




### Tubos quadrados de aço carbono com costura

Square carbon steel welded tubes

 <b>TUBOS QUADRADOS NBR 6591 / NBR 8261 / EN 10305-5 / ASTM A500 / ASTM A513</b> Square tubes NBR 6591 / NBR 8261 / EN 10305-5 / ASTM A500 / ASTM A513		espessura da parede wall thickness (mm)																		
		0,60	0,65	0,75	0,80	0,90	0,95	1,06	1,11	1,13	1,20	1,20	1,25	1,30	1,35	1,50	1,50	1,55	1,80	1,90
dimensão externa external dimension (mm)	BFF	BZC	BFF	BZC	BFF	BZC	BFF	BZC	BFF	BFF	BFQ BQD	BZC	BFF	BFF	BFF	BFQ BQD	BZC	BFQ BQD	BFF	BFQ BQD
15 x 15	0,273	0,295	0,338	0,360	0,403	0,424	0,470	0,491	0,499	0,528	0,528	0,549	0,569	0,589	0,649	0,649	0,669	0,766	0,804	0,804
20 x 20	0,367	0,397	0,456	0,485	0,544	0,573	0,636	0,665	0,676	0,716	0,716	0,744	0,773	0,801	0,884	0,884	0,912	1,048	1,101	1,101
22,22 x 22,22	0,414	0,448	0,515	0,548	0,614	0,647	0,719	0,752	0,765	0,810	0,810	0,842	0,875	0,907	1,002	1,002	1,033		1,250	1,250
25 x 25	0,461	0,499	0,573	0,611	0,685	0,722	0,802	0,839	0,853	0,904	0,904	0,940	0,976	1,012	1,119	1,119	1,154	1,330	1,399	1,399
30 x 30	0,555	0,600	0,691	0,736	0,826	0,870	0,968	1,013	1,030	1,092	1,092	1,136	1,180	1,224	1,354	1,354	1,397	1,893	1,696	1,696
35 x 35			0,808	0,861	0,967	1,019	1,134	1,186	1,207	1,280	1,280	1,332	1,383	1,435	1,589	1,589	1,640	1,893	1,994	1,994
40 x 40			0,926	0,986	1,108	1,168	1,300	1,360	1,384	1,468	1,468	1,527	1,587	1,646	1,824	1,824	1,883	2,175	2,291	2,291
50 x 50					1,389	1,465	1,632	1,708	1,738	1,844	1,844	1,919	1,994	2,069	2,294	2,294	2,368	2,739	2,886	2,886
50,8 x 50,8					1,389	1,465	1,632	1,708	1,738	1,844	1,844	1,919	1,994	2,069	2,294	2,294	2,368	2,739	2,886	2,886
55 x 55															2,763	2,763	2,854	3,303	3,481	3,481
60 x 60					1,671	1,763	1,964	2,056	2,092	2,220	2,220	2,310	2,401	2,492	2,763	2,763	2,854	3,303	3,481	3,481
63,5 x 63,5																				
70 x 70															3,233	3,233	3,339		4,077	4,077
75 x 75															3,468	3,468	3,582		4,374	4,374
80 x 80															3,703	3,703	3,824		4,672	4,672
90 x 90															4,173	4,173	4,310		5,267	5,267
100 x 100															4,643	4,643	4,795		5,862	5,862
101,6 x 101,6															4,643	4,643	4,795		5,862	5,862
110 x 110																				
120 x 120																				
125 x 125																				
127 x 127																				
130 x 130																				



Pode produzir com Rebarba Interna Removida (RR)  
 Available with weld seam removed (RR)



