf} (v/v%)	Q _o (l/hr ore)	Q _u (l/hr ore)	C _{mvu} (v/v%)	Q _{os} (l/hr slurry)	Q _{us} (l/hr slurry)	R _m (v/v)	Q (l/hr)	ρ _{UF(med)} (kg/l)	ρ _{OF(med)} (kg/l)	ρ _{med} (kg/l)
N1	B	64	45	15	0	20	2.65	-3 + 1	M	30.0	718.9	3177	53.1	7024	5980	0.31	13004	1.35	1.27	1.29
N2	B	64	34	15	0	20	2.65	-3 + 1	M	30.5	3134.8	712	52.4	11271	1358	0.07	12629	1.39	1.28	1.29
N3	B	64	25	15	0	20	2.65	-3 + 1	M	29.1	3298.7	425	48.3	11917	881	0.05	12798	1.40	1.29	1.29
N4	B	64	25	15	0	20	2.65	-3 + 1	M	27.3	2995.1	407	48.4	11616	842	0.05	12458	1.50	1.37	1.38
N5	B	64	34	15	0	20	2.65	-3 + 1	M	28.6	2914.8	661	51.3	11200	1289	0.07	12489	1.50	1.37	1.38
N6	B	64	45	15	0	20	2.65	-3 + 1	M	25.4	277.0	3252	51.5	7603	6308	0.29	13910	1.42	1.36	1.38
N7	B	64	45	15	0	22	2.65	-3 + 1	M	40.1	1505.1	3253	56.9	6143	5716	0.35	11859	1.75	1.57	1.63
N8	B	64	34	15	0	22	2.65	-3 + 1	M	16.7	1963.7	596	46.4	14046	1286	0.05	15331	1.43	1.41	1.42
N9	B	64	25	15	0	22	2.65	-3 + 1	M	25.2	3116.6	366	48.3	13057	757	0.04	13814	1.59	1.48	1.49
O1	B	64	45	15	0	22	2.65	-1.8 + 0.8	F	32.6	1536.6	3063	49.2	7893	6228	0.33	14121	1.50	1.45	1.46
O2	B	64	34	15	0	22	2.65	-1.8 + 0.8	F	24.2	2865.8	538	47.7	12940	1128	0.06	14068	1.55	1.46	1.47
O3	B	64	25	15	0	22	2.65	-1.8 + 0.8	F	30.5	3768.6	358	46.4	12779	771	0.04	13550	1.56	1.46	1.47
O4	B	64	25	15	0	25	2.65	-1.8 + 0.8	F	15.7	1889.2	301	47.1	13292	639	0.03	13932	1.74	1.67	1.67
O5	B	64	34	15	0	25	2.65	-1.8 + 0.8	F	15.3	1686.4	468	48.0	13087	976	0.04	14062	1.73	1.66	1.67
O6	B	64	45	15	0	25	2.65	-1.8 + 0.8	F	26.2	855.1	2960	47.2	8319	6264	0.31	14583	1.68	1.65	1.66
P1	B	64	34	15	0	22	2.65	-1.8 + 0.8	C	30.6	3611.1	349	46.8	12191	745	0.04	12936	1.89	1.62	1.63
P2	B	64	34	15	0	27	2.65	-1.8 + 0.8	C	36.7	4867.9	362	47.0	13466	770	0.05	14237	1.93	1.62	1.63
P3	B	64	34	15	0	31	2.65	-1.8 + 0.8	C	40.0	5677.1	398	47.3	14333	840	0.05	15173	1.91	1.61	1.63
P4	B	64	25	15	0	22	2.65	-1.8 + 0.8	C	33.2	4034.4	229	45.8	12360	501	0.03	12861	1.91	1.62	1.63
P5	B	64	45	15	0	22	2.65	-3 + 1	C	28.6	722.7	3151	50.2	7263	6273	0.32	13535	1.73	1.58	1.63
P6	B	64	34	15	0	22	2.65	-3 + 1	C	28.1	3182.6	507	49.6	12087	1021	0.05	13108	1.83	1.62	1.63
P7	B	64	34	15	0	27	2.65	-3 + 1	C	29.3	3801.3	506	49.5	13654	1022	0.05	14676	1.86	1.61	1.62
P8	B	64	34	15	0	31	2.65	-3 + 1	C	35.2	5107.0	499	49.5	14908	1008	0.05	15916	1.88	1.60	1.61
P9	B	64	25	15	0	22	2.65	-3 + 1	C	24.1	2886.3	310	48.0	12639	644	0.03	13283	1.85	1.62	1.63
Q1	A	64	25	15	0	25	2.65	-1.8 + 0.8	F	15.3	2848.9	526	46.0	20950	1143	0.03	22094	1.49	1.37	1.38
Q2	A	64	34	15	0	25	2.65	-1.8 + 0.8	F	14.4	2401.1	803	47.3	20562	1699	0.05	22261	1.48	1.37	1.38

 D = 165mm; 15° cone

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{pore} (kg/l)	d _{ore} (mm)	Med grade	C _{vf} (v/v%)	Q _O (l/hr ore)	Q _U (l/hr ore)	C _{mvu} (v/v%)	Q _{OS} (l/hr slurry)	Q _{US} (l/hr slurry)	R _m (v/v)	Q (l/hr)	ρ _{UF(med)} (kg/l)	ρ _{OF(med)} (kg/l)	ρ _{med} (kg/l)
Q3	A	64	45	15	0	25	2.65	-1.8 + 0.8	F	18.1	32.0	3923	47.6	13582	8240	0.24	21822	1.41	1.36	1.37
Q4	A	64	45	15	0	25	2.65	-1.8 + 0.8	F	18.5	196.2	3896	46.8	13790	8325	0.25	22115	1.50	1.47	1.48
Q5	A	64	34	15	0	25	2.65	-1.8 + 0.8	F	20.6	3570.1	744	46.4	19343	1602	0.05	20945	1.55	1.48	1.48
Q6	A	64	25	15	0	25	2.65	-1.8 + 0.8	F	17.8	3394.7	491	45.1	20788	1088	0.03	21876	1.57	1.48	1.48
Q7	A	64	25	15	0	25	2.65	-1.8 + 0.8	F	7.4	982.8	499	45.2	18807	1104	0.03	19911	1.75	1.69	1.69
Q8	A	64	34	15	0	25	2.65	-1.8 + 0.8	F	11.6	1601.8	793	46.4	18900	1710	0.05	20610	1.73	1.69	1.69
Q9	A	64	45	15	0	25	2.65	-1.8 + 0.8	F	19.8	525.7	3856	46.1	13820	8358	0.25	22179	1.71	1.69	1.69
Q10	A	53	45	15	0	25	2.65	-1.8 + 0.8	F	22.9	461.1	4425	46.1	11782	9597	0.31	21380	1.69	1.69	1.69
Q11	A	53	34	15	0	25	2.65	-1.8 + 0.8	F	21.6	3964.6	788	45.6	20252	1727	0.05	21979	1.73	1.69	1.69
Q12	A	53	25	15	0	25	2.65	-1.8 + 0.8	F	18.4	3500.3	508	44.4	20614	1146	0.04	21761	1.73	1.70	1.70
Q13	A	40	25	15	0	25	2.65	-1.8 + 0.8	F	16.8	2679.9	621	44.1	18270	1406	0.05	19676	1.73	1.70	1.70
Q14	A	40	34	15	0	25	2.65	-1.8 + 0.8	F	19.1	2637.1	1012	46.5	16914	2174	0.08	19088	1.73	1.70	1.71
Q15	A	40	45	15	0	25	2.65	-1.8 + 0.8	F	25.1	830.0	4523	46.1	11504	9814	0.33	21318	1.71	1.71	1.71
Q16	A	40	34	15	0	25	2.65	-5 + 3	F	15.5	2110.3	1126	46.9	18500	2401	0.07	20901	1.73	1.72	1.72
Q17	A	40	25	15	0	25	2.65	-5 + 3	F	20.5	2993.2	631	43.4	16220	1455	0.06	17675	1.73	1.71	1.72
Q18	A	64	25	15	0	25	2.65	-5 + 3	F	9.0	1301.3	524	44.4	19152	1179	0.04	20331	1.75	1.72	1.72
Q19	A	64	34	15	0	25	2.65	-5 + 3	F	13.0	1863.7	921	47.0	19448	1960	0.06	21408	1.74	1.72	1.72
R1	B	40	45	15	0	20	2.65	-1.8 + 0.8	C	34.7	857.2	3385	47.0	5013	7199	0.48	12211	1.34	1.25	1.29
R2	B	40	34	15	0	20	2.65	-1.8 + 0.8	C	33.7	3066.7	829	45.2	9728	1834	0.13	11562	1.41	1.28	1.30
R3	B	40	25	15	0	20	2.65	-1.8 + 0.8	C	32.3	3228.3	547	43.6	10439	1254	0.09	11692	1.43	1.28	1.30
R4	B	64	25	15	0	20	2.65	-1.8 + 0.8	C	21.0	2456.1	413	44.0	12736	937	0.05	13673	1.48	1.29	1.30
R5	B	64	34	15	0	20	2.65	-1.8 + 0.8	C	21.3	2249.4	670	47.2	12269	1421	0.07	13690	1.48	1.28	1.29
R6	B	64	45	15	0	20	2.65	-1.8 + 0.8	C	29.8	543.8	3481	49.2	6437	7074	0.38	13511	1.35	1.26	1.29
R7	B	64	45	15	0	20	2.65	-1.8 + 0.8	C	33.2	950.3	3439	48.9	6183	7039	0.41	13222	1.45	1.34	1.38
R8	B	64	34	15	0	20	2.65	-1.8 + 0.8	C	24.4	2608.9	655	47.0	11989	1393	0.07	13382	1.54	1.36	1.37
R9	B	64	25	15	0	20	2.65	-1.8 + 0.8	C	21.5	2555.0	419	44.6	12886	940	0.05	13826	1.55	1.36	1.37
R10	B	64	25	15	0	25	2.65	-1.8 + 0.8	C	12.5	1348.7	326	45.3	12729	720	0.03	13449	1.94	1.70	1.71
R11	B	64	34	15	0	25	2.65	-1.8 + 0.8	C	17.2	1853.3	499	45.8	12613	1090	0.05	13703	1.90	1.69	1.70
R12	B	64	45	15	0	25	2.65	-1.8 + 0.8	C	29.9	1292.5	3071	46.5	7983	6607	0.35	14590	1.78	1.65	1.70

