

ANABELA GONÇALVES CORREIA DE PAIVA

**DESENVOLVIMENTO DE UM SISTEMA PERICIAL PARA AVALIAÇÃO DO
COMPORTAMENTO TÉRMICO DOS EDIFÍCIOS NO INVERNO**

ANEXOS

FACULDADE DE ENGENHARIA DA UNIVERSIDADE DO PORTO
GABINETE DE CONSTRUÇÕES CIVIS

- 1991 -

ANABELA GONÇALVES CORREIA DE PAIVA

**DESENVOLVIMENTO DE UM SISTEMA PERICIAL PARA AVALIAÇÃO DO
COMPORTAMENTO TÉRMICO DOS EDIFÍCIOS NO INVERNO**

ANEXOS

FACULDADE DE ENGENHARIA DA UNIVERSIDADE DO PORTO
GABINETE DE CONSTRUÇÕES CIVIS

- 1991 -

ANABELA GONÇALVES CORREIA DE PAIVA

**DESENVOLVIMENTO DE UM SISTEMA PERICIAL PARA AVALIAÇÃO DO
COMPORTAMENTO TÉRMICO DOS EDIFÍCIOS NO INVERNO**

ANEXOS

FACULDADE DE ENGENHARIA DA UNIVERSIDADE DO PORTO
GABINETE DE CONSTRUÇÕES CIVIS

- 1991 -

ANEXO 1

tabela 1.1

zona climática de inverno II
sem ganhos solares
soluções grupo 1

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni1	Nic1	Nic/Ni	cls
1	20%	2.70	0%	.00	35%	4.80	18.36	30.12	164.1%	INS
2	20%	2.10	0%	.00	35%	4.80	18.36	28.97	157.8%	INS
3	110%	2.70	0%	.00	35%	4.80	34.08	53.45	156.8%	INS
4	200%	2.70	0%	.00	35%	4.80	49.80	76.78	154.2%	INS
5	20%	2.70	0%	.00	35%	4.20	18.36	28.11	153.1%	INS
6	110%	2.70	0%	.00	35%	4.20	34.08	51.44	150.9%	INS
7	200%	2.70	0%	.00	35%	4.20	49.80	74.76	150.1%	INS
8	20%	2.10	0%	.00	35%	4.20	18.36	26.96	146.9%	INS
9	200%	2.70	117%	1.25	35%	4.80	62.16	90.82	146.1%	INS
10	110%	2.70	117%	1.25	35%	4.80	46.44	67.49	145.3%	INS
11	20%	2.70	117%	1.25	35%	4.80	30.71	44.16	143.8%	INS
12	200%	2.70	117%	1.10	35%	4.80	62.16	89.14	143.4%	INS
13	200%	2.70	117%	1.25	35%	4.20	62.16	88.80	142.9%	INS
14	110%	2.70	117%	1.10	35%	4.80	46.44	65.81	141.7%	INS
15	110%	2.70	117%	1.25	35%	4.20	46.44	65.48	141.0%	INS
16	200%	2.70	235%	1.25	35%	4.80	74.62	104.98	140.7%	INS
17	200%	2.70	0%	.00	20%	4.80	49.80	69.87	140.3%	INS
18	200%	2.70	117%	1.10	35%	4.20	62.16	87.12	140.2%	INS
19	20%	2.10	117%	1.25	35%	4.80	30.71	43.01	140.1%	INS
20	110%	2.70	235%	1.25	35%	4.80	58.90	81.65	138.6%	INS
21	20%	2.70	117%	1.10	35%	4.80	30.71	42.48	138.3%	INS
22	110%	2.10	0%	.00	35%	4.80	34.08	47.12	138.3%	INS
23	200%	2.70	0%	.00	20%	4.20	49.80	68.72	138.0%	INS
24	200%	2.70	235%	1.25	35%	4.20	74.62	102.96	138.0%	INS
25	110%	2.70	117%	1.10	35%	4.20	46.44	63.79	137.4%	INS
26	20%	2.70	117%	1.25	35%	4.20	30.71	42.15	137.2%	INS
27	110%	2.70	0%	.00	20%	4.80	34.08	46.54	136.6%	INS
28	200%	2.70	0%	.00	10%	4.80	47.79	65.26	136.6%	INS
29	200%	2.70	235%	1.10	35%	4.80	74.62	101.60	136.2%	INS
30	200%	2.70	0%	.00	10%	4.20	47.79	64.68	135.4%	INS
31	110%	2.70	235%	1.25	35%	4.20	58.90	79.64	135.2%	INS
32	20%	2.70	235%	1.25	35%	4.80	43.17	58.32	135.1%	INS
33	200%	2.70	117%	1.25	20%	4.80	62.16	83.91	135.0%	INS
34	20%	2.10	117%	1.10	35%	4.80	30.71	41.33	134.6%	INS
35	20%	2.10	117%	1.25	35%	4.20	30.71	41.00	133.5%	INS
36	200%	2.70	235%	1.10	35%	4.20	74.62	99.58	133.4%	INS
37	110%	2.70	0%	.00	20%	4.20	34.08	45.39	133.2%	INS
38	200%	2.70	117%	1.25	20%	4.20	62.16	82.76	133.1%	INS
39	110%	2.70	235%	1.10	35%	4.80	58.90	78.27	132.9%	INS
40	20%	2.10	235%	1.25	35%	4.80	43.17	57.17	132.4%	INS
41	110%	2.10	0%	.00	35%	4.20	34.08	45.10	132.3%	INS
42	200%	2.70	117%	1.10	20%	4.80	62.16	82.22	132.3%	INS
43	200%	2.70	117%	1.25	10%	4.80	60.14	79.30	131.9%	INS
44	20%	2.70	117%	1.10	35%	4.20	30.71	40.46	131.8%	INS
45	110%	2.10	117%	1.25	35%	4.80	46.44	61.16	131.7%	INS
46	200%	2.70	235%	1.25	20%	4.80	74.62	98.07	131.4%	INS
47	200%	2.10	0%	.00	35%	4.80	49.80	65.26	131.0%	INS
48	200%	2.70	117%	1.25	10%	4.20	60.14	78.72	130.9%	INS
49	110%	2.70	0%	.00	10%	4.80	32.06	41.93	130.8%	INS
50	110%	2.70	117%	1.25	20%	4.80	46.44	60.58	130.5%	INS
51	20%	2.70	235%	1.25	35%	4.20	43.17	56.31	130.4%	INS
52	200%	2.70	117%	1.10	20%	4.20	62.16	81.07	130.4%	INS
53	200%	2.70	235%	1.25	20%	4.20	74.62	96.92	129.9%	INS
54	110%	2.70	235%	1.10	35%	4.20	58.90	76.25	129.5%	INS
55	200%	2.70	117%	1.10	10%	4.80	60.14	77.62	129.1%	INS
56	110%	2.70	0%	.00	10%	4.20	32.06	41.36	129.0%	INS
57	200%	2.70	235%	1.25	10%	4.80	72.60	93.46	128.7%	INS

linha	af	Kfc	ah	Kh	aenv	KenV	Ni1	Nic1	Nic/Ni	cls
58	110%	2.10	117%	1.10	35%	4.80	46.44	59.47	128.1%	INS
59	200%	2.70	117%	1.10	10%	4.20	60.14	77.04	128.1%	INS
60	20%	2.10	117%	1.10	35%	4.20	30.71	39.31	128.0%	INS
61	110%	2.70	117%	1.25	20%	4.20	46.44	59.43	128.0%	INS
62	110%	2.10	235%	1.25	35%	4.80	58.90	75.32	127.9%	INS
63	200%	2.70	235%	1.25	10%	4.20	72.60	92.88	127.9%	INS
64	20%	2.10	235%	1.25	35%	4.20	43.17	55.16	127.8%	INS
65	200%	2.10	117%	1.25	35%	4.80	62.16	79.30	127.6%	INS
66	110%	2.10	117%	1.25	35%	4.20	46.44	59.14	127.4%	INS
67	20%	2.70	235%	1.10	35%	4.80	43.17	54.94	127.3%	INS
68	200%	2.10	0%	.00	35%	4.20	49.80	63.24	127.0%	INS
69	110%	2.70	235%	1.25	20%	4.80	58.90	74.74	126.9%	INS
70	200%	2.70	235%	1.10	20%	4.80	74.62	94.68	126.9%	INS
71	110%	2.70	117%	1.10	20%	4.80	46.44	58.90	126.8%	INS
72	20%	2.70	0%	.00	20%	4.80	18.36	23.21	126.5%	INS
73	110%	2.70	117%	1.25	10%	4.80	44.42	55.97	126.0%	INS
74	200%	2.70	235%	1.10	20%	4.20	74.62	93.53	125.3%	INS
75	200%	2.10	235%	1.25	35%	4.80	74.62	93.46	125.2%	INS
76	110%	2.70	235%	1.25	20%	4.20	58.90	73.59	124.9%	INS
77	200%	2.10	117%	1.10	35%	4.80	62.16	77.62	124.9%	INS
78	110%	2.70	117%	1.25	10%	4.20	44.42	55.40	124.7%	INS
79	20%	2.10	235%	1.10	35%	4.80	43.17	53.79	124.6%	INS
80	110%	2.10	235%	1.25	35%	4.20	58.90	73.30	124.5%	INS
81	110%	2.70	117%	1.10	20%	4.20	46.44	57.74	124.4%	INS
82	200%	2.10	117%	1.25	35%	4.20	62.16	77.28	124.3%	INS
83	200%	2.70	235%	1.10	10%	4.80	72.60	90.08	124.1%	INS
84	110%	2.10	117%	1.10	35%	4.20	46.44	57.46	123.7%	INS
85	110%	2.70	235%	1.25	10%	4.80	56.88	70.13	123.3%	INS
86	200%	2.70	235%	1.10	10%	4.20	72.60	89.50	123.3%	INS
87	20%	2.70	235%	1.10	35%	4.20	43.17	52.92	122.6%	INS
88	200%	2.10	235%	1.25	35%	4.20	74.62	91.44	122.5%	INS
89	110%	2.70	235%	1.25	10%	4.20	56.88	69.56	122.3%	INS
90	110%	2.70	117%	1.10	10%	4.80	44.42	54.29	122.2%	INS
91	110%	2.10	235%	1.10	35%	4.80	58.90	71.93	122.1%	INS
92	200%	2.10	117%	1.10	35%	4.20	62.16	75.60	121.6%	INS
93	20%	2.70	117%	1.25	20%	4.80	30.71	37.25	121.3%	INS
94	110%	2.70	235%	1.10	20%	4.80	58.90	71.36	121.2%	INS
95	110%	2.70	117%	1.10	10%	4.20	44.42	53.71	120.9%	INS
96	200%	2.10	235%	1.10	35%	4.80	74.62	90.08	120.7%	INS
97	20%	2.70	0%	.00	20%	4.20	18.36	22.06	120.2%	INS
98	20%	2.10	0%	.00	20%	4.80	18.36	22.06	120.2%	INS
99	20%	2.10	235%	1.10	35%	4.20	43.17	51.77	119.9%	INS
100	110%	2.70	235%	1.10	20%	4.20	58.90	70.20	119.2%	INS
101	20%	2.70	235%	1.25	20%	4.80	43.17	51.41	119.1%	INS
102	110%	2.10	235%	1.10	35%	4.20	58.90	69.92	118.7%	INS
103	110%	2.10	0%	.00	20%	4.80	34.08	40.20	118.0%	INS
104	200%	2.10	235%	1.10	35%	4.20	74.62	88.06	118.0%	INS
105	20%	2.70	117%	1.25	20%	4.20	30.71	36.10	117.6%	INS
106	20%	2.10	117%	1.25	20%	4.80	30.71	36.10	117.6%	INS
107	110%	2.70	235%	1.10	10%	4.80	56.88	66.75	117.4%	INS
108	200%	2.10	0%	.00	20%	4.80	49.80	58.35	117.2%	INS
109	110%	2.10	117%	1.25	20%	4.80	46.44	54.24	116.8%	INS
110	200%	2.10	117%	1.25	20%	4.80	62.16	72.39	116.5%	INS
111	20%	2.70	235%	1.25	20%	4.20	43.17	50.26	116.4%	INS
112	20%	2.10	235%	1.25	20%	4.80	43.17	50.26	116.4%	INS
113	110%	2.70	235%	1.10	10%	4.20	56.88	66.17	116.3%	INS
114	110%	2.10	235%	1.25	20%	4.80	58.90	68.40	116.1%	INS
115	200%	2.10	235%	1.25	20%	4.80	74.62	86.55	116.0%	INS
116	20%	2.70	117%	1.10	20%	4.80	30.71	35.57	115.8%	INS
117	200%	2.10	0%	.00	20%	4.20	49.80	57.20	114.8%	INS
118	110%	2.10	0%	.00	20%	4.20	34.08	39.05	114.6%	INS
119	200%	2.10	117%	1.25	20%	4.20	62.16	71.24	114.6%	INS
120	200%	2.10	235%	1.25	20%	4.20	74.62	85.40	114.4%	INS
121	110%	2.10	117%	1.25	20%	4.20	46.44	53.09	114.3%	INS
122	110%	2.10	235%	1.25	20%	4.20	58.90	67.25	114.2%	INS
123	20%	2.70	0%	.00	10%	4.80	16.34	18.60	113.9%	INS

linha	af	Kfc	ah	Kh	aenv	KenV	Ni1	Nic1	Nic/Ni	cls
124	20%	2.10	0%	.00	20%	4.20	18.36	20.91	113.9%	INS
125	20%	2.70	117%	1.25	10%	4.80	28.69	32.64	113.8%	INS
126	20%	2.10	117%	1.25	20%	4.20	30.71	34.95	113.8%	INS
127	20%	2.10	235%	1.25	20%	4.20	43.17	49.11	113.8%	INS
128	20%	2.70	235%	1.25	10%	4.80	41.16	46.80	113.7%	INS
129	200%	2.10	117%	1.10	20%	4.80	62.16	70.70	113.7%	INS
130	110%	2.10	117%	1.10	20%	4.80	46.44	52.56	113.2%	INS
131	200%	2.10	235%	1.25	10%	4.80	72.60	81.94	112.9%	INS
132	200%	2.10	117%	1.25	10%	4.80	60.14	67.78	112.7%	INS
133	200%	2.10	0%	.00	10%	4.80	47.79	53.74	112.5%	INS
134	20%	2.70	235%	1.25	10%	4.20	41.16	46.23	112.3%	INS
135	110%	2.10	235%	1.25	10%	4.80	56.88	63.80	112.2%	INS
136	20%	2.70	117%	1.10	20%	4.20	30.71	34.42	112.1%	INS
137	20%	2.10	117%	1.10	20%	4.80	30.71	34.42	112.1%	INS
138	200%	2.10	235%	1.25	10%	4.20	72.60	81.36	112.1%	INS
139	200%	2.10	117%	1.10	20%	4.20	62.16	69.55	111.9%	INS
140	20%	2.70	117%	1.25	10%	4.20	28.69	32.07	111.8%	INS
141	110%	2.10	117%	1.25	10%	4.80	44.42	49.64	111.7%	INS
142	200%	2.10	117%	1.25	10%	4.20	60.14	67.20	111.7%	INS
143	200%	2.10	235%	1.10	20%	4.80	74.62	83.16	111.4%	INS
144	20%	2.70	235%	1.10	20%	4.80	43.17	48.03	111.3%	INS
145	200%	2.10	0%	.00	10%	4.20	47.79	53.16	111.2%	INS
146	110%	2.10	235%	1.25	10%	4.20	56.88	63.22	111.1%	INS
147	110%	2.10	0%	.00	10%	4.80	32.06	35.60	111.0%	INS
148	20%	2.10	235%	1.25	10%	4.80	41.16	45.65	110.9%	INS
149	110%	2.10	117%	1.10	20%	4.20	46.44	51.41	110.7%	INS
150	110%	2.10	117%	1.25	10%	4.20	44.42	49.06	110.4%	INS
151	110%	2.10	235%	1.10	20%	4.80	58.90	65.02	110.4%	INS
152	20%	2.70	0%	.00	10%	4.20	16.34	18.03	110.3%	INS
153	200%	2.10	117%	1.10	10%	4.80	60.14	66.10	109.9%	INS
154	200%	2.10	235%	1.10	20%	4.20	74.62	82.01	109.9%	INS
155	20%	2.10	117%	1.25	10%	4.80	28.69	31.49	109.8%	INS
156	20%	2.10	235%	1.25	10%	4.20	41.16	45.08	109.5%	INS
157	110%	2.10	0%	.00	10%	4.20	32.06	35.02	109.2%	INS
158	200%	2.10	117%	1.10	10%	4.20	60.14	65.52	108.9%	INS
159	20%	2.70	235%	1.10	20%	4.20	43.17	46.88	108.6%	INS
160	20%	2.10	235%	1.10	20%	4.80	43.17	46.88	108.6%	INS
161	110%	2.10	235%	1.10	20%	4.20	58.90	63.87	108.4%	INS
162	20%	2.10	117%	1.10	20%	4.20	30.71	33.26	108.3%	INS
163	200%	2.10	235%	1.10	10%	4.80	72.60	78.56	108.2%	INS
164	110%	2.10	117%	1.10	10%	4.80	44.42	47.95	108.0%	INS
165	20%	2.70	117%	1.10	10%	4.80	28.69	30.96	107.9%	INS
166	20%	2.10	117%	1.25	10%	4.20	28.69	30.92	107.7%	INS
167	200%	2.10	235%	1.10	10%	4.20	72.60	77.98	107.4%	INS
168	20%	2.10	0%	.00	10%	4.80	16.34	17.45	106.8%	INS
169	110%	2.10	117%	1.10	10%	4.20	44.42	47.38	106.7%	INS
170	110%	2.10	235%	1.10	10%	4.80	56.88	60.41	106.2%	INS
171	20%	2.70	117%	1.10	10%	4.20	28.69	30.38	105.9%	INS
172	20%	2.10	235%	1.10	20%	4.20	43.17	45.72	105.9%	INS
173	20%	2.70	235%	1.10	10%	4.80	41.16	43.42	105.5%	INS
174	110%	2.10	235%	1.10	10%	4.20	56.88	59.84	105.2%	INS
175	20%	2.70	235%	1.10	10%	4.20	41.16	42.84	104.1%	INS
176	20%	2.10	117%	1.10	10%	4.80	28.69	29.81	103.9%	INS
177	20%	2.10	0%	.00	10%	4.20	16.34	16.88	103.3%	INS
178	20%	2.10	235%	1.10	10%	4.80	41.16	42.27	102.7%	INS
179	20%	2.10	117%	1.10	10%	4.20	28.69	29.23	101.9%	INS
180	20%	2.10	235%	1.10	10%	4.20	41.16	41.69	101.3%	INS

