

PHI - mm CONVERSION $\phi = \log_2 (d \text{ in mm})$ $1 \mu\text{m} = 0.001\text{mm}$		Fractional mm and Decimal inches	SIZE TERMS (after Wentworth, 1922)	SIEVE SIZES		Intermediate diameters of natural grains equivalent to sieve size	Number of grains per mg		Settling Velocity (Quartz, 20°C)		Threshold Velocity for traction cm/sec			
ϕ	mm			ASTM No. (U.S. Standard)	Tyler Mesh No.		Quartz spheres	Natural sand	Spheres (Gibbs, 1971) cm/sec	Crushed	(Nevin, 1946)	(modified from Hjulstrom, 1939)		
-8	256	10.1"	BOULDERS ($\geq -8\phi$) COBBLES											
-7	128	5.04"												
-6	64.0	2.52"	PEBBLES	2 1/2"							200	1 m above bottom		
-5	53.9	1.26"		2.12"	2"									
-4	45.3			1 1/2"	1 1/2"							150		
-3	33.1	0.63"		1 1/4"	1 1/4"									
-2	32.0			3/4"	.742"									
-1	26.9	0.32"		5/8"	.525"									
0	22.6			1/2"	.371"									
1	17.0	0.16"		3/8"	3									
2	16.0			5/16"	.265"	4	4							
3	13.4	0.08" inches		Granules	5	5								
4	11.3		very coarse	6	6									
5	9.52	SAND	SAND	7	7									
6	8.00			very coarse	8	8								
7	6.73			coarse	10	10	1.2	.72	.6					
8	5.66			0.16"	12	12								
9	4.76				14	14								
10	4.00			0.08" mm	16	16								
11	3.36				18	18								
12	2.83			1	20	20	.86	2.0	1.5					
13	2.38				25	24								
14	2.00			1/2	30	28	.59	5.6	4.5					
15	1.63	35	32											
16	1.41	1/4	40	35										
17	1.19		45	42										
18	1.00	1/8	50	48	.42	15	13							
19	.840		60	60										
20	.707	1/16	70	65	.30	43	35							
21	.545		80	80										
22	.500	1/32	100	100	.215	120	91							
23	.420		120	115										
24	.354	1/64	140	150	.155	350	240							
25	.297		170	170										
26	.250	1/128	200	200	.115	1000	580							
27	.210		230	250										
28	.177	1/256	270	270	.080	2900	1700							
29	.149		325	325										
30	.125	1/512	400											
31	.105		coarse											
32	.088	1/1024	medium											
33	.074		fine											
34	.062	Clay/Silt boundary for mineral analysis	very fine											
35	.053		Clay											
36	.044													
37	.037													
38	.031													
39	.025													
40	.020													
41	.016													
42	.012													
43	.009													
44	.007													
45	.005													
46	.004													
47	.003													
48	.002													
49	.001													

Note: Some sieve openings differ slightly from phi mm scale

Note: Sieve openings differ by as much as 2% from phi mm scale

Note: Applies to subangular to subrounded quartz sand (in mm)

Note: Applies to subangular to subrounded quartz sand

Stokes Law ($R = 6\pi r\eta v$)

Note: The relation between the beginning of traction transport and the velocity depends on the height above the bottom that the velocity is measured, and on other factors.