

Diâmetro Externo	Espessuras																
	1,20	1,50	2,00	2,25	2,65	3,00	3,35	3,75	4,25	4,75	5,00	5,60	6,30	7,11	8,00	8,56	9,52
19,05 x 25,40	0,801	0,990	1,296	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20,00 x 30,00	0,907	1,122	1,471	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30,00 x 40,00	1,283	1,593	2,099	2,348	2,739	3,075	-	-	-	-	-	-	-	-	-	-	-
30,00 x 50,00	1,472	1,829	2,413	2,701	3,155	3,546	3,931	4,363	-	-	-	-	-	-	-	-	-
30,00 x 60,00	1,660	2,064	2,272	3,054	3,571	4,017	4,457	4,952	-	-	-	-	-	-	-	-	-
30,00 x 60,00	-	-	-	-	4,820	5,430	6,035	6,718	7,562	8,393	8,804	9,777	10,891	-	-	-	-
30,00 x 100,00	-	-	-	-	5,236	5,901	6,561	7,307	8,229	9,139	9,589	10,656	11,880	-	-	-	-
33,00 x 60,00	1,717	2,135	2,822	3,160	3,696	4,158	4,615	5,129	5,760	6,379	6,684	7,403	8,220	-	-	-	-
35,00 x 60,00	1,754	2,182	2,884	3,231	3,779	4,253	4,720	5,246	5,894	6,528	6,841	7,579	8,418	-	-	-	-
35,00 x 65,00	1,849	2,300	3,041	3,408	3,987	4,488	4,983	5,541	6,227	6,901	7,234	8,019	8,912	-	-	-	-
35,00 x 75,00	-	-	-	-	-	4,959	5,509	6,130	6,894	7,647	8,019	8,898	9,902	-	-	-	-
38,10 x 50,80	1,639	2,038	2,693	3,016	3,526	3,965	4,339	4,887	5,487	6,073	-	-	-	-	-	-	-
40,00 x 50,00	1,660	2,064	2,272	3,054	3,571	4,017	4,457	4,952	5,560	6,155	-	-	-	-	-	-	-
40,00 x 60,00	1,849	2,300	3,041	3,408	3,987	4,488	4,983	5,541	6,227	6,901	-	-	-	-	-	-	-
40,00 x 70,00	2,037	2,535	3,355	3,761	4,403	4,959	5,509	6,130	6,894	7,647	8,019	8,898	9,902	11,033	-	-	-
40,00 x 80,00	-	-	-	-	-	5,430	6,035	6,718	7,562	8,393	8,804	9,777	10,891	-	-	-	-
40,00 x 90,00	-	-	-	-	-	5,901	6,561	7,307	8,229	9,139	9,589	10,656	11,880	-	-	-	-
40,00 x 100,00	-	-	-	-	-	6,372	7,087	7,896	8,896	9,884	10,374	11,536	12,869	-	-	-	-
40,00 x 120,00	-	-	-	-	-	7,314	8,139	9,073	10,231	11,376	11,944	13,294	14,847	-	-	-	-
45,00 x 75,00	-	-	-	-	-	5,430	6,035	6,718	7,562	8,393	8,804	9,777	10,891	-	-	-	-
50,00 x 60,00	-	-	3,355	3,761	4,403	4,959	5,509	6,130	6,894	7,647	8,019	8,898	9,902	-	-	-	-
50,00 x 70,00	-	-	-	-	-	5,430	6,035	6,718	7,562	8,393	8,804	9,777	10,891	-	-	-	-
50,00 x 75,00	-	-	-	-	-	5,666	6,298	7,013	7,895	8,766	9,196	10,217	11,385	-	-	-	-
50,00 x 80,00	-	-	-	-	-	5,901	6,561	7,307	8,229	9,139	9,589	10,656	11,880	-	-	-	-
50,00 x 90,00	-	-	-	-	-	6,372	7,087	7,896	8,896	9,884	10,374	11,536	12,869	-	-	-	-
50,00 x 100,00	-	-	-	-	-	6,843	7,613	8,485	9,564	10,630	11,159	12,415	13,858	-	-	-	-
50,00 x 110,00	-	-	-	-	-	7,314	8,139	9,073	10,231	11,376	11,944	13,294	14,847	16,614	-	-	-
50,00 x 115,00	-	-	-	-	-	7,550	8,402	9,368	10,564	11,749	12,336	13,734	15,342	17,172	19,146	20,368	-
50,00 x 120,00	-	-	-	-	-	7,785	8,665	9,662	10,898	12,122	12,729	14,173	15,836	17,730	19,744	21,040	-
50,00 x 130,00	-	-	-	-	-	8,256	9,191	10,251	11,565	12,867	13,514	15,053	16,825	18,847	21,030	22,382	24,669
50,00 x 140,00	-	-	-	-	-	9,198	10,242	11,428	12,900	14,359	15,084	16,811	18,804	21,079	23,542	25,072	27,658
60,00 x 180,00	-	-	-	-	-	11,082	12,346	13,784	15,569	17,342	18,224	20,328	22,760	25,544	28,566	30,448	33,637
70,00 x 80,00	-	-	-	-	-	6,843	7,613	8,485	9,564	10,630	11,159	12,415	13,858	-	-	-	-
70,00 x 90,00	-	-	-	-	-	7,314	8,139	9,073	10,231	11,376	11,944	13,294	14,847	16,614	18,518	19,696	21,680
70,00 x 100,00	-	-	-	-	-	7,785	8,665	9,662	10,898	12,122	12,729	14,173	15,836	17,730	19,774	21,040	23,174
70,00 x 110,00	-	-	-	-	-	8,256	9,191	10,251	11,565	12,867	13,514	15,053	16,825	18,847	21,030	22,384	24,669
70,00 x 120,00	-	-	-	-	-	8,727	9,717	10,840	12,233	13,613	14,299	15,932	17,815	19,963	22,286	23,728	26,164
