

## TUBOS



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## TUBOS

### TUBOS DE AÇO CARBONO SEM COSTURA

**Características:**

- 1- Composição química referente ao aço SAE 1008/1010.
- 2- Dimensões e tolerâncias conforme norma DIN 2391 C (ABNT NBR 8476).
- 3- Estado de fornecimento normalizado em forno de atmosfera controlada NBK conforme DIN 2391 C (ABNT NBR 8476).
- 4- Máximas pressões de utilização referem-se à resistência à tração do material. Coeficiente de segurança igual a 4 (quatro).
- 5- Fornecidos em barras de 3 a 6 metros, oleados para proteção anti-corrosiva.
- 6- Sob consulta a **MILANO** pode fornecer o tubo com tratamento superficial - Zincado com cromatização azul trivalente (Cor de cromo) - Acrescentar na Ref. **ZN**. Ex. **TS160110ZN, TS100060ZN, etc**

Ref. **TS..... (Diâmetro Externo x Diâmetro Interno)**

Ex. Tubo de aço 10x7 mm (Parede 1,5 mm) - **TS100070**

Ref.	Diâm. Ext. mm	Diâm. Int. mm	Parede mm	Pressão de Trab. Kgf/cm <sup>2</sup>
TS060030	06,0	03,0	1,5	500
TS060040	06,0	04,0	1,0	333
TS064034	06,4	03,4	1,5	468
TS064042	06,4	04,2	1,1	343
TS080050	08,0	05,0	1,5	375
TS080060	08,0	06,0	1,0	250
TS095055	09,5	05,5	2,0	421
TS095063	09,5	06,3	1,6	336
TS100060	10,0	06,0	2,0	400
TS100070	10,0	07,0	1,5	300
TS120080	12,0	08,0	2,0	333
TS120090	12,0	09,0	1,5	250
TS127087	12,7	08,7	2,0	314
TS127097	12,7	09,7	1,5	236
TS140100	14,0	10,0	2,0	285
TS140110	14,0	11,0	1,5	214
TS150110	15,0	11,0	2,0	266
TS150120	15,0	12,0	1,5	200
TS160110	16,0	11,0	2,5	312
TS160130	16,0	13,0	1,5	187
TS180130	18,0	13,0	2,5	277
TS180150	18,0	15,0	1,5	166
TS190140	19,0	14,0	2,5	263
TS190160	19,0	16,0	1,5	157
TS200140	20,0	14,0	3,0	300
TS200160	20,0	16,0	2,0	200
TS220170	22,0	17,0	2,5	227
TS220180	22,0	18,0	2,0	181
TS250175	25,0	17,5	3,75	300
TS250190	25,0	19,0	3,0	240
TS250210	25,0	21,0	2,0	160
TS254194	25,4	19,4	3,0	236
TS254214	25,4	21,4	2,0	157
TS280190	28,0	19,0	4,5	321
TS280220	28,0	22,0	3,0	214
TS280240	28,0	24,0	2,0	142
TS300240	30,0	24,0	3,0	200
TS300250	30,0	25,0	2,5	166
TS320220	32,0	22,0	5,0	312
TS320240	32,0	24,0	4,0	250
TS320270	32,0	27,0	2,5	156
TS350270	35,0	27,0	4,0	228
TS350300	35,0	30,0	2,5	142
TS380300	38,0	30,0	4,0	210
TS380320	38,0	32,0	3,0	157
TS420290	42,0	29,0	6,5	309
TS420340	42,0	34,0	4,0	190
TS420380	42,0	38,0	2,0	95



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## TUBOS

### TUBOS DE AÇO INOXIDÁVEL SEM COSTURA

#### Características:

- 1 - Composição química referente ao aço inoxidável AISI 316 / 316L.
- 2 - Dimensões e tolerâncias conforme norma EN ISO 1127 D4-T3 / ASTM A 269.
- 3 - Máximas pressões de utilização referem-se à resistência à tração do material.  
Coeficiente de segurança igual a 4 (quatro).
- 4 - Fornecidos em barras de 4 a 6 metros.