tabela 1.2

zona climática de inverno I1

sem ganhos solares

soluções grupo 2

linha	af	Kfc	ah	Kh	aenv	KenV	Ni1	Nic1	Nic/Ni	cls
1	20%	1.80	0%	.00	35%	3.60	18.36	24.36	132.7%	INS
2	20%	.80	0%	.00	35%	3.60	18.36	22.44	122.3%	INS
3	20%	1.80	0%	.00	35%	3.00	18.36	22.35	121.8%	INS
4	110%	1.80	0%	.00	35%	3.60	34.08	39.92	117.1%	INS
5	20%	1.80	117%	.90	35%	3.60	30.71	34.47	112.3%	INS
6	200%	1.80	0%	.00	35%	3.60	49.80	55.47	111.4%	INS
7	20%	.80	0%	.00	35%	3.00	18.36	20.43	111.3%	INS
8	110%	1.80	0%	.00	35%	3.00	34.08	37.90	111.2%	INS
9	110%	1.80	117%	.90	35%	3.60	46.44	50.03	107.7%	INS
10	200%	1.80	0%	.00	35%	3.00	49.80	53.45	107.3%	INS
11	20%	.80	117%	.90	35%	3.60	30.71	32.55	106.0%	INS
12	20%	1.80	117%	.90	35%	3.00	30.71	32.46	105.7%	INS
13	200%	1.80	117%	.90	35%	3.60	62.16	65.58	105.5%	INS
14	20%	1.80	0%	.00	20%	3.60	18.36	19.18	104.5%	INS
15	20%	1.80	235%	.90	35%	3.60	43.17	44.67	103.5%	INS
16	110%	1.80	117%	.90	35%	3.00	46.44	48.01	103.4%	INS
17	200%	1.80	117%	.90	35%	3.00	62.16	63.56	102.3%	INS
18	110%	1.80	235%	.90	35%	3.60	58.90	60.22	102.2%	INS
19	110%	1.80	0%	.00	20%	3.60	34.08	34.73	101.9%	INS
20	200%	1.80	235%	.90	35%	3.60	74.62	75.77	101.5%	INS
21	20%	1.80	117%	.60	35%	3.60	30.71	31.10	101.3%	INS
22	200%	1.80	0%	.00	20%	3.60	49.80	50.28	101.0%	INS
23	110%	1.80	117%	.60	35%	3.60	46.44	46.66	100.5%	INS
24	200%	1.80	117%	.60	35%	3.60	62.16	62.21	100.1%	INS
25	20%	.80	117%	.90	35%	3.00	30.71	30.54	99.4%	SUF
26	20%	.80	235%	.90	35%	3.60	43.17	42.75	99.0%	SUF
27	20%	1.80	235%	.90	35%	3.00	43.17	42.65	98.8%	SUF
28	110%	1.80	235%	.90	35%	3.00	58.90	58.20	98.8%	SUF
29	200%	1.80	235%	.90	35%	3.00	74.62	73.76	98.8%	SUF
30	200%	1.80	0%	.00	20%	3.00	49.80	49.13	98.7%	SUF
31	110%	1.80	0%	.00	20%	3.00	34.08	33.58	98.5%	SUF
32	20%	1.80	0%	.00	20%	3.00	18.36	18.03	98.2%	SUF
33	200%	1.80	0%	.00	10%	3.60	47.79	46.83	98.0%	SUF
34	110%	1.80	0%	.00	10%	3.60	32.06	31.28	97.5%	SUF
35	200%	1.80	117%	.90	20%	3.60	62.16	60.39	97.2%	SUF
36	200%	1.80	0%	.00	10%	3.00	47.79	46.25	96.8%	SUF
37	200%	1.80	117%	.60	35%	3.00	62.16	60.19	96.8%	SUF
38	110%	1.80	117%	.90	20%	3.60	46.44	44.84	96.6%	SUF
39	20%	1.80	0%	.00	10%	3.60	16.34	15.72	96.2%	SUF
40	110%	1.80	117%	.60	35%	3.00	46.44	44.64	96.1%	SUF
41	110%	1.80	0%	.00	10%	3.00	32.06	30.70	95.7%	SUF
42	20%	1.80	117%	.90	20%	3.60	30.71	29.29	95.4%	SUF
43	200%	1.80	117%	.90	20%	3.00	62.16	59.24	95.3%	SUF
44	200%	1.80	235%	.90	20%	3.60	74.62	70.59	94.6%	SUF
45	200%	1.80	235%	.90	20%	3.00	74.62	69.44	93.1%	SUF
46	200%	1.80	235%	.90	10%	3.60	72.60	67.13	92.5%	SUF
47	200%	1.80	235%	.60	35%	3.60	74.62	69.00	92.5%	SUF
48	200%	1.80	235%	.90	10%	3.00	72.60	66.56	91.7%	SUF
49	200%	1.80	235%	.60	35%	3.00	74.62	66.99	89.8%	SUF
50	200%	1.80	235%	.60	20%	3.60	74.62	63.82	85.5%	SUF
51	200%	1.80	235%	.60	20%	3.00	74.62	62.67	84.0%	SUF
52	200%	1.80	235%	.60	10%	3.60	72.60	60.36	83.1%	SUF
53	20%	.80	117%	.60	35%	3.60	30.71	29.18	95.0%	BOM
54	20%	1.80	117%	.60	35%	3.00	30.71	29.09	94.7%	BOM
55	200%	1.80	117%	.90	10%	3.60	60.14	56.94	94.7%	BOM

linha	af	Kfc	ah	Kh	aenv	KenV	Ni1	Nic1	Nic/Ni	cls
56	20%	.80	235%	.90	35%	3.00	43.17	40.73	94.4%	BOM
57	110%	1.80	117%	.90	20%	3.00	46.44	43.69	94.1%	BOM
58	20%	.80	0%	.00	20%	3.60	18.36	17.26	94.0%	BOM
59	200%	1.80	117%	.90	10%	3.00	60.14	56.36	93.7%	BOM
60	110%	1.80	235%	.90	20%	3.60	58.90	55.04	93.4%	BOM
61	110%	1.80	117%	.90	10%	3.60	44.42	41.39	93.2%	BOM
62	20%	1.80	0%	.00	10%	3.00	16.34	15.15	92.7%	BOM
63	110%	1.80	117%	.90	10%	3.00	44.42	40.81	91.9%	BOM
64	200%	1.80	117%	.60	20%	3.60	62.16	57.02	91.7%	BOM
65	20%	1.80	117%	.90	20%	3.00	30.71	28.14	91.6%	BOM
66	20%	1.80	235%	.90	20%	3.60	43.17	39.48	91.5%	BOM
67	110%	1.80	235%	.90	20%	3.00	58.90	53.88	91.5%	BOM
68	110%	1.80	235%	.60	35%	3.60	58.90	53.45	90.8%	BOM
69	110%	1.80	235%	.90	10%	3.60	56.88	51.58	90.7%	BOM
70	20%	1.80	117%	.90	10%	3.60	28.69	25.83	90.0%	BOM
71	200%	1.80	117%	.60	20%	3.00	62.16	55.87	89.9%	BOM
72	110%	1.80	235%	.90	10%	3.00	56.88	51.00	89.7%	BOM
73	110%	1.80	117%	.60	20%	3.60	46.44	41.47	89.3%	BOM
74	200%	1.80	117%	.60	10%	3.60	60.14	53.57	89.1%	BOM
75	20%	1.80	235%	.90	20%	3.00	43.17	38.33	88.8%	BOM
76	200%	1.80	117%	.60	10%	3.00	60.14	52.99	88.1%	BOM
77	20%	1.80	117%	.90	10%	3.00	28.69	25.26	88.0%	BOM
78	20%	1.80	235%	.60	35%	3.60	43.17	37.90	87.8%	BOM
79	20%	1.80	235%	.90	10%	3.60	41.16	36.03	87.5%	BOM
80	110%	1.80	235%	.60	35%	3.00	58.90	51.44	87.3%	BOM
81	110%	1.80	117%	.60	20%	3.00	46.44	40.32	86.8%	BOM
82	20%	1.80	235%	.90	10%	3.00	41.16	35.45	86.1%	BOM
83	110%	1.80	117%	.60	10%	3.60	44.42	38.02	85.6%	BOM
84	20%	1.80	117%	.60	20%	3.60	30.71	25.92	84.4%	BOM
85	110%	1.80	117%	.60	10%	3.00	44.42	37.44	84.3%	BOM
86	110%	.80	235%	.90	35%	3.60	58.90	49.66	84.3%	BOM
87	20%	1.80	235%	.60	35%	3.00	43.17	35.88	83.1%	BOM
88	200%	1.80	235%	.60	10%	3.00	72.60	59.79	82.3%	BOM
89	110%	1.80	235%	.60	20%	3.60	58.90	48.27	82.0%	BOM
90	110%	.80	235%	.90	35%	3.00	58.90	47.64	80.9%	BOM
91	20%	1.80	117%	.60	20%	3.00	30.71	24.77	80.7%	BOM
92	110%	1.80	235%	.60	20%	3.00	58.90	47.12	80.0%	BOM
93	110%	1.80	235%	.60	10%	3.60	56.88	44.81	78.8%	BOM
94	20%	1.80	117%	.60	10%	3.60	28.69	22.46	78.3%	BOM
95	110%	1.80	235%	.60	10%	3.00	56.88	44.24	77.8%	BOM
96	20%	1.80	117%	.60	10%	3.00	28.69	21.89	76.3%	BOM
97	20%	1.80	235%	.60	20%	3.60	43.17	32.72	75.8%	BOM
98	200%	.80	235%	.90	35%	3.60	74.62	56.57	75.8%	BOM
99	110%	.80	235%	.90	20%	3.60	58.90	44.48	75.5%	BOM
100	200%	.80	117%	.90	35%	3.60	62.16	46.38	74.6%	BOM
101	110%	.80	235%	.90	20%	3.00	58.90	43.32	73.6%	BOM
102	20%	1.80	235%	.60	20%	3.00	43.17	31.56	73.1%	BOM
103	200%	.80	235%	.90	35%	3.00	74.62	54.56	73.1%	BOM
104	110%	.80	235%	.60	35%	3.60	58.90	42.89	72.8%	BOM
105	110%	.80	235%	.90	10%	3.60	56.88	41.02	72.1%	BOM
106	200%	.80	117%	.90	35%	3.00	62.16	44.36	71.4%	BOM
107	20%	1.80	235%	.60	10%	3.60	41.16	29.26	71.1%	BOM
108	110%	.80	235%	.90	10%	3.00	56.88	40.44	71.1%	BOM
109	20%	1.80	235%	.60	10%	3.00	41.16	28.68	69.7%	BOM
110	110%	.80	235%	.60	35%	3.00	58.90	40.88	69.4%	BOM
111	200%	.80	117%	.60	35%	3.60	62.16	43.01	69.2%	BOM
112	200%	.80	235%	.90	20%	3.60	74.62	51.39	68.9%	BOM
113	200%	.80	235%	.90	20%	3.00	74.62	50.24	67.3%	BOM
114	200%	.80	235%	.60	35%	3.60	74.62	49.80	66.7%	BOM
115	200%	.80	117%	.90	20%	3.60	62.16	41.19	66.3%	BOM
116	200%	.80	235%	.90	10%	3.60	72.60	47.93	66.0%	BOM
117	200%	.80	117%	.60	35%	3.00	62.16	40.99	65.9%	BOM
118	200%	.80	235%	.90	10%	3.00	72.60	47.36	65.2%	BOM
119	200%	.80	117%	.90	20%	3.00	62.16	40.04	64.4%	BOM
120	200%	.80	235%	.60	35%	3.00	74.62	47.79	64.0%	BOM
121	200%	.80	235%	.60	20%	3.60	74.62	44.62	59.8%	BOM

linha	af	Kfc	ah	Kh	aenv	KenV	Ni1	Nic1	Nic/Ni	cls
122	200%	.80	235%	.60	20%	3.00	74.62	43.47	58.3%	BOM
123	200%	.80	235%	.60	10%	3.60	72.60	41.16	56.7%	BOM
124	200%	.80	235%	.60	10%	3.00	72.60	40.59	55.9%	BOM
125	20%	.80	117%	.90	20%	3.60	30.71	27.37	89.1%	MB
126	20%	.80	117%	.60	35%	3.00	30.71	27.17	88.5%	MB
127	20%	.80	0%	.00	20%	3.00	18.36	16.11	87.8%	MB
128	20%	.80	235%	.90	20%	3.60	43.17	37.56	87.0%	MB
129	110%	.80	0%	.00	35%	3.60	34.08	29.36	86.1%	MB
130	20%	.80	117%	.90	20%	3.00	30.71	26.22	85.4%	MB
131	110%	.80	117%	.90	35%	3.60	46.44	39.47	85.0%	MB
132	20%	.80	0%	.00	10%	3.60	16.34	13.80	84.5%	MB
133	20%	.80	235%	.90	20%	3.00	43.17	36.41	84.3%	MB
134	20%	.80	117%	.90	10%	3.60	28.69	23.91	83.3%	MB
135	20%	.80	235%	.60	35%	3.60	43.17	35.98	83.3%	MB
136	20%	.80	235%	.90	10%	3.60	41.16	34.11	82.9%	MB
137	20%	.80	235%	.90	10%	3.00	41.16	33.53	81.5%	MB
138	20%	.80	117%	.90	10%	3.00	28.69	23.34	81.3%	MB
139	20%	.80	0%	.00	10%	3.00	16.34	13.23	81.0%	MB
140	110%	.80	117%	.90	35%	3.00	46.44	37.45	80.6%	MB
141	110%	.80	0%	.00	35%	3.00	34.08	27.34	80.2%	MB
142	20%	.80	235%	.60	35%	3.00	43.17	33.96	78.7%	MB
143	110%	.80	117%	.60	35%	3.60	46.44	36.10	77.7%	MB
144	110%	.80	117%	.90	20%	3.60	46.44	34.28	73.8%	MB
145	110%	.80	117%	.60	35%	3.00	46.44	34.08	73.4%	MB
146	200%	.80	0%	.00	35%	3.60	49.80	36.27	72.8%	MB
147	20%	.80	235%	.60	20%	3.60	43.17	30.80	71.3%	MB
148	110%	.80	117%	.90	20%	3.00	46.44	33.13	71.3%	MB
149	110%	.80	117%	.90	10%	3.60	44.42	30.83	69.4%	MB
150	200%	.80	0%	.00	35%	3.00	49.80	34.25	68.8%	MB
151	20%	.80	235%	.60	20%	3.00	43.17	29.64	68.7%	MB
152	110%	.80	117%	.90	10%	3.00	44.42	30.25	68.1%	MB
153	110%	.80	117%	.60	20%	3.60	46.44	30.91	66.6%	MB
154	20%	.80	235%	.60	10%	3.60	41.16	27.34	66.4%	MB
155	20%	.80	235%	.60	10%	3.00	41.16	26.76	65.0%	MB
156	110%	.80	117%	.60	20%	3.00	46.44	29.76	64.1%	MB
157	110%	.80	235%	.60	20%	3.60	58.90	37.71	64.0%	MB
158	200%	.80	117%	.90	10%	3.60	60.14	37.74	62.7%	MB
159	200%	.80	0%	.00	20%	3.60	49.80	31.08	62.4%	MB
160	110%	.80	235%	.60	20%	3.00	58.90	36.56	62.1%	MB
161	110%	.80	117%	.60	10%	3.60	44.42	27.46	61.8%	MB
162	200%	.80	117%	.90	10%	3.00	60.14	37.16	61.8%	MB
163	200%	.80	117%	.60	20%	3.60	62.16	37.82	60.8%	MB
164	110%	.80	117%	.60	10%	3.00	44.42	26.88	60.5%	MB
165	110%	.80	235%	.60	10%	3.60	56.88	34.25	60.2%	MB
166	200%	.80	0%	.00	20%	3.00	49.80	29.93	60.1%	MB
167	110%	.80	235%	.60	10%	3.00	56.88	33.68	59.2%	MB
168	200%	.80	117%	.60	20%	3.00	62.16	36.67	59.0%	MB
169	200%	.80	0%	.00	10%	3.60	47.79	27.63	57.8%	MB
170	200%	.80	117%	.60	10%	3.60	60.14	34.37	57.1%	MB
171	200%	.80	0%	.00	10%	3.00	47.79	27.05	56.6%	MB
172	200%	.80	117%	.60	10%	3.00	60.14	33.79	56.2%	MB
173	20%	.80	117%	.60	20%	3.60	30.71	24.00	78.1%	EXC
174	20%	.80	117%	.60	20%	3.00	30.71	22.85	74.4%	EXC
175	20%	.80	117%	.60	10%	3.60	28.69	20.54	71.6%	EXC
176	110%	.80	0%	.00	20%	3.60	34.08	24.17	70.9%	EXC
177	20%	.80	117%	.60	10%	3.00	28.69	19.97	69.6%	EXC
178	110%	.80	0%	.00	20%	3.00	34.08	23.02	67.5%	EXC
179	110%	.80	0%	.00	10%	3.60	32.06	20.72	64.6%	EXC
180	110%	.80	0%	.00	10%	3.00	32.06	20.14	62.8%	EXC

