

metais não ferrosos

alumínio-cobre-latão - aço inoxidável

- Arames
- Barras chatas
- Bobinas
- Cantoneiras
- Chapas
- Discos
- Perfis
- Buchas
- Tubos
- Tubos de cobre para refrigeração
- Vergalhões, redondos, sextavados e Quadrados
- Verguinhas de latão para solda
- Tubos e conexões de cupro-níquel

**bronze
ligas**

TM-23
SAE-62
SAE-64
SAE-65
SAE-68-B
SAE-660
SAE-430-B
BZ – 2
BZ – 5
BZ – 8
BZ – 12
BZ – 14

formatos

Buchas
Tarugos
Barras chatas
Barras quadradas
Peças fundidas mediante modelo
Buchas e tarugos grafitados
Chapas fosforosas

lingotes

Alumínio 99,55%
Alumínio sílicioso
Antimônio
Bismuto
Bronze 85-5-5-5
Bronze industrial

Chumbo
Cobre
Estanho
Magnésio metálico
Zinco
Zamac n.^{os} 2 e 5

anodos

Níquel
Cádmio em bolas e bastões
Chumbo
Cobre em placas e tarugos ovalados
Estanho
Latão
Zinco

diversos

Metal patente
Lençol de chumbo
Tubos de chumbo
Estanho em verguinhas
Manganês em flocos
Silício em pedras
Solda preparada










chapas peso por unidade

n.º (BWG)	m/m	1.200 x 600 m/m			2.000 x 1.000 m/m		
		Alumínio	Cobre	Latão	Alumínio	Cobre	Latão
-	25,40	49,6	163,0	155,0	138,0	452,0	430,0
-	22,22	43,2	142,0	135,0	120,0	395,0	378,0
-	19,05	37,2	122,0	116,0	103,0	338,0	322,0
-	15,87	31,0	102,0	97,0	86,0	282,0	270,0
-	12,70	24,8	81,4	77,4	68,8	226,0	215,0
-	9,52	18,6	61,0	58,1	51,6	169,0	161,0
-	7,93	15,5	50,9	48,4	43,0	141,0	135,0
-	6,35	12,4	40,7	38,7	34,4	113,0	108,0
-	4,76	9,29	30,5	29,0	25,8	84,7	80,6
-	3,97	7,75	25,4	24,2	21,5	70,7	67,3
10	3,40	6,63	21,8	20,7	18,4	60,5	57,6
-	3,17	6,19	20,3	19,3	17,2	56,4	53,7
11	3,04	5,95	19,5	18,6	16,5	54,3	51,7
12	2,77	5,40	17,8	16,9	15,0	49,3	46,9
13	2,41	4,70	15,4	14,7	13,1	42,9	40,8
14	2,11	4,12	13,5	12,9	11,4	37,6	35,7
15	1,83	3,57	11,7	11,2	9,92	32,6	31,0
16	1,65	3,22	10,6	10,1	8,94	29,4	28,0
17	1,47	2,87	9,42	8,96	7,97	26,2	24,9
18	1,24	2,42	7,95	7,56	6,72	22,1	21,0
19	1,07	2,09	6,86	6,53	5,80	19,0	18,1
20	0,89	1,74	5,70	5,43	4,82	15,8	15,1
21	0,81	1,58	5,19	4,94	4,39	14,4	13,7
22	0,71	1,39	4,55	4,33	3,85	12,6	12,0
23	0,64	1,25	4,10	3,90	3,47	11,4	10,8
24	0,56	1,09	3,59	3,42	3,04	10,0	9,5
25	0,51	1,00	3,27	3,11	2,76	9,1	8,6
26	0,46	0,90	2,95	2,81	-	-	-
27	0,41	0,80	2,63	2,50	-	-	-
28	0,36	0,70	2,31	2,20	-	-	-
30	0,30	0,59	1,92	1,83	-	-	-




aço inoxidável

n.º (USG)	m/m	Peso por metro quadr.	2.000	2.440	3.000	3.000	3.000
			x 1.000	x 1.220	x 1.000	x 1.200	x 1.500
-	25,40	202,270	405,0	602,0	607,0	728,0	910,0
-	22,22	176,990	354,0	526,0	531,0	637,0	796,0
-	19,05	151,710	304,00	451,0	456,0	546,0	682,0
-	15,87	136,430	273,0	406,0	410,0	491,0	614,0
-	12,70	101,130	203,0	300,0	304,0	364,0	455,0
-	11,11	88,490	177,0	263,0	266,0	318,0	398,0
-	9,53	75,840	152,0	225,0	228,0	273,0	341,0
-	7,93	63,200	127,0	188,0	190,0	227,0	284,0
3	6,35	53,500	107,0	159,0	161,0	192,0	240,0
5	5,66	44,240	89,0	131,0	133,0	159,0	199,0
7	4,76	37,920	76,0	112,0	114,0	136,0	170,0
8	4,37	35,320	71,0	104,0	106,0	127,0	159,0
9	3,97	32,100	65,0	95,0	97,0	115,0	144,0
10	3,57	28,900	58,0	85,0	86,0	104,0	130,0
11	3,18	25,660	52,0	76,0	77,0	92,0	115,0
12	2,78	22,480	45,0	66,0	67,0	81,0	101,0
13	2,37	19,270	39,0	56,0	57,0	69,0	86,0
14	1,98	15,800	32,0	47,0	48,0	57,0	71,0
15	1,79	14,440	29,0	42,0	43,0	52,0	65,0
16	1,59	12,340	25,0	36,0	37,0	44,0	55,0
17	1,43	11,560	23,0	34,0	35,0	41,0	52,0
18	1,27	10,274	20,5	30,5	30,8	36,9	46,0
19	1,11	8,990	18,0	26,7	27,0	32,3	40,0
20	0,95	7,707	15,4	22,8	23,1	27,7	34,6
21	0,87	7,060	14,1	21,0	21,2	25,4	31,7
22	0,79	6,420	12,8	19,0	19,3	23,1	28,9
23	0,71	5,770	11,6	17,0	17,3	20,7	25,9
24	0,64	5,136	10,3	15,0	15,4	18,5	23,1
25	0,56	4,490	9,0	13,3	13,5	16,2	20,2
26	0,48	3,850	7,7	11,4	11,6	13,9	17,3
27	0,44	3,630	7,0	10,5	10,6	13,1	16,3
28	0,40	3,200	6,4	9,5	9,6	11,5	14,4
29	0,36	2,890	5,8	8,6	8,7	10,4	13,0
30	0,32	2,560	5,2	7,6	7,7	9,2	11,5

vergalhões peso por metro

Polegada	Mili-metro	Alumínio			Cobre			Latão		
										
3/32"	2,38	0,012	0,013	0,015	0,039	0,043	0,050	0,038	0,042	0,048
1/8"	3,17	0,021	0,023	0,027	0,070	0,077	0,089	0,067	0,074	0,085
5/32"	3,97	0,033	0,037	0,043	0,110	0,121	0,140	0,105	0,116	0,134
3/16"	4,76	0,048	0,053	0,061	0,158	0,175	0,202	0,151	0,167	0,193
7/32"	5,55	0,066	0,072	0,083	0,216	0,238	0,275	0,206	0,228	0,263
1/4"	6,35	0,086	0,094	0,109	0,282	0,311	0,359	0,269	0,297	0,343
9/32"	7,14	0,108	0,119	0,138	0,356	0,393	0,454	0,340	0,375	0,433
5/16"	7,93	0,134	0,147	0,170	0,441	0,486	0,561	0,421	0,484	0,536
3/8"	9,52	0,192	0,212	0,245	0,634	0,699	0,807	0,605	0,667	0,770
7/16"	11,11	0,262	0,289	0,333	0,863	0,951	1,100	0,824	0,909	1,050
1/2"	12,70	0,342	0,377	0,436	1,130	1,240	1,440	1,080	1,190	1,370
9/16"	14,28	0,433	0,477	0,551	1,430	1,570	1,820	1,360	1,500	1,740
5/8"	15,87	0,535	0,590	6,68	1,760	1,940	2,240	1,680	1,880	2,140
11/16"	17,46	0,646	0,713	0,823	2,130	2,350	2,710	2,030	2,240	2,590
3/4 "	19,05	0,770	0,849	0,980	2,540	2,800	3,230	2,420	2,670	3,080
13/16"	20,63	0,903	0,996	1,150	2,980	3,280	3,790	2,840	3,140	3,620
7/8"	22,22	1,050	1,150	1,330	3,450	3,800	4,390	3,300	3,630	4,200
15/16"	23,81	1,200	1,330	1,530	3,960	4,370	5,050	3,790	4,170	4,820
1"	25,40	1,370	1,510	1,740	4,510	4,970	5,740	4,310	4,750	5,480
1.1/16"	26,97	1,540	1,700	1,970	5,090	5,620	6,480	4,860	5,360	6,190
1.1/8"	28,57	1,730	1,910	2,200	5,710	6,290	7,260	5,450	6,010	6,940
1.3/16"	30,16	1,930	2,130	2,460	6,360	7,010	8,100	6,070	6,700	7,730
1.1/4"	31,75	2,140	2,360	2,720	7,050	7,770	8,970	6,730	7,420	8,570
1.5/16"	33,34	2,355	2,602	3,001	7,769	-	9,892	7,507	8,288	9,559
1.3/8"	34,92	2,590	2,850	3,290	8,520	9,400	10,800	8,140	8,980	10,400
1.7/16"	36,51	2,824	3,120	3,599	9,317	-	11,863	9,003	9,939	11,463
1.1/2"	38,10	3,080	3,390	3,920	10,100	11,200	12,900	9,690	10,700	12,300
1.9/16"	39,69	3,339	3,687	4,253	11,011	-	14,020	10,640	11,746	13,547
1.5/8"	41,27	3,610	3,990	4,600	11,900	13,100	15,200	11,400	12,500	14,500
1.3/4"	44,45	4,190	4,620	5,340	13,800	15,200	17,600	13,200	14,500	16,800
1.7/8"	47,62	4,810	5,300	6,120	15,900	17,500	20,200	15,100	16,100	19,300
2"	50,80	5,470	6,030	6,970	18,00	19,900	23,000	17,200	19,00	21,900
2.1/16"	52,39	5,818	6,425	7,410	19,185	-	24,427	18,538	20,466	23,604
2.1/8"	53,97	6,180	6,810	7,870	20,400	22,500	25,900	19,400	21,400	24,800
2.3/16"	55,56	6,544	7,226	8,334	21,577	-	27,473	20,850	23,018	26,547
2.1/4"	57,15	6,930	7,640	8,820	22,800	25,200	29,100	21,800	24,000	27,800
2.5/ 16"	58,73	7,314	8,074	9,312	24,101	-	30,697	23,297	25, 719	29,663
2.3/8"	60,33	7,720	8,510	9,830	25,400	28,000	32,400	24,300	26,800	30,900
2.7/16"	61,91	8,127	8,972	10,348	26,791	-	34,112	25,880	28,580	32,962
2.1/2"	63,50	8,550	9,430	10,890	28,200	31,100	35,900	26,900	29,700	34,300
2.5/8"	66,67	9,430	10,400	12,00	31,100	34,300	39,600	29,700	32,700	37,800
2.3/4"	69,85	10,350	11,400	13,170	34,100	37,600	43,400	32,600	35,900	41,500
2.7/ 8"	73,03	11,300	12,470	14,400	37,300	41,100	47,500	35,600	39,300	45,300
3"	76,20	12,310	13,580	15,680	40,600	44,700	51,700	38,800	42,700	49,400
3.1/8"	79,39	13,365	-	-	44,056	-	-	42,570	-	-
3.1/4"	82,55	14,450	-	-	47,633	-	-	46,028	50,200	57,940
3.3/8"	85,73	15,585	-	-	51,374	-	-	49,642	-	-
3.1/2"	88,90	16,750	-	-	55,243	-	-	53,381	58,240	67,180
3.5/8"	92,08	17,979	-	-	59,266	-	-	57,269	-	-
3.3/4"	95,25	19,239	-	-	63,417	-	-	61,280	66,880	77,160
3.7/8"	98,43	20,545	-	-	67,722	-	-	65,440	-	-
4"	101,60	21,890	-	-	72,155	-	-	69,723	76,110	87,371
4.1/2"	114,30	27,689	-	-	91,240	-	-	87,280	96,220	111,120
5"	127,00	34,186	-	-	113,240	-	-	109,030	118,720	137,100
5.1/2"	139,70	41,364	-	-	137,025	-	-	131,928	-	-
6"	152,40	49,235	-	-	163,070	-	-	157,000	170,960	197,420
7"	177,80	67,036	-	-	221,025	-	-	213,700	232,700	268,710