Ref. **TSS..... (Diâmetro Externo x Diâmetro Interno)**

Ex. Tubo de aço inoxidável 12,0x9,0 MM (Parede 1,5 mm) -

#### OBS:

**TSS120090**

acrescentar no final da Ref. normal "A2" . Ex.

Para solicitar estes tubos com composição química referente ao Inox AISI 304 / 304L,  
**TSS120090A2.**

Ref.	Diâm. Ext. mm	Diâm. Int. mm	Parede mm	Pressão de Trab. kgf/cm <sup>2</sup>
TSS060040	06,0	04,0	1,0	388
TSS064044	06,4	04,4	1,0	364
TSS080060	08,0	06,0	1,0	282
TSS095075	09,5	07,5	1,0	233
TSS100080	10,0	08,0	1,0	221
TSS120096	12,0	09,6	1,2	221
TSS120090	12,0	09,0	1,5	282
TSS127097	12,7	09,7	1,5	265
TSS140110	14,0	11,0	1,5	238
TSS150120	15,0	12,0	1,5	221
TSS160125	16,0	12,5	1,75	256
TSS160120	16,0	12,0	2,0	282
TSS180150	18,0	15,0	1,5	182
TSS180140	18,0	14,0	2,0	248
TSS190157	19,05	15,75	1,65	190
TSS200160	20,0	16,0	2,0	220
TSS200150	20,0	15,0	2,5	303
TSS200140	20,0	14,0	3,0	345
TSS220180	22,0	18,0	2,0	200
TSS220160	22,0	16,0	3,0	310
TSS250190	25,0	19,0	3,0	269
TSS254221	25,4	22,1	1,65	140
TSS254194	25,4	19,4	3,0	265
TSS280220	28,0	22,0	3,0	238
TSS300240	30,0	24,0	3,0	221
TSS300250	30,0	25,0	2,5	182
TSS320275	31,75	27,53	2,11	143
TSS350310	35,0	31,0	2,0	122
TSS350290	35,0	29,0	3,0	187
TSS380300	38,0	30,0	4,0	234
TSS380280	38,0	28,0	5,0	298
TSS420366	42,16	36,62	2,77	142
TSS420350	42,16	35,04	3,56	185



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## TUBOS

### TUBOS DE AÇO INOXIDÁVEL COM COSTURA

#### Características:

- 1- Composição química referente ao aço inoxidável AISI 316 / 316L.
- 2- Dimensões e tolerâncias conforme norma EN ISO 1127 D4-T3 / ASTM A 269.
- 3- Máximas pressões de utilização referem-se à resistência à tração do material.  
Coeficiente de segurança igual a 4 (quatro).
- 4- Fornecidos em barras de 4 a 6 metros.

Ref. **TWSS..... (Diâmetro Externo x Diâmetro Interno)**

Ex. Tubo de aço inoxidável 20,0x15,0 mm (Parede 2,5 mm) - **TWSS200150**

**OBS:** Para solicitar estes tubos com composição química referente ao Inox 304/304L, acrescentar no final da Ref. normal "A2". Ex. **TWSS200150A2**.

Ref.	Diâm. Ext. mm	Diâm. Int. mm	Parede mm	Pressão de Trab. kgf/cm <sup>2</sup>
TWSS060040	06,0	04,0	1,0	293
TWSS064044	06,4	04,4	1,0	277
TWSS080060	08,0	06,0	1,0	220
TWSS095075	09,5	07,5	1,0	185
TWSS100080	10,0	08,0	1,0	176
TWSS120096	12,0	09,6	1,2	176
TWSS120090	12,0	09,0	1,5	220
TWSS127097	12,7	09,7	1,5	208
TWSS140110	14,0	11,0	1,5	189
TWSS150120	15,0	12,0	1,5	176
TWSS160125	16,0	12,5	1,75	192
TWSS160120	16,0	12,0	2,0	220
TWSS180150	18,0	15,0	1,5	147
TWSS180140	18,0	14,0	2,0	195
TWSS190157	19,05	15,75	1,65	152
TWSS200150	20,0	15,0	2,5	185
TWSS200140	20,0	14,0	3,0	264
TWSS220180	22,0	18,0	2,0	160
TWSS220160	22,0	16,0	3,0	240
TWSS250190	25,0	19,0	3,0	210
TWSS254221	25,4	22,1	1,65	114
TWSS254194	25,4	19,4	3,0	207
TWSS280220	28,0	22,0	3,0	188
TWSS300240	30,0	24,0	3,0	176
TWSS300250	30,0	25,0	2,5	146
TWSS320275	31,75	27,53	2,11	117
TWSS350310	35,0	31,0	2,0	100
TWSS350290	35,0	29,0	3,0	150
TWSS420366	42,16	36,62	2,77	115
TWSS420350	42,16	35,04	3,56	148