		espessura da parede wall thickness (mm)																		dimensão externa external dimension (mm)	peso weight kg/m			
		1,95	2,00	2,25	2,50	2,65	2,70	3,00	3,35	3,75	4,25	4,50	4,75	5,00	5,30	5,50	5,60	6,00	6,30			7,11	8,00	
	BZC	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BZC	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD			
	0,822	0,841																			15 x 15			
	1,128	1,154	1,285	1,412	1,487																	20 x 20		
	1,281	1,311																				22,22 x 22,22		
	1,433	1,467	1,637	1,803	1,902	1,934	2,127															25 x 25		
	1,738	1,781	1,989	2,195	2,317	2,357	2,597	2,871	3,177	3,548	3,729	3,907										30 x 30		
	2,044	2,094	2,342	2,586	2,732	2,780	3,067	3,396	3,764	4,213	4,434	4,651	4,864	5,117	5,283	5,365						35 x 35		
	2,349	2,407	2,694	2,978	3,147	3,203	3,536	3,920	4,351	4,879	5,138	5,394											40 x 40	
	2,960	3,033	3,399	3,761	3,977	4,048	4,476	4,969	5,526	6,210	6,548	6,882	6,819	7,189	7,867	7,554	8,508	8,887					50 x 50	
	2,960	3,033	3,399	3,761	3,977	4,048	4,476	4,969	5,526	6,210	6,548	6,882	6,819	7,189	7,867	7,554	8,508	8,887					50,8 x 50,8	
	3,571	3,660	4,103	4,544	4,807	4,894	5,416	6,019	6,700	7,541	7,957	8,370	8,779	9,267	9,590	9,750							55 x 55	
	3,571	3,660	4,103	4,544	4,807	4,894	5,416	6,019	6,700	7,541	7,957	8,370	8,779	9,267	9,590	9,750	10,387	10,860					60 x 60	
		3,973	4,456	4,935	5,222	5,317	5,885	6,543	7,287	8,207	8,662	9,114	9,566	10,097	10,451	10,627	11,327	11,847					63,5 x 63,5	
	4,181	4,286	4,808	5,327	5,637	5,740	6,355	7,068	7,875	8,872	9,366	9,858	10,345	10,927									70 x 70	
	4,487	4,599	5,160	5,718	6,052	6,163	6,825	7,592	8,462	9,538	10,071	10,601	11,129	11,757									75 x 75	
	4,792	4,913	5,513	6,110	6,467	6,585	7,295	8,117	9,049	10,203	10,776	11,345	11,912	12,587									80 x 80	
	5,403	5,539	6,217	6,893	7,297	7,431	8,234	9,166	10,224	11,534	12,185	12,833	13,478	14,247									90 x 90	
	6,014	6,165	6,922	7,676	8,127	8,277	9,174	10,215	11,398	12,866	13,595	14,321	15,044	15,907									100 x 100	
	6,014	6,165	6,922	7,676	8,127	8,277	9,174	10,215	11,398	12,866	13,595	14,321	15,044	15,907	16,766	17,904	18,753	21,022	23,478				101,6 x 101,6	
		6,792	7,627	8,459	8,957	9,122	10,114	11,265	12,573	14,197	15,004	15,808	16,610	17,567									110 x 110	
		7,418	8,332	9,242	9,787	9,968	11,053	12,314	13,747	15,528	16,413	17,296	18,176	19,227									120 x 120	
		7,418	8,332	9,242	9,787	9,968	11,053	12,314	13,747	15,528	16,413	17,296	18,176	19,227									125 x 125	
		7,418	8,332	9,242	9,787	9,968	11,053	12,314	13,747	15,528	16,413	17,296	18,176	19,227									127 x 127	
		8,045	9,036	10,025	10,617	10,814	11,993	13,363	14,922	16,859	17,823	18,784	19,742	20,887									130 x 130	



**Tubos elípticos de aço carbono com costura** Elliptical carbon steel welded tubes

dimensão externa external dimension (mm)	espessura da parede wall thickness (mm)																		peso weight kg/m	
	0,50	0,60	0,65	0,75	0,80	0,90	0,95	1,06	1,11	1,13	1,20	1,20	1,25	1,30	1,35	1,50	1,50	1,55		1,80
	BFF	BFF	BZC	BFF	BZC	BFF	BZC	BFF	BZC	BFF	BFQ BQD	BZC	BFF	BFF	BFF	BFQ BQD	BZC	BZC		BFQ BQD
14 x 49		0,508	0,549	0,632	0,673	0,755	0,796	0,885	0,926	0,942	0,998	0,998	1,038	1,078	1,118	1,236	1,236	1,276		
31,75 x 21,59				0,480	0,511	0,573	0,603	0,670	0,701	0,713	0,755	0,755	0,785	0,814	0,844	0,932	0,932	0,961		

