



# CONVERSIONS AND TABLES

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Loading Density Tables

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Rock Density Table ..... Figure 6



**LENGTH**

Meter [m]	<b>39.37</b>	Inch [in]
Meter [m]	<b>3.281</b>	Feet [ft]
Millimeter [mm]	<b>0.001</b>	Meter [m]
Centimeter [cm]	<b>0.3937</b>	Inch [in]
Inch [in]	<b>25.40</b>	Millimeter [mm]
Foot [ft]	<b>0.305</b>	Meter [m]
Mile (statute) [mi]	<b>1609.0</b>	Meter [m]
Mile (statute) [mi]	<b>5280.0</b>	Foot [ft]
Mile (nautical) [mi]	<b>1.15</b>	Mile (statute) [mi]

**PRESSURE**

Pound Per Square Inch [psi]	<b>6.8948</b>	Kilopascals [kPa]
Atmosphere [atm]	<b>4.696</b>	Pound Per Square Inch [psi]
One ft of H2O (@15°C)	<b>0.4335</b>	Pound Per Square Inch [psi]

**MASS (WEIGHT)**

Kilogram [kg]	<b>2.2</b>	Pound [lb]
Grain [gr]	<b>0.0648</b>	Gram [g]
Grain [gr]	<b>0.000143</b>	Pound [lb]
Ounce [oz]	<b>28.35</b>	Gram [g]
Pound [lb]	<b>0.4536</b>	Kilogram [kg]
Tonne (metric ton)	<b>1.1023</b>	Tons (short)

**VOLUME**

Cubic Centimeter [cm <sup>3</sup> ]	<b>0.061</b>	Cubic Inch [in <sup>3</sup> ]
Cubic Inch [in <sup>3</sup> ]	<b>16.39</b>	Cubic Centimeter [cm <sup>3</sup> ]
Cubic Meter [m <sup>3</sup> ]	<b>1.31</b>	Cubic Yards [yd <sup>3</sup> ]
Cubic Feet [ft <sup>3</sup> ]	<b>0.028</b>	Cubic Meter [m <sup>3</sup> ]
U.S. Gallon	<b>3.785</b>	Liter [L]
U.S. Gallon	<b>0.1337</b>	Cubic Feet [ft <sup>3</sup> ]
Ounce (U.S. fluid)	<b>29.57</b>	Cubic Centimeter [cm <sup>3</sup> ]
Cubic Yards [yd <sup>3</sup> ]	<b>0.7646</b>	Cubic Meter [m <sup>3</sup> ]

**POWDER FACTOR / SPECIFIC CHARGE**

Pounds Per Cubic Yard [lb/yd <sup>3</sup> ]	<b>0.593</b>	Kilograms Per Cubic Meter [kg/m <sup>3</sup> ]
Kilograms Per Cubic Meter [kg/m <sup>3</sup> ]	<b>1.686</b>	Pounds Per Cubic Yard [lb/yd <sup>3</sup> ]

**VELOCITY**

Meters Per Second [m/sec]	<b>3.281</b>	Feet Per Second [ft/sec]
Feet Per Second [ft/sec]	<b>0.3048</b>	Meters Per Second [m/sec]
Inches Per Second [in/sec]	<b>25.4</b>	Millimeters Per Second [cm/sec]
Inches Per Second [in/sec]	<b>2.54</b>	Centimeters Per Second [cm/sec]
Millimeters Per Second [cm/sec]	<b>0.03937</b>	Inches Per Second [in/sec]

**AREA**

Square Centimeter [cm <sup>2</sup> ]	<b>0.155</b>	Square Inch [in <sup>2</sup> ]
Square Meter [m <sup>2</sup> ]	<b>1550.0</b>	Square Inch [in <sup>2</sup> ]
Square Inch [in <sup>2</sup> ]	<b>6.45</b>	Square Centimeter [cm <sup>2</sup> ]
Square Feet [ft <sup>2</sup> ]	<b>0.0929</b>	Square Meter [m <sup>2</sup> ]
Acre	<b>43560.0</b>	Square Feet [ft <sup>2</sup> ]
Square Mile [mi <sup>2</sup> ]	<b>640.0</b>	Acre