7.2.2. Data for tests performed with 20° cone (cone A).

D = 165mm; 20° cone (cone A)

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{ore} (kg/l)	d _{ore} (mm)	Med grade	C _{vf} (v/v%)	Q _O (l/hr ore)	Q _U (l/hr ore)	C _{mvu} (v/v%)	Q _{OS} (l/hr slurry)	Q _{US} (l/hr slurry)	R _m (v/v)	Q (l/hr)	ρ _{UF(med)} (kg/l)	ρ _{OF(med)} (kg/l)	ρ _{med} (kg/l)
S8	B	40	45	20	200	22	2.65	-1.8 + 0.8	M	33.0	351.8	3506	50.1	4697	6999	0.45	11696	1.27	1.28	1.28
S9	B	53	45	20	200	20	2.65	-1.8 + 0.8	M	31.2	123.9	3434	52.1	4825	6596	0.40	11421	1.27	1.28	1.28
S10	B	64	45	20	200	20	2.65	-1.8 + 0.8	M	30.9	192.1	3307	48.3	4460	6848	0.45	11307	1.27	1.28	1.27
T1	B	64	45	20	0	20	2.65	-1.8 + 0.8	M	26.6	327.5	3017	50.7	6611	5956	0.32	12567	1.30	1.25	1.27
T2	B	64	34	20	0	20	2.65	-1.8 + 0.8	M	25.7	1384.6	1644	46.8	8273	3511	0.21	11784	1.30	1.25	1.26
T3	B	64	25	20	0	20	2.65	-1.8 + 0.8	M	24.2	2030.2	773	46.5	9898	1662	0.10	11561	1.33	1.29	1.29
T4	B	64	25	20	200	20	2.65	-1.8 + 0.8	M	19.6	1604.9	801	45.4	10499	1763	0.10	12262	1.30	1.28	1.28
T5	B	64	34	20	200	20	2.65	-1.8 + 0.8	M	21.6	776.0	1937	57.0	9178	3400	0.15	12577	1.32	1.24	1.25
T6	B	64	45	20	200	20	2.65	-1.8 + 0.8	M	35.5	845.7	3307	45.9	4506	7207	0.52	11713	1.24	1.31	1.27
U1	B	64	34	20	200	20	2.65	-1.8 + 0.8	M	22.5	789.0	1749	49.0	7734	3570	0.21	11304	1.29	1.27	1.27
U2	B	64	25	20	200	20	2.65	-1.8 + 0.8	M	19.0	1350.5	856	47.0	9770	1820	0.10	11590	1.29	1.27	1.27
U3	B	64	25	20	200	25	2.65	-1.8 + 0.8	M	16.1	1257.4	854	46.4	11268	1843	0.09	13111	1.41	1.36	1.36
U4	B	64	25	20	200	30	2.65	-1.8 + 0.8	M	16.1	1540.9	855	45.9	13040	1864	0.08	14904	1.43	1.36	1.36
U5	B	64	34	20	200	25	2.65	-1.8 + 0.8	M	17.2	477.4	1735	48.7	9274	3565	0.17	12839	1.39	1.36	1.36
U6	B	64	34	20	200	30	2.65	-1.8 + 0.8	M	18.0	803.1	1803	48.9	10806	3684	0.16	14489	1.41	1.36	1.37
U7	B	64	45	20	200	20	2.65	-1.8 + 0.8	M	33.5	25.5	3364	54.2	3916	6208	0.42	10124	1.37	1.35	1.36
V1	B	64	25	20	0	25	2.65	-1.8 + 0.8	M	16.3	1119.8	839	46.5	10180	1804	0.10	11984	1.39	1.28	1.29
V2	B	64	34	20	0	25	2.65	-1.8 + 0.8	M	20.5	664.8	1740	48.0	8134	3623	0.20	11757	1.36	1.27	1.29
V3	B	64	45	20	0	25	2.65	-1.8 + 0.8	M	34.3	742.1	3268	49.8	5119	6564	0.43	11683	1.32	1.26	1.28
V4	B	64	45	20	0	25	2.65	-1.8 + 0.8	M	33.2	572.3	3276	48.8	4886	6709	0.44	11596	1.39	1.34	1.36
V5	B	64	34	20	0	25	2.65	-1.8 + 0.8	M	28.0	1471.9	1775	49.9	8047	3560	0.21	11607	1.43	1.36	1.37
V6	B	64	25	20	0	25	2.65	-1.8 + 0.8	M	21.8	1795.8	838	46.5	10263	1801	0.10	12064	1.44	1.36	1.37
X1	B	64	45	20	0	30	2.65	-1.8 + 0.8	F	31.5	798.2	3598	50.7	6867	7096	0.37	13963	1.30	1.27	1.28
X2	B	64	34	20	0	25	2.65	-1.8 + 0.8	F	26.9	1079.5	2032	46.3	7157	4390	0.28	11546	1.29	1.27	1.27
X3	B	64	34	20	0	30	2.65	-1.8 + 0.8	F	26.3	1779.0	2145	47.5	10434	4511	0.21	14946	1.30	1.27	1.27
X4	B	64	34	20	0	36	2.65	-1.8 + 0.8	F	20.4	1139.0	2267	47.7	11911	4747	0.19	16658	1.31	1.27	1.28

D = 165mm; 20° cone (cone A)

Test No.	D _i	D _o	D _u	α	BI	P	ρ _{ore}	d _{ore}	Med grade	C _{vf}	Q _o	Q _u	C _{mvu}	Q _{os}	Q _{us}	R _m	Q	ρ _{UF(med)}	ρ _{OF(med)}	ρ _{med}
		(mm)	(mm)	(deg.)	(mm)	(kPa)	(kg/l)	(mm)		(v/v%)	(l/hr ore)	(l/hr ore)	(v/v%)	(l/hr slurry)	(l/hr slurry)	(v/v)	(l/hr)	(kg/l)	(kg/l)	(kg/l)
X5	B	64	25	20	0	25	2.65	-1.8 + 0.8	F	16.8	1193.6	874	43.3	10263	2015	0.11	12279	1.33	1.28	1.29
X6	B	64	25	20	0	30	2.65	-1.8 + 0.8	F	15.1	1303.6	933	43.1	12630	2165	0.10	14795	1.34	1.29	1.29
X7	B	64	25	20	0	36	2.65	-1.8 + 0.8	F	10.9	777.1	980	42.9	13790	2284	0.09	16073	1.36	1.28	1.29
X8	B	64	25	20	0	29	2.65	-1.8 + 0.8	F	15.3	987.9	778	44.5	9792	1750	0.10	11542	1.70	1.65	1.66
X9	B	64	25	20	0	35	2.65	-1.8 + 0.8	F	26.2	3006.4	841	47.6	12929	1767	0.09	14696	1.77	1.53	1.55
X10	B	64	25	20	0	42	2.65	-1.8 + 0.8	F	27.5	3731.1	824	44.2	14681	1864	0.09	16545	1.60	1.52	1.52
X11	B	64	34	20	0	29	2.65	-1.8 + 0.8	F	20.3	731.3	1903	46.4	8877	4099	0.21	12977	1.53	1.52	1.52
X12	B	64	34	20	0	35	2.65	-1.8 + 0.8	F	19.0	963.3	2017	46.4	11301	4350	0.18	15651	1.55	1.51	1.52
X13	B	64	34	20	0	42	2.65	-1.8 + 0.8	F	19.4	1178.4	2038	45.8	12105	4448	0.18	16552	1.65	1.52	1.54
X14	B	64	45	20	0	35	2.65	-1.8 + 0.8	F	28.6	973.8	3269	46.5	7781	7036	0.36	14817	1.51	1.50	1.50
X15	B	64	45	20	0	39	2.65	-1.8 + 0.8	F	27.2	1424.7	3028	40.9	8962	7407	0.37	16368	1.45	1.71	1.61
X16	B	64	34	20	0	33	2.65	-1.8 + 0.8	F	24.9	1764.2	1556	44.9	9854	3469	0.19	13323	1.73	1.73	1.73
X17	B	64	34	20	0	39	2.65	-1.8 + 0.8	F	26.0	2298.6	1535	45.4	11367	3384	0.17	14751	1.74	1.77	1.76
X18	B	64	34	20	0	47	2.65	-1.8 + 0.8	F	27.8	3008.5	1644	44.9	13065	3661	0.17	16727	1.74	1.74	1.74
X19	B	64	25	20	0	33	2.65	-1.8 + 0.8	F	27.0	2785.8	709	43.4	11334	1634	0.10	12968	1.73	1.74	1.74
X20	B	64	25	20	0	39	2.65	-1.8 + 0.8	F	25.6	3087.9	709	46.1	13317	1538	0.07	14856	1.86	1.76	1.77
X21	B	64	25	20	0	47	2.65	-1.8 + 0.8	F	25.4	3466.7	722	43.3	14836	1669	0.08	16505	1.75	1.75	1.75
Y1	B	53	45	20	0	30	2.65	-1.8 + 0.8	F	30.4	1026.7	3345	46.9	7241	7129	0.38	14370	1.30	1.28	1.29
Y2	B	53	34	20	0	25	2.65	-1.8 + 0.8	F	29.4	1789.9	1915	46.9	8532	4081	0.24	12612	1.30	1.27	1.28
Y3	B	53	34	20	0	30	2.65	-1.8 + 0.8	F	25.2	1769.8	1950	44.8	10420	4352	0.22	14772	1.30	1.28	1.28
Y4	B	53	34	20	0	36	2.65	-1.8 + 0.8	F	21.5	1294.8	2125	45.2	11187	4703	0.21	15890	1.32	1.29	1.29
Y5	B	53	25	20	0	25	2.65	-1.8 + 0.8	F	16.5	1235.6	879	44.4	10816	1979	0.10	12795	1.33	1.29	1.30
Y6	B	53	25	20	0	30	2.65	-1.8 + 0.8	F	18.4	1743.8	913	43.7	12320	2086	0.10	14407	1.34	1.29	1.30
Y7	B	53	25	20	0	36	2.65	-1.8 + 0.8	F	23.1	2526.1	943	43.2	12823	2182	0.11	15005	1.35	1.29	1.30
Y8	B	40	25	20	0	25	2.65	-1.8 + 0.8	F	28.9	2267.8	929	42.8	8905	2169	0.16	11073	1.32	1.29	1.30
Y9	B	40	25	20	0	30	2.65	-1.8 + 0.8	F	24.5	2285.5	1008	42.9	11091	2347	0.13	13438	1.33	1.30	1.30