tabela 1.3

zona climática de inverno I1
sem ganhos solares
soluções grupo 3

linha	af	Kfc	ah	Kh	aenv	KenV	Ni1	Nic1	Nic/Ni	cls
1	20%	.50	0%	.00	35%	2.60	18.36	18.51	100.8%	INS
2	20%	.35	0%	.00	35%	2.60	18.36	18.22	99.3%	SUF
3	20%	.50	0%	.00	35%	2.20	18.36	17.16	93.5%	BOM
4	20%	.35	0%	.00	35%	2.20	18.36	16.88	91.9%	BOM
5	20%	.50	0%	.00	20%	2.60	18.36	14.76	80.4%	MB
6	20%	.50	235%	.45	35%	2.60	43.17	28.66	66.4%	MB
7	20%	.35	235%	.45	35%	2.60	43.17	28.37	65.7%	MB
8	20%	.50	235%	.45	35%	2.20	43.17	27.32	63.3%	MB
9	20%	.35	235%	.45	35%	2.20	43.17	27.03	62.6%	MB
10	110%	.50	117%	.45	35%	2.60	46.44	27.88	60.0%	MB
11	20%	.50	235%	.30	35%	2.60	43.17	25.28	58.6%	MB
12	110%	.50	117%	.45	35%	2.20	46.44	26.54	57.2%	MB
13	110%	.35	117%	.45	35%	2.60	46.44	26.30	56.6%	MB
14	110%	.50	117%	.30	35%	2.60	46.44	26.20	56.4%	MB
15	110%	.50	235%	.45	35%	2.60	58.90	32.98	56.0%	MB
16	200%	.50	0%	.00	35%	2.60	49.80	27.15	54.5%	MB
17	110%	.50	235%	.45	35%	2.20	58.90	31.64	53.7%	MB
18	110%	.35	235%	.45	35%	2.60	58.90	31.40	53.3%	MB
19	200%	.50	0%	.00	35%	2.20	49.80	25.80	51.8%	MB
20	200%	.50	117%	.45	35%	2.60	62.16	32.20	51.8%	MB
21	110%	.35	235%	.45	35%	2.20	58.90	30.05	51.0%	MB
22	110%	.50	235%	.30	35%	2.60	58.90	29.60	50.3%	MB
23	200%	.50	235%	.45	35%	2.60	74.62	37.30	50.0%	MB
24	110%	.50	235%	.45	20%	2.60	58.90	29.24	49.6%	MB
25	200%	.50	117%	.45	35%	2.20	62.16	30.86	49.6%	MB
26	200%	.50	117%	.30	35%	2.60	62.16	30.52	49.1%	MB
27	110%	.50	235%	.45	20%	2.20	58.90	28.47	48.3%	MB
28	200%	.50	235%	.45	35%	2.20	74.62	35.96	48.2%	MB
29	110%	.50	235%	.30	35%	2.20	58.90	28.25	48.0%	MB
30	110%	.35	235%	.30	35%	2.60	58.90	28.01	47.6%	MB
31	200%	.35	117%	.45	35%	2.60	62.16	29.32	47.2%	MB
32	110%	.50	235%	.45	10%	2.60	56.88	26.74	47.0%	MB
33	110%	.35	235%	.45	20%	2.60	58.90	27.65	47.0%	MB
34	200%	.50	117%	.30	35%	2.20	62.16	29.17	46.9%	MB
35	110%	.50	235%	.45	10%	2.20	56.88	26.36	46.3%	MB
36	200%	.35	235%	.45	35%	2.60	74.62	34.42	46.1%	MB
37	200%	.50	117%	.45	20%	2.60	62.16	28.46	45.8%	MB
38	110%	.35	235%	.45	20%	2.20	58.90	26.88	45.6%	MB
39	200%	.50	235%	.30	35%	2.60	74.62	33.92	45.5%	MB
40	110%	.35	235%	.30	35%	2.20	58.90	26.67	45.3%	MB
41	200%	.50	235%	.45	20%	2.60	74.62	33.56	45.0%	MB
42	200%	.35	117%	.45	35%	2.20	62.16	27.98	45.0%	MB
43	200%	.50	117%	.45	20%	2.20	62.16	27.69	44.5%	MB
44	200%	.35	117%	.30	35%	2.60	62.16	27.64	44.5%	MB
45	200%	.35	235%	.45	35%	2.20	74.62	33.08	44.3%	MB
46	110%	.35	235%	.45	10%	2.60	56.88	25.16	44.2%	MB
47	110%	.50	235%	.30	20%	2.60	58.90	25.85	43.9%	MB
48	200%	.50	235%	.45	20%	2.20	74.62	32.79	43.9%	MB
49	200%	.50	235%	.30	35%	2.20	74.62	32.57	43.7%	MB
50	200%	.50	117%	.45	10%	2.60	60.14	25.96	43.2%	MB
51	200%	.50	117%	.30	20%	2.60	62.16	26.77	43.1%	MB
52	200%	.50	235%	.45	10%	2.60	72.60	31.06	42.8%	MB
53	110%	.50	235%	.30	20%	2.20	58.90	25.08	42.6%	MB
54	200%	.50	117%	.45	10%	2.20	60.14	25.58	42.5%	MB

linha	af	Kfc	ah	Kh	aenv	KenV	Ni1	Nic1	Nic/Ni	cls
55	200%	.50	235%	.45	10%	2.20	72.60	30.68	42.3%	MB
56	200%	.35	117%	.30	35%	2.20	62.16	26.29	42.3%	MB
57	200%	.50	117%	.30	20%	2.20	62.16	26.01	41.8%	MB
58	200%	.35	235%	.30	35%	2.60	74.62	31.04	41.6%	MB
59	200%	.35	117%	.45	20%	2.60	62.16	25.58	41.2%	MB
60	200%	.35	235%	.45	20%	2.60	74.62	30.68	41.1%	MB
61	200%	.50	235%	.30	20%	2.60	74.62	30.17	40.4%	MB
62	200%	.35	235%	.45	20%	2.20	74.62	29.91	40.1%	MB
63	200%	.35	235%	.30	35%	2.20	74.62	29.69	39.8%	MB
64	200%	.50	235%	.30	20%	2.20	74.62	29.40	39.4%	MB
65	200%	.35	235%	.45	10%	2.60	72.60	28.18	38.8%	MB
66	200%	.35	235%	.45	10%	2.20	72.60	27.80	38.3%	MB
67	200%	.50	235%	.30	10%	2.60	72.60	27.68	38.1%	MB
68	200%	.50	235%	.30	10%	2.20	72.60	27.29	37.6%	MB
69	200%	.35	235%	.30	20%	2.60	74.62	27.29	36.6%	MB
70	200%	.35	235%	.30	20%	2.20	74.62	26.52	35.5%	MB
71	20%	.35	0%	.00	20%	2.60	18.36	14.48	78.9%	EXC
72	20%	.50	117%	.45	35%	2.60	30.71	23.56	76.7%	EXC
73	20%	.50	0%	.00	20%	2.20	18.36	14.00	76.3%	EXC
74	20%	.35	117%	.45	35%	2.60	30.71	23.28	75.8%	EXC
75	20%	.50	0%	.00	10%	2.60	16.34	12.27	75.1%	EXC
76	20%	.35	0%	.00	20%	2.20	18.36	13.71	74.7%	EXC
77	20%	.35	0%	.00	10%	2.60	16.34	11.98	73.3%	EXC
78	20%	.50	0%	.00	10%	2.20	16.34	11.88	72.7%	EXC
79	20%	.50	117%	.45	35%	2.20	30.71	22.22	72.4%	EXC
80	20%	.35	117%	.45	35%	2.20	30.71	21.93	71.4%	EXC
81	20%	.50	117%	.30	35%	2.60	30.71	21.88	71.2%	EXC
82	20%	.35	0%	.00	10%	2.20	16.34	11.60	71.0%	EXC
83	20%	.35	117%	.30	35%	2.60	30.71	21.59	70.3%	EXC
84	110%	.50	0%	.00	35%	2.60	34.08	22.83	67.0%	EXC
85	20%	.50	117%	.30	35%	2.20	30.71	20.53	66.9%	EXC
86	20%	.35	117%	.30	35%	2.20	30.71	20.25	65.9%	EXC
87	20%	.50	117%	.45	20%	2.60	30.71	19.82	64.5%	EXC
88	20%	.35	117%	.45	20%	2.60	30.71	19.53	63.6%	EXC
89	110%	.50	0%	.00	35%	2.20	34.08	21.48	63.0%	EXC
90	110%	.35	0%	.00	35%	2.60	34.08	21.24	62.3%	EXC
91	20%	.50	117%	.45	20%	2.20	30.71	19.05	62.0%	EXC
92	20%	.35	117%	.45	20%	2.20	30.71	18.76	61.1%	EXC
93	20%	.50	117%	.45	10%	2.60	28.69	17.32	60.4%	EXC
94	20%	.35	117%	.45	10%	2.60	28.69	17.04	59.4%	EXC
95	20%	.50	117%	.45	10%	2.20	28.69	16.94	59.0%	EXC
96	20%	.50	117%	.30	20%	2.60	30.71	18.13	59.0%	EXC
97	110%	.35	0%	.00	35%	2.20	34.08	19.90	58.4%	EXC
98	20%	.35	117%	.30	20%	2.60	30.71	17.85	58.1%	EXC
99	20%	.35	117%	.45	10%	2.20	28.69	16.65	58.0%	EXC
100	20%	.35	235%	.30	35%	2.60	43.17	24.99	57.9%	EXC
101	20%	.50	235%	.45	20%	2.60	43.17	24.92	57.7%	EXC
102	20%	.35	235%	.45	20%	2.60	43.17	24.63	57.0%	EXC
103	20%	.50	117%	.30	20%	2.20	30.71	17.37	56.5%	EXC
104	110%	.50	0%	.00	20%	2.60	34.08	19.08	56.0%	EXC
105	20%	.50	235%	.45	20%	2.20	43.17	24.15	55.9%	EXC
106	20%	.35	117%	.30	20%	2.20	30.71	17.08	55.6%	EXC
107	20%	.50	235%	.30	35%	2.20	43.17	23.93	55.4%	EXC
108	20%	.35	235%	.45	20%	2.20	43.17	23.86	55.3%	EXC
109	20%	.35	235%	.30	35%	2.20	43.17	23.64	54.8%	EXC
110	20%	.50	117%	.30	10%	2.60	28.69	15.64	54.5%	EXC
111	20%	.50	235%	.45	10%	2.60	41.16	22.42	54.5%	EXC
112	20%	.35	235%	.45	10%	2.60	41.16	22.13	53.8%	EXC
113	110%	.50	0%	.00	20%	2.20	34.08	18.32	53.7%	EXC
114	110%	.35	117%	.45	35%	2.20	46.44	24.96	53.7%	EXC
115	20%	.50	235%	.45	10%	2.20	41.16	22.04	53.5%	EXC
116	20%	.35	117%	.30	10%	2.60	28.69	15.35	53.5%	EXC
117	110%	.50	117%	.30	35%	2.20	46.44	24.85	53.5%	EXC
118	20%	.50	117%	.30	10%	2.20	28.69	15.25	53.2%	EXC
119	110%	.35	117%	.30	35%	2.60	46.44	24.61	53.0%	EXC

linha	af	Kfc	ah	Kh	aenv	KenV	Ni1	Nic1	Nic/Ni	cls
120	20%	.35	235%	.45	10%	2.20	41.16	21.75	52.8%	EXC
121	20%	.35	117%	.30	10%	2.20	28.69	14.97	52.2%	EXC
122	110%	.50	117%	.45	20%	2.60	46.44	24.14	52.0%	EXC
123	110%	.50	0%	.00	10%	2.60	32.06	16.59	51.7%	EXC
124	110%	.35	0%	.00	20%	2.60	34.08	17.50	51.4%	EXC
125	110%	.50	0%	.00	10%	2.20	32.06	16.20	50.5%	EXC
126	110%	.50	117%	.45	20%	2.20	46.44	23.37	50.3%	EXC
127	110%	.35	117%	.30	35%	2.20	46.44	23.27	50.1%	EXC
128	20%	.50	235%	.30	20%	2.60	43.17	21.53	49.9%	EXC
129	20%	.35	235%	.30	20%	2.60	43.17	21.24	49.2%	EXC
130	110%	.35	0%	.00	20%	2.20	34.08	16.73	49.1%	EXC
131	110%	.50	117%	.45	10%	2.60	44.42	21.64	48.7%	EXC
132	200%	.35	0%	.00	35%	2.60	49.80	24.27	48.7%	EXC
133	110%	.35	117%	.45	20%	2.60	46.44	22.56	48.6%	EXC
134	110%	.50	117%	.30	20%	2.60	46.44	22.45	48.4%	EXC
135	20%	.50	235%	.30	20%	2.20	43.17	20.76	48.1%	EXC
136	110%	.50	117%	.45	10%	2.20	44.42	21.26	47.9%	EXC
137	20%	.35	235%	.30	20%	2.20	43.17	20.48	47.4%	EXC
138	200%	.50	0%	.00	20%	2.60	49.80	23.40	47.0%	EXC
139	110%	.35	117%	.45	20%	2.20	46.44	21.79	46.9%	EXC
140	110%	.35	0%	.00	10%	2.60	32.06	15.00	46.8%	EXC
141	110%	.50	117%	.30	20%	2.20	46.44	21.69	46.7%	EXC
142	20%	.50	235%	.30	10%	2.60	41.16	19.04	46.3%	EXC
143	200%	.35	0%	.00	35%	2.20	49.80	22.92	46.0%	EXC
144	20%	.35	235%	.30	10%	2.60	41.16	18.75	45.6%	EXC
145	110%	.35	0%	.00	10%	2.20	32.06	14.62	45.6%	EXC
146	200%	.50	0%	.00	20%	2.20	49.80	22.64	45.5%	EXC
147	20%	.50	235%	.30	10%	2.20	41.16	18.65	45.3%	EXC
148	110%	.35	117%	.45	10%	2.60	44.42	20.06	45.2%	EXC
149	110%	.50	117%	.30	10%	2.60	44.42	19.96	44.9%	EXC
150	110%	.35	117%	.30	20%	2.60	46.44	20.87	44.9%	EXC
151	20%	.35	235%	.30	10%	2.20	41.16	18.36	44.6%	EXC
152	110%	.35	117%	.45	10%	2.20	44.42	19.68	44.3%	EXC
153	110%	.50	117%	.30	10%	2.20	44.42	19.57	44.1%	EXC
154	200%	.50	0%	.00	10%	2.60	47.79	20.91	43.8%	EXC
155	110%	.35	235%	.45	10%	2.20	56.88	24.77	43.6%	EXC
156	110%	.35	117%	.30	20%	2.20	46.44	20.10	43.3%	EXC
157	200%	.50	0%	.00	10%	2.20	47.79	20.52	42.9%	EXC
158	110%	.35	117%	.30	10%	2.60	44.42	18.37	41.4%	EXC
159	110%	.35	235%	.30	20%	2.60	58.90	24.27	41.2%	EXC
160	200%	.35	0%	.00	20%	2.60	49.80	20.52	41.2%	EXC
161	110%	.50	235%	.30	10%	2.60	56.88	23.36	41.1%	EXC
162	110%	.35	117%	.30	10%	2.20	44.42	17.99	40.5%	EXC
163	110%	.50	235%	.30	10%	2.20	56.88	22.97	40.4%	EXC
164	200%	.50	117%	.30	10%	2.60	60.14	24.28	40.4%	EXC
165	110%	.35	235%	.30	20%	2.20	58.90	23.50	39.9%	EXC
166	200%	.35	117%	.45	20%	2.20	62.16	24.81	39.9%	EXC
167	200%	.50	117%	.30	10%	2.20	60.14	23.89	39.7%	EXC
168	200%	.35	0%	.00	20%	2.20	49.80	19.76	39.7%	EXC
169	200%	.35	117%	.45	10%	2.60	60.14	23.08	38.4%	EXC
170	200%	.35	117%	.30	20%	2.60	62.16	23.89	38.4%	EXC
171	110%	.35	235%	.30	10%	2.60	56.88	21.77	38.3%	EXC
172	200%	.35	0%	.00	10%	2.60	47.79	18.03	37.7%	EXC
173	200%	.35	117%	.45	10%	2.20	60.14	22.70	37.7%	EXC
174	110%	.35	235%	.30	10%	2.20	56.88	21.39	37.6%	EXC
175	200%	.35	117%	.30	20%	2.20	62.16	23.13	37.2%	EXC
176	200%	.35	0%	.00	10%	2.20	47.79	17.64	36.9%	EXC
177	200%	.35	117%	.30	10%	2.60	60.14	21.40	35.6%	EXC
178	200%	.35	117%	.30	10%	2.20	60.14	21.01	34.9%	EXC
179	200%	.35	235%	.30	10%	2.60	72.60	24.80	34.2%	EXC
180	200%	.35	235%	.30	10%	2.20	72.60	24.41	33.6%	EXC

tabela 1.4

zona climática de inverno I2
sem ganhos solares
soluções grupo 1

linha	af	Kfc	ah	Kh	aenv	KenV	Ni2	Nic2	Nic/Ni	cls
1	20%	2.40	0%	.00	35%	4.80	35.71	59.10	165.5%	INS
2	110%	2.40	0%	.00	35%	4.80	62.67	100.57	160.5%	INS
3	20%	1.80	0%	.00	35%	4.80	35.71	56.79	159.0%	INS
4	200%	2.40	0%	.00	35%	4.80	89.63	142.04	158.5%	INS
5	20%	2.40	0%	.00	35%	4.20	35.71	55.07	154.2%	INS
6	110%	2.40	0%	.00	35%	4.20	62.67	96.54	154.0%	INS
7	200%	2.40	0%	.00	35%	4.20	89.63	138.01	154.0%	INS
8	200%	2.40	117%	1.00	35%	4.80	108.72	164.51	151.3%	INS
9	110%	2.40	117%	1.00	35%	4.80	81.76	123.03	150.5%	INS
10	20%	2.40	117%	1.00	35%	4.80	54.81	81.56	148.8%	INS
11	200%	2.40	117%	.85	35%	4.80	108.72	161.14	148.2%	INS
12	20%	1.80	0%	.00	35%	4.20	35.71	52.76	147.7%	INS
13	200%	2.40	117%	1.00	35%	4.20	108.72	160.47	147.6%	INS
14	110%	2.40	117%	.85	35%	4.80	81.76	119.66	146.4%	INS
15	200%	2.40	235%	1.00	35%	4.80	127.98	187.16	146.2%	INS
16	110%	2.40	117%	1.00	35%	4.20	81.76	119.00	145.5%	INS
17	20%	1.80	117%	1.00	35%	4.80	54.81	79.26	144.6%	INS
18	200%	2.40	117%	.85	35%	4.20	108.72	157.10	144.5%	INS
19	110%	2.40	235%	1.00	35%	4.80	101.02	145.69	144.2%	INS
20	200%	2.40	0%	.00	20%	4.80	89.63	128.22	143.1%	INS
21	200%	2.40	235%	1.00	35%	4.20	127.98	183.13	143.1%	INS
22	20%	2.40	117%	.85	35%	4.80	54.81	78.19	142.7%	INS
23	20%	2.40	117%	1.00	35%	4.20	54.81	77.53	141.5%	INS
24	110%	2.40	117%	.85	35%	4.20	81.76	115.63	141.4%	INS
25	200%	2.40	235%	.85	35%	4.80	127.98	180.39	141.0%	INS
26	20%	2.40	235%	1.00	35%	4.80	74.06	104.22	140.7%	INS
27	200%	2.40	0%	.00	20%	4.20	89.63	125.91	140.5%	INS
28	110%	1.80	0%	.00	35%	4.80	62.67	87.90	140.3%	INS
29	110%	2.40	235%	1.00	35%	4.20	101.02	141.66	140.2%	INS
30	200%	2.40	0%	.00	10%	4.80	85.59	119.00	139.0%	INS
31	200%	2.40	117%	1.00	20%	4.80	108.72	150.68	138.6%	INS
32	20%	1.80	117%	.85	35%	4.80	54.81	75.89	138.5%	INS
33	110%	2.40	0%	.00	20%	4.80	62.67	86.75	138.4%	INS
34	200%	2.40	235%	.85	35%	4.20	127.98	176.36	137.8%	INS
35	200%	2.40	0%	.00	10%	4.20	85.59	117.85	137.7%	INS
36	20%	1.80	235%	1.00	35%	4.80	74.06	101.91	137.6%	INS
37	110%	2.40	235%	.85	35%	4.80	101.02	138.92	137.5%	INS
38	20%	1.80	117%	1.00	35%	4.20	54.81	75.23	137.3%	INS
39	200%	2.40	117%	1.00	20%	4.20	108.72	148.38	136.5%	INS
40	200%	2.40	117%	.85	20%	4.80	108.72	147.31	135.5%	INS
41	200%	2.40	235%	1.00	20%	4.80	127.98	173.34	135.4%	INS
42	20%	2.40	117%	.85	35%	4.20	54.81	74.16	135.3%	INS
43	20%	2.40	235%	1.00	35%	4.20	74.06	100.19	135.3%	INS
44	200%	2.40	117%	1.00	10%	4.80	104.69	141.47	135.1%	INS
45	110%	1.80	117%	1.00	35%	4.80	81.76	110.36	135.0%	INS
46	110%	2.40	0%	.00	20%	4.20	62.67	84.44	134.7%	INS
47	200%	2.40	117%	1.00	10%	4.20	104.69	140.31	134.0%	INS
48	110%	1.80	0%	.00	35%	4.20	62.67	83.87	133.8%	INS
49	110%	2.40	117%	1.00	20%	4.80	81.76	109.21	133.6%	INS
50	200%	2.40	235%	1.00	20%	4.20	127.98	171.03	133.6%	INS
51	110%	2.40	235%	.85	35%	4.20	101.02	134.89	133.5%	INS
52	200%	2.40	117%	.85	20%	4.20	108.72	145.01	133.4%	INS
53	200%	1.80	0%	.00	35%	4.80	89.63	119.00	132.8%	INS
54	200%	2.40	235%	1.00	10%	4.80	123.95	164.12	132.4%	INS
55	20%	1.80	235%	1.00	35%	4.20	74.06	97.88	132.2%	INS
56	110%	2.40	0%	.00	10%	4.80	58.64	77.53	132.2%	INS
57	200%	2.40	117%	.85	10%	4.80	104.69	138.10	131.9%	INS