**Tubos oblongos de aço carbono com costura** Oval carbon steel welded tubes

dimensão externa external dimension (mm)	espessura da parede wall thickness (mm)																		peso weight kg/m	
	0,50	0,60	0,65	0,75	0,80	0,90	0,95	1,06	1,11	1,13	1,20	1,20	1,25	1,30	1,35	1,50	1,50	1,55		1,80
	BFF	BFF	BZC	BFF	BZC	BFF	BZC	BFF	BZC	BFF	BFF	BFQ BQD	BZC	BFF	BFF	BFF	BFQ BQD	BZC		BFQ BQD
16 x 30		0,367	0,397	0,456	0,485	0,544	0,573	0,636	0,665	0,676	0,716	0,716	0,744	0,773	0,801	0,884	0,884	0,912		
20 x 35		0,461	0,499	0,573	0,611	0,685	0,722	0,802	0,839	0,853	0,904	0,904	0,940	0,976	1,012	1,119	1,119	1,154		
29 x 58				0,867	0,923	1,037	1,093	1,217	1,273	1,295	1,373	1,373	1,429	1,484	1,540	1,705	1,705	1,760		
35 x 60				0,926	0,986	1,108	1,168	1,300	1,360	1,384	1,468	1,468	1,527	1,587	1,646	1,824	1,824	1,883		
40 x 77																2,294	2,294	2,368	2,739	
40 x 115																3,233	3,233	3,339		

**Tubos oblongulares de aço carbono com costura** Semioval carbon steel welded tubes

dimensão externa external dimension (mm)	espessura da parede wall thickness (mm)																		peso weight kg/m	
	0,50	0,60	0,65	0,75	0,80	0,90	0,95	1,06	1,11	1,13	1,20	1,20	1,25	1,30	1,35	1,50	1,50	1,55		1,80
	BFF	BFF	BZC	BFF	BZC	BFF	BZC	BFF	BZC	BFF	BFF	BFQ BQD	BZC	BFF	BFF	BFF	BFQ BQD	BZC		BFQ BQD
20 x 39		0,508	0,549	0,632	0,673	0,755	0,796	0,885	0,926	0,942	0,998	0,998	1,038	1,078	1,118	1,236	1,236	1,276		

**Formato especial** Special shapes

dimensão externa external dimension (mm)	espessura da parede wall thickness (mm)																		peso* weight kg/m	
	0,50	0,60	0,65	0,75	0,80	0,90	0,95	1,06	1,11	1,13	1,20	1,20	1,25	1,30	1,35	1,50	1,50	1,55		1,80
	BFF	BFF	BZC	BFF	BZC	BFF	BZC	BFF	BZC	BFF	BFF	BFQ BQD	BZC	BFF	BFF	BFF	BFQ BQD	BZC		BFQ BQD

FORMATO ESPECIAL NBR 6591																			peso* weight kg/m
Special shape NBR 6591																			
100 x 170																			

FORMATO ESPECIAL (4 cantos / 4 dimensões) NBR 6591																			peso* weight kg/m
Special shape (4 corners / 4 dimensions) NBR 6591																			
16x16					0,423	0,473	0,499	0,553	0,578										

FORMATO ESPECIAL (4 cantos / 2 dimensões) NBR 6591																			peso* weight kg/m
Special shape (4 corners / 2 dimensions) NBR 6591																			
16x16					0,423	0,473	0,499	0,553	0,578										

\* Pesos relacionados correspondem ao peso teórico  
Mentioned weight is theoretical

espesura da parede wall thickness (mm)																			dimensão externa external dimension (mm)	peso weight kg/m
1,90	1,90	1,95	2,00	2,25	2,50	2,65	2,70	3,00	3,35	3,75	4,25	4,50	4,75	5,00	5,30	5,60	6,00	6,30		
BFF	BFQ BQD	BZC	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BZC	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ		
																			14 x 49	
1,162	1,162	1,190	1,218	1,357	1,492	1,572	1,598	1,753											14 x 49	