D = 165mm; 20° cone (cone A)

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{ore} (kg/l)	d _{ore} (mm)	Med grade	C _{vf} (v/v%)	Q _o (l/hr ore)	Q _u (l/hr ore)	C _{mvu} (v/v%)	Q _{os} (l/hr slurry)	Q _{us} (l/hr slurry)	R _m (v/v)	Q (l/hr)	ρ _{UF(med)} (kg/l)	ρ _{OF(med)} (kg/l)	ρ _{med} (kg/l)
Y10	B	40	25	20	0	36	2.65	-1.8 + 0.8	F	22.6	2267.0	1098	43.8	12382	2505	0.12	14887	1.33	1.29	1.29
Y11	B	40	34	20	0	25	2.65	-1.8 + 0.8	F	23.2	918.2	1967	45.0	8088	4375	0.25	12462	1.30	1.29	1.29
Y12	B	40	34	20	0	30	2.65	-1.8 + 0.8	F	22.5	1033.9	2145	45.6	9402	4703	0.23	14105	1.31	1.29	1.29
Y13	B	40	34	20	0	36	2.65	-1.8 + 0.8	F	24.0	1485.7	2255	45.3	10622	4972	0.23	15593	1.31	1.29	1.29
Y14	B	40	40	20	0	25	2.65	-1.8 + 0.8	F	29.9	984.5	2624	47.2	6521	5556	0.35	12077	1.30	1.28	1.29
Y15	B	40	40	20	0	30	2.65	-1.8 + 0.8	F	27.6	1136.6	2772	46.0	8130	6033	0.32	14162	1.30	1.29	1.29
Y16	B	40	40	20	0	36	2.65	-1.8 + 0.8	F	26.4	1201.6	2876	45.6	9153	6311	0.30	15464	1.30	1.30	1.30
Y17	A	64	34	20	0	25	2.65	-1.8 + 0.8	F	22.3	2523.9	1977	46.4	15896	4266	0.15	20161	1.31	1.31	1.31
Y18	A	64	34	20	0	30	2.65	-1.8 + 0.8	F	10.9	121.6	2136	45.6	16109	4683	0.14	20793	1.33	1.31	1.31
Y19	A	64	25	20	0	25	2.65	-1.8 + 0.8	F	10.4	1120.9	937	44.5	17717	2107	0.07	19824	1.34	1.34	1.34
Y20	A	64	25	20	0	30	2.65	-1.8 + 0.8	F	13.0	1652.0	1104	46.4	18749	2379	0.07	21128	1.36	1.34	1.34
Y21	A	40	25	20	0	25	2.65	-1.8 + 0.8	F	13.6	1428.4	1134	43.1	16269	2632	0.09	18901	1.32	1.31	1.31
Y22	A	40	25	20	0	30	2.65	-1.8 + 0.8	F	15.7	1881.5	1276	44.2	17234	2888	0.10	20122	1.34	1.32	1.32
Y23	A	40	34	20	0	25	2.65	-1.8 + 0.8	F	25.2	2517.6	2399	47.0	14422	5105	0.19	19527	1.31	1.31	1.31

7.2.3. Data for tests performed with 20° cone (cone B).

D = 165mm; 20° cone (cone B)

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{ore} (kg/l)	d _{ore} (mm)	Med grade	C _{vf} (v/v%)	Q _o (l/hr ore)	Q _u (l/hr ore)	C _{mvu} (v/v%)	Q _{os} (l/hr slurry)	Q _{us} (l/hr slurry)	R _m (v/v)	Q (l/hr)	ρ _{UF(med)} (kg/l)	ρ _{OF(med)} (kg/l)	ρ _{med} (kg/l)
S1	B	40	45	20	200	20	2.65	-1.8 + 0.8	F	31.28	391.92	4099.59	47.45	5720.51	8639.24	0.46	14359.75	1.28	1.27	1.28
S2	B	64	45	20	200	20	2.65	-1.8 + 0.8	F	32.32	126.29	3817.91	47.40	4148.89	8054.29	0.51	12203.18	1.29	1.29	1.29
S3	B	64	45	20	200	20	2.65	-1.8 + 0.8	F	34.19	253.23	3728.38	48.84	4010.80	7634.30	0.51	11645.10	1.39	1.38	1.39
S4	B	53	45	20	200	20	2.65	-1.8 + 0.8	F	31.01	183.47	3770.21	47.38	4791.36	7957.44	0.48	12748.80	1.37	1.38	1.38
S5	B	40	45	20	200	20	2.65	-1.8 + 0.8	F	35.74	212.02	4004.94	49.78	3752.83	8044.65	0.53	11797.48	1.38	1.38	1.38
S6	B	64	45	20	200	22	2.65	-1.8 + 0.8	F	35.49	432.59	3801.22	49.91	4313.84	7615.73	0.50	11929.57	1.47	1.49	1.48
S7	B	64	45	20	200	30	2.65	-1.8 + 0.8	F	29.05	360.68	3566.04	47.56	6019.54	7498.18	0.41	13517.72	1.65	1.67	1.66

7.2.4. Data for tests performed with the 350mm cyclone.

$D = 350\text{mm}$; $D_i = 70\text{mm}$; $D_o = 151\text{mm}$; $\alpha = 20^\circ$; $BI = \text{None}$.

Medium grade = F; Ore = Silica (2.65kg/l); $d_{\text{ore}} = -5+3\text{mm}$

Test No.	D_u (mm)	ρ_{med} (kg/l)	P (kPa)	Q_{UM} (kg/s ore)	STD Dev (kg/s)	Q_{UM} (l/hr ore)
09-4	100	1.5	70	12.43	0.04	16887
09-5	100	1.5	90	12.41	0.04	16860
09-6	100	1.3	65	12.63	0.00	17160
09-7	90	1.7	80	9.92	0.19	13477
09-8	90	1.7	100	10.00	0.39	13587
09-10	90	1.5	70	10.64	0.34	14452
09-11	90	1.5	90	11.85	0.16	16101
09-13	90	1.3	65	9.75	0.34	13244
09-16	75	1.7	80	8.04	0.01	10923
09-19	75	1.5	70	8.75	0.29	11884
09-22	75	1.3	65	8.21	0.08	11154
09-23	75	1.3	70	8.96	0.65	12173
09-25	60	1.7	80	4.82	0.11	6548
09-28	60	1.5	70	5.69	0.02	7731
09-29	60	1.5	90	7.08	0.30	9615
09-30	60	1.5	60	5.37	0.24	7298
09-31	60	1.3	60	4.86	0.09	6599
09-32	60	1.3	80	5.96	0.02	8097
09-33	60	1.3	70	5.69	0.77	7727