**DENSITY**

Pounds Per Cubic Feet [lbs/ft <sup>3</sup> ]	<b>16.0</b>	Kilograms Per Cubic Meter [g/m <sup>3</sup> ]
Pounds Per Cubic Feet [lbs/ft <sup>3</sup> ]	<b>0.01602</b>	Grams Per Cubic Centimeter [g/cm <sup>3</sup> ]
Grams Per Cubic Centimeter [g/cm <sup>3</sup> ]	<b>62.43</b>	Pounds Per Cubic Feet [lbs/ft <sup>3</sup> ]

# Pounds of Explosive Per Foot of Blasthole

(FIG 2) THE BLASTER'S GUIDE



Dia. Hole [in]	Product or Loading Density [g/cc]																		Dia. Hole [mm]	
	0.50	0.75	0.80	0.82	0.85	0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50		1.54
3/4	0.01	0.14	0.15	0.16	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	19
7/8	0.13	0.20	0.21	0.21	0.22	0.23	0.25	0.26	0.27	0.29	0.30	0.31	0.33	0.34	0.35	0.37	0.38	0.39	0.40	22
1	0.17	0.26	0.27	0.28	0.29	0.31	0.32	0.34	0.36	0.37	0.39	0.41	0.43	0.44	0.46	0.48	0.49	0.51	0.52	25
1 1/4	0.27	0.40	0.43	0.44	0.45	0.48	0.51	0.53	0.56	0.59	0.61	0.64	0.67	0.69	0.72	0.74	0.77	0.80	0.82	32
1 3/8	0.32	0.48	0.52	0.53	0.55	0.58	0.61	0.64	0.68	0.71	0.74	0.77	0.80	0.84	0.87	0.90	0.93	0.97	0.99	35
1 1/2	0.38	0.57	0.61	0.63	0.65	0.69	0.73	0.77	0.80	0.84	0.88	0.92	0.96	1.00	1.03	1.07	1.11	1.15	1.18	38
1 5/8	0.45	0.67	0.72	0.74	0.76	0.81	0.85	0.90	0.94	0.99	1.03	1.08	1.12	1.17	1.21	1.26	1.30	1.35	1.38	41
1 3/4	0.52	0.78	0.83	0.86	0.89	0.94	0.99	1.04	1.01	1.15	1.20	1.25	1.30	1.36	1.41	1.46	1.51	1.56	1.61	45
1 7/8	0.60	0.90	0.96	0.98	1.02	1.08	1.14	1.20	1.26	1.32	1.38	1.44	1.50	1.56	1.62	1.68	1.74	1.80	1.84	48
2	0.68	1.02	1.09	1.12	1.16	1.23	1.29	1.36	1.43	1.50	1.57	1.63	1.70	1.77	1.84	1.91	1.98	2.04	2.01	50
2 1/4	0.86	1.29	1.38	1.41	1.47	1.55	1.64	1.72	1.81	1.90	1.98	2.07	2.15	2.24	2.33	2.41	2.50	2.59	2.65	57
2 1/2	1.06	1.60	1.70	1.75	1.81	1.92	2.02	2.13	2.23	2.34	2.45	2.55	2.66	2.77	2.87	2.98	3.09	3.19	3.28	65
2 3/4	1.29	1.93	2.06	2.11	2.19	2.32	2.45	2.58	2.70	2.83	2.96	3.09	3.22	3.35	3.48	3.61	3.73	3.86	3.97	70
3	1.53	2.30	2.45	2.51	2.60	2.76	2.91	3.06	3.22	3.37	3.52	3.68	3.83	3.98	4.14	4.29	4.44	4.60	4.72	75
3 1/2	2.09	3.13	3.34	3.42	3.55	3.75	3.96	4.17	4.38	4.59	4.80	5.01	5.21	5.42	5.63	5.84	6.05	6.26	6.42	90
4	2.72	4.09	4.36	4.47	4.63	4.90	5.18	5.45	5.72	5.99	6.27	6.54	6.81	7.08	7.35	7.63	7.90	8.17	8.39	100