70,00 x 140,00	-	-	-	-	-	9,669	10,768	12,017	13,567	15,105	15,869	17,690	19,793	22,196	24,798	26,416	29,153
75,00 x 100,00	-	-	-	-	-	8,021	8,928	9,957	11,232	12,495	13,121	14,613	16,331	18,289	20,402	21,712	23,922
75,00 x 115,00	-	-	-	-	-	8,727	9,717	10,840	12,233	13,613	14,299	15,932	17,815	19,963	22,286	23,728	26,164
75,00 x 125,00	-	-	-	-	-	9,198	10,242	11,428	12,900	14,359	15,084	16,811	18,804	21,079	23,542	25,072	27,658
75,00 x 130,00	-	-	-	-	-	9,434	10,505	11,723	13,234	14,732	15,476	17,251	19,298	21,637	24,170	25,744	28,406
80,00 x 90,00	-	-	-	5,881	6,900	7,785	8,665	9,662	10,898	12,122	12,729	14,173	15,836	17,730	19,774	21,040	-
80,00 x 100,00	-	-	-	-	-	8,256	9,191	10,251	11,565	12,867	13,514	15,053	16,825	18,847	21,030	22,384	24,669
80,00 x 110,00	-	-	-	-	-	8,727	9,717	10,840	12,233	13,613	14,299	15,932	17,815	19,963	22,286	23,728	26,164
80,00 x 120,00	-	-	-	-	-	9,198	10,242	11,428	12,900	14,359	15,084	16,811	18,804	21,079	23,542	25,072	27,658
80,00 x 130,00	-	-	-	-	-	9,434	10,505	11,723	13,234	14,732	15,476	17,251	19,298	21,637	24,170	25,744	28,406
80,00 x 140,00	-	-	-	-	-	9,669	10,768	12,017	13,567	15,105	15,869	17,690	19,793	22,196	24,798	26,416	29,153
80,00 x 150,00	-	-	-	-	-	10,140	11,694	12,606	14,234	15,850	16,654	18,569	20,782	23,312	26,054	27,760	30,648
80,00 x 160,00	-	-	-	-	-	10,611	11,820	13,195	14,902	16,596	17,439	19,449	21,771	24,428	27,310	29,104	32,142
80,00 x 180,00	-	-	-	-	-	11,082	12,346	13,784	15,569	17,342	18,224	20,328	22,760	25,554	28,566	30,448	33,637
80,00 x 200,00	-	-	-	-	-	12,024	13,398	14,961	16,903	18,834	19,794	22,086	24,738	27,777	31,078	33,136	36,627
85,00 x 130,00	-	-	-	8,707	10,228	11,553	12,872	14,372	16,236	18,088	19,009	21,207	23,749	26,661	29,822	31,792	35,132
90,00 x 110,00	-	-	-	-	-	9,198	10,242	11,428	12,900	14,359	15,084	16,811	18,804	21,079	23,542	25,072	27,658
90,00 x 120,00	-	-	-	-	-	9,669	10,768	12,017	13,567	15,105	15,869	17,690	19,793	22,196	24,798	26,416	29,153
90,00 x 140,00	-	-	-	-	-	10,611	11,820	13,195	14,902	16,596	17,439	19,449	21,771	24,428	27,310	29,104	32,142
90,00 x 150,00	-	-	-	-	-	11,082	12,346	13,784	15,569	17,342	18,224	20,328	22,760	25,554	28,566	30,448	33,637
90,00 x 160,00	-	-	-	-	-	12,024	13,398	14,961	16,903	18,834	19,794	22,086	24,738	27,777	31,078	33,136	36,627
100,00 x 120,00	-	-	-	-	-	8,707	10,228	11,553	12,872	14,372	16,236	18,088	19,009	21,207	23,749	26,661	29,822
100,00 x 130,00	-	-	-	-	-	9,198	10,242	11,428	12,900	14,359	15,084	16,811	18,804	21,079	23,542	25,072	27,658
100,00 x 140,00	-	-	-	-	-	9,669	10,768	12,017	13,567	15,105	15,869	17,690	19,793	22,196	24,798	26,416	29,153
100,00 x 150,00	-	-	-	-	-	10,140	11,694	12,606	14,234	15,850	16,654	18,569	20,782	23,312	26,054	27,760	30,648
100,00 x 160,00	-	-	-	-	-	10,611	11,820	13,195	14,902	16,596	17,439	19,449	21,771	24,428	27,310	29,104	32,142
100,00 x 180,00	-	-	-	-	-	11,533	12,872	14,372	16,236	18,088	19,009	21,207	23,749	26,661	29,822	31,792	35,132
100,00 x 200,00	-	-	-	-	-	12,024	13,398	14,961	16,903	18,834	19,794	22,086	24,738	27,777	31,078	33,136	36,627
120,00 x 140,00	-	-	-	-	-	12,024	13,398	14,961	16,903	18,834	19,794	22,086	24,738	27,777	31,078	33,136	36,627
120,00 x 150,00	-	-	-	-	-	12,495	13,924	15,550	17,571	19,579	20,579	22,966	25,728	28,893	32,334	34,480	38,121
140,00 x 220,00	-	-	-	-	-	16,734	18,658	20,849	23,576	29,291	27,644	30,879	34,630	38,940	43,639	46,575	51,573
150,00 x 200,00	-	-	-	-	-	16,263	18,132	20,260	22,909	25,545	26,859	29,999	33,641	37,824	42,383	45,231	50,079

Obs.: Consultar o Departamento de Engenharia para materiais com espessuras a partir de 12,70.