7.3. Appendix C. Raw Data and Experimental Conditions

7.3.1. Raw data for tests performed with 15° cone.

D = 165mm; 15° cone

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{ore} (kg/l)	d _{ore} (mm)	Med grade	Floats				Sinks			
										Flow-rate (kg/s)	ρ _{slurry} (kg/l)	C _{vo} (v/v%)	ρ _{medium} (kg/l)	Flow-rate (kg/s)	ρ _{slurry} (kg/l)	C _{vu} (v/v%)	ρ _{medium} (kg/l)
A1	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	2.67	1.20	0.00	1.20	1.14	1.79	1.64	1.77
A2	B	64	45	15	0	25	2.65	-1.8 + 0.8	F	2.93	1.18	0.00	1.18	1.20	1.91	3.21	1.88
A3	B	64	45	15	0	30	2.65	-1.8 + 0.8	F	3.45	1.17	0.00	1.18	1.30	2.02	3.36	2.15
A4	B	64	34	15	0	30	2.65	-1.8 + 0.8	F	3.61	1.18	0.00	1.17	1.11	2.19	5.71	2.00
A5	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	3.22	1.39	0.00	1.39	1.36	1.92	1.14	1.90
A6	B	64	45	15	0	25	2.65	-1.8 + 0.8	F	3.55	1.39	0.00	1.37	1.41	1.99	0.31	1.97
A7	B	64	45	15	0	30	2.65	-1.8 + 0.8	F	4.06	1.38	0.00	1.38	1.55	2.11	4.04	2.06
A8	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	3.61	1.58	0.00	1.59	1.43	1.94	0.12	1.95
A9	B	64	45	15	0	25	2.65	-1.8 + 0.8	F	4.25	1.59	0.00	1.59	1.50	2.04	0.01	2.04
A10	B	64	45	15	0	30	2.65	-1.8 + 0.8	F	4.57	1.60	0.00	1.61	1.58	2.10	1.91	2.10
A11	B	64	20	15	0	20	2.65	-1.8 + 0.8	F	3.63	1.13	0.00	1.17	0.81	1.98	13.42	1.73
A12	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	3.34	1.21	0.00	1.20	1.49	1.95	25.69	1.88
A13	B	40	20	15	0	20	2.65	-1.8 + 0.8	F	2.08	1.19	0.00	1.18	0.70	2.42	6.69	2.37
A14	B	40	34	15	0	20	2.65	-1.8 + 0.8	F	1.54	1.15	0.00	1.15	1.46	1.57	1.33	1.54
A15	B	40	45	15	0	20	2.65	-1.8 + 0.8	F	0.88	1.18	0.00	1.18	2.45	1.43	4.50	1.38
A16	B	53	20	15	0	20	2.65	-1.8 + 0.8	F	2.89	1.20	0.00	1.20	0.76	2.17	3.80	2.08
A17	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	2.32	1.16	0.00	1.15	1.16	1.81	9.60	1.73
A18	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.05	1.16	0.00	1.16	1.56	1.66	2.28	1.64

NB: A-inlet – 70x25 mm² and B-inlet – 70x10mm².

$D = 165\text{mm}; 15^\circ \text{ cone}$

Test No.	D_i	D_o (mm)	D_u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ_{pore} (kg/l)	d_{ore} (mm)	Med grade	Floats				Sinks			
										Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vo} (v/v%)	ρ_{medium} (kg/l)	Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vu} (v/v%)	ρ_{medium} (kg/l)
B1	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.35	1.15	0.00	1.15	1.63	1.61	3.99	1.56
B2	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.34	1.15	0.00	1.15	1.71	1.63	6.25	1.55
B3	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.32	1.16	0.01	1.15	1.76	1.66	8.67	1.56
B4	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.47	1.16	0.00	1.16	1.99	1.68	10.58	1.55
B5	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.37	1.16	0.01	1.16	1.94	1.69	11.82	1.55
B6	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.34	1.16	0.01	1.16	2.05	1.69	12.82	1.54
B7	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.35	1.15	0.02	1.15	2.17	1.73	16.42	1.54
B8	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.31	1.18	0.02	1.18	2.77	1.77	25.32	1.46
C1	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	2.72	1.19	0.00	1.19	1.62	1.79	17.33	1.61
C2	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	2.53	1.18	0.00	1.18	2.06	1.78	22.39	1.53
C3	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	2.55	1.19	0.00	1.19	2.17	1.75	20.41	1.52
C4	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	2.11	1.19	0.00	1.19	2.86	1.75	25.34	1.44
C5	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	1.78	1.20	0.00	1.20	3.33	1.76	29.38	1.39
C6	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	1.07	1.22	0.00	1.22	4.38	1.52	17.01	1.29
C7	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	3.33	1.19	0.00	1.19	1.04	1.99	13.65	1.88
C8	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	3.32	1.18	0.00	1.18	1.06	2.01	13.72	1.91
C9	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	3.28	1.19	0.00	1.19	1.22	2.02	21.86	1.84
C10	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	3.47	1.21	0.00	1.21	1.00	2.13	30.80	1.89
C11	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	3.49	1.21	0.00	1.21	0.91	2.14	26.23	1.96

$D = 165\text{mm}; 15^\circ$ cone

Test No.	D_i	D_o (mm)	D_u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ_{pore} (kg/l)	d_{ore} (mm)	Med grade	Floats				Sinks			
										Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vo} (v/v%)	ρ_{medium} (kg/l)	Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vu} (v/v%)	ρ_{medium} (kg/l)
D1	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.13	1.14	0.00	1.14	1.86	1.68	14.58	1.52
D2	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.08	1.14	0.00	1.14	2.00	1.72	17.15	1.52
D3	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.06	1.14	0.00	1.14	2.17	1.66	14.10	1.50
D4	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.05	1.15	0.00	1.15	2.54	1.70	22.60	1.42
D5	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	1.95	1.15	0.00	1.15	2.80	1.78	28.37	1.43
D6	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	1.12	1.19	0.00	1.19	3.84	1.53	17.71	1.29
D7	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	4.54	1.31	3.40	1.26	0.88	1.98	45.31	1.42
D8	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	2.53	1.16	0.00	1.16	1.56	1.75	15.81	1.58
D9	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	2.52	1.15	0.00	1.15	1.28	1.78	10.47	1.68
D10	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	2.60	1.14	0.00	1.14	1.22	1.79	6.77	1.73
D11	B	53	25	15	0	20	2.65	-1.8 + 0.8	F	2.82	1.17	0.00	1.17	0.99	2.02	21.87	1.84
E1	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.14	1.20	0.00	1.20	1.89	1.52	10.65	1.39
E2	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	0.88	1.26	0.08	1.26	4.85	1.64	27.49	1.26
E3	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.93	1.32	4.45	1.26	3.41	1.97	51.01	1.27
E4	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.68	1.35	6.44	1.26	3.59	1.96	50.40	1.26
E5	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	3.04	1.35	6.90	1.25	3.35	1.96	50.50	1.26
E6	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	3.04	1.34	4.99	1.27	3.37	1.98	51.26	1.27
E7	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.68	1.27	0.92	1.26	3.54	1.97	50.41	1.27
E8	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	1.17	1.25	0.08	1.25	4.78	1.72	32.81	1.27
E9	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	4.82	1.38	10.81	1.23	1.14	1.97	49.40	1.31
E10	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	3.97	1.53	19.30	1.26	2.22	1.92	47.43	1.26
E11	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	3.63	1.62	26.48	1.25	2.19	1.93	47.84	1.27

$D = 165\text{mm}; 15^\circ$ cone

Test No.	D_i	D_o (mm)	D_u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ_{pore} (kg/l)	d_{ore} (mm)	Med grade	Floats				Sinks			
										Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vo} (v/v%)	ρ_{medium} (kg/l)	Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vu} (v/v%)	ρ_{medium} (kg/l)
E12	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	4.64	1.43	12.19	1.26	1.70	1.94	48.85	1.26
E13	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	2.54	1.25	0.00	1.25	1.82	1.75	28.28	1.40
E14	B	53	25	15	0	20	2.65	-1.8 + 0.8	F	5.46	1.74	30.94	1.33	0.49	1.88	44.58	1.25
E15	B	53	25	15	0	20	2.65	-1.8 + 0.8	F	5.57	1.54	19.78	1.27	0.49	1.90	45.38	1.27
E16	B	53	25	15	0	20	2.65	-1.8 + 0.8	F	5.32	1.46	14.14	1.27	0.50	1.90	45.00	1.28
E17	B	53	25	15	0	20	2.65	-1.8 + 0.8	F	3.03	1.25	0.00	1.25	0.74	1.71	21.93	1.45
F1	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	2.53	1.22	0.01	1.22	2.16	1.74	29.81	1.36
F2	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	2.74	1.28	2.31	1.24	3.48	1.96	51.36	1.23
F3	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	2.80	1.41	12.37	1.23	3.54	1.96	50.51	1.25
F4	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	2.88	1.34	6.75	1.24	3.47	1.95	49.44	1.26
F5	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	1.24	1.22	0.03	1.22	4.46	1.64	27.94	1.25
F6	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	5.01	1.39	9.79	1.25	0.72	1.92	46.59	1.28
F7	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	5.50	1.43	13.21	1.25	0.49	1.89	44.73	1.27
F8	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	5.20	1.40	10.05	1.26	0.51	1.90	45.16	1.29
F9	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	3.48	1.22	0.00	1.22	0.63	1.78	19.55	1.57
G1	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	2.92	1.35	8.32	1.24	3.51	1.96	50.60	1.25
G2	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	3.74	1.59	24.67	1.24	2.24	1.95	49.79	1.25
G3	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	5.68	1.52	19.76	1.24	0.49	1.89	45.08	1.27
G4	B	64	20	15	0	20	2.65	-1.8 + 0.8	F	6.07	1.48	16.45	1.24	0.34	1.86	42.89	1.26
G5	B	53	45	15	0	20	2.65	-1.8 + 0.8	F	2.92	1.41	11.83	1.24	3.52	1.95	50.07	1.25
G6	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	4.54	1.46	15.32	1.24	1.86	1.93	48.49	1.26
G7	B	53	25	15	0	20	2.65	-1.8 + 0.8	F	5.72	1.48	17.52	1.23	0.52	1.89	45.53	1.26