barras de aço inox peso p/ metro

Polegada	Milímetro	aço Inoxidável			Polegada	Milímetro	aço Inoxidável		
									
3/32"	2,38	0,034	-	-	3.3/8"	85,73	45,270	49,980	57,630
1/8"	3,17	0,062	-	-	3.1/2"	88,90	48,680	53,740	61,980
5/32"	3,97	0,097	-	-	3.5/8"	92,08	52,220	57,660	66,490
3/16"	4,76	0,148	-	-	3.3/4"	95,25	55,880	61,690	71,150
7/32"	5,55	0,189	-	-	3.7/8"	98,43	60,670	65,880	75,960
1/4"	6,35	0,250	0,270	0,320	4"	101,60	63,580	-	80,970
9/32"	7,14	0,314	0,346	0,400	4.1/8"	104,78	67,620	-	96,100
5/16"	7,93	0,390	0,430	0,490	4.1/4"	107,95	71,780	-	91,390
3/8"	9,52	0,560	0,620	0,710	4.3/8"	111,13	76,060	-	96,850
7/16"	11,11	0,760	0,840	0,970	4.1/2"	114,30	80,470	-	102,460
1/2"	12,70	0,990	1,100	1,270	4.5/8"	117,48	85,010	-	108,230
9/16"	14,28	1,206	1,390	1,600	4.3/4"	120,65	89,660	-	114,160
5/8"	15,87	1,550	1,710	1,980	4.7/8"	123,83	94,440	-	120,250
11/16"	17,46	1,880	2,070	2,390	5"	127,00	99,800	-	126,500
3/4"	19,05	2,240	2,460	2,850	5.1/4"	133,36	109,500	-	139,500
13/16"	20,63	2,620	2,890	3,340	5.1/2"	139,7	120,200	-	153,100
7/8"	22,22	3,040	3,350	3,870	5.3/4"	146,06	131,400	-	167,200
15/16"	23,81	3,490	3,850	4,450	6"	152,40	143,100	-	182,500
1"	25,40	3,970	4,380	5,080	6.1/4"	158,76	155,200	-	197,800
1.1/16"	26,97	4,490	4,950	5,710	6.1/2"	165,11	167,900	-	213,500
1.1/8"	28,57	5,030	5,500	6,400	6.3/4"	171,46	181,100	-	231,000
1.3/16"	30,16	5,600	6,180	7,140	7"	177,81	194,700	-	218,100
1.1/4"	31,75	6,210	6,850	7,910	7.1/4"	184,16	209,700	-	266,200
1.5/16"	33,34	6,850	7,550	8,720	7.1/2"	190,51	223,800	-	285,000
1.3/8"	34,92	7,510	8,290	9,570	7.3/4"	196,85	238,900	-	304,000
1.7/16"	36,51	8,210	9,050	10,460	8"	203,20	254,600	-	324,000
1.1/2"	38,10	8,940	9,860	11,390	8.1/4"	209,55	270,700	-	345,000
1.9/16"	39,69	9,700	10,700	12,350	8.1/2"	215,90	287,400	-	385,900
1.5/8"	41,27	10,490	11,570	13,360	8.3/4"	222,25	304,600	-	388,500
1.3/4"	44,45	12,700	13,420	15,500	9"	228,60	322,100	-	410,200
1.7/8"	47,62	13,970	15,410	17,790	9.1/4"	234,95	340,300	-	433,500
2"	50,80	15,900	17,530	20,240	9.1/2"	241,30	359,00	-	457,100
2.1/16"	52,39	16,910	18,640	21,520	9.3/4"	247,65	378,100	-	481,400
2.1/8"	53,97	17,950	19,790	22,850	10"	254,00	397,800	-	506,500
2.3/16"	55,56	19,020	20,970	24,210	10.1/2"	266,70	438,500	-	558,400
2.1/4"	57,15	20,120	22,190	25,620	11"	279,40	481,200	-	612,800
2.5/16"	58,73	21,250	23,440	27,060	11.1/2"	292,70	526,000	-	669,800
2.3/8"	60,33	22,420	24,720	28,540	12"	304,80	576,000	-	729,300
2.7/16"	61,91	23,610	23,030	30,060	13"	330,20	672,600	-	855,800
2.1/2"	63,50	24,840	7,380	31,620	14"	355,60	779,700	-	992,600
2.5/8"	66,68	27,380	30,190	34,870	15"	381,00	894,900	-	1.139,50
2.3/4"	69,85	30,050	33,140	38,270	16"	406,40	1.017,30	-	1.295,30
2.7/8"	73,03	32,050	36,220	41,820	17"	431,80	1.148,50	-	1.462,30
3"	76,20	35,770	39,430	45,540	18"	457,20	1.287,60	-	1.639,40
3.1/8"	79,30	38,810	42,790	49,410	20"	508,00	1.589,50	-	2.032,90
3.1/4"	82,55	41,880	46,340	53,440					

tubos peso por metro

espessuras de parede

Diâmet. Externo		1/32" - 0,79 mm			1,00 m/m			1/16" 1,58 m/m			3/32" - 2,38 m/m			1/8" - 3,17 m/m		
Polegada	Milim.	Alumín.	Cobre	Latão	Alumín.	Cobre	Latão	Alumín.	Cobre	Latão	Alumín.	Cobre	Latão	Alumín.	Cobre	Latão
1/8"	3,17	0,016	0,053	0,050	0,018	0,061	0,059	-	-	-	-	-	-	-	-	-
5/32"	3,97	0,021	0,070	0,067	0,025	0,083	0,080	0,032	0,105	0,101	-	-	-	-	-	-
3/16"	4,76	0,027	0,088	0,084	0,032	0,105	0,101	0,043	0,141	0,135	-	-	-	-	-	-
1/4"	6,35	0,037	0,123	0,118	0,045	0,150	0,143	0,064	0,212	0,203	0,080	0,264	0,253	-	-	-
5/16"	7,93	0,048	0,158	0,151	0,059	0,194	0,186	0,086	0,282	0,271	0,112	0,370	0,355	0,128	0,422	0,400
3/8"	9,52	0,059	0,193	0,185	0,072	0,238	0,228	0,107	0,353	0,338	0,144	0,475	0,455	0,171	0,563	0,510
7/16"	11,11	0,069	0,228	0,218	0,086	0,283	0,217	0,128	0,423	0,406	0,176	0,581	0,557	0,213	0,704	0,590
1/2"	12,70	0,080	0,263	0,252	0,099	0,327	0,314	0,150	0,494	0,473	0,208	0,687	0,658	0,256	0,844	0,825
9/16"	14,28	0,090	0,298	0,286	0,113	0,372	0,356	0,171	0,565	0,541	0,240	0,793	0,760	0,299	0,985	0,062
5/8"	15,87	0,101	0,333	0,319	0,126	0,416	0,399	0,193	0,635	0,609	0,272	0,898	0,860	0,341	1,130	1,100
3/4"	19,05	0,122	0,403	0,387	0,153	0,505	0,484	0,235	0,776	0,744	0,337	1,110	1,060	0,427	1,410	1,350
7/8"	22,22	0,144	0,473	0,454	0,180	0,593	0,569	0,278	0,918	0,879	0,401	1,320	1,270	0,512	1,609	1,620
1"	25,40	0,165	0,544	0,521	0,207	0,682	0,654	0,321	1,060	1,010	0,465	1,530	1,470	0,597	1,970	1,890
1,1/8"	28,57	0,186	0,614	0,588	1,234	0,771	0,739	0,374	1,200	1,150	0,553	1,740	1,670	0,683	2,250	2,180
1,1/4"	31,75	0,207	0,684	0,655	0,261	0,860	0,824	0,407	1,340	1,290	0,593	1,950	1,870	0,768	2,530	2,430
1,3/8"	34,92	0,229	0,754	0,723	0,288	0,948	0,909	0,450	1,480	1,420	0,657	2,170	2,080	0,854	2,810	2,700
1,1/2"	38,10	0,250	0,824	0,790	0,315	1,040	0,994	0,492	1,620	1,560	0,721	2,380	2,280	0,939	3,100	2,970
1,5/8"	41,27	0,271	0,893	0,857	0,342	1,130	1,080	0,535	1,760	1,690	0,785	2,590	2,480	1,020	3,380	3,240
1,3/4"	44,45	0,293	0,964	0,924	0,369	1,210	1,160	0,578	1,910	1,830	0,849	2,800	2,680	1,110	3,660	3,510
1,7/8"	47,62	0,314	1,030	0,991	0,395	1,300	1,250	0,621	2,050	1,960	0,913	3,010	2,890	1,200	3,940	3,780
2"	50,80	0,335	1,100	1,060	0,422	1,390	1,330	0,664	2,190	2,100	0,977	3,220	3,090	1,280	4,220	4,050
2,1/8"	53,97	0,356	1,170	1,130	0,449	1,480	1,420	0,706	2,330	2,230	1,040	3,430	3,290	1,370	4,500	4,320
2,1/4"	57,15	0,378	1,240	1,190	0,476	1,570	1,500	0,749	2,470	2,370	1,110	3,640	3,490	1,450	4,780	4,580
2,3/8"	60,33	0,399	1,310	1,260	0,503	1,660	1,590	0,792	2,610	2,500	1,170	3,860	3,700	1,540	5,070	4,850
2,1/2"	63,50	0,420	1,390	1,330	0,530	1,750	1,670	0,835	2,750	2,640	1,230	4,060	3,900	1,620	5,350	5,120
2,5/8"	66,67	0,442	1,460	1,390	0,557	1,840	1,760	0,878	2,890	2,770	1,300	4,280	4,100	1,710	5,630	5,390
2,3/4"	69,85	0,463	1,530	1,460	0,584	1,930	1,850	0,921	3,030	2,910	1,360	4,490	4,300	1,790	5,910	5,680
3"	76,20	0,505	1,670	1,600	0,638	2,100	2,020	1,010	3,320	3,180	1,490	4,910	4,710	1,960	6,470	6,200
3,1/4"	82,55	-	-	-	-	-	-	1,091	3,599	3,441	1,619	5,392	5,212	2,133	7,111	6,874
3,1/2"	88,90	-	-	-	-	-	-	1,173	3,881	3,709	1,800	5,910	5,680	2,250	7,830	7,450
3,3/4"	95,25	-	-	-	-	-	-	1,258	4,162	3,977	1,974	6,243	6,038	2,550	8,300	7,969
4"	101,60	-	-	-	-	-	-	1,344	4,444	4,245	2,020	6,673	6,451	2,610	8,719	8,250

tubos de aço inox peso p/metro sem costura

Diâmetro externo	Parede	Peso	Diâmetro externo	Parede	Peso	Diâmetro externo	Parede	Peso
5,00	1,00	0,125	23,00	1,50	0,807	48,30	2,60	2,990
8,00	1,00	0,175	25,00	1,50	0,883	48,30	3,20	3,640
10,00	1,00	0,225	25,00	1,60	0,937	51,00	1,50	1,880
10,20	1,00	0,232	25,00	2,00	1,150	51,00	2,60	3,170
10,20	1,60	0,347	25,40	1,65	1,070	53,00	1,50	1,930
10,20	2,00	0,404	25,40	2,11	1,340	54,00	2,00	2,620
12,00	1,00	0,275	25,40	2,77	1,570	57,00	2,00	2,780
12,70	1,00	0,288	26,90	1,60	1,020	57,00	2,90	3,960
13,50	2,30	0,648	26,90	2,60	1,590	60,30	2,00	2,940
14,00	1,00	0,325	28,00	1,50	0,995	60,30	2,60	3,780
14,00	2,00	0,592	30,00	2,00	1,400	60,30	3,60	5,150
15,00	1,50	0,506	30,00	2,60	1,756	63,50	2,00	3,032
15,87	1,20	0,434	31,75	1,65	1,220	63,50	2,60	3,990
16,00	1,00	0,376	32,00	1,50	1,130	70,00	2,00	3,430
17,20	1,60	0,629	33,00	1,50	1,165	70,00	2,90	4,990
17,20	2,30	0,863	33,70	1,60	1,290	76,10	2,00	3,740
18,00	1,00	0,426	33,70	2,00	1,600	76,10	2,90	5,360
18,00	1,50	0,619	33,70	3,20	2,460	76,10	3,60	6,580
19,05	1,65	0,783	35,00	1,50	1,260	88,90	2,90	6,290
19,05	2,11	0,971	38,00	1,50	1,370	88,90	3,60	7,740
20,00	1,00	0,476	38,00	1,60	1,470	88,90	4,00	8,560
20,00	1,50	0,694	38,00	2,00	1,820	101,60	3,60	8,900
20,00	1,65	0,737	38,00	2,60	2,320	108,00	3,00	7,880
20,00	2,00	0,901	42,40	1,60	1,650	108,00	4,00	10,500
21,30	1,60	0,795	42,40	3,20	3,160	114,30	4,55	12,470
21,30	2,00	0,974	44,50	2,00	2,140	121,00	4,00	11,670
21,30	2,60	1,230	44,50	2,90	3,040	133,00	4,00	13,000
22,00	2,00	0,987	48,30	2,00	2,330	159,00	4,50	17,300