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## TUBOS

### TUBOS DE COBRE TREFILADO SEM COSTURA

#### Características:

- 1 - Composição química referente ao cobre nº 122 (DHP), SAE CA 122, UNS 12200, ABNT NBR 5030 CuDHP.
- 2 - Dimensões e tolerâncias conforme norma ASTM B 251 (ABNT NBR 5020).
- 3 - Máximas pressões de utilização referem-se à resistência à tração do material.  
Coeficiente de segurança igual a 4 (quatro).
- 4 - Fornecidos em barras de 3 a 6 metros.

#### Ref.TK..... (Diâmetro Externo x Diâmetro Interno)

Ex. Tubo de cobre 20,0x15,0 mm (Parede 2,5 mm) - **TK200150**

Ref.	Diâm. Ext. m m	Diâm. Int. m m	Parede m m	Pressão de Trab. kgf/cm <sup>2</sup>
TK040020	04,0	02,0	1,0	390
TK050030	05,0	03,0	1,0	297
TK060040	06,0	04,0	1,0	240
TK064042	06,4	04,2	1,1	249
TK080050	08,0	05,0	1,5	275
TK080060	08,0	06,0	1,0	173
TK095063	09,5	06,3	1,6	243
TK095075	09,5	07,5	1,0	143
TK100064	10,0	06,4	1,8	262
TK100080	10,0	08,0	1,0	135
TK120084	12,0	08,4	1,8	213
TK120100	12,0	10,0	1,0	111
TK127091	12,7	09,1	1,8	199
TK127107	12,7	10,7	1,0	105
TK140100	14,0	10,0	2,0	201
TK140120	14,0	12,0	1,0	94
TK150110	15,0	11,0	2,0	186
TK150130	15,0	13,0	1,0	88
TK160116	16,0	11,6	2,2	193
TK160136	16,0	13,6	1,2	99
TK180136	18,0	13,6	2,2	169
TK180156	18,0	15,6	1,2	88
TK190140	19,0	14,0	2,5	183
TK190166	19,0	16,6	1,2	83
TK200150	20,0	15,0	2,5	173
TK200170	20,0	17,0	1,5	99
TK220170	22,0	17,0	2,5	156
TK220190	22,0	19,0	1,5	90
TK250190	25,0	19,0	3,0	165
TK250220	25,0	22,0	1,5	78
TK254194	25,4	19,4	3,0	163
TK254224	25,4	22,4	1,5	77
TK280220	28,0	22,0	3,0	146
TK280250	28,0	25,0	1,5	69
TK300240	30,0	24,0	3,0	135
TK300270	30,0	27,0	1,5	65
TK320260	32,0	26,0	3,0	126
TK320290	32,0	29,0	1,5	60
TK350290	35,0	29,0	3,0	115
TK350320	35,0	32,0	1,5	55
TK380320	38,0	32,0	3,0	105
TK380350	38,0	35,0	1,5	50
TK420360	42,0	36,0	3,0	94
TK420390	42,0	39,0	1,5	45



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## TUBOS

### TUBOS DE COBRE TREFILADO RECOZIDO SEM COSTURA

#### Características:

- 1- Composição química referente ao cobre nº 122 (DHP), SAE CA 122, UNS 12200, ABNT NBR 5030 CuDHR
- 2- Dimensões e tolerâncias conforme norma ASTM B 251 (ABNT NBR 5020).
- 3- Máximas pressões de utilização referem-se à resistência à tração do material.  
Coeficiente de segurança igual a 4 (quatro).
- 4- Fornecidos em barras de 3 a 6 metros, não retas a olho nu.