linha	af	Kfc	ah	Kh	aenv	KenV	Ni2	Nic2	Nic/Ni	cls
58	110%	1.80	235%	1.00	35%	4.80	101.02	133.02	131.7%	INS
59	20%	2.40	235%	.85	35%	4.80	74.06	97.45	131.6%	INS
60	200%	2.40	235%	1.00	10%	4.20	123.95	162.97	131.5%	INS
61	20%	1.80	117%	.85	35%	4.20	54.81	71.86	131.1%	INS
62	110%	1.80	117%	.85	35%	4.80	81.76	106.99	130.9%	INS
63	110%	2.40	117%	1.00	20%	4.20	81.76	106.91	130.8%	INS
64	200%	2.40	117%	.85	10%	4.20	104.69	136.94	130.8%	INS
65	110%	2.40	235%	1.00	20%	4.80	101.02	131.87	130.5%	INS
66	110%	2.40	0%	.00	10%	4.20	58.64	76.38	130.3%	INS
67	200%	2.40	235%	.85	20%	4.80	127.98	166.57	130.2%	INS
68	200%	1.80	117%	1.00	35%	4.80	108.72	141.47	130.1%	INS
69	110%	1.80	117%	1.00	35%	4.20	81.76	106.33	130.0%	INS
70	110%	2.40	117%	.85	20%	4.80	81.76	105.84	129.4%	INS
71	110%	2.40	117%	1.00	10%	4.80	77.73	99.99	128.6%	INS
72	20%	1.80	235%	.85	35%	4.80	74.06	95.15	128.5%	INS
73	200%	2.40	235%	.85	20%	4.20	127.98	164.27	128.4%	INS
74	110%	2.40	235%	1.00	20%	4.20	101.02	129.56	128.3%	INS
75	200%	1.80	0%	.00	35%	4.20	89.63	114.97	128.3%	INS
76	200%	1.80	235%	1.00	35%	4.80	127.98	164.12	128.2%	INS
77	110%	1.80	235%	1.00	35%	4.20	101.02	128.99	127.7%	INS
78	110%	2.40	117%	1.00	10%	4.20	77.73	98.84	127.2%	INS
79	200%	2.40	235%	.85	10%	4.80	123.95	157.35	127.0%	INS
80	200%	1.80	117%	.85	35%	4.80	108.72	138.10	127.0%	INS
81	20%	2.40	0%	.00	20%	4.80	35.71	45.27	126.8%	INS
82	110%	2.40	117%	.85	20%	4.20	81.76	103.54	126.6%	INS
83	110%	2.40	235%	1.00	10%	4.80	96.99	122.65	126.5%	INS
84	200%	1.80	117%	1.00	35%	4.20	108.72	137.43	126.4%	INS
85	20%	2.40	235%	.85	35%	4.20	74.06	93.42	126.1%	INS
86	200%	2.40	235%	.85	10%	4.20	123.95	156.20	126.0%	INS
87	110%	1.80	117%	.85	35%	4.20	81.76	102.96	125.9%	INS
88	110%	2.40	235%	1.00	10%	4.20	96.99	121.50	125.3%	INS
89	200%	1.80	235%	1.00	35%	4.20	127.98	160.09	125.1%	INS
90	110%	1.80	235%	.85	35%	4.80	101.02	126.25	125.0%	INS
91	110%	2.40	117%	.85	10%	4.80	77.73	96.62	124.3%	INS
92	110%	2.40	235%	.85	20%	4.80	101.02	125.10	123.8%	INS
93	20%	2.40	117%	1.00	20%	4.80	54.81	67.74	123.6%	INS
94	200%	1.80	117%	.85	35%	4.20	108.72	134.06	123.3%	INS
95	20%	1.80	235%	.85	35%	4.20	74.06	91.11	123.0%	INS
96	200%	1.80	235%	.85	35%	4.80	127.98	157.35	123.0%	INS
97	110%	2.40	117%	.85	10%	4.20	77.73	95.47	122.8%	INS
98	20%	2.40	235%	1.00	20%	4.80	74.06	90.39	122.0%	INS
99	110%	2.40	235%	.85	20%	4.20	101.02	122.79	121.6%	INS
100	110%	1.80	235%	.85	35%	4.20	101.02	122.22	121.0%	INS
101	20%	2.40	0%	.00	20%	4.20	35.71	42.97	120.3%	INS
102	20%	1.80	0%	.00	20%	4.80	35.71	42.97	120.3%	INS
103	200%	1.80	235%	.85	35%	4.20	127.98	153.32	119.8%	INS
104	110%	2.40	235%	.85	10%	4.80	96.99	115.88	119.5%	INS
105	20%	2.40	117%	1.00	20%	4.20	54.81	65.43	119.4%	INS
106	20%	1.80	117%	1.00	20%	4.80	54.81	65.43	119.4%	INS
107	20%	2.40	235%	1.00	20%	4.20	74.06	88.09	118.9%	INS
108	20%	1.80	235%	1.00	20%	4.80	74.06	88.09	118.9%	INS
109	110%	2.40	235%	.85	10%	4.20	96.99	114.73	118.3%	INS
110	110%	1.80	0%	.00	20%	4.80	62.67	74.07	118.2%	INS
111	110%	1.80	117%	1.00	20%	4.80	81.76	96.54	118.1%	INS
112	110%	1.80	235%	1.00	20%	4.80	101.02	119.19	118.0%	INS
113	20%	2.40	117%	.85	20%	4.80	54.81	64.37	117.4%	INS
114	200%	1.80	0%	.00	20%	4.80	89.63	105.18	117.4%	INS
115	200%	1.80	117%	1.00	20%	4.80	108.72	127.64	117.4%	INS
116	200%	1.80	235%	1.00	20%	4.80	127.98	150.30	117.4%	INS
117	20%	2.40	235%	1.00	10%	4.80	70.03	81.18	115.9%	INS
118	20%	1.80	235%	1.00	20%	4.20	74.06	85.79	115.8%	INS
119	110%	1.80	235%	1.00	20%	4.20	101.02	116.89	115.7%	INS
120	200%	1.80	235%	1.00	20%	4.20	127.98	147.99	115.6%	INS
121	20%	2.40	117%	1.00	10%	4.80	50.77	58.52	115.3%	INS
122	110%	1.80	117%	1.00	20%	4.20	81.76	94.23	115.3%	INS
123	200%	1.80	117%	1.00	20%	4.20	108.72	125.34	115.3%	INS

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni2	Nic2	Nic/Ni	cls
124	20%	1.80	117%	1.00	20%	4.20	54.81	63.13	115.2%	INS
125	200%	1.80	0%	.00	20%	4.20	89.63	102.87	114.8%	INS
126	110%	1.80	0%	.00	20%	4.20	62.67	71.77	114.5%	INS
127	20%	2.40	235%	1.00	10%	4.20	70.03	80.03	114.3%	INS
128	200%	1.80	117%	.85	20%	4.80	108.72	124.27	114.3%	INS
129	20%	1.80	0%	.00	20%	4.20	35.71	40.67	113.9%	INS
130	110%	1.80	117%	.85	20%	4.80	81.76	93.17	113.9%	INS
131	20%	2.40	0%	.00	10%	4.80	31.68	36.06	113.8%	INS
132	200%	1.80	235%	1.00	10%	4.80	123.95	141.08	113.8%	INS
133	110%	1.80	235%	1.00	10%	4.80	96.99	109.98	113.4%	INS
134	20%	2.40	117%	.85	20%	4.20	54.81	62.06	113.2%	INS
135	20%	1.80	117%	.85	20%	4.80	54.81	62.06	113.2%	INS
136	200%	1.80	117%	1.00	10%	4.80	104.69	118.43	113.1%	INS
137	20%	2.40	117%	1.00	10%	4.20	50.77	57.37	113.0%	INS
138	20%	2.40	235%	.85	20%	4.80	74.06	83.63	112.9%	INS
139	200%	1.80	235%	1.00	10%	4.20	123.95	139.93	112.9%	INS
140	20%	1.80	235%	1.00	10%	4.80	70.03	78.87	112.6%	INS
141	110%	1.80	117%	1.00	10%	4.80	77.73	87.32	112.3%	INS
142	110%	1.80	235%	1.00	10%	4.20	96.99	108.83	112.2%	INS
143	200%	1.80	117%	.85	20%	4.20	108.72	121.97	112.2%	INS
144	200%	1.80	235%	.85	20%	4.80	127.98	143.53	112.2%	INS
145	200%	1.80	0%	.00	10%	4.80	85.59	95.96	112.1%	INS
146	200%	1.80	117%	1.00	10%	4.20	104.69	117.27	112.0%	INS
147	110%	1.80	235%	.85	20%	4.80	101.02	112.43	111.3%	INS
148	110%	1.80	117%	.85	20%	4.20	81.76	90.86	111.1%	INS
149	20%	1.80	235%	1.00	10%	4.20	70.03	77.72	111.0%	INS
150	110%	1.80	117%	1.00	10%	4.20	77.73	86.17	110.9%	INS
151	200%	1.80	0%	.00	10%	4.20	85.59	94.81	110.8%	INS
152	20%	1.80	117%	1.00	10%	4.80	50.77	56.22	110.7%	INS
153	110%	1.80	0%	.00	10%	4.80	58.64	64.86	110.6%	INS
154	200%	1.80	235%	.85	20%	4.20	127.98	141.23	110.4%	INS
155	20%	2.40	0%	.00	10%	4.20	31.68	34.91	110.2%	INS
156	200%	1.80	117%	.85	10%	4.80	104.69	115.06	109.9%	INS
157	20%	2.40	235%	.85	20%	4.20	74.06	81.32	109.8%	INS
158	20%	1.80	235%	.85	20%	4.80	74.06	81.32	109.8%	INS
159	20%	1.80	117%	.85	20%	4.20	54.81	59.76	109.0%	INS
160	110%	1.80	235%	.85	20%	4.20	101.02	110.12	109.0%	INS
161	200%	1.80	117%	.85	10%	4.20	104.69	113.90	108.8%	INS
162	20%	2.40	117%	.85	10%	4.80	50.77	55.15	108.6%	INS
163	110%	1.80	0%	.00	10%	4.20	58.64	63.71	108.6%	INS
164	20%	1.80	117%	1.00	10%	4.20	50.77	55.07	108.5%	INS
165	200%	1.80	235%	.85	10%	4.80	123.95	134.31	108.4%	INS
166	110%	1.80	117%	.85	10%	4.80	77.73	83.95	108.0%	INS
167	200%	1.80	235%	.85	10%	4.20	123.95	133.16	107.4%	INS
168	20%	1.80	235%	.85	20%	4.20	74.06	79.02	106.7%	INS
169	20%	1.80	0%	.00	10%	4.80	31.68	33.75	106.5%	INS
170	110%	1.80	117%	.85	10%	4.20	77.73	82.80	106.5%	INS
171	20%	2.40	117%	.85	10%	4.20	50.77	54.00	106.4%	INS
172	110%	1.80	235%	.85	10%	4.80	96.99	103.21	106.4%	INS
173	20%	2.40	235%	.85	10%	4.80	70.03	74.41	106.3%	INS
174	110%	1.80	235%	.85	10%	4.20	96.99	102.06	105.2%	INS
175	20%	2.40	235%	.85	10%	4.20	70.03	73.26	104.6%	INS
176	20%	1.80	117%	.85	10%	4.80	50.77	52.85	104.1%	INS
177	20%	1.80	235%	.85	10%	4.80	70.03	72.11	103.0%	INS
178	20%	1.80	0%	.00	10%	4.20	31.68	32.60	102.9%	INS
179	20%	1.80	117%	.85	10%	4.20	50.77	51.70	101.8%	INS
180	20%	1.80	235%	.85	10%	4.20	70.03	70.95	101.3%	INS

tabela 1.5

zona climática de inverno I2

sem ganhos solares

soluções grupo 2

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni2	Nic2	Nic/Ni	cls
1	20%	1.42	0%	.00	35%	3.60	35.71	47.27	132.4%	INS
2	20%	.80	0%	.00	35%	3.60	35.71	44.89	125.7%	INS
3	20%	1.42	0%	.00	35%	3.00	35.71	43.24	121.1%	INS
4	20%	1.42	117%	.75	35%	3.60	54.81	64.12	117.0%	INS
5	110%	1.42	0%	.00	35%	3.60	62.67	71.81	114.6%	INS
6	20%	.80	0%	.00	35%	3.00	35.71	40.86	114.4%	INS
7	20%	.80	117%	.75	35%	3.60	54.81	61.74	112.6%	INS
8	20%	1.42	117%	.75	35%	3.00	54.81	60.09	109.6%	INS
9	20%	1.42	235%	.75	35%	3.60	74.06	81.11	109.5%	INS
10	110%	1.42	117%	.75	35%	3.60	81.76	88.66	108.4%	INS
11	110%	1.42	0%	.00	35%	3.00	62.67	67.78	108.1%	INS
12	200%	1.42	0%	.00	35%	3.60	89.63	96.35	107.5%	INS
13	20%	1.42	117%	.50	35%	3.60	54.81	58.50	106.7%	INS
14	20%	.80	235%	.75	35%	3.60	74.06	78.73	106.3%	INS
15	20%	.80	117%	.75	35%	3.00	54.81	57.71	105.3%	INS
16	110%	1.42	235%	.75	35%	3.60	101.02	105.65	104.6%	INS
17	20%	1.42	235%	.75	35%	3.00	74.06	77.08	104.1%	INS
18	200%	1.42	117%	.75	35%	3.60	108.72	113.19	104.1%	INS
19	110%	1.42	117%	.75	35%	3.00	81.76	84.62	103.5%	INS
20	20%	1.42	0%	.00	20%	3.60	35.71	36.90	103.3%	INS
21	200%	1.42	0%	.00	35%	3.00	89.63	92.31	103.0%	INS
22	20%	.80	117%	.50	35%	3.60	54.81	56.12	102.4%	INS
23	200%	1.42	235%	.75	35%	3.60	127.98	130.19	101.7%	INS
24	110%	1.42	117%	.50	35%	3.60	81.76	83.04	101.6%	INS
25	20%	.80	235%	.75	35%	3.00	74.06	74.70	100.9%	INS
26	110%	1.42	235%	.75	35%	3.00	101.02	101.62	100.6%	INS
27	200%	1.42	117%	.75	35%	3.00	108.72	109.16	100.4%	INS
28	20%	1.42	117%	.50	35%	3.00	54.81	54.47	99.4%	SUF
29	200%	1.42	117%	.50	35%	3.60	108.72	107.58	98.9%	SUF
30	200%	1.42	235%	.75	35%	3.00	127.98	126.15	98.6%	SUF
31	20%	1.42	117%	.75	20%	3.60	54.81	53.75	98.1%	SUF
32	110%	1.42	0%	.00	20%	3.60	62.67	61.44	98.0%	SUF
33	20%	1.42	0%	.00	20%	3.00	35.71	34.60	96.9%	SUF
34	20%	.80	0%	.00	20%	3.60	35.71	34.52	96.7%	SUF
35	110%	1.42	117%	.50	35%	3.00	81.76	79.01	96.6%	SUF
36	200%	1.42	0%	.00	20%	3.60	89.63	85.98	95.9%	SUF
37	110%	1.42	117%	.75	20%	3.60	81.76	78.29	95.7%	SUF
38	20%	1.42	235%	.75	20%	3.60	74.06	70.74	95.5%	SUF
39	200%	1.42	117%	.50	35%	3.00	108.72	103.55	95.2%	SUF
40	200%	1.42	117%	.75	20%	3.60	108.72	102.83	94.6%	SUF
41	110%	1.42	235%	.75	20%	3.60	101.02	95.28	94.3%	SUF
42	200%	1.42	235%	.75	20%	3.60	127.98	119.82	93.6%	SUF
43	110%	1.42	235%	.50	35%	3.60	101.02	94.37	93.4%	SUF
44	200%	1.42	235%	.50	35%	3.60	127.98	118.91	92.9%	SUF
45	200%	1.42	117%	.75	20%	3.00	108.72	100.52	92.5%	SUF
46	110%	1.42	235%	.75	20%	3.00	101.02	92.98	92.0%	SUF
47	200%	1.42	235%	.75	20%	3.00	127.98	117.51	91.8%	SUF
48	110%	.80	235%	.75	35%	3.60	101.02	92.55	91.6%	SUF
49	200%	1.42	117%	.75	10%	3.60	104.69	95.91	91.6%	SUF
50	200%	1.42	235%	.75	10%	3.60	123.95	112.91	91.1%	SUF
51	200%	1.42	117%	.75	10%	3.00	104.69	94.76	90.5%	SUF
52	200%	1.42	235%	.75	10%	3.00	123.95	111.75	90.2%	SUF
53	200%	1.42	235%	.50	35%	3.00	127.98	114.87	89.8%	SUF
54	110%	1.42	235%	.50	35%	3.00	101.02	90.34	89.4%	SUF
55	200%	1.42	117%	.50	20%	3.60	108.72	97.21	89.4%	SUF
56	200%	1.42	117%	.50	20%	3.00	108.72	94.91	87.3%	SUF