com costura

Diâmetro externo	Parede	Peso	Diâmetro externo	Parede	Peso	Diâmetro externo	Parede	Peso
1,00	0,17	0,0035	20,00	1,50	0,694	48,26	1,65	1,934
1,20	0,18	0,0046	20,00	1,60	0,737	48,26	2,00	2,327
1,40	0,19	0,0058	21,30	1,60	0,795	50,80	1,00	1,830
1,50	0,19	0,0062	23,00	1,50	0,807	50,80	1,20	1,850
1,60	0,19	0,0070	25,40	1,00	0,613	50,80	1,50	1,880
1,80	0,20	0,0080	25,40	1,20	0,759	50,80	1,65	1,980
2,00	0,20	0,0089	25,40	1,50	0,901	50,80	2,00	2,470
2,50	0,25	0,0140	25,40	1,65	0,985	53,00	1,50	1,930
3,00	0,25	0,0170	25,40	2,00	1,178	54,00	1,60	2,110
3,17	0,50	0,0330	26,90	1,60	1,020	54,00	2,00	2,620
4,00	0,50	0,0400	26,90	2,00	1,260	57,00	2,00	2,780
5,00	0,50	0,0560	28,00	1,00	0,676	60,30	1,60	2,370
6,00	0,50	0,0690	28,00	1,50	0,995	60,30	2,00	2,940
6,00	1,00	0,125	28,00	1,60	1,060	63,50	1,60	2,500
8,00	1,00	0,175	30,00	1,50	1,070	63,50	2,00	3,032
9,52	0,89	0,189	30,00	1,60	1,140	68,00	1,60	2,619
10,00	1,00	0,225	30,00	2,00	1,400	68,00	2,00	3,255
10,20	1,00	0,232	32,00	1,00	0,779	70,00	1,60	2,760
12,00	1,00	0,275	32,00	1,20	0,958	70,00	2,00	3,430
12,70	1,00	0,288	32,00	1,50	1,150	78,10	1,60	3,010
12,70	1,20	0,340	32,00	1,65	1,259	76,10	2,00	3,740
13,50	1,00	0,313	32,00	2,00	1,509	83,00	1,50	3,060
14,00	1,00	0,325	33,70	1,60	1,290	84,00	2,00	4,100
14,00	2,00	0,592	33,70	2,00	1,600	88,90	1,60	3,520
15,87	1,00	0,360	35,00	1,50	1,260	88,90	2,00	4,350
15,87	1,20	0,434	35,00	1,60	1,340	103,00	1,50	3,810
15,87	1,50	0,512	38,00	1,00	0,932	104,00	2,00	5,110
16,00	1,00	0,369	38,10	1,20	1,158	114,30	2,00	5,660
16,00	1,50	0,530	38,10	1,50	1,380	128,00	1,50	4,750
17,20	1,00	0,408	38,10	1,65	1,513	129,00	2,00	6,360
17,20	1,60	0,629	38,10	2,00	1,814	153,00	1,50	5,690
18,00	1,00	0,428	40,00	2,00	1,900	154,00	2,00	7,610
18,00	1,50	0,619	42,40	1,60	1,650	168,30	2,60	10,900
19,05	1,00	0,454	42,40	2,00	2,040	203,00	1,50	7,570
19,05	1,20	0,559	43,00	1,50	1,580	204,00	2,00	10,100
19,05	1,50	0,662	44,50	2,00	2,140	205,00	2,50	12,700
19,05	1,65	0,721	48,26	1,00	1,189	206,00	3,00	15,200
19,05	2,00	0,875	48,26	1,20	1,478	219,10	2,60	14,200
20,00	1,00	0,476	48,26	1,50	1,764	254,00	2,00	12,600

tubos de aço inox peso p/metro

PADRÃO SCHEDULE

Polegada	Milímetro	Espessuras de Parede e Peso por Metro											
		5 - S		10 - S		20 - S		40 - S		80 - S		160 - S	
		Par	Peso	Par	Peso	Par	Peso	Par	Peso	Par	Peso	Par	Peso
1/8"	10,20	-	-	1,24	0,280	1,50	0,320	1,73	0,370	2,41	0,460	-	-
1/4"	13,72	-	-	1,65	0,500	2,00	0,580	2,24	0,630	3,02	0,810	-	-
3/8"	17,15	-	-	1,65	0,640	2,00	0,750	2,31	0,860	3,20	1,120	-	-
1/2"	21,34	1,65	0,813	2,11	1,020	2,50	1,160	2,77	1,290	3,73	1,640	4,75	1,94
3/4"	26,67	1,65	1,035	2,11	1,300	2,50	1,490	2,87	1,710	3,91	2,220	5,54	2,88
1"	33,40	1,65	1,310	2,77	2,120	3,00	2,250	3,38	2,540	4,55	3,290	6,35	4,24
1.1/4"	42,16	1,65	1,670	2,77	2,730	3,00	2,890	3,56	3,440	4,85	4,540	6,35	5,60
1.1/2"	48,26	1,65	1,930	2,77	3,160	3,00	3,350	3,65	4,110	5,08	5,480	7,14	7,24
2"	60,33	1,65	2,420	2,77	3,980	3,50	4,900	3,91	5,530	5,54	7,580	8,71	11,08
2.1/2"	73,03	2,11	3,750	3,05	5,330	3,50	6,000	5,16	8,750	7,01	11,570	9,53	14,92
3"	88,90	2,11	4,510	3,05	6,450	4,00	8,370	5,49	11,450	7,62	15,480	11,13	21,3
3.1/2"	101,60	2,11	5,170	3,05	7,400	4,00	8,620	5,74	13,760	8,08	18,900	12,70	27,8
4"	114,30	2,11	5,830	3,05	8,350	4,00	10,900	6,02	16,300	8,56	22,220	13,49	33,5
5"	141,30	2,77	9,450	3,40	11,600	5,00	16,800	6,55	22,090	9,53	31,380	15,88	49,1
6"	168,28	2,77	11,300	3,40	13,800	5,00	20,310	7,11	28,650	10,97	43,160	18,24	67,4
8"	219,08	2,77	14,800	3,76	19,900	6,50	34,100	8,18	42,970	12,70	64,570	23,02	111,3
10"	273,05	3,40	22,600	4,19	27,800	6,50	42,700	9,27	60,300	12,70	81,500	28,57	172,2
12"	323,85	3,96	31,400	4,57	36,000	6,50	50,900	9,27	71,900	12,70	97,400	33,34	238,8
14"	355,60	3,96	34,400	4,78	41,300	-	-	-	-	-	-	-	-
16"	406,40	4,20	41,500	4,78	47,300	-	-	-	-	-	-	-	-
18"	457,20	4,20	46,800	4,78	53,200	-	-	-	-	-	-	-	-
20"	508,00	4,78	59,300	5,54	68,600	-	-	-	-	-	-	-	-
24"	609,60	5,54	82,500	6,35	94,500	-	-	-	-	-	-	-	-

MECÂNICO

Diâmetros		Peso por metro	Diâmetros		Peso por metro	Diâmetros		Peso por metro
Externo	Interno		Externo	Interno		Externo	Interno	
32	20	4,230	85	45	33,700	140	112	48,200
32	16	5,110	90	71	20,800	140	100	63,800
36	25	4,580	90	63	27,400	140	90	75,400
36	20	5,960	90	56	32,500	140	80	85,900
36	16	6,840	90	50	36,400	150	125	47,800
40	28	5,530	95	50	42,300	150	106	74,700
40	25	6,510	100	80	24,600	150	95	88,300
40	20	7,890	100	71	32,900	150	80	104,400
45	32	6,750	100	63	39,500	160	132	56,600
45	28	8,230	100	56	44,600	160	122	72,100
45	20	10,600	106	80	32,600	160	112	86,500
50	36	8,080	106	71	40,800	170	140	64,300
50	32	9,750	106	63	47,400	170	130	80,800
50	25	12,200	106	56	52,500	170	118	99,100
56	40	10,300	112	90	30,400	180	150	68,900
56	36	12,100	112	80	40,800	180	140	86,600
56	28	15,300	112	71	49,200	180	125	111,000
63	50	10,000	112	63	55,800	190	160	73,500
63	40	15,608	118	90	39,200	190	150	92,400
63	36	17,500	118	80	49,700	190	132	123,600
63	32	19,100	118	71	57,900	200	160	98,400
71	56	13,000	118	63	64,600	200	150	117,300
71	45	19,800	125	100	38,400	200	140	135,200
71	40	22,400	125	90	50,100	212	170	109,700
71	36	24,300	125	80	60,500	212	130	183,300
75	40	26,200	125	71	68,900	224	180	121,600
80	63	16,500	132	106	42,300	224	140	200,200
80	50	25,500	132	90	61,900	236	190	134,200
80	45	28,500	132	80	72,000	236	150	217,600
80	40	31,100	132	71	80,300	250	200	153,700

cantoneiras peso por metro

Largura	Espes-sura	Material			Largura	Espes-sura	Material		
		Alumínio	Aço Inoxidável	Latão			Alumínio	Aço Inoxidável	Latão
1/2"	1/16"	0,102	0,295	0,319	1.1/2"	1/4"	1,200	3,480	3,730
1/2"	3/32"	0,148	0,429	0,461	1.3/4"	1/16"	0,375	1,087	1,170
1/2"	1/8"	0,190	0,551	0,593	1.3/4"	3/32"	0,556	1,612	1,730
1/2"	5/32"	0,230	0,667	0,716	1.3/4"	1/8"	0,734	2,128	2,290
1/2"	3/16"	0,265	0,770	0,827	1/3/4"	5/32"	0,910	2,639	2,840
5/8"	1/16"	0,130	0,377	0,404	1/3/4"	3/16"	1,080	3,132	3,370
5/8"	3/32"	0,189	0,540	0,589	1.3/4"	1/4"	1,420	4,118	4,410
5/8"	1/8"	0,245	0,710	0,763	2"	1/16"	0,429	1,244	1,340
5/8"	5/32"	0,298	0,864	0,929	2"	3/32"	0,639	1,850	1,990
5/8"	3/16"	0,347	1,006	1,080	2"	1/8"	0,842	2,442	2,630
3/4"	1/16"	0,157	0,455	0,489	2"	5/32"	1,050	3,045	3,260
3/4"	3/32"	0,230	0,667	0,716	2"	3/16"	1,240	3,597	3,880
3/4"	1/8"	0,299	0,867	0,932	2"	1/4"	1,630	4,717	5,090
3/4"	5/32"	0,366	1,061	1,140	2.1/4"	1/16"	0,484	1,404	1,510
3/4"	3/16"	0,428	1,211	1,340	2.1/4"	3/32"	0,719	2,083	2,240
7/8"	1/16"	0,184	0,533	0,574	2.1/4"	1/8"	0,951	2,734	2,970
7/8"	3/32"	0,270	0,783	0,843	2.1/4"	5/32"	1,180	3,431	3,690
7/8"	1/8"	0,353	1,023	1,090	2.1/4"	3/16"	1,410	4,082	4,390
7/8"	5/32"	0,434	1,258	1,290	2.1/4"	1/4"	1,850	4,727	5,070
7/8"	3/16"	0,510	1,579	1,590	2.1/2"	1/16"	0,538	1,560	1,680
1"	1/16"	0,211	0,611	0,659	2.1/2"	3/32"	0,801	2,323	2,500
1"	3/32"	0,311	0,901	0,970	2.1/2"	1/8"	1,060	3,074	3,310
1"	1/8"	0,408	1,183	1,270	2.1/2"	5/32"	1,320	3,828	4,110
1"	5/32"	0,502	1,455	1,570	2.1/2"	3/16"	1,570	4,453	4,900
1"	3/16"	0,592	1,717	1,850	2.1/2"	1/4"	2,070	6,003	6,450
1"	1/4"	0,762	2,209	2,380	2.1/2"	5/16"	2,549	7,412	8,120
1.1/8"	1/16"	0,238	0,690	0,744	2.1/2"	3/8"	3,019	8,779	9,618
1.1/8"	3/32"	0,352	1,021	1,100	2.3/4"	3/32"	0,882	2,565	2,810
1.1/8"	1/8"	0,462	1,339	1,440	2.3/4"	1/8"	1,168	3,397	3,722
1.1/8"	5/32"	0,570	1,653	1,780	2.3/4"	5/32"	1,455	4,231	4,635
1.1/8"	3/16"	0,673	1,949	2,100	2.3/4"	3/16"	1,734	5,042	5,523
1.1/8"	1/4"	0,871	2,525	2,720	2.3/4"	1/4"	2,286	6,647	7,282
1.1/4"	1/16"	0,266	0,771	0,829	2.3/4"	5/16"	2,821	8,202	8,986
1.1/4"	3/32"	0,393	1,130	1,220	2.3/4"	3/8"	3,346	9,728	10,658
1.1/4"	1/8"	0,516	1,496	1,610	3"	3/32"	0,964	2,803	3,071
1.1/4"	5/32"	0,638	1,850	1,990	3"	1/8"	1,277	3,713	4,068
1.1/4"	3/16"	0,755	2,189	2,250	3"	5/32"	1,591	4,625	5,067
1.1/4"	1/4"	0,980	2,840	3,060	3"	3/16"	1,897	5,516	6,043
1.1/2"	1/16"	0,320	0,928	0,999	3"	1/4"	2,504	7,280	7,975
1.1/2"	3/32"	0,474	1,374	1,480	3"	5/16"	3,093	8,993	9,825
1.1/2"	1/8"	0,625	1,812	1,950	3"	3/8"	3,672	10,670	11,698
1.1/2"	5/32"	0,774	2,245	2,410	3"	1/4"	4,790	13,927	15,258
1.1/2"	3/16"	0,918	2,662	2,860					