espesura da parede wall thickness (mm)																			dimensão externa external dimension (mm)	peso weight kg/m
1,90	1,90	1,95	2,00	2,25	2,50	2,65	2,70	3,00	3,35	3,75	4,25	4,50	4,75	5,00	5,30	5,60	6,00	6,30		
BFF	BFQ BQD	BZC	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BZC	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ		
																			16 x 30	
1,101	1,101	1,128	1,154	1,285	1,412	1,487													16 x 30	
1,399	1,399	1,433	1,467	1,637	1,803	1,902													20 x 35	
2,141	2,141	2,195	2,249	2,516	2,781	2,938	2,990	3,300											20 x 35	
2,291	2,291	2,349	2,407	2,694	2,978	3,147	3,203	3,536											29 x 58	
2,886	2,886	2,960	3,033	3,399	3,761	3,977	4,048	4,476	4,969	5,526	6,210	6,548	6,882	7,213				29 x 58		
4,077	4,077	4,181	4,286	4,808	5,327	5,637	5,740	6,355	7,068	7,875	8,872	9,366	9,858	10,345	10,927	11,504	12,267	12,833		

espesura da parede wall thickness (mm)																			dimensão externa external dimension (mm)	peso weight kg/m
1,90	1,90	1,95	2,00	2,25	2,50	2,65	2,70	3,00	3,35	3,75	4,25	4,50	4,75	5,00	5,30	5,60	6,00	6,30		
BFF	BFQ BQD	BZC	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BZC	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ		
																			20 x 39	
1,547	1,547	1,586	1,624	1,813															20 x 39	

espesura da parede wall thickness (mm)																			dimensão externa external dimension (mm)	peso* weight kg/m
1,90	1,90	1,95	2,00	2,25	2,50	2,65	2,70	3,00	3,35	3,75	4,25	4,50	4,75	5,00	5,30	5,60	6,00	6,30		
BFF	BFQ BQD	BZC	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BZC	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ		
																			100 x 170	
				7,418	8,332	9,242	9,787	9,968	11,053	12,314	13,747	15,528	16,413	17,296	18,176	19,227	20,274	21,663	22,699	

espesura da parede wall thickness (mm)																			dimensão externa external dimension (mm)	peso* weight kg/m
1,90	1,90	1,95	2,00	2,25	2,50	2,65	2,70	3,00	3,35	3,75	4,25	4,50	4,75	5,00	5,30	5,60	6,00	6,30		
BFF	BFQ BQD	BZC	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BZC	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ BQD	BFQ		
																			16 x 16	
																			16 x 16	

☐ Pode produzir com Rebarba Interna Removida (RR) Available with weld seam removed (RR)

### NBR 5580:2015 – Norma de tubos de aço-carbono para usos comuns na condução de fluidos.



Esta norma estabelece os requisitos para tubos de aço-carbono, com ou sem revestimento de zinco, para condução de água, gás, vapor e outros fluidos não corrosivos.

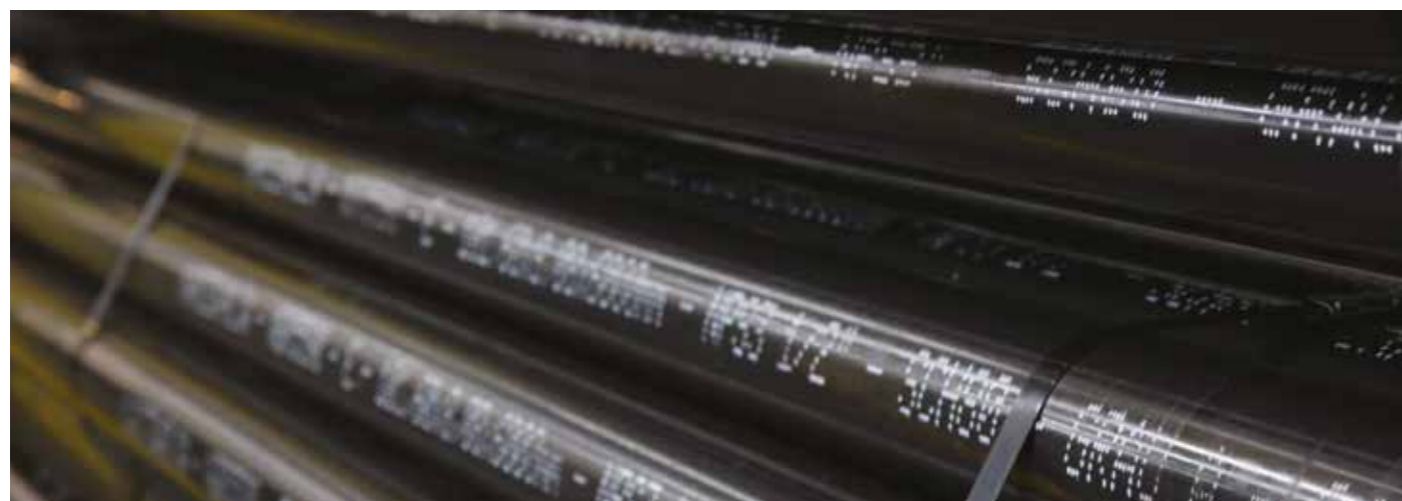
### NBR 5580:2015 – Standard carbon steel tubes for common use in conducting fluids.