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni2	Nic2	Nic/Ni	cls
57	200%	1.42	117%	.50	10%	3.60	104.69	90.30	86.3%	SUF
58	200%	1.42	235%	.50	20%	3.60	127.98	108.54	84.8%	SUF
59	200%	.80	235%	.75	35%	3.60	127.98	106.38	83.1%	SUF
60	200%	1.42	235%	.50	20%	3.00	127.98	106.23	83.0%	SUF
61	200%	1.42	235%	.50	10%	3.60	123.95	101.63	82.0%	SUF
62	200%	1.42	235%	.50	10%	3.00	123.95	100.47	81.1%	SUF
63	200%	.80	235%	.75	35%	3.00	127.98	102.35	80.0%	SUF
64	200%	.80	235%	.75	20%	3.60	127.98	96.01	75.0%	SUF
65	200%	.80	235%	.50	35%	3.60	127.98	95.10	74.3%	SUF
66	200%	.80	235%	.75	20%	3.00	127.98	93.71	73.2%	SUF
67	200%	.80	235%	.50	35%	3.00	127.98	91.07	71.2%	SUF
68	20%	.80	117%	.50	35%	3.00	54.81	52.09	95.0%	BOM
69	20%	1.42	0%	.00	10%	3.60	31.68	29.99	94.7%	BOM
70	110%	1.42	0%	.00	20%	3.00	62.67	59.14	94.4%	BOM
71	20%	1.42	235%	.50	35%	3.60	74.06	69.83	94.3%	BOM
72	20%	1.42	117%	.75	20%	3.00	54.81	51.45	93.9%	BOM
73	20%	.80	117%	.75	20%	3.60	54.81	51.37	93.7%	BOM
74	110%	.80	0%	.00	35%	3.60	62.67	58.71	93.7%	BOM
75	200%	1.42	0%	.00	20%	3.00	89.63	83.67	93.4%	BOM
76	110%	1.42	0%	.00	10%	3.60	58.64	54.53	93.0%	BOM
77	110%	1.42	117%	.75	20%	3.00	81.76	75.98	92.9%	BOM
78	20%	1.42	235%	.75	20%	3.00	74.06	68.44	92.4%	BOM
79	110%	.80	117%	.75	35%	3.60	81.76	75.56	92.4%	BOM
80	200%	1.42	0%	.00	10%	3.60	85.59	79.07	92.4%	BOM
81	20%	.80	235%	.75	20%	3.60	74.06	68.36	92.3%	BOM
82	20%	1.42	117%	.75	10%	3.60	50.77	46.84	92.2%	BOM
83	110%	1.42	117%	.75	10%	3.60	77.73	71.38	91.8%	BOM
84	20%	1.42	235%	.75	10%	3.60	70.03	63.83	91.1%	BOM
85	20%	.80	235%	.50	35%	3.60	74.06	67.45	91.1%	BOM
86	110%	1.42	235%	.75	10%	3.60	96.99	88.37	91.1%	BOM
87	20%	1.42	0%	.00	10%	3.00	31.68	28.84	91.0%	BOM
88	110%	1.42	0%	.00	10%	3.00	58.64	53.38	91.0%	BOM
89	200%	1.42	0%	.00	10%	3.00	85.59	77.91	91.0%	BOM
90	110%	1.42	117%	.75	10%	3.00	77.73	70.22	90.3%	BOM
91	20%	.80	0%	.00	20%	3.00	35.71	32.22	90.2%	BOM
92	20%	1.42	117%	.75	10%	3.00	50.77	45.69	90.0%	BOM
93	110%	1.42	235%	.75	10%	3.00	96.99	87.22	89.9%	BOM
94	20%	1.42	235%	.75	10%	3.00	70.03	62.68	89.5%	BOM
95	20%	.80	235%	.75	20%	3.00	74.06	66.06	89.2%	BOM
96	110%	1.42	117%	.50	20%	3.60	81.76	72.67	88.9%	BOM
97	20%	1.42	235%	.50	35%	3.00	74.06	65.80	88.8%	BOM
98	20%	1.42	117%	.50	20%	3.60	54.81	48.13	87.8%	BOM
99	20%	.80	235%	.75	10%	3.60	70.03	61.45	87.7%	BOM
100	20%	.80	117%	.75	10%	3.60	50.77	44.46	87.6%	BOM
101	110%	.80	235%	.75	35%	3.00	101.02	88.52	87.6%	BOM
102	110%	.80	117%	.75	35%	3.00	81.76	71.53	87.5%	BOM
103	20%	.80	0%	.00	10%	3.60	31.68	27.61	87.2%	BOM
104	20%	.80	235%	.75	10%	3.00	70.03	60.30	86.1%	BOM
105	110%	1.42	117%	.50	20%	3.00	81.76	70.37	86.1%	BOM
106	20%	.80	235%	.50	35%	3.00	74.06	63.42	85.6%	BOM
107	110%	.80	117%	.50	35%	3.60	81.76	69.95	85.5%	BOM
108	200%	1.42	117%	.50	10%	3.00	104.69	89.15	85.2%	BOM
109	110%	1.42	117%	.50	10%	3.60	77.73	65.76	84.6%	BOM
110	20%	1.42	117%	.50	20%	3.00	54.81	45.83	83.6%	BOM
111	20%	.80	117%	.50	20%	3.60	54.81	45.75	83.5%	BOM
112	110%	1.42	235%	.50	20%	3.60	101.02	84.00	83.2%	BOM
113	110%	1.42	117%	.50	10%	3.00	77.73	64.61	83.1%	BOM
114	200%	.80	117%	.75	35%	3.60	108.72	89.39	82.2%	BOM
115	110%	.80	235%	.75	20%	3.60	101.02	82.19	81.4%	BOM
116	20%	1.42	117%	.50	10%	3.60	50.77	41.22	81.2%	BOM
117	110%	1.42	235%	.50	20%	3.00	101.02	81.70	80.9%	BOM
118	200%	.80	0%	.00	35%	3.60	89.63	72.54	80.9%	BOM
119	110%	.80	117%	.50	35%	3.00	81.76	65.91	80.6%	BOM
120	110%	.80	235%	.50	35%	3.60	101.02	81.27	80.5%	BOM
121	20%	1.42	235%	.50	20%	3.60	74.06	59.46	80.3%	BOM

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni2	Nic2	Nic/Ni	cls
122	110%	.80	117%	.75	20%	3.60	81.76	65.19	79.7%	BOM
123	110%	1.42	235%	.50	10%	3.60	96.99	77.09	79.5%	BOM
124	110%	.80	235%	.75	20%	3.00	101.02	79.88	79.1%	BOM
125	20%	1.42	117%	.50	10%	3.00	50.77	40.07	78.9%	BOM
126	200%	.80	117%	.75	35%	3.00	108.72	85.35	78.5%	BOM
127	110%	1.42	235%	.50	10%	3.00	96.99	75.94	78.3%	BOM
128	110%	.80	235%	.75	10%	3.60	96.99	75.27	77.6%	BOM
129	20%	1.42	235%	.50	20%	3.00	74.06	57.16	77.2%	BOM
130	20%	.80	235%	.50	20%	3.60	74.06	57.08	77.1%	BOM
131	110%	.80	0%	.00	20%	3.60	62.67	48.35	77.1%	BOM
132	200%	.80	117%	.50	35%	3.60	108.72	83.77	77.1%	BOM
133	110%	.80	117%	.75	20%	3.00	81.76	62.89	76.9%	BOM
134	20%	.80	117%	.50	10%	3.60	50.77	38.84	76.5%	BOM
135	110%	.80	235%	.50	35%	3.00	101.02	77.24	76.5%	BOM
136	110%	.80	235%	.75	10%	3.00	96.99	74.12	76.4%	BOM
137	200%	.80	0%	.00	35%	3.00	89.63	68.51	76.4%	BOM
138	20%	1.42	235%	.50	10%	3.60	70.03	52.55	75.0%	BOM
139	110%	.80	117%	.75	10%	3.60	77.73	58.28	75.0%	BOM
140	20%	1.42	235%	.50	10%	3.00	70.03	51.40	73.4%	BOM
141	200%	.80	117%	.50	35%	3.00	108.72	79.74	73.3%	BOM
142	110%	.80	117%	.50	20%	3.60	81.76	59.58	72.9%	BOM
143	200%	.80	117%	.75	20%	3.60	108.72	79.02	72.7%	BOM
144	200%	.80	235%	.75	10%	3.60	123.95	89.10	71.9%	BOM
145	20%	.80	235%	.50	10%	3.60	70.03	50.17	71.6%	BOM
146	200%	.80	235%	.75	10%	3.00	123.95	87.95	71.0%	BOM
147	110%	.80	0%	.00	10%	3.60	58.64	41.43	70.7%	BOM
148	200%	.80	117%	.75	20%	3.00	108.72	76.71	70.6%	BOM
149	110%	.80	235%	.50	20%	3.60	101.02	70.91	70.2%	BOM
150	200%	.80	0%	.00	20%	3.60	89.63	62.17	69.4%	BOM
151	200%	.80	117%	.75	10%	3.60	104.69	72.11	68.9%	BOM
152	110%	.80	235%	.50	20%	3.00	101.02	68.60	67.9%	BOM
153	110%	.80	117%	.50	10%	3.60	77.73	52.67	67.8%	BOM
154	200%	.80	117%	.75	10%	3.00	104.69	70.95	67.8%	BOM
155	200%	.80	117%	.50	20%	3.60	108.72	73.40	67.5%	BOM
156	200%	.80	235%	.50	20%	3.60	127.98	84.73	66.2%	BOM
157	110%	.80	235%	.50	10%	3.60	96.99	63.99	66.0%	BOM
158	200%	.80	117%	.50	20%	3.00	108.72	71.10	65.4%	BOM
159	110%	.80	235%	.50	10%	3.00	96.99	62.84	64.8%	BOM
160	200%	.80	0%	.00	10%	3.60	85.59	55.26	64.6%	BOM
161	200%	.80	235%	.50	20%	3.00	127.98	82.43	64.4%	BOM
162	200%	.80	117%	.50	10%	3.60	104.69	66.49	63.5%	BOM
163	200%	.80	235%	.50	10%	3.60	123.95	77.82	62.8%	BOM
164	200%	.80	117%	.50	10%	3.00	104.69	65.34	62.4%	BOM
165	200%	.80	235%	.50	10%	3.00	123.95	76.67	61.9%	BOM
166	20%	.80	117%	.75	20%	3.00	54.81	49.07	89.5%	MB
167	110%	.80	0%	.00	35%	3.00	62.67	54.68	87.3%	MB
168	20%	.80	117%	.75	10%	3.00	50.77	43.31	85.3%	MB
169	20%	.80	0%	.00	10%	3.00	31.68	26.46	83.5%	MB
170	20%	.80	235%	.50	20%	3.00	74.06	54.78	74.0%	MB
171	110%	.80	0%	.00	20%	3.00	62.67	46.04	73.5%	MB
172	110%	.80	117%	.75	10%	3.00	77.73	57.13	73.5%	MB
173	20%	.80	235%	.50	10%	3.00	70.03	49.02	70.0%	MB
174	110%	.80	117%	.50	20%	3.00	81.76	57.27	70.0%	MB
175	200%	.80	0%	.00	20%	3.00	89.63	59.87	66.8%	MB
176	110%	.80	117%	.50	10%	3.00	77.73	51.51	66.3%	MB
177	200%	.80	0%	.00	10%	3.00	85.59	54.11	63.2%	MB
178	20%	.80	117%	.50	20%	3.00	54.81	43.45	79.3%	EXC
179	20%	.80	117%	.50	10%	3.00	50.77	37.69	74.2%	EXC
180	110%	.80	0%	.00	10%	3.00	58.64	40.28	68.7%	EXC

tabela 1.6

zona climática de inverno I2
sem ganhos solares
soluções grupo 3

linha	af	Kfc	ah	Kh	aenv	KenV	Ni2	Nic2	Nic/Ni	cls
1	20%	.50	0%	.00	35%	2.60	35.71	37.02	103.7%	INS
2	20%	.35	0%	.00	35%	2.60	35.71	36.44	102.0%	INS
3	20%	.50	0%	.00	35%	2.20	35.71	34.33	96.1%	SUF
4	20%	.35	0%	.00	35%	2.20	35.71	33.75	94.5%	BOM
5	110%	.50	235%	.45	35%	2.60	101.02	65.96	65.3%	BOM
6	110%	.50	235%	.45	35%	2.20	101.02	63.27	62.6%	BOM
7	110%	.35	235%	.45	35%	2.60	101.02	62.79	62.2%	BOM
8	110%	.35	235%	.45	35%	2.20	101.02	60.11	59.5%	BOM
9	200%	.50	117%	.45	35%	2.60	108.72	64.41	59.2%	BOM
10	200%	.50	235%	.45	35%	2.60	127.98	74.60	58.3%	BOM
11	200%	.50	117%	.45	35%	2.20	108.72	61.72	56.8%	BOM
12	200%	.50	235%	.45	35%	2.20	127.98	71.91	56.2%	BOM
13	200%	.50	117%	.30	35%	2.60	108.72	61.04	56.1%	BOM
14	200%	.35	235%	.45	35%	2.60	127.98	68.84	53.8%	BOM
15	200%	.50	235%	.30	35%	2.60	127.98	67.83	53.0%	BOM
16	200%	.50	235%	.45	20%	2.60	127.98	67.11	52.4%	BOM
17	200%	.35	235%	.45	35%	2.20	127.98	66.15	51.7%	BOM
18	200%	.50	235%	.45	20%	2.20	127.98	65.58	51.2%	BOM
19	200%	.50	235%	.30	35%	2.20	127.98	65.15	50.9%	BOM
20	200%	.50	235%	.45	10%	2.60	123.95	62.12	50.1%	BOM
21	200%	.50	235%	.45	10%	2.20	123.95	61.35	49.5%	BOM
22	200%	.35	235%	.30	35%	2.60	127.98	62.07	48.5%	BOM
23	200%	.35	235%	.45	20%	2.60	127.98	61.35	47.9%	BOM
24	200%	.50	235%	.30	20%	2.60	127.98	60.35	47.2%	BOM
25	20%	.50	117%	.45	35%	2.60	54.81	47.13	86.0%	MB
26	20%	.35	117%	.45	35%	2.60	54.81	46.55	84.9%	MB
27	20%	.50	0%	.00	20%	2.60	35.71	29.53	82.7%	MB
28	20%	.50	117%	.45	35%	2.20	54.81	44.44	81.1%	MB
29	20%	.35	0%	.00	20%	2.60	35.71	28.95	81.1%	MB
30	20%	.50	235%	.45	35%	2.60	74.06	57.32	77.4%	MB
31	20%	.35	235%	.45	35%	2.60	74.06	56.75	76.6%	MB
32	20%	.50	235%	.45	35%	2.20	74.06	54.63	73.8%	MB
33	20%	.35	235%	.45	35%	2.20	74.06	54.06	73.0%	MB
34	110%	.50	0%	.00	35%	2.60	62.67	45.66	72.9%	MB
35	20%	.50	235%	.30	35%	2.60	74.06	50.55	68.3%	MB
36	110%	.50	117%	.45	35%	2.60	81.76	55.77	68.2%	MB
37	20%	.35	235%	.30	35%	2.60	74.06	49.98	67.5%	MB
38	20%	.50	235%	.45	20%	2.60	74.06	49.83	67.3%	MB
39	20%	.35	235%	.45	20%	2.60	74.06	49.26	66.5%	MB
40	20%	.50	235%	.45	20%	2.20	74.06	48.30	65.2%	MB
41	110%	.50	117%	.45	35%	2.20	81.76	53.08	64.9%	MB
42	20%	.50	235%	.30	35%	2.20	74.06	47.87	64.6%	MB
43	20%	.35	235%	.45	20%	2.20	74.06	47.72	64.4%	MB
44	110%	.35	117%	.45	35%	2.60	81.76	52.60	64.3%	MB
45	110%	.50	117%	.30	35%	2.60	81.76	52.40	64.1%	MB
46	20%	.35	235%	.30	35%	2.20	74.06	47.29	63.8%	MB
47	110%	.35	117%	.45	35%	2.20	81.76	49.91	61.0%	MB
48	110%	.50	117%	.30	35%	2.20	81.76	49.71	60.8%	MB
49	200%	.50	0%	.00	35%	2.60	89.63	54.30	60.6%	MB
50	110%	.35	117%	.30	35%	2.60	81.76	49.23	60.2%	MB
51	110%	.50	117%	.45	20%	2.60	81.76	48.28	59.0%	MB
52	110%	.50	235%	.30	35%	2.60	101.02	59.19	58.6%	MB
53	110%	.50	235%	.45	20%	2.60	101.02	58.47	57.9%	MB
54	200%	.50	0%	.00	35%	2.20	89.63	51.61	57.6%	MB

linha	af	Kfc	ah	Kh	aenv	KenV	Ni2	Nic2	Nic/Ni	cls
55	110%	.50	117%	.45	20%	2.20	81.76	46.74	57.2%	MB
56	110%	.35	117%	.30	35%	2.20	81.76	46.54	56.9%	MB
57	110%	.50	235%	.45	20%	2.20	101.02	56.94	56.4%	MB
58	110%	.50	235%	.30	35%	2.20	101.02	56.51	55.9%	MB
59	110%	.35	235%	.30	35%	2.60	101.02	56.03	55.5%	MB
60	110%	.35	117%	.45	20%	2.60	81.76	45.11	55.2%	MB
61	110%	.50	235%	.45	10%	2.60	96.99	53.48	55.1%	MB
62	110%	.35	235%	.45	20%	2.60	101.02	55.31	54.7%	MB
63	110%	.50	235%	.45	10%	2.20	96.99	52.71	54.4%	MB
64	200%	.35	0%	.00	35%	2.60	89.63	48.54	54.2%	MB
65	200%	.35	117%	.45	35%	2.60	108.72	58.65	53.9%	MB
66	200%	.50	117%	.30	35%	2.20	108.72	58.35	53.7%	MB
67	110%	.35	235%	.45	20%	2.20	101.02	53.77	53.2%	MB
68	110%	.35	235%	.30	35%	2.20	101.02	53.34	52.8%	MB
69	200%	.50	117%	.45	20%	2.60	108.72	56.92	52.4%	MB
70	200%	.50	0%	.00	20%	2.60	89.63	46.81	52.2%	MB
71	110%	.35	235%	.45	10%	2.60	96.99	50.31	51.9%	MB
72	200%	.35	117%	.45	35%	2.20	108.72	55.96	51.5%	MB
73	110%	.50	235%	.30	20%	2.60	101.02	51.71	51.2%	MB
74	200%	.35	0%	.00	35%	2.20	89.63	45.85	51.2%	MB
75	110%	.35	235%	.45	10%	2.20	96.99	49.55	51.1%	MB
76	200%	.50	117%	.45	20%	2.20	108.72	55.38	50.9%	MB
77	200%	.35	117%	.30	35%	2.60	108.72	55.28	50.8%	MB
78	200%	.50	0%	.00	20%	2.20	89.63	45.27	50.5%	MB
79	110%	.50	235%	.30	20%	2.20	101.02	50.17	49.7%	MB
80	200%	.50	117%	.45	10%	2.60	104.69	51.93	49.6%	MB
81	200%	.50	117%	.30	20%	2.60	108.72	53.55	49.3%	MB
82	200%	.50	117%	.45	10%	2.20	104.69	51.16	48.9%	MB
83	200%	.35	117%	.30	35%	2.20	108.72	52.59	48.4%	MB
84	110%	.50	235%	.30	10%	2.60	96.99	46.71	48.2%	MB
85	110%	.35	235%	.30	20%	2.60	101.02	48.54	48.0%	MB
86	200%	.50	117%	.30	20%	2.20	108.72	52.01	47.8%	MB
87	110%	.50	235%	.30	10%	2.20	96.99	45.95	47.4%	MB
88	200%	.35	117%	.45	20%	2.60	108.72	51.16	47.1%	MB
89	200%	.35	235%	.45	20%	2.20	127.98	59.82	46.7%	MB
90	110%	.35	235%	.30	20%	2.20	101.02	47.00	46.5%	MB
91	200%	.50	117%	.30	10%	2.60	104.69	48.56	46.4%	MB
92	200%	.35	235%	.30	35%	2.20	127.98	59.39	46.4%	MB
93	200%	.50	235%	.30	20%	2.20	127.98	58.81	46.0%	MB
94	200%	.50	117%	.30	10%	2.20	104.69	47.79	45.6%	MB
95	200%	.35	117%	.45	20%	2.20	108.72	49.62	45.6%	MB
96	200%	.35	235%	.45	10%	2.60	123.95	56.36	45.5%	MB
97	200%	.35	235%	.45	10%	2.20	123.95	55.59	44.9%	MB
98	200%	.50	235%	.30	10%	2.60	123.95	55.35	44.7%	MB
99	200%	.35	117%	.45	10%	2.60	104.69	46.17	44.1%	MB
100	200%	.50	235%	.30	10%	2.20	123.95	54.59	44.0%	MB
101	200%	.35	117%	.30	20%	2.60	108.72	47.79	44.0%	MB
102	200%	.35	117%	.45	10%	2.20	104.69	45.40	43.4%	MB
103	200%	.35	235%	.30	20%	2.60	127.98	54.59	42.7%	MB
104	200%	.35	117%	.30	20%	2.20	108.72	46.25	42.5%	MB
105	200%	.35	235%	.30	20%	2.20	127.98	53.05	41.5%	MB
106	200%	.35	235%	.30	10%	2.60	123.95	49.59	40.0%	MB
107	200%	.35	235%	.30	10%	2.20	123.95	48.83	39.4%	MB
108	20%	.35	117%	.45	35%	2.20	54.81	43.86	80.0%	EXC
109	20%	.50	117%	.30	35%	2.60	54.81	43.76	79.8%	EXC
110	20%	.35	117%	.30	35%	2.60	54.81	43.18	78.8%	EXC
111	20%	.50	0%	.00	20%	2.20	35.71	27.99	78.4%	EXC
112	20%	.50	0%	.00	10%	2.60	31.68	24.54	77.5%	EXC
113	20%	.35	0%	.00	20%	2.20	35.71	27.42	76.8%	EXC
114	20%	.35	0%	.00	10%	2.60	31.68	23.96	75.6%	EXC
115	20%	.50	0%	.00	10%	2.20	31.68	23.77	75.0%	EXC
116	20%	.50	117%	.30	35%	2.20	54.81	41.07	74.9%	EXC
117	20%	.35	117%	.30	35%	2.20	54.81	40.49	73.9%	EXC
118	20%	.35	0%	.00	10%	2.20	31.68	23.19	73.2%	EXC
119	20%	.50	117%	.45	20%	2.60	54.81	39.64	72.3%	EXC