Tubos de cobre para condução elétrica – I.P.S.

Bitola pol. I.P.S.	Diâmetro Externo	Diâmetro Interno	Espessura da parede	Peso por metro
	mm	mm	mm	(kg)
1/8"	10,29	7,13	1,58	0,396
1/4"	13,71	9,55	2,08	0,675
3/8"	17,15	12,57	2,29	0,945
1/2"	21,34	15,90	2,72	1,395
3/4"	26,67	20,87	2,90	1,926
1"	33,40	27,00	3,20	2,736
1.1/4"	42,17	34,75	3,71	4,140
1.1/2"	48,26	40,64	3,81	4,770
2"	60,32	52,40	3,96	6,300
2.1/2"	73,03	63,53	4,75	9,180
3"	88,90	77,78	5,56	13,05
3.1/2"	101,60	88,90	6,35	16,65
4"	114,30	101,60	6,35	18,35
5"	141,27	128,57	6,35	24,57
6"	168,28	155,58	6,35	29,61

tarugos de bronze 500 mm

Diâmetro	Peso	Diâmetro	Peso	Diâmetro	Peso	Diâmetro	Peso	Diâmetro	Peso
3/8"	0,325	2.3/4"	17,900	5.3/8"	67,100	8"	144,000	10.5/8"	258,100
7/16"	0,450	2.7/8"	19,500	5.1/2"	70,250	8.1/8"	147,000	10.3/4"	265,900
1/2"	0,575	3"	21,250	5.5/8"	73,400	8.1/4"	151,000	10.7/8"	274,100
9/16"	0,700	3.1/8"	23,000	5.3/4"	76,600	8.3/8"	154,000	11"	281,300
5/8"	1,060	3.1/4"	24,750	5.7/8"	80,000	8.1/2"	157,000	11.1/8"	286,600
3/4"	1,500	3.3/8"	26,750	6"	83,250	8.5/8"	160,000	11.1/4"	290,900
7/8"	2,000	3.1/2"	28,750	6.1/8"	86,000	8.3/4"	166,000	11.3/8"	298,400
1"	2,550	3.5/8"	30,850	6.1/4"	89,000	8.7/8"	174,000	11.1/2"	305,200
1.1/8"	3,200	3.3/4"	33,000	6.3/8"	92,000	9"	185,000	11.5/8"	311,400
1.1/4"	3,900	3.7/8"	35,250	6.1/2"	98,000	9.1/8"	190,000	11.3/4"	319,100
1.3/8"	4,700	4"	37,500	6.5/8"	101,000	9.1/4"	195,000	11.7/8"	325,800
1.1/2"	5,550	4.1/8"	39,750	6.3/4"	103,000	9.3/8"	200,000	12"	329,200
1.5/8"	6,500	4.1/4"	42,250	6.7/8"	108,000	9.1/2"	205,000	12.1/8"	339,400
1.3/4"	7,500	4.3/8"	44,750	7"	115,000	9.5/8"	210,000	12.1/4"	348,300
1.7/8"	8,550	4.1/2"	47,250	7.1/8"	117,000	9.3/4"	215,000	12.3/8"	356,100
2"	9,650	4.5/8"	50,000	7.1/4"	120,000	9.7/8"	220,000	12.1/2"	363,300
2.1/8"	10,850	4.3/4"	52,650	7.3/8"	126,000	10"	227,000	12.5/8"	372,800
2.1/4"	12,100	4.7/8"	55,500	7.1/2"	131,000	10.1/8"	234,000	12.3/4"	378,800
2.3/8"	13,500	5"	58,250	7.5/8"	133,000	10.1/4"	241,000	12.7/8"	385,300
2.1/2"	14,850	5.1/8"	61,100	7.3/4"	137,000	10.3/8"	248,000	13"	394,400
2.5/8"	16,850	5.1/4"	64,100	7.7/8"	140,000	10.1/2"	252,000	-	-

chapas de bronze fosforoso

medida padrão: 1000x200mm

Espessuras			PESO	Espessuras			PESO
N.º (BWG)	Poleg.	m/m		N.º (BWG)	Poleg.	m/m	
-	-	0,05	0,090	24	-	0,55	0,990
-	-	0,08	0,140	23	-	0,64	1,080
-	-	0,10	0,180	22	-	0,71	1,260
-	-	0,15	0,270	21	1/32"	0,79	1,440
-	-	0,20	0,360	20	-	0,89	1,620
-	-	0,25	0,450	19	-	1,06	1,800
30	-	0,30	0,540	18	-	1,24	2,300
28	-	0,35	0,630	17	-	1,47	2,700
27	-	0,41	0,720	16	1/16"	1,58	3,030
26	-	0,45	0,810	-	-	2,00	3,600
25	-	0,50	0,900	11	1/8"	3,17	5,500

bobinas de cobre peso p/metro linear

Largura		Espessuras						
Polegada	Milímetro	0,30 mm	0,35 mm	0,40 mm	0,45 mm	0,50 mm	0,55 mm	0,60 mm
10"	254,00	0,680	0,790	1,020	1,130	1,180	1,240	1,400
12"	304,80	0,810	0,950	1,080	1,220	1,360	1,490	1,680
14"	355,60	0,950	1,110	1,260	1,420	1,580	1,840	1,960
16"	406,40	1,080	1,260	1,450	1,630	1,810	1,990	2,240
18"	457,20	1,220	1,440	1,630	1,830	2,030	1,240	2,520
20"	508,00	1,350	1,580	1,830	2,030	2,260	2,490	2,800
22"	558,80	1,490	1,740	1,990	2,240	2,490	2,730	2,080
24"	609,60	1,630	1,900	2,170	2,440	2,710	2,980	3,360

buchas de bronze 500 mm

Diâmetro		Peso	Diâmetro		Peso	Diâmetro		Peso
Externo	Interno		Externo	Interno		Externo	Interno	
7/8"	1/2"	1,550	2.1/8"	1"	8,850	2.3/4"	1.1/2"	13,250
7/8"	5/8"	1,275	2.1/8"	1.1/8"	8,300	2.3/4"	1.5/8"	12,400
1"	1/2"	2,100	2.1/8"	1.1/4"	7,675	2.3/4"	1.3/4"	11,500
1"	5/8"	1,850	2.1/8"	1.3/8"	6,950	2.3/4"	1.7/8"	10,500
1"	3/4"	1,500	2.1/8"	1.1/2"	6,175	2.3/4"	2"	9,500
1.1/8"	1/2"	2,750	2.1/8"	1.5/8"	5,300	2.3/4"	2.1/8"	8,250
1.1/8"	5/8"	2,500	2.1/8"	1.3/4"	4,375	2.3/4"	2.1/4"	7,100
1.1/8"	3/4"	2,150	2.1/4"	1/2"	11,500	2.3/4"	2.3/8"	5,750
1.1/8"	7/8"	1,700	2.1/4"	5/8"	11,250	2.7/8"	1/2"	19,000
1.1/4"	1/2"	3,450	2.1/4"	3/4"	11,000	2.7/8"	5/8"	18,750
1.1/4"	5/8"	3,200	2.1/4"	7/8"	10,500	2.7/8"	3/4"	18,500
1.1/4"	3/4"	2,850	2.1/4"	1"	10,100	2.7/8"	7/8"	18,000
1.1/4"	7/8"	2,425	2.1/4"	1.1/8"	9,500	2.7/8"	1"	17,550
1.1/4"	1"	1,925	2.1/4"	1.1/4"	8,900	2.7/8"	1.1/8"	17,000
1.3/8"	1/2"	4,250	2.1/4"	1.3/8"	8,250	2.7/8"	1.1/4"	16,400
1.3/8"	5/8"	4,000	2.1/4"	1.1/2"	7,400	2.7/8"	1.3/8"	15,700
1.3/8"	3/4"	3,650	2.1/4"	1.5/8"	6,600	2.7/8"	1.1/2"	14,850
1.3/8"	7/8"	3,225	2.1/4"	1.3/4"	5,650	2.7/8"	1.5/8"	14,000
1.3/8"	1"	2,700	2.1/4"	1.7/8"	4,750	2.7/8"	1.3/4"	13,100
1.3/8"	1.1/8"	2,150	2.3/8"	1/2"	13,000	2.7/8"	1.7/8"	12,100
1.1/2"	1/2"	5,100	2.3/8"	5/8"	12,650	2.7/8"	2"	11,100
1.1/2"	5/8"	4,850	2.3/8"	3/4"	12,400	2.7/8"	2.1/8"	9,850
1.1/2"	3/4"	4,500	2.3/8"	7/8"	12,000	2.7/8"	2.1/4"	8,750
1.1/2"	7/8"	4,075	2.3/8"	1"	11,500	2.7/8"	2.3/8"	7,500
1.1/2"	1"	3,575	2.3/8"	1.1/8"	10,900	2.7/8"	2.1/2"	6,100
1.1/2"	1.1/8"	3,000	2.3/8"	1.1/4"	10,250	3"	1/2"	20,500
1.1/2"	1.1/4"	2,350	2.3/8"	1.3/8"	9,550	3"	5/8"	19,800
1.5/8"	1/2"	6,050	2.3/8"	1.1/2"	8,750	3"	3/4"	19,000
1.5/8"	5/8"	5,775	2.3/8"	1.5/8"	7,950	3"	7/8"	18,800
1.5/8"	3/4"	5,400	2.3/8"	1.3/4"	7,000	3"	1"	18,600
1.5/8"	7/8"	5,000	2.3/8"	1.7/8"	6,050	3"	1.1/8"	18,500
1.5/8"	1"	4,500	2.3/8"	2"	5,000	3"	1.1/4"	18,000
1.5/8"	1.1/8"	3,925	2.1/2"	1/2"	14,250	3"	1.3/8"	17,400
1.5/8"	1.1/4"	3,300	2.1/2"	5/8"	14,000	3"	1.1/2"	16,600
1.5/8"	1.3/8"	2,550	2.1/2"	3/4"	13,750	3"	1.5/8"	15,750
1.3/4"	1/2"	7,050	2.1/2"	7/8"	13,350	3"	1.3/4"	14,750
1.3/4"	5/8"	6,750	2.1/2"	1"	12,900	3"	1.7/8"	13,850
1.3/4"	3/4"	6,400	2.1/2"	1.1/8"	12,250	3"	2"	12,750
1.3/4"	7/8"	6,000	2.1/2"	1.1/4"	11,700	3"	2.1/8"	11,600
1.3/4"	1"	5,500	2.1/2"	1.3/8"	11,000	3"	2.1/4"	10,500
1.3/4"	1.1/8"	4,925	2.1/2"	1.1/2"	10,200	3"	2.3/8"	9,100
1.3/4"	1.1/4"	4,300	2.1/2"	1.5/8"	9,350	3"	2.1/2"	7,800
1.3/4"	1.3/8"	3,550	2.1/2"	1.3/4"	8,400	3"	2.5/8"	6,400
1.3/4"	1.1/2"	2,800	2.1/2"	1.7/8"	7,500	3.1/8"	1/2"	22,500
1.7/8"	1/2"	8,100	2.1/2"	2"	6,400	3.1/8"	5/8"	22,000
1.7/8"	5/8"	7,825	2.1/2"	2.1/8"	5,250	3.1/8"	3/4"	21,700
1.7/8"	3/4"	7,450	2.5/8"	1/2"	15,750	3.1/8"	7/8"	21,500
1.7/8"	7/8"	7,050	2.5/8"	5/8"	15,500	3.1/8"	1"	21,000
1.7/8"	1"	6,550	2.5/8"	3/4"	15,250	3.1/8"	1.1/8"	20,500
1.7/8"	1.1/8"	5,975	2.5/8"	7/8"	14,800	3.1/8"	1.1/4"	20,000
1.7/8"	1.1/4"	5,350	2.5/8"	1"	14,300	3.1/8"	1.3/8"	19,000
1.7/8"	1.3/8"	4,625	2.5/8"	1.1/8"	13,750	3.1/8"	1.1/2"	18,300
1.7/8"	1.1/2"	3,850	2.5/8"	1.1/4"	13,200	3.1/8"	1.5/8"	17,400
1.7/8"	1.5/8"	3,000	2.5/8"	1.3/8"	12,500	3.1/8"	1.3/4"	16,600
2"	1/2"	9,225	2.5/8"	1.1/2"	11,700	3.1/8"	1.7/8"	15,600
2"	5/8"	8,950	2.5/8"	1.5/8"	10,800	3.1/8"	2"	14,500
2"	3/4"	8,600	2.5/8"	1.3/4"	10,000	3.1/8"	2.1/8"	13,300
2"	7/8"	8,150	2.5/8"	1.7/8"	9,000	3.1/8"	2.1/4"	12,250
2"	1"	7,675	2.5/8"	2"	7,900	3.1/8"	2.3/8"	10,400
2"	1.1/8"	7,100	2.5/8"	2.1/8"	6,750	3.1/8"	2.1/2"	9,600
2"	1.1/4"	6,450	2.5/8"	2.1/4"	5,500	3.1/8"	2.5/8"	8,150
2"	1.3/8"	5,750	2.3/4"	1/2"	17,350	3.1/4"	1/2"	24,000
2"	1.1/2"	4,975	2.3/4"	5/8"	17,000	3.1/4"	5/8"	23,000
2"	1.5/8"	4,100	2.3/4"	3/4"	16,800	3.1/4"	3/4"	22,500
2"	1.3/4"	3,200	2.3/4"	7/8"	16,350	3.1/4"	7/8"	22,250
2.1/8"	1/2"	10,425	2.3/4"	1"	15,950	3.1/4"	1"	22,000
2.1/8"	5/8"	10,000	2.3/4"	1.1/8"	15,300	3.1/4"	1.1/8"	21,500
2.1/8"	3/4"	9,800	2.3/4"	1.1/4"	14,750	3.1/4"	1.1/4"	21,250
2.1/8"	7/8"	9,350	2.3/4"	1.3/8"	14,000	3.1/4"	1.3/8"	20,600