4 1/4	3.08	4.61	4.92	5.04	5.23	5.54	5.84	6.15	6.46	6.77	7.07	7.38	7.69	8.00	8.30	8.61	8.92	9.23	9.47	110
4 1/2	3.45	5.17	5.52	5.65	5.86	6.21	6.55	6.90	7.24	7.58	7.93	8.27	8.62	8.96	9.31	9.65	10.00	10.34	10.62	115
5	4.26	6.38	6.81	6.98	7.24	7.66	8.09	8.51	8.94	9.36	9.79	10.22	10.64	11.07	11.49	11.92	12.34	12.77	13.11	125
5 1/2	5.15	7.73	8.24	8.45	8.76	9.27	9.79	10.30	10.82	11.33	11.85	12.36	12.88	13.39	13.91	14.42	14.94	15.45	15.86	140
5 5/8	5.39	8.08	8.62	8.83	9.16	9.70	10.24	10.77	11.31	11.85	12.39	12.93	13.47	14.01	14.54	15.08	15.62	16.16	16.59	145
6	6.13	9.19	9.81	10.05	10.42	11.03	11.65	12.26	12.87	13.48	14.01	14.71	15.32	15.94	16.55	17.16	17.77	18.39	18.88	150
6 1/4	6.65	9.98	10.64	10.91	11.31	11.97	12.64	13.30	13.97	14.63	15.30	15.96	16.63	17.29	17.96	18.62	19.29	19.95	20.48	160
6 1/2	7.19	10.79	11.51	11.80	12.23	12.95	13.67	14.39	15.11	15.82	16.54	17.26	17.98	18.70	19.42	20.14	20.86	21.58	22.15	165
6 3/4	7.76	11.64	12.41	12.72	13.19	13.96	14.74	15.51	16.29	17.07	17.84	18.62	19.39	20.17	20.94	21.72	22.50	23.27	23.89	170
7 3/8	9.26	13.89	14.82	15.19	15.74	16.67	17.59	18.52	19.45	20.37	21.30	22.22	23.15	24.08	25.00	25.93	26.85	27.78	28.52	187
7 7/8	10.56	15.84	16.89	17.32	17.95	19.01	20.06	21.12	22.17	23.23	24.28	25.34	26.40	27.45	28.51	29.56	30.62	31.67	32.52	200
8	10.90	16.34	17.43	17.87	18.52	19.61	20.70	21.79	22.88	23.97	25.06	26.15	27.24	28.33	29.42	30.51	31.60	32.69	33.56	203
9	13.79	20.69	22.06	22.62	23.44	24.82	26.20	27.58	28.96	30.34	31.72	33.01	34.48	35.85	37.23	38.61	39.99	41.37	42.47	230
9 7/8	16.60	24.90	26.56	27.23	28.22	29.88	31.54	33.20	34.86	36.52	38.18	39.84	41.51	43.17	44.83	46.49	48.15	49.81	51.13	250
10 5/8	19.22	28.83	30.75	31.52	32.67	34.60	36.52	38.44	40.36	42.28	44.21	46.13	48.05	49.97	51.89	53.82	55.74	57.66	59.20	270
12 1/4	25.55	38.32	40.88	41.90	43.43	45.99	48.54	51.01	53.65	56.21	58.76	61.32	63.87	66.43	68.98	71.53	74.09	76.64	78.69	311
13 3/4	32.19	48.28	51.50	52.79	54.72	57.94	61.16	64.38	67.59	70.81	74.03	77.25	80.47	83.69	86.91	90.13	93.34	96.56	99.14	350
15	38.31	57.46	61.29	62.82	65.12	68.95	72.78	76.61	80.44	84.27	88.10	91.94	95.77	99.60	103.43	107.26	111.09	114.92	117.98	380
17 1/2	52.14	78.21	83.42	85.51	88.64	93.85	99.06	104.28	109.49	114.71	119.92	125.13	130.35	135.56	140.78	145.99	151.20	156.42	160.59	445