This standard establishes requirements for carbon steel tubes, with or without protective coating of zinc, for conducting water, gas, steam, and other non-corrosive fluids.

NBR 5580:2015	
<b>Espessura</b> Thickness	Espessura mínima: 12,5% da espessura nominal. Espessura máxima limitada pela massa nominal (kg/m) com tolerância ±10% Minimum thickness: 12,5% of nominal thickness. Maximum wall thickness limited by the mass (kg/m) with ±10% of tolerance.
<b>Graus</b> Grades	LEVE (L) - MÉDIO (M) - PESADO (P) LIGHT (L) - MEDIUM (M) - HEAVY (P)
<b>Ensaio e testes</b> Inspections and tests	Pressão hidrostática e/ou ensaio eletromagnético (N.D.T) Hidrostático: pressão = 50 kg/cm <sup>2</sup> durante 5 segundos Hydrostatic test and/or electromagnetic inspection (N.D.T) Hydrostatic test: pressure = 50 kg/cm <sup>2</sup> for 5 seconds
<b>Extremidades</b> End finish	1 - Lisas (isentas de rebarbas - corte em serra) 2 - Chanfradas (biseladas/ usinadas em ângulo) 1 - Plain-end (without burrs - saw cutting) 2 - Beveled-end (beveled/angle machined)
<b>Retilidade</b> Straightness	5 mm/m (máximo admissível) 5 mm/m (maximum allowed)

TUBOS REDONDOS NBR 5580 Round tubes NBR 5580							
BITOLAS dimensions		espessura da parede wall thickness mm			peso weight kg/m		
Ø nominal	mm	Leve Light	Medio Medium	Pesado Heavy	Leve Light	Medio Medium	Pesado Heavy
15 (1/2)	21,30	2,25	2,65	3,00	1,057	1,219	1,354
20 (3/4)	26,90	2,25	2,65	3,00	1,368	1,585	1,768
25 (1)	33,70	2,65	3,35	3,75	2,029	2,507	2,770
32 (1 1/4)	42,40	2,65	3,35	3,75	2,598	3,226	3,574
40 (1 1/2)	48,30	3,00	3,35	3,75	3,352	3,714	4,120
50 (2)	60,30	3,00	3,75	4,50	4,239	5,230	6,193
65 (2 1/2)	76,10	3,35	3,75	4,50	6,010	6,691	7,946
80 (3)	88,90	3,35	4,00	4,50	7,068	8,375	9,366
90 (3 1/2)	101,60	3,75	4,25	5,00	9,049	10,203	11,912
100 (4)	114,30	3,75	4,50	5,60	10,224	12,185	15,012
125 (5)	139,70		4,75	5,60		15,808	18,520
150 (6)	165,10		5,00	5,60		19,742	22,028

-  Produz com Rebarba Interna Removida (RR)  
Available with weld seam removed (RR)
-  Não produz com Rebarba Interna Removida (RR)  
Not available with weld seam removed (RR)



### NBR 5590:2015 – Norma de Tubos de aço-carbono com ou sem solda longitudinal, pretos ou galvanizados.

Esta norma estabelece os requisitos de tubos para condução de fluidos não corrosivos sob pressão e aplicações mecânicas, sendo também aceitável para uso comum em linhas de vapor, água, gás e ar comprimido.

### NBR 5590:2015 – Standard carbon steel tubes, with or without weld, black or galvanized.



This standard covers seamless and welded, black and hot-dipped galvanized carbon steel tubes, non-corrosive fluids conveyance under pressure, mechanical applications and is also acceptable for ordinary uses in steam, water, gas, and air lines.