buchas de bronze 500 mm

Diâmetro		Peso	Diâmetro		Peso	Diâmetro		Peso
Externo	Interno		Externo	Interno		Externo	Interno	
4.3/8"	1.1/4"	40,900	4.5/8"	3.3/4"	19,150	5"	2.1/4"	46,100
4.3/8"	1.3/8"	40,000	4.5/8"	3.7/8"	17,000	5"	2.3/8"	45,150
4.3/8"	1.1/2"	39,400	4.5/8"	4"	14,750	5"	2.1/2"	43,800
4.3/8"	1.5/8"	39,000	4.5/8"	4.1/8"	12,500	5"	2.5/8"	41,400
4.3/8"	1.3/4"	38,300	4.3/4"	1"	50,500	5"	2.3/4"	40,800
4.3/8"	1.7/8"	37,500	4.3/4"	1.1/8"	50,000	5"	2.7/8"	39,000
4.3/8"	2"	36,000	4.3/4"	1.1/4"	49,000	5"	3"	37,500
4.3/8"	2.1/8"	35,000	4.3/4"	1.3/8"	48,000	5"	3.1/8"	37,000
4.3/8"	2.1/4"	34,000	4.3/4"	1.1/2"	47,000	5"	3.1/4"	35,250
4.3/8"	2.3/8"	33,000	4.3/4"	1.3/4"	45,000	5"	3.1/2"	31,500
4.3/8"	2.1/2"	31,300	4.3/4"	1.7/8"	44,000	5"	3.5/8"	29,500
4.3/8"	2.3/4"	28,500	4.3/4"	2"	43,140	5"	3.3/4"	27,500
4.3/8"	2.7/8"	26,900	4.3/4"	2.1/8"	42,000	5"	3.7/8"	25,250
4.3/8"	3"	25,200	4.3/4"	2.1/4"	41,500	5"	4"	23,000
4.3/8"	3.1/8"	23,500	4.3/4"	2.3/8"	41,000	5"	4.1/8"	20,800
4.3/8"	3.1/4"	21,750	4.3/4"	2.1/2"	40,000	5"	4.1/4"	18,500
4.3/8"	3.3/8"	20,000	4.3/4"	2.5/8"	39,000	5"	4.3/8"	16,000
4.3/8"	3.1/2"	18,000	4.3/4"	2.3/4"	38,000	5"	4.1/2"	13,500
4.3/8"	3.5/8"	16,000	4.3/4"	2.7/8"	34,740	5.1/8"	1"	59,000
4.3/8"	3.3/4"	13,900	4.3/4"	3"	33,150	5.1/8"	1.1/8"	58,500
4.3/8"	3.7/8"	11,750	4.3/4"	3.1/8"	31,500	5.1/8"	1.1/4"	58,000
4.1/2"	1"	44,500	4.3/4"	3.1/4"	29,700	5.1/8"	1.3/8"	57,500
4.1/2"	1.1/8"	44,000	4.3/4"	3.3/8"	27,850	5.1/8"	1.1/2"	57,000
4.1/2"	1.1/4"	43,500	4.3/4"	3.1/2"	25,850	5.1/8"	1.5/8"	56,500
4.1/2"	1.3/8"	43,000	4.3/4"	3.5/8"	23,900	5.1/8"	1.3/4"	56,000
4.1/2"	1.1/2"	41,550	4.3/4"	3.3/4"	21,850	5.1/8"	1.7/8"	55,300
4.1/2"	1.5/8"	40,770	4.3/4"	3.7/8"	19,650	5.1/8"	2"	53,000
4.1/2"	1.3/4"	39,800	4.3/4"	4"	17,500	5.1/8"	2.1/8"	51,500
4.1/2"	1.7/8"	38,870	4.3/4"	4.1/8"	15,250	5.1/8"	2.1/4"	50,000
4.1/2"	2"	37,800	4.3/4"	4.1/4"	12,850	5.1/8"	2.3/8"	49,000
4.1/2"	2.1/8"	36,700	4.7/8"	1"	52,000	5.1/8"	2.1/2"	48,000
4.1/2"	2.1/4"	35,500	4.7/8"	1.1/8"	51,500	5.1/8"	2.5/8"	46,250
4.1/2"	2.3/8"	34,250	4.7/8"	1.1/4"	51,000	5.1/8"	2.3/4"	45,000
4.1/2"	2.1/2"	34,000	4.7/8"	1.3/8"	50,500	5.1/8"	2.7/8"	43,200
4.1/2"	2.5/8"	32,500	4.7/8"	1.1/2"	50,000	5.1/8"	3"	41,500
4.1/2"	2.3/4"	31,000	4.7/8"	1.5/8"	49,500	5.1/8"	3.1/8"	40,000
4.1/2"	2.7/8"	29,500	4.7/8"	1.3/4"	49,000	5.1/8"	3.1/4"	38,150
4.1/2"	3"	27,800	4.7/8"	1.7/8"	48,500	5.1/8"	3.3/8"	36,350
4.1/2"	3.1/8"	26,250	4.7/8"	2"	47,600	5.1/8"	3.1/2"	34,350
4.1/2"	3.1/4"	24,400	4.7/8"	2.1/8"	46,700	5.1/8"	3.5/8"	32,400
4.1/2"	3.3/8"	22,500	4.7/8"	2.1/4"	45,800	5.1/8"	3.3/4"	30,350
4.1/2"	3.1/2"	20,500	4.7/8"	2.3/8"	44,500	5.1/8"	3.7/8"	28,200
4.1/2"	3.5/8"	18,600	4.7/8"	2.1/2"	42,600	5.1/8"	4"	26,000
4.1/2"	3.3/4"	16,500	4.7/8"	2.5/8"	40,650	5.1/8"	4.1/8"	23,750
4.1/2"	3.7/8"	14,300	4.7/8"	2.3/4"	39,000	5.1/8"	4.1/4"	21,850
4.1/2"	4"	12,000	4.7/8"	2.7/8"	37,600	5.1/8"	4.3/8"	18,950
4.5/8"	1"	48,000	4.7/8"	3"	36,000	5.1/8"	4.1/2"	16,400
4.5/8"	1.1/8"	47,000	4.7/8"	3.1/8"	34,250	5.1/8"	4.5/8"	13,900
4.5/8"	1.1/4"	46,000	4.7/8"	3.1/4"	32,500	5.1/4"	1"	62,000
4.5/8"	1.3/8"	45,000	4.7/8"	3.3/8"	30,500	5.1/4"	1.1/8"	61,500
4.5/8"	1.1/2"	44,000	4.7/8"	3.1/2"	28,600	5.1/4"	1.1/4"	61,000
4.5/8"	1.5/8"	43,800	4.7/8"	3.5/8"	26,650	5.1/4"	1.3/8"	60,500
4.5/8"	1.3/4"	43,000	4.7/8"	3.3/4"	24,600	5.1/4"	1/1/2"	60,000
4.5/8"	1.7/8"	42,100	4.7/8"	3.7/8"	22,500	5.1/4"	1.5/8"	58,200
4.5/8"	2"	41,300	4.7/8"	4"	20,250	5.1/4"	1.3/4"	57,000
4.5/8"	2.1/8"	40,200	4.7/8"	4.1/8"	18,000	5.1/4"	1.7/8"	56,000
4.5/8"	2.1/4"	39,000	4.7/8"	4.1/4"	15,650	5.1/4"	2"	55,000
4.5/8"	2.3/8"	38,000	4.7/8"	4.3/8"	13,250	5.1/4"	2.1/8"	54,000
4.5/8"	2.1/2"	37,000	5"	1"	56,000	5.1/4"	2.1/4"	53,000
4.5/8"	2.5/8"	34,400	5"	1.1/8"	55,500	5.1/4"	2.3/8"	52,000
4.5/8"	2.3/4"	33,500	5"	1.1/4"	55,000	5.1/4"	2.1/2"	51,000
4.5/8"	2.7/8"	32,000	5"	1.3/8"	54,500	5.1/4"	2.5/8"	50,500
4.5/8"	3"	30,500	5"	1.1/2"	54,000	5.1/4"	2.3/4"	50,000
4.5/8"	3.1/8"	28,750	5"	1.5/8"	53,000	5.1/4"	2.7/8"	48,200
4.5/8"	3.1/4"	27,000	5"	1.3/4"	51,500	5.1/4"	3"	48,000
4.5/8"	3.3/8"	25,000	5"	1.7/8"	50,500	5.1/4"	3.1/8"	42,900
4.5/8"	3.1/2"	23,150	5"	2"	48,500	5.1/4"	3.1/4"	41,100
4.5/8"	3.5/8"	21,200	5"	2.1/8"	48,100	5.1/4"	3.3/8"	39,250