$D = 165\text{mm}; 15^\circ$ cone

Test No.	D_i	D_o (mm)	D_u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ_{pore} (kg/l)	d_{ore} (mm)	Med grade	Floats				Sinks			
										Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vo} (v/v%)	ρ_{medium} (kg/l)	Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vu} (v/v%)	ρ_{medium} (kg/l)
G8	B	53	20	15	0	20	2.65	-1.8 + 0.8	F	5.67	1.61	26.55	1.24	0.34	1.85	42.98	1.25
G9	B	40	45	15	0	20	2.65	-1.8 + 0.8	F	2.75	1.38	9.51	1.25	3.69	1.94	49.46	1.25
G10	B	40	34	15	0	20	2.65	-1.8 + 0.8	F	3.93	1.67	30.02	1.25	2.14	1.91	47.20	1.26
G11	B	40	25	15	0	20	2.65	-1.8 + 0.8	F	5.33	1.74	34.53	1.26	0.65	1.88	44.74	1.25
G12	B	40	20	15	0	20	2.65	-1.8 + 0.8	F	5.55	1.77	34.84	1.29	0.45	1.86	42.82	1.27
H1	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	6.29	1.71	31.61	1.27	0.48	1.90	44.93	1.29
H2	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	6.00	1.62	24.06	1.29	0.49	2.02	50.98	1.36
H3	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	5.64	1.44	11.01	1.29	0.52	1.96	47.62	1.33
H4	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	5.46	1.38	6.75	1.29	0.50	1.95	47.01	1.34
H5	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	5.01	1.32	2.28	1.29	0.53	1.95	46.04	1.36
H6	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	5.33	1.52	17.94	1.27	1.35	1.96	49.25	1.29
H7	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	5.67	1.44	12.19	1.28	0.73	1.97	49.85	1.30
H8	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	5.55	1.44	11.42	1.28	0.74	1.95	49.12	1.28
H9	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	5.34	1.38	6.88	1.28	0.74	1.95	48.03	1.31
H10	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	5.14	1.39	7.37	1.29	0.76	1.98	49.00	1.34
H11	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	5.21	1.33	3.26	1.29	0.82	1.98	48.76	1.33
H12	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	3.32	1.47	14.89	1.27	3.19	1.97	50.28	1.28
H13	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	3.15	1.46	13.64	1.27	3.49	1.98	51.20	1.28
H14	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	2.99	1.33	4.19	1.27	3.46	1.97	50.24	1.28
H15	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	3.07	1.37	6.74	1.27	3.47	1.99	51.84	1.28
I1	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	6.02	1.45	11.74	1.29	0.75	1.95	47.08	1.32
I2	B	64	30	15	0	20	2.65	-1.8 + 0.8	F	6.15	1.47	12.97	1.29	0.60	1.94	46.20	1.33

$D = 165\text{mm}; 15^\circ \text{ cone}$

Test No.	D_i	D_o (mm)	D_u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ_{pore} (kg/l)	d_{ore} (mm)	Med grade	Floats				Sinks			
										Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vo} (v/v%)	ρ_{medium} (kg/l)	Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vu} (v/v%)	ρ_{medium} (kg/l)
I3	B	64	30	15	0	20	2.65	-1.8 + 0.8	F	6.07	1.47	13.22	1.29	0.62	1.93	45.94	1.33
I4	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	5.76	1.48	13.50	1.30	0.82	1.95	46.88	1.33
I5	B	53	34	15	0	20	2.65	-1.8 + 0.8	F	5.76	1.42	9.55	1.30	0.85	1.96	47.98	1.33
I6	B	40	34	15	0	20	2.65	-1.8 + 0.8	F	5.27	1.47	12.51	1.30	0.99	1.95	47.39	1.33
I7	B	40	34	15	0	20	2.65	-1.8 + 0.8	F	5.28	1.48	13.44	1.29	1.01	1.94	46.97	1.32
I8	B	40	25	15	0	20	2.65	-1.8 + 0.8	F	5.41	1.50	14.47	1.30	0.65	1.92	44.55	1.33
J1	B	40	34	15	0	20	2.65	-1.8 + 0.8	F	4.25	1.36	6.42	1.27	1.09	1.94	47.06	1.31
J2	B	40	34	15	0	20	2.65	-1.8 + 0.8	F	4.71	1.54	19.85	1.26	1.55	1.92	47.00	1.27
J3	B	40	34	15	0	20	2.65	-1.8 + 0.8	F	4.32	1.52	18.52	1.26	1.93	1.91	46.31	1.27
J4	B	40	34	15	0	20	2.65	-1.8 + 0.8	F	4.96	1.51	17.90	1.26	0.98	1.92	46.15	1.29
J5	B	40	45	15	0	20	2.65	-1.8 + 0.8	F	2.90	1.34	5.30	1.27	3.67	1.96	49.89	1.28
J6	B	40	30	15	0	20	2.65	-1.8 + 0.8	F	5.18	1.51	17.70	1.26	0.79	1.90	45.53	1.28
J7	B	40	30	15	0	20	2.65	-1.8 + 0.8	F	5.20	1.51	17.59	1.27	0.81	1.91	45.54	1.29
J8	B	64	30	15	0	20	2.65	-1.8 + 0.8	F	4.75	1.28	0.29	1.28	1.49	1.97	48.09	1.34
J9	B	64	30	15	0	20	2.65	-1.8 + 0.8	F	5.41	1.38	7.49	1.28	0.63	1.94	46.30	1.32
J10	B	64	30	15	0	20	2.65	-1.8 + 0.8	F	5.97	1.47	14.27	1.28	0.61	1.93	46.44	1.30
J11	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	6.02	1.46	12.76	1.28	0.49	1.92	45.25	1.31
J12	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	5.71	1.40	9.02	1.28	0.75	1.95	48.02	1.30
J13	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	5.76	1.47	13.81	1.28	0.76	1.91	45.83	1.29
K1	B	64	45	15	0	20	2.65	-1.8 + 0.8	M	2.86	1.41	11.53	1.25	3.63	2.00	51.20	1.31
K2	B	64	34	15	0	20	2.65	-1.8 + 0.8	M	5.69	1.68	29.85	1.27	0.74	1.99	48.65	1.36
K3	B	64	25	15	0	20	2.65	-1.8 + 0.8	M	5.75	1.76	35.40	1.27	0.47	1.94	44.86	1.36

$D = 165\text{mm}; 15^\circ$ cone

Test No.	D_i	D_o (mm)	D_u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ_{pore} (kg/l)	d_{ore} (mm)	Med grade	Floats				Sinks			
										Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vo} (v/v%)	ρ_{medium} (kg/l)	Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vu} (v/v%)	ρ_{medium} (kg/l)
K4	B	40	25	15	0	20	2.65	-1.8 + 0.8	M	5.12	1.62	25.05	1.27	0.65	1.93	45.06	1.34
K5	B	40	34	15	0	20	2.65	-1.8 + 0.8	M	4.84	1.60	23.51	1.27	0.96	1.96	46.91	1.35
K6	B	40	45	15	0	20	2.65	-1.8 + 0.8	M	2.67	1.31	3.47	1.26	3.83	1.98	50.48	1.30
K7	B	64	45	15	0	20	2.65	-1.8 + 0.8	M	2.99	1.53	14.00	1.35	3.65	2.02	50.20	1.39
K8	B	64	34	15	0	20	2.65	-1.8 + 0.8	M	5.77	1.75	30.33	1.35	0.72	2.01	47.30	1.44
K9	B	64	34	15	0	20	2.65	-1.8 + 0.8	M	6.52	1.68	25.25	1.35	0.73	2.02	47.42	1.45
K10	B	64	34	15	0	20	2.65	-1.8 + 0.8	M	6.66	1.55	14.86	1.36	0.80	2.06	47.52	1.53
K11	B	64	25	15	0	20	2.65	-1.8 + 0.8	M	5.82	1.58	16.24	1.37	0.50	2.04	46.38	1.51
K12	B	64	25	15	0	20	2.65	-1.8 + 0.8	M	6.49	1.55	13.63	1.37	0.53	2.04	46.13	1.52
K13	B	64	25	15	0	20	2.65	-1.8 + 0.8	M	6.54	1.42	3.88	1.37	0.56	2.07	46.31	1.56
K14	B	64	45	15	0	20	2.65	-1.8 + 0.8	M	3.96	2.05	35.27	1.72	3.44	2.02	43.59	1.53
K15	B	64	34	15	0	20	2.65	-1.8 + 0.8	M	6.53	1.49	8.42	1.39	0.65	2.18	52.73	1.65
K16	B	64	34	15	0	20	2.65	-1.8 + 0.8	M	7.65	1.82	27.87	1.49	0.77	2.10	46.94	1.61
K17	B	64	34	15	0	20	2.65	-1.8 + 0.8	M	6.88	1.59	7.53	1.51	0.80	2.11	46.81	1.64
K18	B	64	25	15	0	20	2.65	-1.8 + 0.8	M	6.65	1.78	24.02	1.50	0.43	2.08	45.76	1.61
L1	B	64	25	15	0	25	2.65	-1.8 + 0.8	F	5.79	1.40	8.58	1.29	0.54	1.94	44.94	1.36
L2	B	64	25	15	0	29	2.65	-1.8 + 0.8	F	6.20	1.44	11.00	1.29	0.57	1.94	45.14	1.36
L3	B	64	34	15	0	25	2.65	-1.8 + 0.8	F	5.57	1.39	7.49	1.28	0.81	1.96	47.44	1.34
L4	B	64	34	15	0	29	2.65	-1.8 + 0.8	F	6.07	1.37	6.50	1.29	0.84	1.97	47.88	1.34
L5	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	3.15	1.36	6.36	1.27	3.35	2.01	53.45	1.27
L6	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	3.08	1.31	2.94	1.27	3.46	1.97	50.48	1.28
L7	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	1.57	1.26	0.03	1.26	4.66	1.71	30.99	1.29