NBR 5590:2015	
<b>Espessura</b> Thickness	Espessura mínima: 12,5% da espessura nominal. Espessura máxima limitada pela massa nominal (kg/m) com tolerância ±10% Minimum thickness: 12,5% of nominal thickness. Maximum wall thickness limited by the mass (kg/m) with ±10% of tolerance
<b>Diâmetro</b> Diameter	Para tubos de diâmetro nominal ≤40, tolerância ±0,40 mm Para tubos de diâmetro nominal ≥50, tolerância ±1,0% do diâmetro externo For tubes with nominal diameter ≤40, tolerance ±0,40 mm For tubes with nominal diameter ≥50, tolerance ±1,0% from the external diameter.
<b>Ensaio e testes</b> Inspections and tests	Pressão hidrostática e/ou ensaio eletromagnético (N.D.T) Hidrostático: pressão = 50 kg/cm <sup>2</sup> durante 5 segundos Hydrostatic test and/or electromagnetic inspection (N.D.T) Hydrostatic test: pressure = 50 kg/cm <sup>2</sup> for 5 seconds
<b>Extremidades</b> End finish	1 - Lisas (isentas de rebarbas - corte em serra) 2 - Chanfradas (biseladas/ usinadas em ângulo) 1 - Plain-end (without burrs - saw cutting) 2 - Beveled-end (beveled/angle machined)
<b>Retilidade</b> Straightness	5 mm/m (máximo admissível) 5 mm/m (maximum allowed)

NBR 5590:2015 - Propriedades mecânicas Mechanical properties		
	GRAU A Grade A	GRAU B Grade B
<b>LE (MPa) mín</b>	205	240
<b>LR (MPa) mín</b>	330	415
<b>A (%) ≥</b>	30%	23%
<b>Massa Mass kg/m</b>	m = 0,0246 6e (D-e)	
<b>Comprimento</b> Length	±50 mm, outras tolerâncias podem ser acordadas ±50 mm, other tolerances by agreement	
<b>Rebarba Interna</b> Weld seam	Normalmente removida (conforme solicitação no pedido) Usually removed (accordingly to purchase order)	

TUBOS REDONDOS NBR 5590 Round tubes NBR 5590									
BITOLAS dimensions		espessura da parede wall thickness (mm)							
Ø nominal	mm	5-SCHEDULE		10-SCHEDULE		40-SCHEDULE		80-SCHEDULE	
		espessura thickness mm	peso weight kg/m	espessura thickness mm	peso weight kg/m	espessura thickness mm	peso weight kg/m	espessura thickness mm	peso weight kg/m
15 (1/2)	21,30	1,65	0,8130	2,11	1,020	2,77	1,290	3,73	1,640
20 (3/4)	26,70	1,65	1,0300	2,11	1,300	2,87	1,710	3,91	2,220
25 (1)	33,40	1,65	1,3100	2,77	2,120	3,38	2,540	4,55	3,290
32 (1 1/4)	42,20	1,65	1,6700	2,77	2,730	3,56	3,440	4,85	4,540
40 (1 1/2)	48,30	1,65	1,9300	2,77	3,160	3,68	4,110	5,08	5,480
50 (2)	60,30	1,65	2,4200	2,77	3,980	3,91	5,530	5,54	7,580
65 (2 1/2)	73,00	2,11	3,7500	3,05	5,330	5,16	8,633	7,01	11,570
80 (3)	88,90	2,11	4,5100	3,05	6,450	5,49	11,450	7,62	15,480
90 (3 1/2)	101,60	2,11	5,1700	3,05	7,400	5,74	13,760	8,08	18,900
100 (4)	114,30	2,11	5,8300	3,05	8,350	6,02	16,300		
125 (5)	141,30	2,77	9,4500	3,40	11,600	6,55	22,090		
150 (6)	168,30	2,77	11,3000	3,40	13,800	7,11	28,650		

- Norma similar a ASTM A53 Similar standard to ASTM A53
- Por acordo prévio, outras dimensões podem ser admitidas  
By prior arrangement, other dimensions can be admitted

-  Produz com Rebarba Interna Removida (RR)  
Available with weld seam removed (RR)
-  Não produz com Rebarba Interna Removida (RR)  
Not available with weld seam removed (RR)