buchas de bronze 500 mm

Diâmetro		Peso	Diâmetro		Peso	Diâmetro		Peso
Externo	Interno		Externo	Interno		Externo	Interno	
5.1/4"	3.1/2"	37,300	5.1/2"	4.1/8"	32,800	5.3/4"	4.1/8"	39,250
5.1/4"	3.5/8"	35,350	5.1/2"	4.1/4"	30,500	5.3/4"	4.1/4"	36,850
5.1/4"	3.3/4"	33,300	5.1/2"	4.3/8"	28,000	5.3/4"	4.3/8"	34,400
5.1/4"	3.7/8"	31,100	5.1/2"	4.1/2"	25,500	5.3/4"	4.1/2"	21,900
5.1/4"	4"	28,900	5.1/2"	4.5/8"	23,000	5.3/4"	4.5/8"	29,400
5.1/4"	4.1/8"	26,760	5.1/2"	4.3/4"	20,300	5.3/4"	4.3/4"	26,750
5.1/4"	4.1/4"	24,340	5.1/2"	4.7/8"	17,600	5.3/4"	4.7/8"	24,000
5.1/4"	4.3/8"	21,900	5.1/2"	5"	14,800	5.3/4"	5"	21,250
5.1/4"	4.1/2"	19,300	5.5/8"	1"	71,000	5.3/4"	5.1/8"	18,400
5.1/4"	4.5/8"	16,850	5.5/8"	1.1/8"	70,500	5.3/4"	5.1/4"	15,500
5.1/4"	4.3/4"	14,250	5.5/8"	1.1/4"	70,000	5.7/8"	2"	71,000
5.3/8"	1"	65,000	5.5/8"	1.3/8"	69,500	5.7/8"	2.1/8"	70,000
5.3/8"	1.1/8"	64,500	5.5/8"	1.1/2"	69,000	5.7/8"	2.1/4"	67,900
5.3/8"	1.1/4"	64,000	5.5/8"	1.5/8"	68,500	5.7/8"	2.3/8"	66,500
5.3/8"	1.3/8"	63,500	5.5/8"	1.3/4"	68,000	5.7/8"	2.1/2"	65,100
5.3/8"	1.1/2"	63,000	5.5/8"	1.7/8"	67,500	5.7/8"	2.5/8"	65,000
5.3/8"	1.5/8"	61,500	5.5/8"	2"	66,000	5.7/8"	2.3/4"	62,100
5.3/8"	1.3/4"	60,000	5.5/8"	2.1/8"	64,500	5.7/8"	2.7/8"	60,500
5.3/8"	1.7/8"	58,500	5.5/8"	2.1/4"	63,000	5.7/8"	3"	58,750
5.3/8"	2"	56,000	5.5/8"	2.3/8"	61,500	5.7/8"	3.1/8"	57,000
5.3/8"	2.1/8"	55,000	5.5/8"	2.1/2"	60,000	5.7/8"	3.1/4"	56,250
5.3/8"	2.1/4"	54,000	5.5/8"	2.5/8"	58,550	5.7/8"	3.3/8"	55,000
5.3/8"	2.3/8"	53,000	5.5/8"	2.3/4"	57,000	5.7/8"	3.1/2"	51,250
5.3/8"	2.1/2"	52,000	5.5/8"	2.7/8"	55,500	5.7/8"	3.5/8"	49,000
5.3/8"	2.5/8"	51,250	5.5/8"	3"	53,500	5.7/8"	3.3/4"	48,000
5.3/8"	2.3/4"	51,000	5.5/8"	3.1/8"	51,000	5.7/8"	3.7/8"	47,000
5.3/8"	2.7/8"	50,500	5.5/8"	3.1/4"	50,500	5.7/8"	4"	44,750
5.3/8"	3"	50,000	5.5/8"	3.3/8"	48,500	5.7/8"	4.1/8"	42,500
5.3/8"	3.1/8"	46,000	5.5/8"	3.1/2"	46,600	5.7/8"	4.1/4"	40,150
5.3/8"	3.1/4"	44,150	5.5/8"	3.5/8"	44,200	5.7/8"	4.3/8"	37,750
5.3/8"	3.3/8"	41,300	5.5/8"	3.3/4"	42,600	5.7/8"	4.1/2"	35,200
5.3/8"	3.1/2"	40,300	5.5/8"	3.7/8"	40,500	5.7/8"	4.5/8"	32,700
5.3/8"	3.5/8"	38,400	5.5/8"	4"	38,200	5.7/8"	4.3/4"	30,000
5.3/8"	3.3/4"	36,300	5.5/8"	4.1/8"	36,000	5.5/8"	4.7/8"	23,700
5.3/8"	3.7/8"	34,150	5.5/8"	4.1/4"	33,650	5.7/8"	5"	24,500
5.3/8"	4"	31,950	5.5/8"	4.3/8"	31,200	5.7/8"	5.1/8"	21,750
5.3/8"	4.1/8"	29,750	5.5/8"	4.1/2"	28,000	5.7/8"	5.1/4"	18,800
5.3/8"	4.1/4"	27,400	5.5/8"	4.5/8"	26,150	5.7/8"	5.3/8"	15,800
5.3/8"	4.3/8"	25,000	5.5/8"	4.3/4"	23,500	6"	2"	75,500
5.3/8"	4.1/2"	22,400	5.5/8"	4.7/8"	20,750	6"	2.1/8"	73,000
5.3/8"	4.5/8"	19,900	5.5/8"	5"	18,000	6"	2.1/4"	72,000
5.3/8"	4.3/4"	17,250	5.5/8"	5.1/8"	15,150	6"	2.3/8"	70,000
5.3/8"	4.7/8"	14,500	5.3/4"	1"	75,000	6"	2.1/2"	68,700
5.1/2"	1"	68,000	5.3/4"	1.1/8"	74,000	6"	2.5/8"	66,400
5.1/2"	1.1/8"	67,500	5.3/4"	1.1/4"	73,000	6"	2.3/4"	65,800
5.1/2"	1.1/4"	67,000	5.3/4"	1.3/8"	72,000	6"	2.7/8"	64,750
5.1/2"	1.3/8"	66,500	5.3/4"	1.1/2"	71,000	6"	3"	62,700
5.1/2"	1.1/2"	66,000	5.3/4"	1.5/8"	70,000	6"	3.1/8"	60,000
5.1/2"	1.5/8"	65,500	5.3/4"	1.3/4"	69,000	6"	3.1/4"	59,300
5.1/2"	1.3/4"	64,000	5.3/4"	1.7/8"	68,000	6"	3.3/8"	56,500
5.1/2"	1.7/8"	62,500	5.3/4"	2"	67,000	6"	3.1/2"	56,700
5.1/2"	2"	61,000	5.3/4"	2.1/8"	66,000	6"	3.5/8"	52,400
5.1/2"	2.1/8"	59,500	5.3/4"	2.1/4"	65,000	6"	3.3/4"	51,200
5.1/2"	2.1/4"	58,600	5.3/4"	2.3/8"	64,000	6"	3.7/8"	50,250
5.1/2"	2.3/8"	57,300	5.3/4"	2.1/2"	63,000	6"	4"	48,100
5.1/2"	2.1/2"	56,000	5.3/4"	2.5/8"	62,000	6"	4.1/8"	46,000
5.1/2"	2.5/8"	55,400	5.3/4"	2.3/4"	61,000	6"	4.1/4"	43,500
5.1/2"	2.3/4"	53,100	5.3/4"	2.7/8"	60,000	6"	4.3/8"	41,100
5.1/2"	3"	50,000	5.3/4"	3"	54,300	6"	4.1/2"	38,500
5.1/2"	3.1/8"	48,000	5.3/4"	3.1/8"	53,800	6"	4.5/8"	36,250
5.1/2"	3.1/4"	47,250	5.3/4"	3.1/4"	51,950	6"	4.3/4"	33,250
5.1/2"	3.3/8"	45,400	5.3/4"	3.3/8"	50,000	6"	4.7/8"	30,600
5.1/2"	3.1/2"	43,450	5.3/4"	3.1/2"	49,500	6"	5"	27,750
5.1/2"	3.5/8"	41,500	5.3/4"	3.5/8"	47,900	6"	5.1/8"	25,000
5.1/2"	3.3/4"	39,500	5.3/4"	3.3/4"	45,850	6"	5.1/4"	22,150
5.1/2"	3.7/8"	37,250	5.3/4"	3.7/8"	43,550	6"	5.3/8"	19,150
5.1/2"	4"	35,000	5.3/4"	4"	41,450	6"	5.1/2"	16,150

buchas de bronze 500 mm

Diâmetro		Peso	Diâmetro		Peso	Diâmetro		Peso
Externo	Interno		Externo	Interno		Externo	Interno	
3.1/4"	1.1/2"	20,000	3.5/8"	2.5/8"	16,000	4"	2.3/8"	25,400
3.1/4"	1.5/8"	19,000	3.5/8"	2.3/4"	14,500	4"	2.1/2"	24,000
3.1/4"	1.3/4"	18,500	3.5/8"	2.7/8"	13,000	4"	2.5/8"	22,650
3.1/4"	1.7/8"	17,500	3.5/8"	3"	11,400	4"	2.3/4"	21,150
3.1/4"	2"	16,400	3.5/8"	3.1/8"	9,550	4"	2.7/8"	19,500
3.1/4"	2.1/8"	15,250	3.3/4"	1/2"	32,300	4"	3"	18,000
3.1/4"	2.1/4"	14,000	3.3/4"	5/8"	31,800	4"	3.1/8"	16,250
3.1/4"	2.3/8"	12,750	3.3/4"	3/4"	31,200	4"	3.1/4"	14,500
3.1/4"	2.1/2"	11,400	3.3/4"	7/8"	30,800	4"	3.3/8"	12,700
3.1/4"	2.5/8"	10,000	3.3/4"	1"	30,000	4"	3.1/2"	10,750
3.1/4"	2.3/4"	8,500	3.3/4"	1.1/8"	29,700	4.1/8"	1/2"	39,300
3.3/8"	1/2"	26,300	3.3/4"	1.1/4"	29,450	4.1/8"	5/8"	38,500
3.3/8"	5/8"	25,700	3.3/4"	1.3/8"	28,000	4.1/8"	3/4"	38,000
3.3/8"	3/4"	25,200	3.3/4"	1.1/2"	27,800	4.1/8"	7/8"	37,400
3.3/8"	7/8"	24,600	3.3/4"	1.5/8"	26,990	4.1/8"	1"	36,600
3.3/8"	1"	24,000	3.3/4"	1.3/4"	26,000	4.1/8"	1.1/8"	36,000
3.3/8"	1.1/8"	23,500	3.3/4"	1.7/8"	25,110	4.1/8"	1.1/4"	35,400
3.3/8"	1.1/4"	22,800	3.3/4"	2"	24,000	4.1/8"	1.3/8"	35,000
3.3/8"	1.3/8"	22,500	3.3/4"	2.1/8"	23,350	4.1/8"	1.1/2"	34,600
3.3/8"	1.1/2"	22,300	3.3/4"	2.1/4"	22,250	4.1/8"	1.5/8"	34,000
3.3/8"	1.5/8"	22,000	3.3/4"	2.3/8"	20,900	4.1/8"	1.3/4"	33,600
3.3/8"	1.3/4"	21,500	3.3/4"	1.1/2"	19,500	4.1/8"	1.7/8"	33,000
3.3/8"	1.7/8"	19,400	3.3/4"	2.5/8"	18,500	4.1/8"	2"	31,500
3.3/8"	2"	18,000	3.3/4"	2.3/4"	16,700	4.1/8"	2.1/8"	31,000
3.3/8"	2.1/8"	17,100	3.3/4"	2.7/8"	15,100	4.1/8"	2.1/4"	29,300
3.3/8"	2.1/4"	16,000	3.3/4"	3"	13,500	4.1/8"	2.3/8"	27,800
3.3/8"	2.3/8"	14,750	3.3/4"	3.1/8"	11,800	4.1/8"	2.1/2"	26,500
3.3/8"	2.1/2"	13,350	3.1/4"	3.1/4"	10,000	4.1/8"	2.5/8"	25,500
3.3/8"	2.5/8"	12,000	3.7/8"	1/2"	34,500	4.1/8"	2.3/4"	23,500
3.3/8"	2.3/4"	10,500	3.7/8"	5/8"	34,000	4.1/8"	2.7/8"	22,000
3.3/8"	2.7/8"	8,900	3.7/8"	3/4"	33,500	4.1/8"	3"	20,250
3.1/2"	1/2"	28,000	3.7/8"	7/8"	33,000	4.1/8"	3.1/8"	18,650
3.1/2"	5/8"	27,600	3.7/8"	1"	32,500	4.1/8"	3.1/4"	16,850
3.1/2"	3/4"	27,300	3.7/8"	1.1/8"	31,800	4.1/8"	3.3/8"	15,000
3.1/2"	7/8"	27,000	3.7/8"	1.1/4"	31,000	4.1/8"	3.1/2"	13,000
3.1/2"	1"	26,350	3.7/8"	1.3/8"	30,500	4.1/8"	3.5/8"	11,000
3.1/2"	1.1/8"	26,000	3.7/8"	1.1/2"	30,000	4.1/4"	1/2"	42,500
3.1/2"	1.1/4"	25,210	3.7/8"	1.5/8"	29,300	4.1/4"	5/8"	41,500
3.1/2"	1.3/8"	24,010	3.7/8"	1.3/4"	28,500	4.1/4"	3/4"	41,000
3.1/2"	1.1/2"	23,700	3.7/8"	1.7/8"	27,500	4.1/4"	7/8"	40,000
3.1/2"	1.5/8"	22,920	3.7/8"	2"	26,500	4.1/4"	1"	39,500
3.1/2"	1.3/4"	22,000	3.7/8"	2.1/8"	25,000	4.1/4"	1.1/8"	39,000
3.1/2"	1.7/8"	21,000	3.7/8"	2.1/4"	24,400	4.1/4"	1.1/4"	38,000
3.1/2"	2"	20,300	3.7/8"	2.3/8"	23,100	4.1/4"	1.3/8"	37,600
3.1/2"	2.1/8"	19,100	3.7/8"	2.1/2"	21,750	4.1/4"	1.1/2"	36,500
3.1/2"	2.1/4"	18,000	3.7/8"	2.5/8"	20,350	4.1/4"	1.5/8"	36,000
3.1/2"	2.3/8"	16,750	3.7/8"	2.3/4"	18,900	4.1/4"	1.3/4"	35,100
3.1/2"	2.1/2"	15,300	3.7/8"	2.7/8"	17,250	4.1/4"	1.7/8"	34,120
3.1/2"	2.5/8"	14,000	3.7/8"	3"	15,650	4.1/4"	2"	33,000
3.1/2"	2.3/4"	12,500	3.7/8"	3.1/8"	14,000	4.1/4"	2.1/8"	31,800
3.1/2"	2.7/8"	10,900	3.7/8"	3.1/4"	12,250	4.1/4"	2.1/4"	30,800
3.1/2"	3"	9,250	3.7/8"	3.3/8"	11,500	4.1/4"	2.3/8"	30,250
3.5/8"	1/2"	30,000	3.7/8"	3.1/2"	10,600	4.1/4"	2.1/2"	28,750
3.5/8"	5/8"	29,700	3.7/8"	3.5/8"	10,400	4.1/4"	2.5/8"	27,400
3.5/8"	3/4"	29,400	4"	1/2"	36,800	4.1/4"	2.3/4"	26,000
3.5/8"	7/8"	29,000	4"	5/8"	36,000	4.1/4"	2.7/8"	24,400
3.5/8"	1"	28,000	4"	3/4"	35,400	4.1/4"	3"	22,750
3.5/8"	1.1/8"	27,600	4"	7/8"	34,800	4.1/4"	3.1/8"	21,000
3.5/8"	1.1/4"	27,300	4"	1"	34,700	4.1/4"	3.1/4"	19,250
3.5/8"	1.3/8"	27,000	4"	1.1/8"	34,200	4.1/4"	3.3/8"	17,500
3.5/8"	1.1/2"	26,150	4"	1.1/4"	33,560	4.1/4"	3.1/2"	15,500
3.5/8"	1.5/8"	25,500	4"	1.3/8"	32,800	4.1/4"	3.5/8"	13,500
3.5/8"	1.3/4"	23,500	4"	1.1/2"	32,000	4.1/4"	3.3/4"	11,400
3.5/8"	1.7/8"	22,600	4"	1.5/8"	31,250	4.3/8"	1/2"	44,000
3.5/8"	2"	22,000	4"	1.3/4"	30,350	4.3/8"	5/8"	43,300
3.5/8"	2.1/8"	20,250	4"	1.7/8"	29,350	4.3/8"	3/4"	42,800
3.5/8"	2.1/4"	20,000	4"	2"	28,000	4.3/8"	7/8"	42,500
3.5/8"	2.3/8"	18,750	4"	2.1/8"	27,000	4.3/8"	1"	42,000
3.5/8"	2.1/2"	17,500	4"	2.1/4"	26,000	4.3/8"	1.1/8"	41,000