Ref. **TZ..... (Diâmetro Externo x Diâmetro Interno)**

Ex. Tubo de Cobre Recozido 12,7x10,7 mm (Parede 1,0 mm) - **TZ127107**

Ref.	Diâm. Ext. mm	Diâm. Int. mm	Parede m m	Pressão de Trab. kgf/cm <sup>2</sup>
TZ040020	04,0	02,0	1,0	280
TZ050030	05,0	03,0	1,0	214
TZ060040	06,0	04,0	1,0	172
TZ064042	06,4	04,2	1,1	179
TZ080060	08,0	06,0	1,0	124
TZ095075	09,5	07,5	1,0	102
TZ100080	10,0	08,0	1,0	97
TZ120100	12,0	10,0	1,0	80
TZ127107	12,7	10,7	1,0	75
TZ140120	14,0	12,0	1,0	67
TZ150130	15,0	13,0	1,0	63
TZ160136	16,0	13,6	1,2	71
TZ180156	18,0	15,6	1,2	63
TZ190166	19,0	16,6	1,2	59
TZ200170	20,0	17,0	1,5	71
TZ220190	22,0	19,0	1,5	64
TZ250220	25,0	22,0	1,5	56
TZ254224	25,4	22,4	1,5	54
TZ280250	28,0	25,0	1,5	49
TZ300270	30,0	27,0	1,5	46
TZ320290	32,0	29,0	1,5	43
TZ350320	35,0	32,0	1,5	39
TZ380350	38,0	35,0	1,5	36
TZ420390	42,0	39,0	1,5	32



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## TUBOS

### TUBOS DE POLIAMIDA FLEXÍVEL PA 11 / 12 (NYLON)

#### Características:

Excelente compatibilidade química, excelente resistência a luz solar (U.V.);

Atende as especificações das normas: ASTM D 4066, BS 5409, DIN 73378 E DIN 74324;

Temperatura de trabalho: -20 °C à + 80 °C;

Baixa absorção de umidade;

Boa resistência mecânica e abrasão;

Cores padrão: Natural e Preto;

Coefficiente de segurança: 3:1

Rolos de até 100 M.

Principais utilizações: Linhas de automatização, controle, instrumentação, acessórios pneumáticos, linhas de lubrificação, ar, combustível, refrigeração, ar condicionado, indústria alimentícia, bebidas e farmacêuticas. Linhas hidráulicas de baixa pressão.

Sob consulta:

Podem ser fornecidos com conexões e/ou com terminais prensados;

Podem ser fornecidos com outras cores;

Para dimensional, temperaturas, pressões e/ou aplicações diferentes das especificadas, favor consultar nosso Depto. de Vendas / Técnico.

#### Ref. **TP..... (Diâmetro Externo x Diâmetro Interno)**

Ex. Tubo de Poliamida 10,0x7,0 mm (Parede 1,5 mm) - **TP100070** (Natural)

Para solicitar na cor preta, acrescentar "PT" no final da ref. - **TP100070PT**

Ref.	Diâm. Ext. mm	Diâm. Int. mm	Parede mm	Pressão TR kgf/cm <sup>2</sup>	Pressão RP kgf/cm <sup>2</sup>	Raio de Curvatura Min. mm
TP040020	04,0	02,0	1,0	45	135	15
TP040025	04,0	02,5	0,75	31	93	20
TP060040	06,0	04,0	1,0	27	81	40
TP064044	06,4	04,4	1,0	21	63	40
TP080060	08,0	06,0	1,0	19	57	40
TP095064	09,5	06,4	1,59	21	63	45
TP100070	10,0	07,0	1,5	24	72	60
TP100080	10,0	08,0	1,0	15	45	50
TP120090	12,0	09,0	1,5	19	57	60
TP127096	12,7	09,53	1,58	17	51	51
TP160120	16,0	12,0	2,00	14	42	120



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