$D = 165\text{mm}; 15^\circ$ cone

Test No.	D_i	D_o (mm)	D_u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ_{pore} (kg/l)	d_{ore} (mm)	Med grade	Floats				Sinks			
										Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vo} (v/v%)	ρ_{medium} (kg/l)	Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vu} (v/v%)	ρ_{medium} (kg/l)
L8	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	2.69	1.25	0.01	1.25	2.40	1.63	22.16	1.34
L9	B	64	40	15	0	20	2.65	-1.8 + 0.8	F	4.11	1.42	10.43	1.28	2.36	1.95	48.99	1.28
L10	B	64	45	15	0	20	2.65	-1.8 + 0.8	F	3.45	1.50	9.82	1.38	3.49	2.02	50.21	1.38
L11	B	64	34	15	0	20	2.65	-1.8 + 0.8	F	6.17	1.80	33.36	1.37	0.68	2.01	48.51	1.40
L12	B	64	34	15	0	25	2.65	-1.8 + 0.8	F	6.69	1.74	28.43	1.38	0.73	2.01	48.88	1.40
L13	B	64	34	15	0	29	2.65	-1.8 + 0.8	F	6.34	1.50	8.49	1.39	0.82	2.03	48.61	1.44
L14	B	64	25	15	0	20	2.65	-1.8 + 0.8	F	5.97	1.67	22.20	1.38	0.46	2.00	47.54	1.41
L15	B	64	25	15	0	25	2.65	-1.8 + 0.8	F	6.73	1.66	21.19	1.39	0.48	1.99	46.44	1.41
L16	B	64	25	15	0	29	2.65	-1.8 + 0.8	F	6.43	1.50	8.68	1.39	0.53	2.00	46.78	1.43
M1	B	64	45	15	0	20	2.65	-3 + 1	F	3.19	1.33	3.55	1.28	3.27	1.99	51.31	1.30
M2	B	64	45	15	0	20	2.65	-3 + 1	F	3.16	1.39	7.74	1.28	3.25	1.99	51.19	1.30
M3	B	64	34	15	0	20	2.65	-3 + 1	F	5.51	1.62	24.38	1.29	0.76	2.00	51.02	1.33
M4	B	64	34	15	0	25	2.65	-3 + 1	F	5.76	1.48	13.82	1.30	0.78	2.02	50.20	1.38
M5	B	64	25	15	0	20	2.65	-3 + 1	F	5.57	1.57	19.95	1.30	0.47	1.98	47.69	1.36
M6	B	64	25	15	0	20	2.65	-3 + 1	F	5.50	1.65	22.12	1.37	0.46	2.01	47.93	1.43
M7	B	64	34	15	0	29	2.65	-3 + 1	F	6.36	1.49	9.36	1.37	0.78	2.07	50.77	1.47
M8	B	64	34	15	0	25	2.65	-3 + 1	F	6.19	1.66	23.21	1.37	0.77	2.04	50.09	1.42
M9	B	64	34	15	0	20	2.65	-3 + 1	F	5.48	1.61	18.92	1.37	0.72	2.04	50.13	1.42
M10	B	64	45	15	0	20	2.65	-3 + 1	F	3.29	1.53	13.17	1.36	3.35	2.02	50.09	1.38
M11	B	64	45	15	0	20	2.65	-3 + 1	F	3.60	1.59	8.33	1.49	3.27	2.14	55.67	1.51
M12	B	64	34	15	0	30	2.65	-3 + 1	F	6.96	1.76	22.41	1.50	0.76	2.11	51.28	1.54
M13	B	64	34	15	0	27	2.65	-3 + 1	F	6.81	1.79	25.29	1.49	0.73	2.10	50.70	1.54

$D = 165\text{mm}; 15^\circ$ cone

Test No.	D_i	D_o (mm)	D_u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ_{pore} (kg/l)	d_{ore} (mm)	Med grade	Floats				Sinks			
										Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vo} (v/v%)	ρ_{medium} (kg/l)	Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vu} (v/v%)	ρ_{medium} (kg/l)
M14	B	64	34	15	0	22	2.65	-3 + 1	F	6.26	1.74	20.54	1.51	0.70	2.11	51.17	1.54
M15	B	64	25	15	0	22	2.65	-3 + 1	F	6.46	1.83	27.97	1.51	0.43	2.09	50.12	1.54
M16	B	64	20	15	0	22	2.65	-3 + 1	F	6.62	1.80	25.57	1.51	0.26	2.06	47.02	1.55
M17	B	64	30	15	0	22	2.65	-3 + 1	F	6.39	1.76	22.13	1.51	0.55	2.11	50.75	1.55
M18	B	64	40	15	0	22	2.65	-3 + 1	F	4.87	1.62	9.72	1.51	1.81	2.14	54.07	1.53
N1	B	64	45	15	0	20	2.65	-3 + 1	M	2.75	1.41	10.23	1.27	3.39	2.04	53.12	1.35
N2	B	64	34	15	0	20	2.65	-3 + 1	M	5.21	1.66	27.81	1.28	0.77	2.05	52.43	1.39
N3	B	64	25	15	0	20	2.65	-3 + 1	M	5.50	1.66	27.68	1.29	0.49	2.00	48.27	1.40
N4	B	64	25	15	0	20	2.65	-3 + 1	M	5.50	1.70	25.78	1.37	0.48	2.06	48.37	1.50
N5	B	64	34	15	0	20	2.65	-3 + 1	M	5.29	1.70	26.02	1.37	0.75	2.09	51.30	1.50
N6	B	64	45	15	0	20	2.65	-3 + 1	M	2.97	1.41	3.64	1.36	3.60	2.05	51.55	1.42
N7	B	64	45	15	0	22	2.65	-3 + 1	M	3.14	1.84	24.50	1.57	3.59	2.26	56.91	1.75
N8	B	64	34	15	0	22	2.65	-3 + 1	M	6.19	1.59	13.98	1.41	0.71	2.00	46.37	1.43
N9	B	64	25	15	0	22	2.65	-3 + 1	M	6.39	1.76	23.87	1.48	0.44	2.10	48.35	1.59
O1	B	64	45	15	0	22	2.65	-1.8 + 0.8	F	3.69	1.68	19.47	1.45	3.57	2.06	49.19	1.50
O2	B	64	34	15	0	22	2.65	-1.8 + 0.8	F	6.20	1.72	22.15	1.46	0.65	2.08	47.69	1.55
O3	B	64	25	15	0	22	2.65	-1.8 + 0.8	F	6.44	1.81	29.49	1.46	0.44	2.07	46.44	1.56
O4	B	64	25	15	0	25	2.65	-1.8 + 0.8	F	6.67	1.81	14.21	1.67	0.39	2.17	47.06	1.74
O5	B	64	34	15	0	25	2.65	-1.8 + 0.8	F	6.50	1.79	12.89	1.66	0.59	2.17	48.00	1.73
O6	B	64	45	15	0	25	2.65	-1.8 + 0.8	F	4.06	1.76	10.28	1.65	3.73	2.14	47.25	1.68
P1	B	64	34	15	0	22	2.65	-1.8 + 0.8	C	6.52	1.93	29.62	1.62	0.47	2.25	46.83	1.89
P2	B	64	34	15	0	27	2.65	-1.8 + 0.8	C	7.45	1.99	36.15	1.62	0.48	2.27	46.96	1.93