$Pounds\ of\ Explosives\ Per\ Foot\ of\ Blasthole = 0.3405 \times Loading\ Density\ [g/cc] \times Explosive\ Diameter^2$

# Kilograms of Explosive Per Meter of Blasthole

(FIG 3) THE BLASTER'S GUIDE



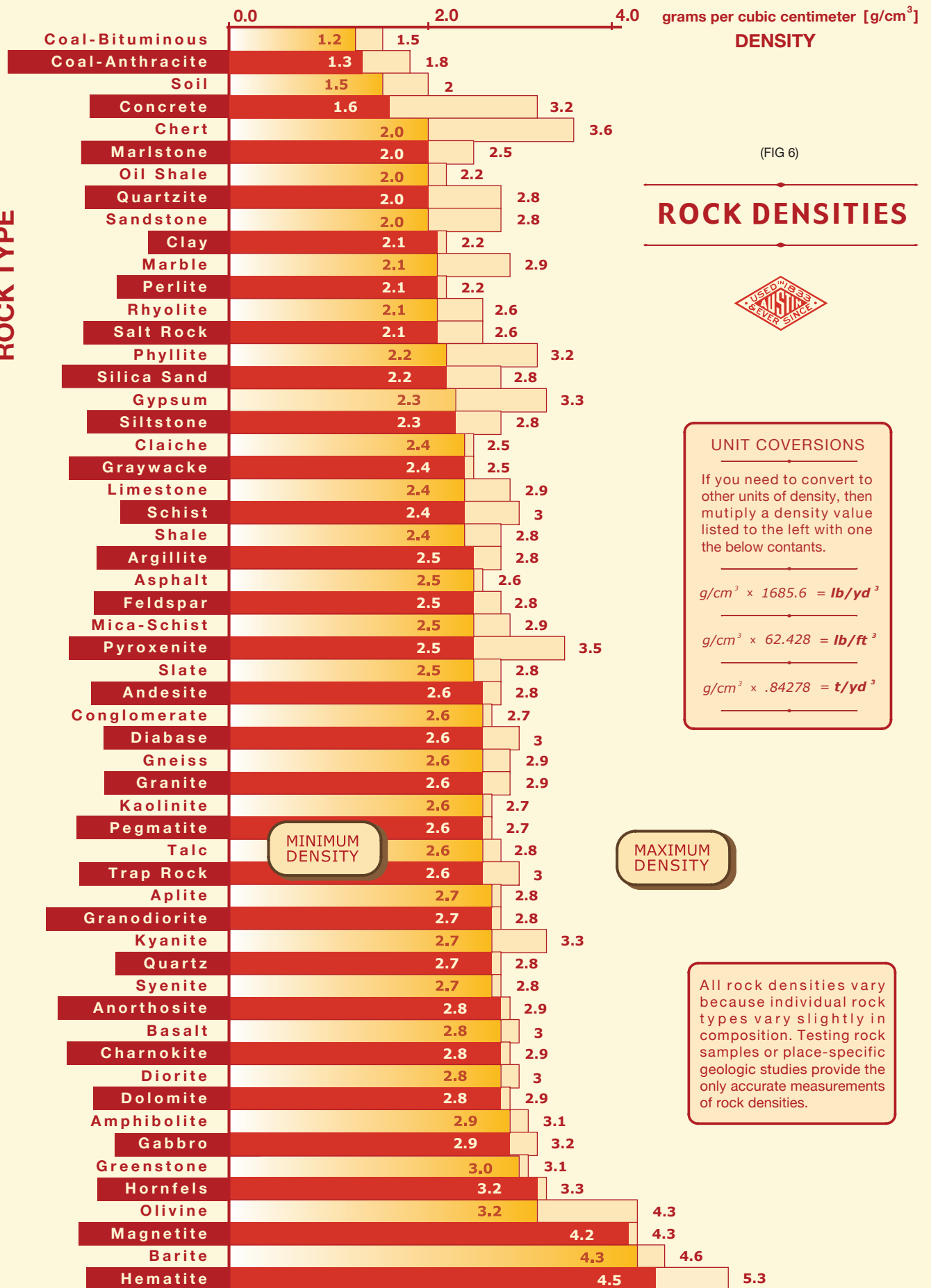
Dia. Hole [in]	Product or Loading Density [g/cc]																		Dia. Hole [mm]
	0.50	0.75	0.80	0.82	0.85	0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	
3/4	0.14	0.21	0.23	0.23	0.24	0.26	0.27	0.28	0.30	0.31	0.33	0.34	0.36	0.37	0.38	0.40	0.41	0.43	19
7/8	0.19	0.29	0.31	0.32	0.33	0.35	0.37	0.39	0.41	0.43	0.45	0.46	0.48	0.50	0.52	0.54	0.56	0.58	22
1	0.25	0.38	0.40	0.42	0.43	0.46	0.48	0.51	0.53	0.56	0.58	0.61	0.63	0.66	0.68	0.71	0.73	0.76	25
1 1/4	0.40	0.59	0.63	0.65	0.67	0.71	0.75	0.79	0.83	0.87	0.91	0.95	0.99	1.03	1.07	1.11	1.15	1.19	32
1 3/8	0.48	0.72	0.77	0.78	0.81	0.86	0.91	0.96	1.01	1.05	1.10	1.15	1.20	1.24	1.29	1.34	1.39	1.44	35
1 1/2	0.57	0.85	0.91	0.93	0.97	1.02	1.08	1.14	1.20	1.25	1.31	1.37	1.42	1.48	1.54	1.59	1.65	1.71	38
1 5/8	0.67	1.00	1.07	1.01	1.14	1.20	1.27	1.34	1.40	1.47	1.54	1.60	1.67	1.74	1.80	1.87	1.94	2.00	41
1 3/4	0.77	1.16	1.24	1.27	1.32	1.39	1.47	1.55	1.63	1.70	1.78	1.86	1.94	2.01	2.09	2.17	2.25	2.32	45
1 7/8	0.89	1.33	1.42	1.46	1.51	1.60	1.69	1.78	1.87	1.96	2.05	2.13	2.22	2.31	2.40	2.49	2.58	2.67	48
2	1.01	1.52	1.62	1.66	1.72	1.82	1.92	2.02	2.13	2.23	2.33	2.43	2.53	2.63	2.73	2.83	2.93	3.04	50
2 1/4	1.28	1.92	2.05	2.10	2.18	2.31	2.43	2.56	2.69	2.82	2.95	3.07	3.20	3.33	3.46	3.59	3.71	3.84	57
2 1/2	1.58	2.37	2.53	2.59	2.69	2.85	3.00	3.16	3.32	3.48	3.64	3.80	3.95	4.11	4.27	4.43	4.59	4.74	65
2 3/4	1.91	2.87	3.06	3.14	3.25	3.44	3.64	3.83	4.02	4.21	4.40	4.59	4.78	4.97	5.17	5.36	5.55	5.74	70