linha	af	Kfc	ah	Kh	aenv	KenV	Ni2	Nic2	Nic/Ni	cls
120	20%	.35	117%	.45	20%	2.60	54.81	39.06	71.3%	EXC
121	20%	.50	117%	.45	20%	2.20	54.81	38.10	69.5%	EXC
122	110%	.50	0%	.00	35%	2.20	62.67	42.97	68.6%	EXC
123	20%	.35	117%	.45	20%	2.20	54.81	37.53	68.5%	EXC
124	20%	.50	117%	.45	10%	2.60	50.77	34.65	68.2%	EXC
125	110%	.35	0%	.00	35%	2.60	62.67	42.49	67.8%	EXC
126	20%	.35	117%	.45	10%	2.60	50.77	34.07	67.1%	EXC
127	20%	.50	117%	.45	10%	2.20	50.77	33.88	66.7%	EXC
128	20%	.50	117%	.30	20%	2.60	54.81	36.27	66.2%	EXC
129	20%	.35	117%	.45	10%	2.20	50.77	33.30	65.6%	EXC
130	20%	.35	117%	.30	20%	2.60	54.81	35.69	65.1%	EXC
131	20%	.50	235%	.45	10%	2.60	70.03	44.84	64.0%	EXC
132	110%	.35	0%	.00	35%	2.20	62.67	39.80	63.5%	EXC
133	20%	.50	117%	.30	20%	2.20	54.81	34.73	63.4%	EXC
134	20%	.35	235%	.45	10%	2.60	70.03	44.27	63.2%	EXC
135	20%	.50	235%	.45	10%	2.20	70.03	44.07	62.9%	EXC
136	20%	.35	117%	.30	20%	2.20	54.81	34.16	62.3%	EXC
137	20%	.35	235%	.45	10%	2.20	70.03	43.50	62.1%	EXC
138	20%	.50	117%	.30	10%	2.60	50.77	31.28	61.6%	EXC
139	110%	.50	0%	.00	20%	2.60	62.67	38.17	60.9%	EXC
140	20%	.35	117%	.30	10%	2.60	50.77	30.70	60.5%	EXC
141	20%	.50	117%	.30	10%	2.20	50.77	30.51	60.1%	EXC
142	20%	.35	117%	.30	10%	2.20	50.77	29.93	59.0%	EXC
143	110%	.50	0%	.00	20%	2.20	62.67	36.63	58.5%	EXC
144	20%	.50	235%	.30	20%	2.60	74.06	43.07	58.1%	EXC
145	20%	.35	235%	.30	20%	2.60	74.06	42.49	57.4%	EXC
146	110%	.50	0%	.00	10%	2.60	58.64	33.18	56.6%	EXC
147	20%	.50	235%	.30	20%	2.20	74.06	41.53	56.1%	EXC
148	110%	.35	0%	.00	20%	2.60	62.67	35.00	55.9%	EXC
149	110%	.50	117%	.45	10%	2.60	77.73	43.29	55.7%	EXC
150	20%	.35	235%	.30	20%	2.20	74.06	40.95	55.3%	EXC
151	110%	.50	0%	.00	10%	2.20	58.64	32.41	55.3%	EXC
152	110%	.50	117%	.30	20%	2.60	81.76	44.91	54.9%	EXC
153	110%	.50	117%	.45	10%	2.20	77.73	42.52	54.7%	EXC
154	20%	.50	235%	.30	10%	2.60	70.03	38.07	54.4%	EXC
155	20%	.35	235%	.30	10%	2.60	70.03	37.50	53.5%	EXC
156	110%	.35	0%	.00	20%	2.20	62.67	33.47	53.4%	EXC
157	20%	.50	235%	.30	10%	2.20	70.03	37.31	53.3%	EXC
158	110%	.35	117%	.45	20%	2.20	81.76	43.57	53.3%	EXC
159	110%	.50	117%	.30	20%	2.20	81.76	43.37	53.0%	EXC
160	20%	.35	235%	.30	10%	2.20	70.03	36.73	52.4%	EXC
161	110%	.35	117%	.45	10%	2.60	77.73	40.12	51.6%	EXC
162	110%	.50	117%	.30	10%	2.60	77.73	39.92	51.4%	EXC
163	110%	.35	0%	.00	10%	2.60	58.64	30.01	51.2%	EXC
164	110%	.35	117%	.30	20%	2.60	81.76	41.74	51.1%	EXC
165	110%	.35	117%	.45	10%	2.20	77.73	39.35	50.6%	EXC
166	110%	.50	117%	.30	10%	2.20	77.73	39.15	50.4%	EXC
167	110%	.35	0%	.00	10%	2.20	58.64	29.24	49.9%	EXC
168	110%	.35	117%	.30	20%	2.20	81.76	40.20	49.2%	EXC
169	200%	.50	0%	.00	10%	2.60	85.59	41.82	48.9%	EXC
170	200%	.50	0%	.00	10%	2.20	85.59	41.05	48.0%	EXC
171	110%	.35	117%	.30	10%	2.60	77.73	36.75	47.3%	EXC
172	110%	.35	117%	.30	10%	2.20	77.73	35.98	46.3%	EXC
173	200%	.35	0%	.00	20%	2.60	89.63	41.05	45.8%	EXC
174	110%	.35	235%	.30	10%	2.60	96.99	43.55	44.9%	EXC
175	110%	.35	235%	.30	10%	2.20	96.99	42.78	44.1%	EXC
176	200%	.35	0%	.00	20%	2.20	89.63	39.51	44.1%	EXC
177	200%	.35	0%	.00	10%	2.60	85.59	36.06	42.1%	EXC
178	200%	.35	0%	.00	10%	2.20	85.59	35.29	41.2%	EXC
179	200%	.35	117%	.30	10%	2.60	104.69	42.80	40.9%	EXC
180	200%	.35	117%	.30	10%	2.20	104.69	42.03	40.1%	EXC

tabela 1.7

zona climática de inverno I3
sem ganhos solares
soluções grupo 1

linha	af	Kfc	ah	Kh	aenv	KenV	Ni3	Nic3	Nic/Ni	cls
1	200%	2.17	0%	.00	35%	4.80	154.29	266.42	172.7%	INS
2	110%	2.17	0%	.00	35%	4.80	111.61	191.42	171.5%	INS
3	20%	2.17	0%	.00	35%	4.80	68.93	116.43	168.9%	INS
4	200%	2.17	0%	.00	35%	4.20	154.29	258.36	167.4%	INS
5	110%	2.17	0%	.00	35%	4.20	111.61	183.36	164.3%	INS
6	200%	2.17	117%	.90	35%	4.80	187.99	306.85	163.2%	INS
7	20%	1.42	0%	.00	35%	4.80	68.93	110.67	160.6%	INS
8	110%	2.17	117%	.90	35%	4.80	145.31	231.86	159.6%	INS
9	200%	2.17	117%	.75	35%	4.80	187.99	300.12	159.6%	INS
10	200%	2.17	117%	.90	35%	4.20	187.99	298.79	158.9%	INS
11	20%	2.17	0%	.00	35%	4.20	68.93	108.36	157.2%	INS
12	200%	2.17	235%	.90	35%	4.80	221.97	347.64	156.6%	INS
13	200%	2.17	117%	.75	35%	4.20	187.99	292.05	155.4%	INS
14	110%	2.17	117%	.75	35%	4.80	145.31	225.12	154.9%	INS
15	200%	2.17	0%	.00	20%	4.80	154.29	238.77	154.8%	INS
16	110%	2.17	117%	.90	35%	4.20	145.31	223.80	154.0%	INS
17	200%	2.17	235%	.90	35%	4.20	221.97	339.57	153.0%	INS
18	20%	2.17	117%	.90	35%	4.80	102.62	156.86	152.9%	INS
19	110%	2.17	235%	.90	35%	4.80	179.29	272.64	152.1%	INS
20	200%	2.17	0%	.00	20%	4.20	154.29	234.16	151.8%	INS
21	200%	2.17	0%	.00	10%	4.80	146.23	220.34	150.7%	INS
22	200%	2.17	235%	.75	35%	4.80	221.97	334.10	150.5%	INS
23	110%	2.17	117%	.75	35%	4.20	145.31	217.06	149.4%	INS
24	200%	2.17	0%	.00	10%	4.20	146.23	218.04	149.1%	INS
25	20%	1.42	0%	.00	35%	4.20	68.93	102.60	148.9%	INS
26	200%	2.17	117%	.90	20%	4.80	187.99	279.21	148.5%	INS
27	110%	2.17	235%	.90	35%	4.20	179.29	264.58	147.6%	INS
28	20%	1.42	117%	.90	35%	4.80	102.62	151.10	147.2%	INS
29	200%	2.17	235%	.75	35%	4.20	221.97	326.04	146.9%	INS
30	110%	2.17	0%	.00	20%	4.80	111.61	163.78	146.7%	INS
31	20%	2.17	117%	.75	35%	4.80	102.62	150.12	146.3%	INS
32	200%	2.17	117%	.90	20%	4.20	187.99	274.60	146.1%	INS
33	20%	2.17	117%	.90	35%	4.20	102.62	148.80	145.0%	INS
34	200%	2.17	117%	.90	10%	4.80	179.92	260.77	144.9%	INS
35	200%	2.17	117%	.75	20%	4.80	187.99	272.47	144.9%	INS
36	20%	2.17	235%	.90	35%	4.80	136.61	197.64	144.7%	INS
37	110%	2.17	235%	.75	35%	4.80	179.29	259.10	144.5%	INS
38	200%	2.17	235%	.90	20%	4.80	221.97	319.99	144.2%	INS
39	200%	2.17	117%	.90	10%	4.20	179.92	258.47	143.7%	INS
40	110%	1.42	0%	.00	35%	4.80	111.61	159.74	143.1%	INS
41	110%	2.17	0%	.00	20%	4.20	111.61	159.17	142.6%	INS
42	200%	2.17	117%	.75	20%	4.20	187.99	267.86	142.5%	INS
43	200%	2.17	235%	.90	20%	4.20	221.97	315.38	142.1%	INS
44	200%	2.17	117%	.75	10%	4.80	179.92	254.04	141.2%	INS
45	200%	2.17	235%	.90	10%	4.80	213.91	301.56	141.0%	INS
46	20%	1.42	117%	.75	35%	4.80	102.62	144.36	140.7%	INS
47	20%	1.42	235%	.90	35%	4.80	136.61	191.88	140.5%	INS
48	110%	2.17	117%	.90	20%	4.80	145.31	204.21	140.5%	INS
49	110%	2.17	0%	.00	10%	4.80	103.55	145.34	140.4%	INS
50	110%	2.17	235%	.75	35%	4.20	179.29	251.04	140.0%	INS
51	200%	2.17	117%	.75	10%	4.20	179.92	251.73	139.9%	INS
52	200%	2.17	235%	.90	10%	4.20	213.91	299.25	139.9%	INS
53	20%	1.42	117%	.90	35%	4.20	102.62	143.04	139.4%	INS
54	20%	2.17	235%	.90	35%	4.20	136.61	189.58	138.8%	INS
55	20%	2.17	117%	.75	35%	4.20	102.62	142.06	138.4%	INS
56	110%	2.17	0%	.00	10%	4.20	103.55	143.04	138.1%	INS
57	200%	2.17	235%	.75	20%	4.80	221.97	306.45	138.1%	INS

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni3	Nic3	Nic/Ni	cls
58	110%	1.42	117%	.90	35%	4.80	145.31	200.18	137.8%	INS
59	110%	2.17	117%	.90	20%	4.20	145.31	199.60	137.4%	INS
60	110%	2.17	235%	.90	20%	4.80	179.29	244.99	136.6%	INS
61	200%	2.17	235%	.75	20%	4.20	221.97	301.84	136.0%	INS
62	110%	2.17	117%	.75	20%	4.80	145.31	197.47	135.9%	INS
63	110%	1.42	0%	.00	35%	4.20	111.61	151.68	135.9%	INS
64	110%	2.17	117%	.90	10%	4.80	137.24	185.78	135.4%	INS
65	200%	1.42	0%	.00	35%	4.80	154.29	208.82	135.3%	INS
66	20%	2.17	235%	.75	35%	4.80	136.61	184.11	134.8%	INS
67	20%	1.42	235%	.90	35%	4.20	136.61	183.82	134.6%	INS
68	200%	2.17	235%	.75	10%	4.80	213.91	288.02	134.6%	INS
69	110%	1.42	235%	.90	35%	4.80	179.29	240.96	134.4%	INS
70	110%	2.17	235%	.90	20%	4.20	179.29	240.38	134.1%	INS
71	110%	2.17	117%	.90	10%	4.20	137.24	183.48	133.7%	INS
72	200%	2.17	235%	.75	10%	4.20	213.91	285.72	133.6%	INS
73	110%	1.42	117%	.75	35%	4.80	145.31	193.44	133.1%	INS
74	20%	1.42	117%	.75	35%	4.20	102.62	136.30	132.8%	INS
75	110%	2.17	117%	.75	20%	4.20	145.31	192.86	132.7%	INS
76	200%	1.42	117%	.90	35%	4.80	187.99	249.25	132.6%	INS
77	110%	2.17	235%	.90	10%	4.80	171.23	226.56	132.3%	INS
78	110%	1.42	117%	.90	35%	4.20	145.31	192.12	132.2%	INS
79	110%	2.17	235%	.90	10%	4.20	171.23	224.26	131.0%	INS
80	200%	1.42	235%	.90	35%	4.80	221.97	290.04	130.7%	INS
81	20%	1.42	235%	.75	35%	4.80	136.61	178.35	130.6%	INS
82	110%	2.17	117%	.75	10%	4.80	137.24	179.04	130.5%	INS
83	200%	1.42	0%	.00	35%	4.20	154.29	200.76	130.1%	INS
84	110%	1.42	235%	.90	35%	4.20	179.29	232.90	129.9%	INS
85	110%	2.17	235%	.75	20%	4.80	179.29	231.46	129.1%	INS
86	200%	1.42	117%	.75	35%	4.80	187.99	242.52	129.0%	INS
87	20%	2.17	235%	.75	35%	4.20	136.61	176.04	128.9%	INS
88	20%	2.17	0%	.00	20%	4.80	68.93	88.78	128.8%	INS
89	110%	2.17	117%	.75	10%	4.20	137.24	176.74	128.8%	INS
90	200%	1.42	117%	.90	35%	4.20	187.99	241.19	128.3%	INS
91	110%	1.42	117%	.75	35%	4.20	145.31	185.38	127.6%	INS
92	200%	1.42	235%	.90	35%	4.20	221.97	281.97	127.0%	INS
93	110%	1.42	235%	.75	35%	4.80	179.29	227.42	126.8%	INS
94	110%	2.17	235%	.75	20%	4.20	179.29	226.85	126.5%	INS
95	20%	2.17	117%	.90	20%	4.80	102.62	129.22	125.9%	INS
96	20%	1.42	235%	.75	35%	4.20	136.61	170.28	124.7%	INS
97	200%	1.42	117%	.75	35%	4.20	187.99	234.45	124.7%	INS
98	200%	1.42	235%	.75	35%	4.80	221.97	276.50	124.6%	INS
99	20%	2.17	235%	.90	20%	4.80	136.61	170.00	124.4%	INS
100	110%	2.17	235%	.75	10%	4.80	171.23	213.02	124.4%	INS
101	110%	2.17	235%	.75	10%	4.20	171.23	210.72	123.1%	INS
102	110%	1.42	235%	.75	35%	4.20	179.29	219.36	122.3%	INS
103	20%	2.17	0%	.00	20%	4.20	68.93	84.17	122.1%	INS
104	20%	2.17	117%	.90	20%	4.20	102.62	124.61	121.4%	INS
105	20%	2.17	235%	.90	20%	4.20	136.61	165.39	121.1%	INS
106	200%	1.42	235%	.75	35%	4.20	221.97	268.44	120.9%	INS
107	20%	1.42	0%	.00	20%	4.80	68.93	83.02	120.4%	INS
108	20%	1.42	117%	.90	20%	4.80	102.62	123.46	120.3%	INS
109	20%	1.42	235%	.90	20%	4.80	136.61	164.24	120.2%	INS
110	20%	2.17	117%	.75	20%	4.80	102.62	122.48	119.3%	INS
111	110%	1.42	235%	.90	20%	4.80	179.29	213.31	119.0%	INS
112	110%	1.42	117%	.90	20%	4.80	145.31	172.53	118.7%	INS
113	110%	1.42	0%	.00	20%	4.80	111.61	132.10	118.4%	INS
114	200%	1.42	235%	.90	20%	4.80	221.97	262.39	118.2%	INS
115	20%	2.17	235%	.90	10%	4.80	128.54	151.56	117.9%	INS
116	200%	1.42	117%	.90	20%	4.80	187.99	221.61	117.9%	INS
117	200%	1.42	0%	.00	20%	4.80	154.29	181.17	117.4%	INS
118	20%	2.17	117%	.90	10%	4.80	94.56	110.78	117.2%	INS
119	20%	1.42	235%	.90	20%	4.20	136.61	159.63	116.9%	INS
120	110%	1.42	235%	.90	20%	4.20	179.29	208.70	116.4%	INS
121	20%	2.17	235%	.90	10%	4.20	128.54	149.26	116.1%	INS
122	200%	1.42	235%	.90	20%	4.20	221.97	257.78	116.1%	INS
123	20%	1.42	117%	.90	20%	4.20	102.62	118.85	115.8%	INS