$D = 165\text{mm}; 15^\circ$ cone

Test No.	D_i	D_o (mm)	D_u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ_{pore} (kg/l)	d_{ore} (mm)	Med grade	Floats				Sinks			
										Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vo} (v/v%)	ρ_{medium} (kg/l)	Flow-rate (kg/s)	ρ_{slurry} (kg/l)	C_{vu} (v/v%)	ρ_{medium} (kg/l)
P3	B	64	34	15	0	31	2.65	-1.8 + 0.8	C	8.06	2.02	39.61	1.61	0.53	2.26	47.33	1.91
P4	B	64	25	15	0	22	2.65	-1.8 + 0.8	C	6.73	1.96	32.64	1.62	0.31	2.25	45.76	1.91
P5	B	64	45	15	0	22	2.65	-3 + 1	C	3.40	1.69	9.95	1.58	3.82	2.19	50.24	1.73
P6	B	64	34	15	0	22	2.65	-3 + 1	C	6.35	1.89	26.33	1.62	0.63	2.24	49.64	1.83
P7	B	64	34	15	0	27	2.65	-3 + 1	C	7.20	1.90	27.84	1.61	0.64	2.25	49.50	1.86
P8	B	64	34	15	0	31	2.65	-3 + 1	C	8.12	1.96	34.26	1.60	0.63	2.26	49.48	1.88
P9	B	64	25	15	0	22	2.65	-3 + 1	C	6.51	1.85	22.84	1.62	0.40	2.23	48.04	1.85
Q1	A	64	25	15	0	25	2.65	-1.8 + 0.8	F	9.00	1.55	13.60	1.37	0.64	2.02	45.99	1.49
Q2	A	64	34	15	0	25	2.65	-1.8 + 0.8	F	8.70	1.52	11.68	1.37	0.96	2.03	47.26	1.48
Q3	A	64	45	15	0	25	2.65	-1.8 + 0.8	F	5.15	1.37	0.24	1.36	4.58	2.00	47.61	1.41
Q4	A	64	45	15	0	25	2.65	-1.8 + 0.8	F	5.70	1.49	1.42	1.47	4.71	2.04	46.79	1.50
Q5	A	64	34	15	0	25	2.65	-1.8 + 0.8	F	9.11	1.70	18.46	1.48	0.92	2.06	46.42	1.55
Q6	A	64	25	15	0	25	2.65	-1.8 + 0.8	F	9.65	1.67	16.33	1.48	0.62	2.06	45.15	1.57
Q7	A	64	25	15	0	25	2.65	-1.8 + 0.8	F	9.10	1.74	5.23	1.69	0.66	2.15	45.18	1.75
Q8	A	64	34	15	0	25	2.65	-1.8 + 0.8	F	9.31	1.77	8.47	1.69	1.02	2.15	46.37	1.73
Q9	A	64	45	15	0	25	2.65	-1.8 + 0.8	F	6.62	1.73	3.80	1.69	4.98	2.14	46.14	1.71
Q10	A	53	45	15	0	25	2.65	-1.8 + 0.8	F	5.66	1.73	3.91	1.69	5.69	2.13	46.11	1.69
Q11	A	53	34	15	0	25	2.65	-1.8 + 0.8	F	10.55	1.88	19.58	1.69	1.03	2.15	45.65	1.73
Q12	A	53	25	15	0	25	2.65	-1.8 + 0.8	F	10.64	1.86	16.98	1.70	0.68	2.14	44.35	1.73
Q13	A	40	25	15	0	25	2.65	-1.8 + 0.8	F	9.35	1.84	14.67	1.70	0.83	2.13	44.13	1.73
Q14	A	40	34	15	0	25	2.65	-1.8 + 0.8	F	8.70	1.85	15.59	1.70	1.30	2.16	46.54	1.73
Q15	A	40	45	15	0	25	2.65	-1.8 + 0.8	F	5.67	1.77	7.21	1.71	5.84	2.14	46.09	1.71

D = 165mm; 15° cone

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{pore} (kg/l)	d _{ore} (mm)	Med grade	Floats				Sinks			
										Flow-rate (kg/s)	ρ _{slurry} (kg/l)	C _{vo} (v/v%)	ρ _{medium} (kg/l)	Flow-rate (kg/s)	ρ _{slurry} (kg/l)	C _{vu} (v/v%)	ρ _{medium} (kg/l)
Q16	A	40	34	15	0	25	2.65	-5 + 3	F	9.39	1.83	11.41	1.72	1.44	2.16	46.88	1.73
Q17	A	40	25	15	0	25	2.65	-5 + 3	F	8.50	1.89	18.45	1.71	0.86	2.13	43.38	1.73
Q18	A	64	25	15	0	25	2.65	-5 + 3	F	9.50	1.79	6.79	1.72	0.70	2.15	44.44	1.75
Q19	A	64	34	15	0	25	2.65	-5 + 3	F	9.76	1.81	9.58	1.72	1.18	2.17	46.99	1.74
R1	B	40	45	15	0	20	2.65	-1.8 + 0.8	C	2.07	1.49	17.10	1.25	3.92	1.96	47.02	1.34
R2	B	40	34	15	0	20	2.65	-1.8 + 0.8	C	4.63	1.71	31.52	1.28	1.00	1.97	45.19	1.41
R3	B	40	25	15	0	20	2.65	-1.8 + 0.8	C	4.95	1.71	30.93	1.28	0.68	1.96	43.60	1.43
R4	B	64	25	15	0	20	2.65	-1.8 + 0.8	C	5.49	1.55	19.29	1.29	0.52	2.00	44.04	1.48
R5	B	64	34	15	0	20	2.65	-1.8 + 0.8	C	5.22	1.53	18.33	1.28	0.80	2.03	47.18	1.48
R6	B	64	45	15	0	20	2.65	-1.8 + 0.8	C	2.46	1.38	8.45	1.26	3.91	1.99	49.21	1.35
R7	B	64	45	15	0	20	2.65	-1.8 + 0.8	C	2.64	1.54	15.37	1.34	3.98	2.03	48.86	1.45
R8	B	64	34	15	0	20	2.65	-1.8 + 0.8	C	5.45	1.64	21.76	1.36	0.80	2.06	47.05	1.54
R9	B	64	25	15	0	20	2.65	-1.8 + 0.8	C	5.79	1.62	19.83	1.36	0.53	2.04	44.59	1.55
R10	B	64	25	15	0	25	2.65	-1.8 + 0.8	C	6.37	1.80	10.60	1.70	0.45	2.26	45.34	1.94
R11	B	64	34	15	0	25	2.65	-1.8 + 0.8	C	6.42	1.83	14.69	1.69	0.68	2.24	45.78	1.90
R12	B	64	45	15	0	25	2.65	-1.8 + 0.8	C	4.02	1.81	16.19	1.65	4.01	2.18	46.48	1.78

7.3.2. Raw data for tests performed with cone A.

D = 165mm; 20° cone (Cone A)

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{ore} (kg/l)	d _{ore} (mm)	Med grade	Floats				Sinks			
										Flow-rate (kg/s)	ρ _{slurry} (kg/l)	C _{vo} (v/v%)	ρ _{medium} (kg/l)	Flow-rate (kg/s)	ρ _{slurry} (kg/l)	C _{vu} (v/v%)	ρ _{medium} (kg/l)
S8	B	40	45	20	200	22	2.65	-1.8 + 0.8	M	1.77	1.32	2.57	1.28	3.65	1.99	52.06	1.27
S9	B	53	45	20	200	20	2.65	-1.8 + 0.8	M	1.66	1.34	4.31	1.28	3.69	1.94	48.29	1.27
S10	B	64	45	20	200	20	2.65	-1.8 + 0.8	M	1.80	1.38	7.49	1.28	3.81	1.96	50.09	1.27
T1	B	64	45	20	0	20	2.65	-1.8 + 0.8	M	2.42	1.32	4.95	1.25	3.28	1.98	50.66	1.30
T2	B	64	34	20	0	20	2.65	-1.8 + 0.8	M	3.42	1.49	16.74	1.25	1.88	1.93	46.82	1.30
T3	B	64	25	20	0	20	2.65	-1.8 + 0.8	M	4.30	1.57	20.51	1.29	0.90	1.94	46.51	1.33
T4	B	64	25	20	200	20	2.65	-1.8 + 0.8	M	4.35	1.49	15.29	1.28	0.94	1.91	45.42	1.30
T5	B	64	34	20	200	20	2.65	-1.8 + 0.8	M	3.46	1.36	8.46	1.24	1.96	2.08	56.99	1.32
T6	B	64	45	20	200	20	2.65	-1.8 + 0.8	M	1.95	1.56	18.77	1.31	3.77	1.89	45.89	1.24
U1	B	64	34	20	200	20	2.65	-1.8 + 0.8	M	3.03	1.41	10.20	1.27	1.94	1.96	48.99	1.29
U2	B	64	25	20	200	20	2.65	-1.8 + 0.8	M	3.96	1.46	13.82	1.27	0.98	1.93	47.04	1.29
U3	B	64	25	20	200	25	2.65	-1.8 + 0.8	M	4.69	1.50	11.16	1.36	1.02	1.98	46.35	1.41
U4	B	64	25	20	200	30	2.65	-1.8 + 0.8	M	5.47	1.51	11.82	1.36	1.03	1.99	45.87	1.43
U5	B	64	34	20	200	25	2.65	-1.8 + 0.8	M	3.67	1.43	5.15	1.36	1.98	2.00	48.67	1.39
U6	B	64	34	20	200	30	2.65	-1.8 + 0.8	M	4.37	1.46	7.43	1.36	2.06	2.02	48.95	1.41
U7	B	64	45	20	200	20	2.65	-1.8 + 0.8	M	1.48	1.36	0.65	1.35	3.56	2.06	54.18	1.37
V1	B	64	25	20	0	25	2.65	-1.8 + 0.8	M	4.05	1.43	11.00	1.28	0.99	1.98	46.52	1.39
V2	B	64	34	20	0	25	2.65	-1.8 + 0.8	M	3.13	1.39	8.17	1.27	1.99	1.98	48.04	1.36
V3	B	64	45	20	0	25	2.65	-1.8 + 0.8	M	2.08	1.46	14.50	1.26	3.61	1.98	49.79	1.32
V4	B	64	45	20	0	25	2.65	-1.8 + 0.8	M	2.03	1.50	11.71	1.34	3.73	2.00	48.83	1.39
V5	B	64	34	20	0	25	2.65	-1.8 + 0.8	M	3.56	1.59	18.29	1.36	2.01	2.04	49.86	1.43
V6	B	64	25	20	0	25	2.65	-1.8 + 0.8	M	4.51	1.58	17.50	1.36	1.00	2.00	46.50	1.44

D = 165mm; 20° cone (Cone A)