3	2.28	3.42	3.64	3.73	3.87	4.01	4.33	4.55	4.78	5.00	5.24	5.46	5.69	5.92	6.15	6.38	6.60	6.83	75
3 1/2	3.01	4.65	4.96	5.08	5.27	5.58	5.89	6.20	6.51	6.82	7.13	7.44	7.75	8.06	8.37	8.68	8.99	9.30	90
4	4.05	6.07	6.48	6.64	6.88	7.29	7.69	8.01	8.50	8.91	9.31	9.72	10.12	10.52	10.93	11.33	11.74	12.14	100
4 1/4	4.57	6.85	7.31	7.49	7.77	8.23	8.68	9.14	9.60	10.05	10.51	10.97	11.42	11.88	12.34	12.80	13.25	13.71	110
4 1/2	5.12	7.68	8.20	8.40	8.71	9.22	9.73	10.25	10.76	11.27	11.78	12.30	12.81	13.32	13.83	14.35	14.86	15.37	115
5	6.33	9.49	10.12	10.37	10.75	11.39	12.02	12.65	13.28	13.92	14.55	15.18	15.81	16.45	17.08	17.71	18.34	18.98	125
5 1/2	7.65	11.48	12.25	12.55	13.01	13.78	14.54	15.31	16.07	16.84	17.60	18.37	19.13	19.90	20.66	21.43	22.19	22.96	140
5 5/8	8.01	12.01	12.81	13.13	13.61	14.41	15.21	16.01	16.81	17.61	18.41	19.21	20.01	20.81	21.61	22.41	23.21	24.02	145
6	9.11	13.66	14.57	14.94	15.48	16.39	17.31	18.22	19.13	20.04	20.95	21.86	22.77	23.68	24.59	25.50	26.41	27.32	150
6 1/4	9.88	14.82	15.81	16.21	16.80	17.79	18.78	19.77	20.75	21.74	22.73	23.72	24.71	25.70	26.68	27.67	28.66	29.65	160
6 1/2	10.69	16.03	17.10	17.53	18.17	19.24	20.31	21.38	22.45	23.52	24.59	25.65	26.72	27.79	28.86	29.93	31.00	32.07	165
6 3/4	11.53	17.29	18.44	18.90	19.60	20.75	21.90	23.05	24.21	25.36	26.51	27.67	28.82	29.97	31.12	32.28	33.43	34.58	170
7 3/8	13.76	20.64	22.02	22.57	23.39	24.77	26.15	27.52	28.90	30.27	31.65	33.03	34.40	35.78	37.15	38.53	39.91	41.28	187
7 7/8	15.69	23.54	25.10	25.73	26.67	28.24	29.81	31.38	32.95	34.52	36.09	37.66	39.22	40.79	42.36	43.93	45.50	47.07	200