linha	af	Kfc	ah	Kh	aenv	KenV	Ni3	Nic3	Nic/Ni	cls
124	20%	2.17	0%	.00	10%	4.80	60.86	70.35	115.6%	INS
125	110%	1.42	117%	.90	20%	4.20	145.31	167.92	115.6%	INS
126	200%	1.42	117%	.90	20%	4.20	187.99	217.00	115.4%	INS
127	20%	2.17	117%	.75	20%	4.20	102.62	117.87	114.9%	INS
128	20%	2.17	117%	.90	10%	4.20	94.56	108.48	114.7%	INS
129	20%	2.17	235%	.75	20%	4.80	136.61	156.46	114.5%	INS
130	200%	1.42	0%	.00	20%	4.20	154.29	176.56	114.4%	INS
131	200%	1.42	117%	.75	20%	4.80	187.99	214.87	114.3%	INS
132	110%	1.42	0%	.00	20%	4.20	111.61	127.49	114.2%	INS
133	110%	1.42	117%	.75	20%	4.80	145.31	165.79	114.1%	INS
134	200%	1.42	235%	.90	10%	4.80	213.91	243.96	114.0%	INS
135	20%	1.42	0%	.00	20%	4.20	68.93	78.41	113.8%	INS
136	110%	1.42	235%	.90	10%	4.80	171.23	194.88	113.8%	INS
137	20%	1.42	117%	.75	20%	4.80	102.62	116.72	113.7%	INS
138	20%	1.42	235%	.90	10%	4.80	128.54	145.80	113.4%	INS
139	200%	1.42	235%	.90	10%	4.20	213.91	241.65	113.0%	INS
140	200%	1.42	117%	.90	10%	4.80	179.92	203.17	112.9%	INS
141	110%	1.42	235%	.90	10%	4.20	171.23	192.58	112.5%	INS
142	110%	1.42	117%	.90	10%	4.80	137.24	154.10	112.3%	INS
143	200%	1.42	235%	.75	20%	4.80	221.97	248.85	112.1%	INS
144	20%	2.17	0%	.00	10%	4.20	60.86	68.04	111.8%	INS
145	200%	1.42	117%	.75	20%	4.20	187.99	210.26	111.8%	INS
146	20%	1.42	235%	.90	10%	4.20	128.54	143.50	111.6%	INS
147	200%	1.42	117%	.90	10%	4.20	179.92	200.87	111.6%	INS
148	110%	1.42	235%	.75	20%	4.80	179.29	199.78	111.4%	INS
149	200%	1.42	0%	.00	10%	4.80	146.23	162.74	111.3%	INS
150	20%	2.17	235%	.75	20%	4.20	136.61	151.85	111.2%	INS
151	20%	1.42	117%	.90	10%	4.80	94.56	105.02	111.1%	INS
152	110%	1.42	117%	.75	20%	4.20	145.31	161.18	110.9%	INS
153	110%	1.42	117%	.90	10%	4.20	137.24	151.80	110.6%	INS
154	20%	1.42	235%	.75	20%	4.80	136.61	150.70	110.3%	INS
155	20%	2.17	117%	.75	10%	4.80	94.56	104.04	110.0%	INS
156	200%	1.42	235%	.75	20%	4.20	221.97	244.24	110.0%	INS
157	110%	1.42	0%	.00	10%	4.80	103.55	113.66	109.8%	INS
158	200%	1.42	0%	.00	10%	4.20	146.23	160.44	109.7%	INS
159	20%	1.42	117%	.75	20%	4.20	102.62	112.11	109.2%	INS
160	200%	1.42	117%	.75	10%	4.80	179.92	196.44	109.2%	INS
161	110%	1.42	235%	.75	20%	4.20	179.29	195.17	108.9%	INS
162	20%	1.42	117%	.90	10%	4.20	94.56	102.72	108.6%	INS
163	200%	1.42	117%	.75	10%	4.20	179.92	194.13	107.9%	INS
164	200%	1.42	235%	.75	10%	4.80	213.91	230.42	107.7%	INS
165	20%	2.17	117%	.75	10%	4.20	94.56	101.74	107.6%	INS
166	110%	1.42	0%	.00	10%	4.20	103.55	111.36	107.5%	INS
167	20%	2.17	235%	.75	10%	4.80	128.54	138.03	107.4%	INS
168	110%	1.42	117%	.75	10%	4.80	137.24	147.36	107.4%	INS
169	20%	1.42	235%	.75	20%	4.20	136.61	146.09	106.9%	INS
170	200%	1.42	235%	.75	10%	4.20	213.91	228.12	106.6%	INS
171	20%	1.42	0%	.00	10%	4.80	60.86	64.59	106.1%	INS
172	110%	1.42	235%	.75	10%	4.80	171.23	181.34	105.9%	INS
173	110%	1.42	117%	.75	10%	4.20	137.24	145.06	105.7%	INS
174	20%	2.17	235%	.75	10%	4.20	128.54	135.72	105.6%	INS
175	110%	1.42	235%	.75	10%	4.20	171.23	179.04	104.6%	INS
176	20%	1.42	117%	.75	10%	4.80	94.56	98.28	103.9%	INS
177	20%	1.42	235%	.75	10%	4.80	128.54	132.27	102.9%	INS
178	20%	1.42	0%	.00	10%	4.20	60.86	62.28	102.3%	INS
179	20%	1.42	117%	.75	10%	4.20	94.56	95.98	101.5%	INS
180	20%	1.42	235%	.75	10%	4.20	128.54	129.96	101.1%	INS

tabela 1.8

zona climática de inverno I3
sem ganhos solares
soluções grupo 2

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni3	Nic3	Nic/Ni	cls
1	20%	1.25	0%	.00	35%	3.60	68.93	93.24	135.3%	INS
2	20%	.80	0%	.00	35%	3.60	68.93	89.78	130.3%	INS
3	20%	1.25	0%	.00	35%	3.00	68.93	85.17	123.6%	INS
4	110%	1.25	0%	.00	35%	3.60	111.61	136.44	122.2%	INS
5	20%	1.25	117%	.65	35%	3.60	102.62	122.44	119.3%	INS
6	20%	.80	0%	.00	35%	3.00	68.93	81.72	118.6%	INS
7	200%	1.25	0%	.00	35%	3.60	154.29	179.64	116.4%	INS
8	20%	.80	117%	.65	35%	3.60	102.62	118.98	115.9%	INS
9	110%	1.25	0%	.00	35%	3.00	111.61	128.37	115.0%	INS
10	110%	1.25	117%	.65	35%	3.60	145.31	165.64	114.0%	INS
11	20%	1.25	117%	.50	35%	3.60	102.62	115.70	112.7%	INS
12	20%	1.25	117%	.65	35%	3.00	102.62	114.37	111.4%	INS
13	20%	1.25	235%	.65	35%	3.60	136.61	151.89	111.2%	INS
14	200%	1.25	0%	.00	35%	3.00	154.29	171.57	111.2%	INS
15	200%	1.25	117%	.65	35%	3.60	187.99	208.84	111.1%	INS
16	20%	.80	117%	.50	35%	3.60	102.62	112.24	109.4%	INS
17	110%	1.25	117%	.50	35%	3.60	145.31	158.90	109.4%	INS
18	110%	1.25	235%	.65	35%	3.60	179.29	195.09	108.8%	INS
19	20%	.80	235%	.65	35%	3.60	136.61	148.44	108.7%	INS
20	110%	1.25	117%	.65	35%	3.00	145.31	157.57	108.4%	INS
21	20%	.80	117%	.65	35%	3.00	102.62	110.92	108.1%	INS
22	200%	1.25	117%	.50	35%	3.60	187.99	202.10	107.5%	INS
23	200%	1.25	235%	.65	35%	3.60	221.97	238.29	107.4%	INS
24	200%	1.25	117%	.65	35%	3.00	187.99	200.77	106.8%	INS
25	20%	1.25	235%	.65	35%	3.00	136.61	143.83	105.3%	INS
26	20%	1.25	0%	.00	20%	3.60	68.93	72.50	105.2%	INS
27	110%	.80	0%	.00	35%	3.60	111.61	117.43	105.2%	INS
28	20%	1.25	117%	.50	35%	3.00	102.62	107.64	104.9%	INS
29	110%	1.25	235%	.65	35%	3.00	179.29	187.03	104.3%	INS
30	110%	1.25	117%	.50	35%	3.00	145.31	150.84	103.8%	INS
31	110%	1.25	0%	.00	20%	3.60	111.61	115.70	103.7%	INS
32	200%	1.25	235%	.65	35%	3.00	221.97	230.23	103.7%	INS
33	200%	1.25	117%	.50	35%	3.00	187.99	194.04	103.2%	INS
34	200%	1.25	0%	.00	20%	3.60	154.29	158.90	103.0%	INS
35	20%	.80	235%	.65	35%	3.00	136.61	140.37	102.8%	INS
36	20%	.80	117%	.50	35%	3.00	102.62	104.18	101.5%	INS
37	20%	1.25	235%	.50	35%	3.60	136.61	138.36	101.3%	INS
38	110%	1.25	235%	.50	35%	3.60	179.29	181.56	101.3%	INS
39	200%	1.25	235%	.50	35%	3.60	221.97	224.76	101.3%	INS
40	110%	.80	117%	.65	35%	3.60	145.31	146.63	100.9%	INS
41	20%	.80	0%	.00	20%	3.60	68.93	69.04	100.2%	INS
42	200%	1.25	117%	.65	20%	3.60	187.99	188.10	100.1%	INS
43	200%	1.25	0%	.00	20%	3.00	154.29	154.29	100.0%	SUF
44	110%	1.25	117%	.65	20%	3.60	145.31	144.90	99.7%	SUF
45	110%	1.25	0%	.00	20%	3.00	111.61	111.09	99.5%	SUF
46	200%	1.25	0%	.00	10%	3.60	146.23	145.08	99.2%	SUF
47	20%	1.25	117%	.65	20%	3.60	102.62	101.70	99.1%	SUF
48	20%	.80	235%	.50	35%	3.60	136.61	134.90	98.7%	SUF
49	20%	1.25	0%	.00	20%	3.00	68.93	67.89	98.5%	SUF
50	110%	1.25	0%	.00	10%	3.60	103.55	101.88	98.4%	SUF
51	110%	.80	235%	.65	35%	3.60	179.29	176.08	98.2%	SUF
52	110%	.80	0%	.00	35%	3.00	111.61	109.36	98.0%	SUF
53	200%	1.25	235%	.65	20%	3.60	221.97	217.56	98.0%	SUF
54	200%	1.25	0%	.00	10%	3.00	146.23	142.77	97.6%	SUF
55	200%	1.25	117%	.65	20%	3.00	187.99	183.49	97.6%	SUF
56	200%	1.25	235%	.50	35%	3.00	221.97	216.69	97.6%	SUF

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni3	Nic3	Nic/Ni	cls
57	110%	1.25	235%	.65	20%	3.60	179.29	174.36	97.2%	SUF
58	200%	1.25	117%	.65	10%	3.60	179.92	174.28	96.9%	SUF
59	110%	1.25	235%	.50	35%	3.00	179.29	173.49	96.8%	SUF
60	110%	1.25	117%	.65	20%	3.00	145.31	140.29	96.6%	SUF
61	200%	1.25	117%	.50	20%	3.60	187.99	181.36	96.5%	SUF
62	20%	1.25	0%	.00	10%	3.60	60.86	58.68	96.4%	SUF
63	110%	.80	117%	.50	35%	3.60	145.31	139.89	96.3%	SUF
64	110%	1.25	0%	.00	10%	3.00	103.55	99.57	96.2%	SUF
65	20%	1.25	235%	.65	20%	3.60	136.61	131.16	96.0%	SUF
66	200%	1.25	235%	.65	20%	3.00	221.97	212.95	95.9%	SUF
67	20%	.80	117%	.65	20%	3.60	102.62	98.25	95.7%	SUF
68	200%	1.25	117%	.65	10%	3.00	179.92	171.97	95.6%	SUF
69	110%	1.25	117%	.65	10%	3.60	137.24	131.08	95.5%	SUF
70	20%	1.25	235%	.50	35%	3.00	136.61	130.29	95.4%	SUF
71	110%	.80	117%	.65	35%	3.00	145.31	138.57	95.4%	SUF
72	200%	1.25	235%	.65	10%	3.60	213.91	203.73	95.2%	SUF
73	110%	1.25	117%	.50	20%	3.60	145.31	138.16	95.1%	SUF
74	110%	1.25	235%	.65	20%	3.00	179.29	169.75	94.7%	SUF
75	200%	1.25	235%	.65	10%	3.00	213.91	201.43	94.2%	SUF
76	200%	1.25	117%	.50	20%	3.00	187.99	176.76	94.0%	SUF
77	110%	1.25	235%	.65	10%	3.60	171.23	160.53	93.8%	SUF
78	110%	.80	235%	.65	35%	3.00	179.29	168.02	93.7%	SUF
79	200%	1.25	117%	.50	10%	3.60	179.92	167.54	93.1%	SUF
80	200%	.80	117%	.65	35%	3.60	187.99	174.28	92.7%	SUF
81	200%	1.25	235%	.50	20%	3.60	221.97	204.02	91.9%	SUF
82	200%	1.25	117%	.50	10%	3.00	179.92	165.24	91.8%	SUF
83	200%	.80	235%	.65	35%	3.60	221.97	203.73	91.8%	SUF
84	110%	.80	235%	.50	35%	3.60	179.29	162.55	90.7%	SUF
85	200%	1.25	235%	.50	20%	3.00	221.97	199.41	89.8%	SUF
86	110%	1.25	235%	.50	20%	3.60	179.29	160.82	89.7%	SUF
87	200%	.80	117%	.50	35%	3.60	187.99	167.54	89.1%	SUF
88	200%	1.25	235%	.50	10%	3.60	213.91	190.20	88.9%	SUF
89	200%	.80	117%	.65	35%	3.00	187.99	166.21	88.4%	SUF
90	200%	.80	235%	.65	35%	3.00	221.97	195.67	88.1%	SUF
91	200%	1.25	235%	.50	10%	3.00	213.91	187.89	87.8%	SUF
92	200%	.80	235%	.50	35%	3.60	221.97	190.20	85.7%	SUF
93	200%	.80	235%	.65	20%	3.60	221.97	183.00	82.4%	SUF
94	200%	.80	235%	.50	35%	3.00	221.97	182.13	82.1%	SUF
95	200%	.80	235%	.65	20%	3.00	221.97	178.39	80.4%	SUF
96	200%	.80	235%	.65	10%	3.60	213.91	169.17	79.1%	SUF
97	200%	.80	235%	.65	10%	3.00	213.91	166.87	78.0%	SUF
98	200%	.80	235%	.50	20%	3.60	221.97	169.46	76.3%	SUF
99	200%	.80	235%	.50	20%	3.00	221.97	164.85	74.3%	SUF
100	20%	1.25	117%	.65	20%	3.00	102.62	97.09	94.6%	BOM
101	200%	.80	0%	.00	35%	3.60	154.29	145.08	94.0%	BOM
102	110%	1.25	117%	.65	10%	3.00	137.24	128.77	93.8%	BOM
103	20%	.80	0%	.00	20%	3.00	68.93	64.44	93.5%	BOM
104	20%	.80	235%	.65	20%	3.60	136.61	127.70	93.5%	BOM
105	20%	1.25	117%	.65	10%	3.60	94.56	87.88	92.9%	BOM
106	20%	.80	235%	.50	35%	3.00	136.61	126.84	92.8%	BOM
107	20%	1.25	0%	.00	10%	3.00	60.86	56.37	92.6%	BOM
108	20%	1.25	235%	.65	20%	3.00	136.61	126.55	92.6%	BOM
109	20%	1.25	117%	.50	20%	3.60	102.62	94.96	92.5%	BOM
110	110%	1.25	235%	.65	10%	3.00	171.23	158.23	92.4%	BOM
111	110%	1.25	117%	.50	20%	3.00	145.31	133.56	91.9%	BOM
112	20%	1.25	235%	.65	10%	3.60	128.54	117.33	91.3%	BOM
113	20%	.80	117%	.65	20%	3.00	102.62	93.64	91.2%	BOM
114	20%	.80	0%	.00	10%	3.60	60.86	55.22	90.7%	BOM
115	110%	.80	117%	.50	35%	3.00	145.31	131.83	90.7%	BOM
116	110%	1.25	117%	.50	10%	3.60	137.24	124.34	90.6%	BOM
117	20%	1.25	117%	.65	10%	3.00	94.56	85.57	90.5%	BOM
118	20%	.80	235%	.65	20%	3.00	136.61	123.09	90.1%	BOM
119	20%	1.25	235%	.65	10%	3.00	128.54	115.03	89.5%	BOM
120	20%	.80	117%	.65	10%	3.60	94.56	84.42	89.3%	BOM
121	20%	.80	117%	.50	20%	3.60	102.62	91.51	89.2%	BOM