TABELA DE CONVERSÃO DE DUREZAS

Rockwell C(HRC)	Brinell H.B	Vickers H.V	Rockwell			Shore	Rockwell C(HRC)	Brinell H.B	Vickers H.V	Rockwell			Shore
			A HRA	B HRA	D HRA					A HRA	B HRA	D HRA	
68	—	940	85,6	—	76	97	38	353	372	69,4	—	53,8	51
67	—	900	85,0	—	76,1	95	37	344	363	68,9	—	53,1	50
66	—	865	84,5	—	75,4	92	36	336	354	68,4	(109)	52,3	49
65	739	832	83,9	—	74,5	91	35	327	345	67,9	(108,5)	51,5	48
64	722	800	83,4	—	73,8	88	34	319	336	67,4	(108)	50,8	47
63	705	772	82,8	—	73,0	87	33	311	327	66,8	(107,5)	50,0	46
62	688	746	82,3	—	72,2	85	32	301	318	66,3	(107)	49,2	44
61	670	720	81,8	—	71,5	83	31	294	310	65,8	(106)	48,4	43
60	654	697	81,2	—	70,7	81	30	286	302	65,3	(105,5)	47,7	42
59	634	674	80,7	—	69,9	80	29	279	294	64,7	(104,5)	47,0	41
58	615	653	80,1	—	69,2	78	28	271	286	64,3	(104)	46,1	41
57	595	633	79,6	—	68,5	76	27	264	279	63,8	(103)	45,2	40
56	577	613	79,0	—	67,7	75	26	258	272	63,3	(102,5)	44,6	38
55	560	595	78,5	—	66,9	74	25	263	266	62,8	(101,5)	43,8	38
54	543	577	78,0	—	66,1	72	24	247	260	62,4	(101)	43,1	37
53	525	560	77,4	—	65,4	71	23	243	254	62,0	100	42,1	36
52	512	544	76,8	—	64,6	69	22	237	248	61,5	99	41,6	36
51	496	528	76,3	—	63,8	68	21	231	243	61,0	98,5	40,9	35
50	481	513	75,9	—	63,1	67	20	226	238	60,5	97,8	40,1	34
49	469	498	75,2	—	62,1	66	(18)	219	230	—	96,7	—	33
48	455	484	74,7	—	61,4	64	(16)	212	222	—	95,5	—	32
47	443	471	74,1	—	60,8	63	(14)	203	213	—	93,9	—	31
46	432	458	73,6	—	60,0	62	(12)	194	204	—	92,3	—	29
45	421	446	73,1	—	59,2	60	(10)	187	196	—	90,7	—	28
44	409	434	72,5	—	58,5	58	(8)	179	188	—	89,5	—	27
43	400	423	72,0	—	57,7	57	(6)	171	180	—	87,1	—	26
42	390	412	71,5	—	56,9	56	(4)	165	173	—	85,5	—	25
41	381	402	70,9	—	56,2	55	(2)	158	166	—	83,5	—	24
40	371	392	70,4	—	55,4	54	(0)	152	160	—	81,7	—	24
39	362	382	60,9	—	54,6	52							

DADOS FÍSICO-QUÍMICOS DE ALGUNS ELEMENTOS USADOS NAS METALÚRGICAS

Símbolo	Produto	Densidade	Peso Atômico	Temp. de Fusão °C	Símbolo	Produto	Densidade	Peso Atômico	Temp. de Fusão °C
Al	Alumínio	2,70	26,97	660	Nd	Neodímio	7,05	144,27	840
Ag	Prata	10,50	107,88	960	Ni	Níquel	8,90	58,69	1.455
As	Arsênico	5,70	74,91	818	Os	Ósmio	22,48	190,02	2.500
Au	Ouro	19,30	197,20	1.063	P	Fósforo	2,20	30,98	590
B	Boro	2,30	10,80	2.318	Pb	Chumbo	11,34	207,21	327
Ba	Bário	3,59	137,36	710	Pd	Paládio	12,02	106,70	1.554
Bi	Bismuto	9,80	209,00	271	Pr	Praseodímio	6,77	140,92	932
C	Carbono	2,25	12,01	—	Pt	Platina	21,44	195,23	1.773
Cd	Cádmio	8,64	112,41	302	Re	Rênio	20,99	186,31	3.170
Ce	Cério	6,78	140,13	815	Rh	Ródio	12,41	102,91	1.966
Co	Cobalto	8,70	58,94	1.478	Ru	Rutênio	12,43	101,70	1.950
Cr	Cromo	7,18	52,01	1.920	Sb	Antimônio	6,68	121,76	630
Cu	Cobre	8,93	63,57	1.083	Se	Selenio	4,26	78,96	220
Fe	Ferro	7,88	55,85	1.535	Si	Silício	2,32	28,06	1.414
Ga	Gálio	5,93	69,72	29	Sn	Estanho	7,28	118,70	232
Ge	Germanio	5,32	72,60	958,5	Ta	Tantalio	16,65	180,88	3.030
Hf	Hafnio	13,30	178,60	2.230	Te	Telúrio	6,24	127,61	452
Hg	Mercúrio	13,69	200,61	(- 38)	Th	Tório	11,70	232,12	1.827
In	Índium	7,29	114,76	15	Ti	Titânio	4,54	47,90	1.820
Ir	Iridium	22,64	193,10	2.554	Tl	Tálio	11,84	204,39	303
La	Lantânio	6,19	138,92	885	U	Urânio	18,70	238,07	1.130
Mg	Magnésio	1,70	24,32	650	V	Vanádio	6,07	50,95	1.700
Mn	Manganês	7,46	54,93	1.244	W	Tungstênio	19,26	183,92	3.380
Mo	Molibdênio	10,21	95,95	2.600	Zn	Zinco	7,14	65,38	419
Nb	Nióbio	8,56	92,91	2.415	Zr	Zircônio	6,49	91,22	2.130


barras de aço inox dados físico-químicos e aplicações típicas

AISI	COMPOSIÇÃO QUÍMICA NOMINAL								PROPRIEDADES MECÂNICAS						APLICAÇÕES TÍPICAS
	C max	MN max	SI max	P max	S max	CR	NI	MO	Dureza Brinell Aproxim.	Limite de Resist. Kg/mm2	Limite de escoam. Kg/mm2	Alongamento mínimo	Estricção mínimo	Similares	
302	0,15	2,00	1,00	0,045	0,030	17,00 a 19,00	8,00 a 10,00	-	149	50-70	22	50%	-	V-302 SAE 30302	Elementos arquitetônicos equip. Hospitalares e farmacêuticos, para indústria de bebidas e alimentos, máquinas de embalagem, molas, peças de tubulações, utensílios domésticos, artigos esportivos etc.
303	0,15	2,00	1,00	0,20	0,15 (mim)	17,00 a 19,00	8,00 a 10,00	-	163	50-70	22	50%	-	V-303 SAE 30303	Peças produzidas em tornos automáticos com grande remoção de cavacos, tais como: parafusos, prisioneiros, porcas, pinos peças rosçadas etc., sujeitas a solicitações mecânicas moderadas, com características de resistência a corrosão.
304	0,06	2,00	1,00	0,045	0,030	18,00 a 20,00	8,00 a 10,50	-	149	60	20	50%	-	V-304 SAE 30304	Equip. Inds. Químicas, farmacêuticas, têxtil, do petróleo, do papel e celulose etc. Equip. Hospitalar, permutadores de calor. Válvulas e peças de tubulações. Indústria do frio e instalações criogênicas em geral.
304-L	0,03	2,00	1,00	0,045	0,030	18,00 a 20,00	8,00 a 12,00	-	143	55	18	50%	-	V-304-L SAE 30304-L	Campo de aplicação semelhante ao 304, sendo porém, Graças ao baixo teor de carbono, preferido nos casos em que existam condições propicias para a ocorrência de corrosão intercrystalina.
310	0,25	2,00	1,50	0,045	0,030	24,00 a 26,00	19,00 a 22,00	-	185	60	39	40%	-	V-310 SAE 30310	Peças de fornos, caixas para recozimento e para cementação, equip. para Ind. Química e do petróleo, peças de motores de calor, aquecedores de ar, transportadores internos de fornos.
316	0,08	2,00	1,00	0,045	0,030	16,00 a 18,00	10,00 a 14,00	2,00 a 3,00	149	60	20	45%	-	V-316 SAE 30316	Equip. das Inds. Químicas, Farmacêuticas, Têxtil, do petróleo, do papel e celulose etc. Peças e componentes diversos usados na construção naval. Equip Ind. Do frio e aplicações criogênicas em geral.
316-L	0,03	2,00	1,00	0,045	0,030	16,00 a 18,00	10,00 a 14,00	2,00 a 3,00	143	45	18	50%	-	V-316-L SAE 30316-L	Campo de aplicação semelhante ao Aisi 316, sendo porém preferido por seu baixo teor de carbono nos casos em que ocorra condições propicias para a ocorrência de corrosão intercrystalina.
410	0,15	1,00	1,00	0,040	0,030	11,50 a 13,50	-	-	155	50-65	30	20%	60%	VC-140 SAE 51410	Pás e outras peças de turbinas, peças de v eículos, eixos e peças rosqueadas das Inds. Químicas, petroquímicas e do petróleo, eixos de bombas material ferroviário, peças de equip. ind. Do papel e celulose, peças de fornos (menor que 400°C) etc.
416	0,15	1,25	1,00	0,06	0,15 (min)	12,00 a 14,00	-	-	155	50-65	30	20%	60%	V-416 SAE 51416	Peças produzidas em tornos automáticos, tais como: Parafusos, prisioneiros, porcas etc., expostas ao ataque de agentes agressivos suaves e que devam possuir propriedades de resistência mecânica superiores às obtidas com o Aisi 303
420	0,15 (min)	1,25	1,00	0,040	0,030	12,00 a 14,00	-	-	195	65-80	35	18%	55%	V-150 SAE 51420	Artigos de cutelaria, instrumentos cirúrgicos e dentários, eixos, peças de bombas e válvulas, pás e outras peças de turbinas a vapor e equip. em geral, moldes para plásticos e para a indústria do vidro etc.