8	16.19	24.29	25.91	26.55	27.53	29.15	30.76	32.38	34.00	35.62	37.24	38.86	40.48	42.01	43.72	45.34	46.96	48.58	203
9	20.49	30.74	32.79	33.61	34.84	36.89	38.94	40.99	43.04	45.08	47.13	49.18	51.23	53.28	55.33	57.38	59.43	61.48	230
9 7/8	24.67	37.01	39.47	40.46	41.94	44.41	46.88	49.34	51.81	54.28	56.74	59.21	61.68	64.15	66.61	69.08	71.55	74.01	250
10 5/8	28.56	42.84	45.70	46.84	48.55	51.41	54.27	57.12	59.98	62.84	65.69	68.55	71.40	74.26	77.12	79.97	82.83	85.68	270
12 1/4	37.97	56.95	60.75	62.26	64.54	68.34	72.14	75.93	79.73	83.52	87.32	91.12	94.91	98.71	102.51	106.30	110.10	113.90	311
13 3/4	47.83	71.75	76.53	78.45	81.32	86.01	90.88	95.67	100.45	105.23	110.02	114.80	119.58	124.37	129.15	133.93	138.72	143.50	350
15	56.93	85.39	91.08	93.36	96.77	102.47	108.16	113.85	119.54	125.24	130.93	136.62	142.31	148.01	153.70	159.39	165.08	170.78	380
17 1/2	77.48	116.22	123.97	127.07	131.72	139.47	147.21	154.96	162.71	170.46	178.21	185.96	193.70	201.45	209.20	216.95	224.70	232.44	445

$\text{kilograms of Explosives Per Meter of Blasthole} = 0.506 \times \text{Loading Density [g/cc]} \times \text{Explosive Diameter}^2$





ROCK TYPE



grams per cubic centimeter [g/cm<sup>3</sup>]

DENSITY

(FIG 6)

ROCK DENSITIES



UNIT COVERIONS

If you need to convert to other units of density, then mutiply a density value listed to the left with one the below contants.

$$g/cm^3 \times 1685.6 = lb/yd^3$$

$$g/cm^3 \times 62.428 = lb/ft^3$$

$$g/cm^3 \times .84278 = t/yd^3$$

MINIMUM DENSITY

MAXIMUM DENSITY

All rock densities vary because individual rock types vary slightly in composition. Testing rock samples or place-specific geologic studies provide the only accurate measurements of rock densities.