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Physical data of hydrous kaolin-water suspensions

Scope

The data presented in this TIP serve as a quick reference for determining the weight of a hydrous kaolin slurry or amount of dry clay per gallon of slurry at specified percent clay slurry solids. It can also be used to determine the volume of slurry per ton of dry clay at specified percent solids.

Safety precautions

Not applicable.

Keywords

Clay, Density, Solids content, Dispersions, Slurry

Additional Information

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TIP Category: Data and Calculations
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Hydrous kaolin solids	Specific gravity	Lb. Slurry per gallon	Lb. dry clay per gallon	Cubic ft per ton dry clay	Gal per ton dry clay	Grams dry clay per gallon
%	g/ml	lbs/gal	lbs/gal	ft ³ /ton	gal/ton	g/gal
1.0	1.006	8.40	0.08	3183.8	23817	38
2.0	1.013	8.45	0.17	1582.0	11834	77
3.0	1.019	8.50	0.26	1048.0	7840	116
4.0	1.025	8.56	0.34	781.1	5843	155
5.0	1.032	8.61	0.43	620.9	4645	195
6.0	1.039	8.67	0.52	514.1	3846	236
7.0	1.045	8.72	0.61	437.8	3275	277
8.0	1.052	8.78	0.70	380.6	2847	319
9.0	1.059	8.84	0.80	336.1	2514	361
10.0	1.066	8.90	0.89	300.5	2248	404
11.0	1.073	8.96	0.99	271.4	2030	447
12.0	1.080	9.02	1.08	247.1	1849	491
13.0	1.088	9.08	1.18	226.6	1695	536
14.0	1.095	9.14	1.28	209.0	1563	581
15.0	1.102	9.20	1.38	193.7	1449	627
16.0	1.110	9.26	1.48	180.4	1349	673
17.0	1.118	9.33	1.59	168.6	1261	720
18.0	1.126	9.39	1.69	158.1	1183	768
19.0	1.133	9.46	1.80	148.8	1113	816
20.0	1.141	9.53	1.91	140.3	1050	865
21.0	1.150	9.59	2.01	132.7	993	915
22.0	1.158	9.66	2.13	125.8	941	965
23.0	1.166	9.73	2.24	119.4	893	1016
24.0	1.175	9.80	2.35	113.6	850	1068
25.0	1.183	9.88	2.47	108.3	810	1121
26.0	1.192	9.95	2.59	103.4	773	1174
27.0	1.201	10.02	2.71	98.8	739	1229
28.0	1.210	10.10	2.83	94.6	707	1284
29.0	1.219	10.17	2.95	90.6	678	1340
30.0	1.228	10.25	3.08	86.9	650	1396
31.0	1.238	10.33	3.20	83.5	625	1454
32.0	1.247	10.41	3.33	80.3	600	1512
33.0	1.257	10.49	3.46	77.2	578	1572
34.0	1.267	10.57	3.59	74.4	556	1632
35.0	1.277	10.66	3.73	71.7	536	1693
36.0	1.287	10.74	3.87	69.1	517	1756
37.0	1.298	10.83	4.01	66.7	499	1819

Note: Density of water = .99704 g/ml @ 25°C,
Specific Gravity of Hydrous Kaolin = 2.63 g/ml

Formula Used To Generate Data

$$S = \frac{B(A - 1)}{A(B - 1)}$$

S = Solids of Clay Slurry
A = Specific Gravity of Clay Slip
B = Specific Gravity of Hydrous Kaolin

NOTE: These tables are computed on the basis of hydrous kaolin clay having density of 2.63 g/cm³ in water with a density of 0.99704 at 25.0°C. It should be realized that commercial kaolin clays vary somewhat in density. For most accurate results, the actual density of the specific kaolin clay pigment should be measured. This table is sufficiently accurate for routine mill and lab calculations.