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{pore} (kg/l)	d _{ore} (mm)	Med grade	Floats				Sinks			
										Flow-rate (kg/s)	ρ _{slurry} (kg/l)	C _{vo} (v/v%)	ρ _{medium} (kg/l)	Flow-rate (kg/s)	ρ _{slurry} (kg/l)	C _{vu} (v/v%)	ρ _{medium} (kg/l)
X1	B	64	45	20	0	30	2.65	-1.8 + 0.8	F	2.73	1.43	11.62	1.27	3.91	1.98	50.70	1.30
X2	B	64	34	20	0	25	2.65	-1.8 + 0.8	F	2.93	1.48	15.08	1.27	2.34	1.92	46.28	1.29
X3	B	64	34	20	0	30	2.65	-1.8 + 0.8	F	4.36	1.50	17.05	1.27	2.43	1.94	47.54	1.30
X4	B	64	34	20	0	36	2.65	-1.8 + 0.8	F	4.64	1.40	9.56	1.27	2.57	1.95	47.75	1.31
X5	B	64	25	20	0	25	2.65	-1.8 + 0.8	F	4.11	1.44	11.63	1.28	1.06	1.90	43.35	1.33
X6	B	64	25	20	0	30	2.65	-1.8 + 0.8	F	5.00	1.43	10.32	1.29	1.15	1.91	43.09	1.34
X7	B	64	25	20	0	36	2.65	-1.8 + 0.8	F	5.21	1.36	5.64	1.28	1.21	1.91	42.93	1.36
X8	B	64	25	20	0	29	2.65	-1.8 + 0.8	F	4.77	1.75	10.09	1.65	1.03	2.12	44.48	1.70
X9	B	64	25	20	0	35	2.65	-1.8 + 0.8	F	6.42	1.79	23.25	1.53	1.07	2.19	47.61	1.77
X10	B	64	25	20	0	42	2.65	-1.8 + 0.8	F	7.36	1.80	25.41	1.52	1.07	2.06	44.22	1.60
X11	B	64	34	20	0	29	2.65	-1.8 + 0.8	F	3.97	1.61	8.24	1.52	2.34	2.05	46.41	1.53
X12	B	64	34	20	0	35	2.65	-1.8 + 0.8	F	5.06	1.61	8.52	1.51	2.49	2.06	46.37	1.55
X13	B	64	34	20	0	42	2.65	-1.8 + 0.8	F	5.48	1.63	9.74	1.52	2.61	2.11	45.82	1.65
X14	B	64	45	20	0	35	2.65	-1.8 + 0.8	F	3.55	1.64	12.52	1.50	3.99	2.04	46.46	1.51
X15	B	64	45	20	0	39	2.65	-1.8 + 0.8	F	4.62	1.86	15.90	1.71	4.00	1.94	40.88	1.45
X16	B	64	34	20	0	33	2.65	-1.8 + 0.8	F	5.19	1.89	17.90	1.73	2.06	2.14	44.86	1.73
X17	B	64	34	20	0	39	2.65	-1.8 + 0.8	F	6.14	1.94	20.22	1.77	2.02	2.15	45.37	1.74
X18	B	64	34	20	0	47	2.65	-1.8 + 0.8	F	7.06	1.95	23.03	1.74	2.18	2.15	44.90	1.74
X19	B	64	25	20	0	33	2.65	-1.8 + 0.8	F	6.18	1.96	24.58	1.74	0.97	2.13	43.41	1.73
X20	B	64	25	20	0	39	2.65	-1.8 + 0.8	F	7.28	1.97	23.19	1.76	0.95	2.23	46.12	1.86
X21	B	64	25	20	0	47	2.65	-1.8 + 0.8	F	8.07	1.96	23.37	1.75	0.99	2.14	43.29	1.75

D = 165mm; 20° cone (Cone A)

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{pore} (kg/l)	d _{ore} (mm)	Med grade	Floats				Sinks			
										Flow-rate (kg/s)	ρ _{slurry} (kg/l)	C _{vo} (v/v%)	ρ _{medium} (kg/l)	Flow-rate (kg/s)	ρ _{slurry} (kg/l)	C _{vu} (v/v%)	ρ _{medium} (kg/l)
Y1	B	53	45	20	0	30	2.65	-1.8 + 0.8	F	2.96	1.47	14.18	1.28	3.83	1.93	46.92	1.30
Y2	B	53	34	20	0	25	2.65	-1.8 + 0.8	F	3.70	1.56	20.98	1.27	2.19	1.93	46.93	1.30
Y3	B	53	34	20	0	30	2.65	-1.8 + 0.8	F	4.37	1.51	16.99	1.28	2.30	1.91	44.81	1.30
Y4	B	53	34	20	0	36	2.65	-1.8 + 0.8	F	4.49	1.44	11.57	1.29	2.51	1.92	45.18	1.32
Y5	B	53	25	20	0	25	2.65	-1.8 + 0.8	F	4.35	1.45	11.42	1.29	1.05	1.92	44.40	1.33
Y6	B	53	25	20	0	30	2.65	-1.8 + 0.8	F	5.08	1.48	14.15	1.29	1.11	1.91	43.74	1.34
Y7	B	53	25	20	0	36	2.65	-1.8 + 0.8	F	5.55	1.56	19.70	1.29	1.16	1.91	43.22	1.35
Y8	B	40	25	20	0	25	2.65	-1.8 + 0.8	F	4.06	1.64	25.47	1.29	1.14	1.89	42.85	1.32
Y9	B	40	25	20	0	30	2.65	-1.8 + 0.8	F	4.86	1.58	20.61	1.30	1.24	1.90	42.93	1.33
Y10	B	40	25	20	0	36	2.65	-1.8 + 0.8	F	5.28	1.54	18.31	1.29	1.33	1.91	43.81	1.33
Y11	B	40	34	20	0	25	2.65	-1.8 + 0.8	F	3.24	1.44	11.35	1.29	2.32	1.91	44.97	1.30
Y12	B	40	34	20	0	30	2.65	-1.8 + 0.8	F	3.76	1.44	11.00	1.29	2.51	1.92	45.60	1.31
Y13	B	40	34	20	0	36	2.65	-1.8 + 0.8	F	4.36	1.48	13.99	1.29	2.65	1.92	45.35	1.31
Y14	B	40	40	20	0	25	2.65	-1.8 + 0.8	F	2.70	1.49	15.10	1.28	2.99	1.94	47.23	1.30
Y15	B	40	40	20	0	30	2.65	-1.8 + 0.8	F	3.34	1.48	13.98	1.29	3.21	1.92	45.96	1.30
Y16	B	40	40	20	0	36	2.65	-1.8 + 0.8	F	3.75	1.47	13.13	1.30	3.36	1.92	45.58	1.30
Y17	A	64	34	20	0	25	2.65	-1.8 + 0.8	F	6.72	1.52	15.88	1.31	2.29	1.93	46.36	1.31
Y18	A	64	34	20	0	30	2.65	-1.8 + 0.8	F	5.89	1.32	0.75	1.31	2.52	1.93	45.62	1.33
Y19	A	64	25	20	0	25	2.65	-1.8 + 0.8	F	6.99	1.42	6.33	1.34	1.12	1.92	44.46	1.34
Y20	A	64	25	20	0	30	2.65	-1.8 + 0.8	F	7.60	1.46	8.81	1.34	1.30	1.96	46.41	1.36
Y21	A	40	25	20	0	25	2.65	-1.8 + 0.8	F	6.46	1.43	8.78	1.31	1.39	1.89	43.09	1.32
Y22	A	40	25	20	0	30	2.65	-1.8 + 0.8	F	7.00	1.46	10.92	1.32	1.54	1.92	44.17	1.34
Y23	A	40	34	20	0	25	2.65	-1.8 + 0.8	F	6.17	1.54	17.46	1.31	2.75	1.94	47.00	1.31

7.3.3. Raw data for cyclone operating with cone B.

D = 165mm; 20° cone (Cone B)

Test No.	D _i	D _o (mm)	D _u (mm)	α (deg.)	BI (mm)	P (kPa)	ρ _{ore} (kg/l)	d _{ore} (mm)	Med grade	Floats				Sinks			
										Flow-rate (kg/s)	ρ _{slurry} (kg/l)	C _{vo} (v/v%)	ρ _{medium} (kg/l)	Flow-rate (kg/s)	ρ _{slurry} (kg/l)	C _{vu} (v/v%)	ρ _{medium} (kg/l)
S1	B	40	45	20	200	20	2.65	-1.8 + 0.8	F	2.17	1.37	6.85	1.27	4.64	1.93	47.45	1.28
S2	B	64	45	20	200	20	2.65	-1.8 + 0.8	F	1.54	1.33	3.04	1.29	4.33	1.93	47.40	1.29
S3	B	64	45	20	200	20	2.65	-1.8 + 0.8	F	1.62	1.46	6.31	1.38	4.26	2.01	48.84	1.39
S4	B	53	45	20	200	20	2.65	-1.8 + 0.8	F	1.90	1.43	3.83	1.38	4.37	1.98	47.38	1.37
S5	B	40	45	20	200	20	2.65	-1.8 + 0.8	F	1.52	1.45	5.65	1.38	4.49	2.01	49.78	1.38
S6	B	64	45	20	200	22	2.65	-1.8 + 0.8	F	1.92	1.60	10.03	1.49	4.36	2.06	49.91	1.47
S7	B	64	45	20	200	30	2.65	-1.8 + 0.8	F	2.89	1.73	5.99	1.67	4.43	2.13	47.56	1.65