ligas de bronze dados físico-químicos e aplicações típicas

LIGA	COMPOSIÇÃO QUÍMICA NOMINAL									PROPRIEDADES MECÂNICAS					ASTIM	APLICAÇÕES TÍPICAS
	CU	SN	PB	ZN	P	AL	FE	NI	MN	Densidade 20°C	Ponto Fusão °C	Limite Resistência kg/mm2	Escoamento kg/mm2	Dureza Brinell		
SAE-40	85	5	5	5	-	-	-	-	-	8,83	1.010	30	14	75	B-145-4-A	Ligas de bronze especiais para válvulas, flanges, registros, rotores de bombas, desbastadores, laminadores etc. As ligas SAE-62 e SAE-65, são especiais para a confecção de Coroas.
SAE-62	88	10	-	2	-	-	-	-	-	8,70	999	35	20	95	B-143-1-A	
SAE-64	80	10	10	-	-	-	-	-	-	8,95	928	28	15	90	B-144-3-A	
SAE-65	88,8	11	-	-	0,20	-	-	-	-	8,82	1.000	39	21	105	B-505	
SAE-660	83	7	7	3	-	-	-	-	-	8,93	977	30	16	80	B-144-3-B	
TM-23	Min 72	Min 8	Max 5	15	-	-	-	-	-	9,03	940	28	16	75	-	Liga especial para mancais, conexões, porcas, parafusos, pinos, guias de válvulas etc.
BZ-2	98,7	1,25	-	-	-	-	-	-	-	8,89	1.075	26	8	45	DIN-17,662	Ligas para engrenagens, buchas e mancais, principalmente para peças sujeitas a desgaste rápido.
BZ-5	94,8	5	-	-	0,20	-	-	-	-	8,86	1.050	34	15	74	B-139	
BZ-8	91,7	8	-	-	0,25	-	-	-	-	8,80	1.020	40	22	85	B-139-C	
BZ-12	88	12	-	-	-	-	-	-	-	8,70	990	32	17	105	B-505	
BZ-14	86	14	-	-	-	-	-	-	-	8,60	965	25	17	115	B-505	
SAE-68-B	82,5	-	-	-	-	10	3	4,5	-	7,58	1.055	60	20	175	B-150-2	Bronze-Alumínio, próprio para engrenagens pesadas. Ótima resistência a água salgada.
SUPER LIGA																Ligas de bronze-manganez, próprio para engrenagens, pinos e registros com necessidades de altas durezas.
3	62	31	-	-	-	3	1,5	-	2,5	7,90	920	65	46	160	DIN-17-661	
5	64	25	-	-	-	5	2,5	-	3,5	7,80	920	75	53	210	B-138-B	
7	65	20,5	-	-	-	7	3,5	-	4,0	7,65	930	85	60	260	DIN-17 661	


FÓRMULAS PARA CÁLCULO DE PESO



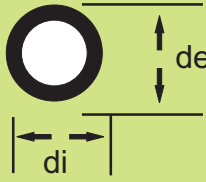
BARRAS REDONDAS Ex: Vergalhão de Latão redondo 1"

$$d \times d = \frac{3,1416 \times \text{Peso Específico}}{4.000} \quad 25,40 \times 25,40 \times \frac{3,1416 \times 8,6}{4.000} = 4,357 \text{ kgs.}$$


BARRAS SEXTAVADAS Ex: Vergalhão de Latão sextavado 1"

$$d \times d \times 3 \times \text{Peso Específico} \quad 25,40 \times 25,40 \times 3 \times \frac{8,6}{3.460} = 4,810 \text{ kgs.}$$


BARRAS QUADRADAS Ex: Vergalhão de Latão Quadrado 1"

$$d \times d \times \text{Peso Específico} \quad 25,40 \times 25,40 \times \frac{8,6}{1.000} = 5,548 \text{ kgs.}$$


TUBOS REDONDOS

$$(\text{De} \times \text{de} \times 3,1416) - (\text{di} \times \text{di} \times 3,1416) \times \text{Peso Específico} \quad 4.000$$

Ex: Tubo de Latão redondo 1" x 1/16"

$$(25,40 \times 25,40 \times 3,1416) - (22,22 \times 22,22 \times 3,1416) \times \frac{8,60}{4.000}$$

$$(2.026,83 - 1.551,09) \times \frac{8,60}{4.000} = \frac{475,74 \times 8,60}{4.000} = 1,022 \text{ kgs.}$$

CHAPAS

Larguras x Espessura x Peso Específico

Ex: Chapa de latão 1,20 x 0,60 x 2,00 mm

$$1,20 \times 0,60 \times 2 \times \frac{8,60}{1.000} = 12,384 \text{ kgs.}$$

BARRAS CHATAS

Largura x Espessura x Peso Específico

Ex: Barra chata de Latão 1" x 1/4"

$$25,40 \times 6,35 \times \frac{8,60}{1.000} = 1,387 \text{ kgs.}$$

DISCOS

Diâmetro x Diâmetro x 3,1416 x Peso Específico

Ex: Disco de latão 100 mm x 1/4"

$$100 \times 100 \times \frac{3,1416 \times 8,6}{40.000} = 6,754$$

BUCHAS DE BRONZE

Acha-se o peso do tarugo referente ao diâmetro externo da bucha e Diminui-se o peso do tarugo de bronze do diâmetro interno Imediatamente inferior:

Ex: Bucha de Bronze 3" x 2"

Peso do Tarugo de 3" = 21,250 kgs.

Peso do Tarugo 1.7/8" = 8,550 kgs.

Peso de uma bucha de 3" x 2" = 12,700 kgs.

Aços SAE 1020/1045/4140/4340/8620/8640

Peso de aço por metro linear (Kg)								
∅ Pol.	∅ mm	●	■	■	∅ Pol.	∅ mm	●	■
1/4	6,35	0,25	0,32	0,27	4	101,60	63,58	80,96
5/16	7,94	0,39	0,49	0,43	4.1/8	104,78	67,62	86,10
3/8	9,53	0,56	0,71	0,62	4.1/4	107,95	71,78	91,39
7/16	11,11	0,76	0,97	0,84	4.3/8	111,13	76,06	96,85
1/2	12,70	0,99	1,22	1,10	4.1/2	114,30	80,47	102,46
9/16	14,29	1,26	1,60	1,39	4.5/8	117,48	85,01	108,23
5/8	15,87	1,55	1,98	1,71	4.3/4	120,65	89,66	114,16
11/16	17,46	1,88	2,39	2,07	4.7/8	123,83	94,44	120,25
3/4	19,05	2,24	2,85	2,46	5	127,00	99,8	126,5
13/16	20,64	2,62	3,34	2,89	5.1/4	133,35	109,5	139,5
7/8	22,22	3,04	3,87	3,35	5.1/2	139,70	120,2	153,1
15/16	23,81	3,49	4,45	3,85	5.3/4	146,05	131,4	167,2
1	25,40	3,97	5,06	4,38	6	152,40	143,1	182,5
1.1/16	26,99	4,49	5,71	4,95	6.1/4	158,75	155,2	197,8
1.1/8	28,57	5,03	6,40	5,55	6.1/2	165,10	167,9	213,5
1.3/16	30,16	5,60	7,14	6,18	6.3/4	171,45	181,1	231,0
1.1/4	31,75	6,21	7,91	6,85	7	177,80	194,7	248,1
1.5/16	33,34	6,85	8,72	7,55	7.1/4	184,15	209,7	266,2
1.3/8	34,92	7,51	9,57	8,29	7.1/2	190,50	223,8	285,0
1.7/16	36,51	8,21	10,46	9,06	7.3/4	196,85	238,9	304,0
1.1/2	38,10	8,94	11,39	9,86	8	203,20	254,6	324,0
1.9/16	39,69	9,70	12,35	10,70	8.1/4	209,55	270,7	345,0
1.5/8	41,27	10,49	13,36	11,57	8.1/2	215,90	287,4	365,9
1.11/16	42,86	11,32	14,41	12,48	8.3/4	222,25	304,6	388,5
1.3/4	44,45	12,17	15,50	13,42	9	228,60	322,1	410,2
1.13/16	46,04	13,06	16,62	14,40	9.1/4	234,95	340,3	433,5
1.7/8	47,62	13,97	17,79	15,41	9.1/2	241,30	359,0	457,1
1.15/16	49,21	14,92	18,99	16,45	9.3/4	247,65	378,1	481,4
2	50,80	15,90	20,24	17,53	10	254,00	397,8	506,5
2.1/16	52,39	16,91	21,52	18,64	10.1/4	260,35	417,9	532,0
2.1/8	53,97	17,95	22,85	19,79	10.1/2	266,70	438,5	558,4
2.3/16	55,56	19,02	24,21	20,97	10.3/4	273,05	459,7	585,3
2.1/4	57,15	20,12	25,62	22,19	11	279,40	481,2	612,8
2.5/16	58,74	21,25	27,06	23,44	11.1/4	285,75	503,4	641,0
2.3/8	60,32	22,42	29,54	24,72	11.1/2	292,70	526,0	669,8
2.7/16	61,91	23,61	30,06	26,03	11.3/4	298,45	549,1	699,2
2.1/2	63,50	24,84	31,62	27,38	12	304,80	572,7	729,3
2.9/16	65,09	26,10	33,22	28,78	12.1/2	317,50	620,9	790,6
2.5/8	66,67	27,38	34,87	30,19	13	330,20	672,6	855,8
2.11/16	68,26	28,70	36,55	31,67	13.1/2	342,90	724,3	922,2
2.3/4	69,85	30,05	38,27	33,14	14	355,60	779,7	992,6
2.13/16	71,44	31,44	40,02	34,22	14.1/2	368,30	835,5	1063,8
2.7/8	73,02	32,85	41,82	36,22	15	381,00	894,9	1139,5
2.15/16	74,61	34,29	43,66	37,81	15.1/2	393,70	954,7	1215,6
3	76,20	35,77	45,54	39,43	16	406,40	1017,3	1295,3
3.1/8	79,38	38,81	49,41	42,79	17	431,80	1148,5	1462,3
3.1/4	82,55	41,88	53,44	46,34	18	457,20	1287,6	1639,4
3.3/8	85,73	45,27	57,63	49,98	19	482,60	1434,6	1826,6
3.1/2	88,90	48,68	61,98	53,74	20	508,00	1589,5	2023,9
3.5/8	92,08	52,22	66,49	57,66				
3.3/4	95,25	55,88	71,15	61,69				
3.7/8	98,43	60,67	75,98	65,88				

PESO ESPECÍFICO = 7,85 Kg/dm³

AÇOS RÁPIDOS MAIS 10%

1 POLEGADA – 25,40mm

1 PÉ = 12 POLEGADAS – 305 mm.