

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"	3/4"	.742"							
-1	26.9	0.32"		5/8"	5/8"	.525"			100	50			
0	22.6			1/2"	1/2"	.371"			90	40	100		
1	17.0	0.16"		7/16"	7/16"	.265"			80	30	90		
2	16.0			3/8"	3/8"	3			70	20	80		
3	13.4	0.08" inches		5/16"	5/16"				60	10	70		
4	11.3		4	4				50	20	60	100		
5	8.00	1	Granules	5	5			40	10	50			
6	6.73		very coarse	6	6			30	5	40	50		
7	5.66	1/2	very coarse	7	7			20	5	30			
8	4.76		18	18				10	5	20	26		
9	4.00	1/4	coarse	20	20	1.2	.72	10	5	10			
10	3.36		25	25				8	5	10			
11	2.83	1/8	coarse	28	28	.86	2.0	7	5	10			
12	2.38		30	30				6	5	10			
13	2.00	1/16	medium	35	32	.59	5.6	5	4	30			
14	1.63		40	35				4	3	30			
15	1.41	1/32	medium	45	42	.42	15	3	3	20			
16	1.19		50	48				3	3	20			
17	1.00	1/64	fine	60	60	.30	43	3	3	20			
18	.840		70	65				2	2	20			
19	.707	1/128	fine	80	80	.215	120	2	2	20			
20	.545		100	100				1	1.0	20			
21	.420	1/256	very fine	120	115	.155	350	1	1.0	20			
22	.354		140	150				0.5	0.5	20			
23	.297	1/512	very fine	170	170	.115	1000	0.5	0.5	20			
24	.250		200	200				0.329	0.329	20			
25	.210	1/1024	coarse	230	250	.080	2900	0.1	0.085	20			
26	.177		270	270				0.023	0.023	20			
27	.149		medium	325	325			0.01	0.01	20			
28	.125		medium	400	400			0.0057	0.0057	20			
29	.105		fine					0.0014	0.0014	20			
30	.088		fine					0.00036	0.00036	20			
31	.074		very fine					0.0001	0.0001	20			
32	.062		very fine							20			
33	.053		Clay/Silt boundary for mineral analysis							20			
34	.044									20			
35	.037									20			
36	.031									20			
37	.025									20			
38	.020									20			
39	.016									20			
40	.012									20			
41	.009									20			
42	.007									20			
43	.005									20			
44	.004									20			
45	.003									20			
46	.002									20			
47	.001									20			

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)

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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.