

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			
$\phi$	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"		very coarse	2.12"	2"						150		
-4	45.3			coarse	1 1/2"	1 1/2"								
-3	33.1	0.63"		medium	1 1/4"	1.05"						100		
-2	32.0			fine	3/4"	.742"								
-1	26.9			very fine	5/8"	.525"								
0	22.6	0.32"		Granules	7/16"	.371"						100		
-1	17.0			very coarse	3/8"	.265"	3							
-2	16.0	0.16"		SAND	4	4						60		
-3	13.4				very fine	5	5							
-4	11.3		coarse		6	6								
-5	9.52		medium		7	7								
-6	8.00		fine		8	8								
-7	6.73		very fine		10	10								
-8	5.66		coarse		12	12	1.2	.72	.6	10	10		40	
-9	4.76		medium		14	14	.86	2.0	1.5	7	7		30	
-10	4.00		fine		16	16	.59	5.6	4.5	6	6		30	
-1	3.36		0.08" inches mm		SILT	18	18	.30	43	35	3	3		26
0	3.00	very coarse		20		20	.215	120	91	2	2			
1	2.83	coarse		25		25	.155	350	240	1	1.0			
2	2.38	medium		30		30	.115	1000	580	0.5	0.5			
3	2.00	fine		35		35	.080	2900	1700	0.329				
4	1.63	very fine		40		40				0.1	0.085			
5	1.41	coarse		45		45				0.023				
6	1.19	medium		50		50				0.01				
7	1.00	fine		60		60				0.0057				
8	.840	very fine		70		70				0.0014				
9	.707	coarse	80	80				0.001						
10	.545	medium	100	100				0.00036						
11	.420	fine	120	120										
12	.354	very fine	140	140										
13	.297	coarse	170	170										
14	.250	medium	200	200										
15	.210	fine	230	230										
16	.177	very fine	270	270										
17	.149	coarse	325	325										
18	.125	medium	400	400										
19	.105	fine												
20	.088	very fine												
21	.074	coarse												
22	.062	medium												
23	.053	fine												
24	.044	very fine												
25	.037	coarse												
26	.031	medium												
27	.02	fine												
28	.016	very fine												
29	.008	coarse												
30	.004	medium												
31	.003	fine												
32	.002	very fine												
33	.001	coarse												
34	.001	medium												
35	.001	fine												
36	.001	very fine												
37	.001	clay												

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.