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni3	Nic3	Nic/Ni	cls
122	110%	1.25	117%	.50	10%	3.00	137.24	122.04	88.9%	BOM
123	200%	.80	0%	.00	35%	3.00	154.29	137.01	88.8%	BOM
124	20%	.80	235%	.65	10%	3.60	128.54	113.88	88.6%	BOM
125	20%	1.25	117%	.50	20%	3.00	102.62	90.36	88.0%	BOM
126	110%	1.25	235%	.50	20%	3.00	179.29	156.21	87.1%	BOM
127	110%	.80	0%	.00	20%	3.60	111.61	96.69	86.6%	BOM
128	110%	.80	117%	.65	20%	3.60	145.31	125.89	86.6%	BOM
129	110%	.80	235%	.65	20%	3.60	179.29	155.35	86.6%	BOM
130	110%	.80	235%	.50	35%	3.00	179.29	154.48	86.2%	BOM
131	20%	1.25	235%	.50	20%	3.60	136.61	117.62	86.1%	BOM
132	20%	1.25	117%	.50	10%	3.60	94.56	81.14	85.8%	BOM
133	110%	1.25	235%	.50	10%	3.60	171.23	147.00	85.8%	BOM
134	200%	.80	117%	.50	35%	3.00	187.99	159.48	84.8%	BOM
135	110%	1.25	235%	.50	10%	3.00	171.23	144.69	84.5%	BOM
136	110%	.80	235%	.65	20%	3.00	179.29	150.74	84.1%	BOM
137	20%	.80	235%	.50	20%	3.60	136.61	114.16	83.6%	BOM
138	110%	.80	117%	.65	20%	3.00	145.31	121.29	83.5%	BOM
139	20%	1.25	117%	.50	10%	3.00	94.56	78.84	83.4%	BOM
140	20%	1.25	235%	.50	20%	3.00	136.61	113.01	82.7%	BOM
141	110%	.80	235%	.65	10%	3.60	171.23	141.52	82.7%	BOM
142	20%	.80	117%	.50	10%	3.60	94.56	77.68	82.2%	BOM
143	110%	.80	117%	.50	20%	3.60	145.31	119.16	82.0%	BOM
144	110%	.80	117%	.65	10%	3.60	137.24	112.07	81.7%	BOM
145	200%	.80	117%	.65	20%	3.60	187.99	153.54	81.7%	BOM
146	110%	.80	235%	.65	10%	3.00	171.23	139.22	81.3%	BOM
147	20%	1.25	235%	.50	10%	3.60	128.54	103.80	80.7%	BOM
148	200%	.80	0%	.00	20%	3.60	154.29	124.34	80.6%	BOM
149	110%	.80	0%	.00	10%	3.60	103.55	82.87	80.0%	BOM
150	200%	.80	117%	.65	20%	3.00	187.99	148.93	79.2%	BOM
151	110%	.80	235%	.50	20%	3.60	179.29	141.81	79.1%	BOM
152	20%	1.25	235%	.50	10%	3.00	128.54	101.49	79.0%	BOM
153	20%	.80	235%	.50	10%	3.60	128.54	100.34	78.1%	BOM
154	200%	.80	117%	.50	20%	3.60	187.99	146.80	78.1%	BOM
155	200%	.80	117%	.65	10%	3.60	179.92	139.72	77.7%	BOM
156	110%	.80	117%	.50	10%	3.60	137.24	105.33	76.7%	BOM
157	110%	.80	235%	.50	20%	3.00	179.29	137.20	76.5%	BOM
158	200%	.80	117%	.65	10%	3.00	179.92	137.41	76.4%	BOM
159	200%	.80	0%	.00	10%	3.60	146.23	110.52	75.6%	BOM
160	200%	.80	117%	.50	20%	3.00	187.99	142.20	75.6%	BOM
161	110%	.80	235%	.50	10%	3.60	171.23	127.99	74.7%	BOM
162	200%	.80	117%	.50	10%	3.60	179.92	132.98	73.9%	BOM
163	110%	.80	235%	.50	10%	3.00	171.23	125.68	73.4%	BOM
164	200%	.80	235%	.50	10%	3.60	213.91	155.64	72.8%	BOM
165	200%	.80	117%	.50	10%	3.00	179.92	130.68	72.6%	BOM
166	200%	.80	235%	.50	10%	3.00	213.91	153.33	71.7%	BOM
167	20%	.80	0%	.00	10%	3.00	60.86	52.92	86.9%	MB
168	20%	.80	117%	.65	10%	3.00	94.56	82.12	86.8%	MB
169	20%	.80	235%	.65	10%	3.00	128.54	111.57	86.8%	MB
170	20%	.80	117%	.50	20%	3.00	102.62	86.90	84.7%	MB
171	110%	.80	0%	.00	20%	3.00	111.61	92.08	82.5%	MB
172	20%	.80	235%	.50	20%	3.00	136.61	109.56	80.2%	MB
173	110%	.80	117%	.65	10%	3.00	137.24	109.77	80.0%	MB
174	110%	.80	117%	.50	20%	3.00	145.31	114.55	78.8%	MB
175	200%	.80	0%	.00	20%	3.00	154.29	119.73	77.6%	MB
176	20%	.80	235%	.50	10%	3.00	128.54	98.04	76.3%	MB
177	110%	.80	117%	.50	10%	3.00	137.24	103.03	75.1%	MB
178	200%	.80	0%	.00	10%	3.00	146.23	108.21	74.0%	MB
179	20%	.80	117%	.50	10%	3.00	94.56	75.38	79.7%	EXC
180	110%	.80	0%	.00	10%	3.00	103.55	80.56	77.8%	EXC

tabela 1.9

zona climática de inverno I3
sem ganhos solares
soluções grupo 3

linha	af	Kfc	ah	Kh	aenv	KenV	Ni3	Nic3	Nic/Ni	cls
1	20%	.50	0%	.00	35%	2.60	68.93	74.04	107.4%	INS
2	20%	.35	0%	.00	35%	2.60	68.93	72.88	105.7%	INS
3	20%	.50	0%	.00	35%	2.20	68.93	68.66	99.6%	SUF
4	20%	.35	0%	.00	35%	2.20	68.93	67.51	97.9%	SUF
5	20%	.50	117%	.45	35%	2.60	102.62	94.25	91.8%	BOM
6	20%	.35	117%	.45	35%	2.60	102.62	93.10	90.7%	BOM
7	110%	.50	235%	.45	35%	2.60	179.29	131.92	73.6%	BOM
8	110%	.50	235%	.45	35%	2.20	179.29	126.55	70.6%	BOM
9	110%	.35	235%	.45	35%	2.60	179.29	125.59	70.0%	BOM
10	200%	.50	117%	.45	35%	2.60	187.99	128.81	68.5%	BOM
11	200%	.50	235%	.45	35%	2.60	221.97	149.20	67.2%	BOM
12	110%	.35	235%	.45	35%	2.20	179.29	120.21	67.0%	BOM
13	200%	.50	117%	.45	35%	2.20	187.99	123.44	65.7%	BOM
14	200%	.50	117%	.30	35%	2.60	187.99	122.07	64.9%	BOM
15	200%	.50	235%	.45	35%	2.20	221.97	143.83	64.8%	BOM
16	200%	.35	235%	.45	35%	2.60	221.97	137.68	62.0%	BOM
17	200%	.50	235%	.30	35%	2.60	221.97	135.67	61.1%	BOM
18	200%	.50	235%	.45	20%	2.60	221.97	134.23	60.5%	BOM
19	200%	.35	235%	.45	35%	2.20	221.97	132.31	59.6%	BOM
20	200%	.50	235%	.45	20%	2.20	221.97	131.16	59.1%	BOM
21	200%	.50	235%	.30	35%	2.20	221.97	130.29	58.7%	BOM
22	200%	.50	235%	.45	10%	2.60	213.91	124.24	58.1%	BOM
23	200%	.50	235%	.45	10%	2.20	213.91	122.71	57.4%	BOM
24	200%	.35	235%	.30	35%	2.60	221.97	124.15	55.9%	BOM
25	200%	.35	235%	.45	20%	2.60	221.97	122.71	55.3%	BOM
26	200%	.50	235%	.30	20%	2.60	221.97	120.69	54.4%	BOM
27	20%	.50	117%	.45	35%	2.20	102.62	88.88	86.6%	MB
28	20%	.50	0%	.00	20%	2.60	68.93	59.06	85.7%	MB
29	20%	.35	117%	.45	35%	2.20	102.62	87.72	85.5%	MB
30	20%	.50	117%	.30	35%	2.60	102.62	87.51	85.3%	MB
31	20%	.35	117%	.30	35%	2.60	102.62	86.36	84.2%	MB
32	20%	.35	0%	.00	20%	2.60	68.93	57.91	84.0%	MB
33	20%	.50	235%	.45	35%	2.60	136.61	114.64	83.9%	MB
34	20%	.35	235%	.45	35%	2.60	136.61	113.49	83.1%	MB
35	110%	.50	0%	.00	35%	2.60	111.61	91.32	81.8%	MB
36	20%	.50	0%	.00	20%	2.20	68.93	55.99	81.2%	MB
37	20%	.50	0%	.00	10%	2.60	60.86	49.08	80.6%	MB
38	20%	.50	235%	.45	35%	2.20	136.61	109.27	80.0%	MB
39	20%	.35	235%	.45	35%	2.20	136.61	108.12	79.1%	MB
40	110%	.50	117%	.45	35%	2.60	145.31	111.53	76.8%	MB
41	20%	.50	235%	.30	35%	2.60	136.61	101.11	74.0%	MB
42	20%	.35	235%	.30	35%	2.60	136.61	99.96	73.2%	MB
43	110%	.50	117%	.45	35%	2.20	145.31	106.16	73.1%	MB
44	20%	.50	235%	.45	20%	2.60	136.61	99.67	73.0%	MB
45	110%	.35	117%	.45	35%	2.60	145.31	105.20	72.4%	MB
46	20%	.35	235%	.45	20%	2.60	136.61	98.52	72.1%	MB
47	110%	.50	117%	.30	35%	2.60	145.31	104.79	72.1%	MB
48	20%	.50	235%	.45	20%	2.20	136.61	96.60	70.7%	MB
49	200%	.50	0%	.00	35%	2.60	154.29	108.60	70.4%	MB
50	20%	.50	235%	.30	35%	2.20	136.61	95.73	70.1%	MB
51	20%	.35	235%	.45	20%	2.20	136.61	95.44	69.9%	MB
52	20%	.35	235%	.30	35%	2.20	136.61	94.58	69.2%	MB
53	110%	.35	117%	.45	35%	2.20	145.31	99.82	68.7%	MB
54	110%	.50	117%	.30	35%	2.20	145.31	99.42	68.4%	MB

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni3	Nic3	Nic/Ni	cls
55	110%	.35	117%	.30	35%	2.60	145.31	98.46	67.8%	MB
56	200%	.50	0%	.00	35%	2.20	154.29	103.22	66.9%	MB
57	110%	.50	117%	.45	20%	2.60	145.31	96.56	66.5%	MB
58	110%	.50	235%	.30	35%	2.60	179.29	118.39	66.0%	MB
59	110%	.50	235%	.45	20%	2.60	179.29	116.95	65.2%	MB
60	110%	.50	117%	.45	20%	2.20	145.31	93.48	64.3%	MB
61	110%	.35	117%	.30	35%	2.20	145.31	93.08	64.1%	MB
62	110%	.50	235%	.45	20%	2.20	179.29	113.88	63.5%	MB
63	110%	.50	235%	.30	35%	2.20	179.29	113.01	63.0%	MB
64	200%	.35	0%	.00	35%	2.60	154.29	97.08	62.9%	MB
65	110%	.50	235%	.45	10%	2.60	171.23	106.96	62.5%	MB
66	110%	.35	235%	.30	35%	2.60	179.29	112.05	62.5%	MB
67	200%	.35	117%	.45	35%	2.60	187.99	117.29	62.4%	MB
68	110%	.35	117%	.45	20%	2.60	145.31	90.22	62.1%	MB
69	200%	.50	117%	.30	35%	2.20	187.99	116.70	62.1%	MB
70	110%	.35	235%	.45	20%	2.60	179.29	110.61	61.7%	MB
71	110%	.50	235%	.45	10%	2.20	171.23	105.43	61.6%	MB
72	200%	.50	0%	.00	20%	2.60	154.29	93.62	60.7%	MB
73	200%	.50	117%	.45	20%	2.60	187.99	113.84	60.6%	MB
74	110%	.35	235%	.45	20%	2.20	179.29	107.54	60.0%	MB
75	110%	.35	235%	.30	35%	2.20	179.29	106.68	59.5%	MB
76	200%	.35	117%	.45	35%	2.20	187.99	111.92	59.5%	MB
77	200%	.35	0%	.00	35%	2.20	154.29	91.70	59.4%	MB
78	200%	.50	117%	.45	20%	2.20	187.99	110.76	58.9%	MB
79	110%	.35	235%	.45	10%	2.60	171.23	100.63	58.8%	MB
80	200%	.35	117%	.30	35%	2.60	187.99	110.55	58.8%	MB
81	200%	.50	0%	.00	20%	2.20	154.29	90.55	58.7%	MB
82	110%	.35	235%	.45	10%	2.20	171.23	99.09	57.9%	MB
83	110%	.50	235%	.30	20%	2.60	179.29	103.41	57.7%	MB
84	200%	.50	117%	.45	10%	2.60	179.92	103.85	57.7%	MB
85	200%	.50	117%	.30	20%	2.60	187.99	107.10	57.0%	MB
86	200%	.50	117%	.45	10%	2.20	179.92	102.32	56.9%	MB
87	110%	.50	235%	.30	20%	2.20	179.29	100.34	56.0%	MB
88	200%	.35	117%	.30	35%	2.20	187.99	105.18	55.9%	MB
89	200%	.50	117%	.30	20%	2.20	187.99	104.03	55.3%	MB
90	110%	.50	235%	.30	10%	2.60	171.23	93.43	54.6%	MB
91	200%	.35	117%	.45	20%	2.60	187.99	102.32	54.4%	MB
92	110%	.35	235%	.30	20%	2.60	179.29	97.08	54.1%	MB
93	200%	.50	117%	.30	10%	2.60	179.92	97.11	54.0%	MB
94	200%	.35	235%	.45	20%	2.20	221.97	119.64	53.9%	MB
95	110%	.50	235%	.30	10%	2.20	171.23	91.89	53.7%	MB
96	200%	.35	235%	.30	35%	2.20	221.97	118.77	53.5%	MB
97	200%	.50	117%	.30	10%	2.20	179.92	95.58	53.1%	MB
98	200%	.50	235%	.30	20%	2.20	221.97	117.62	53.0%	MB
99	200%	.35	117%	.45	20%	2.20	187.99	99.24	52.8%	MB
100	200%	.35	235%	.45	10%	2.60	213.91	112.72	52.7%	MB
101	110%	.35	235%	.30	20%	2.20	179.29	94.00	52.4%	MB
102	200%	.35	235%	.45	10%	2.20	213.91	111.19	52.0%	MB
103	200%	.50	235%	.30	10%	2.60	213.91	110.71	51.8%	MB
104	200%	.35	117%	.45	10%	2.60	179.92	92.33	51.3%	MB
105	200%	.50	235%	.30	10%	2.20	213.91	109.17	51.0%	MB
106	200%	.35	117%	.30	20%	2.60	187.99	95.58	50.8%	MB
107	200%	.35	117%	.45	10%	2.20	179.92	90.80	50.5%	MB
108	200%	.35	117%	.30	20%	2.20	187.99	92.51	49.2%	MB
109	200%	.35	235%	.30	20%	2.60	221.97	109.17	49.2%	MB
110	200%	.35	235%	.30	20%	2.20	221.97	106.10	47.8%	MB
111	200%	.35	235%	.30	10%	2.60	213.91	99.19	46.4%	MB
112	200%	.35	235%	.30	10%	2.20	213.91	97.65	45.7%	MB
113	20%	.50	117%	.30	35%	2.20	102.62	82.14	80.0%	EXC
114	20%	.35	0%	.00	20%	2.20	68.93	54.84	79.6%	EXC
115	20%	.35	117%	.30	35%	2.20	102.62	80.99	78.9%	EXC
116	20%	.35	0%	.00	10%	2.60	60.86	47.92	78.7%	EXC
117	20%	.50	0%	.00	10%	2.20	60.86	47.54	78.1%	EXC
118	20%	.50	117%	.45	20%	2.60	102.62	79.28	77.2%	EXC
119	110%	.50	0%	.00	35%	2.20	111.61	85.94	77.0%	EXC

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni3	Nic3	Nic/Ni	cls
120	20%	.35	0%	.00	10%	2.20	60.86	46.39	76.2%	EXC
121	20%	.35	117%	.45	20%	2.60	102.62	78.12	76.1%	EXC
122	110%	.35	0%	.00	35%	2.60	111.61	84.98	76.1%	EXC
123	20%	.50	117%	.45	20%	2.20	102.62	76.20	74.3%	EXC
124	20%	.50	117%	.45	10%	2.60	94.56	69.29	73.3%	EXC
125	20%	.35	117%	.45	20%	2.20	102.62	75.05	73.1%	EXC
126	20%	.35	117%	.45	10%	2.60	94.56	68.14	72.1%	EXC
127	20%	.50	117%	.45	10%	2.20	94.56	67.76	71.7%	EXC
128	110%	.35	0%	.00	35%	2.20	111.61	79.60	71.3%	EXC
129	20%	.50	117%	.30	20%	2.60	102.62	72.54	70.7%	EXC
130	20%	.35	117%	.45	10%	2.20	94.56	66.60	70.4%	EXC
131	20%	.50	235%	.45	10%	2.60	128.54	89.68	69.8%	EXC
132	20%	.35	117%	.30	20%	2.60	102.62	71.39	69.6%	EXC
133	20%	.35	235%	.45	10%	2.60	128.54	88.53	68.9%	EXC
134	20%	.50	235%	.45	10%	2.20	128.54	88.15	68.6%	EXC
135	110%	.50	0%	.00	20%	2.60	111.61	76.34	68.4%	EXC
136	20%	.50	117%	.30	20%	2.20	102.62	69.47	67.7%	EXC
137	20%	.35	235%	.45	10%	2.20	128.54	87.00	67.7%	EXC
138	20%	.35	117%	.30	20%	2.20	102.62	68.31	66.6%	EXC
139	20%	.50	117%	.30	10%	2.60	94.56	62.55	66.2%	EXC
140	110%	.50	0%	.00	20%	2.20	111.61	73.27	65.6%	EXC
141	20%	.35	117%	.30	10%	2.60	94.56	61.40	64.9%	EXC
142	20%	.50	117%	.30	10%	2.20	94.56	61.02	64.5%	EXC
143	110%	.50	0%	.00	10%	2.60	103.55	66.36	64.1%	EXC
144	20%	.35	117%	.30	10%	2.20	94.56	59.87	63.3%	EXC
145	110%	.50	117%	.45	10%	2.60	137.24	86.57	63.1%	EXC
146	20%	.50	235%	.30	20%	2.60	136.61	86.13	63.0%	EXC
147	110%	.35	0%	.00	20%	2.60	111.61	70.00	62.7%	EXC
148	110%	.50	0%	.00	10%	2.20	103.55	64.82	62.6%	EXC
149	20%	.35	235%	.30	20%	2.60	136.61	84.98	62.2%	EXC
150	110%	.50	117%	.45	10%	2.20	137.24	85.04	62.0%	EXC
151	110%	.50	117%	.30	20%	2.60	145.31	89.82	61.8%	EXC
152	20%	.50	235%	.30	20%	2.20	136.61	83.06	60.8%	EXC
153	20%	.35	235%	.30	20%	2.20	136.61	81.91	60.0%	EXC
154	110%	.35	0%	.00	20%	2.20	111.61	66.93	60.0%	EXC
155	110%	.35	117%	.45	20%	2.20	145.31	87.15	60.0%	EXC
156	110%	.50	117%	.30	20%	2.20	145.31	86.75	59.7%	EXC
157	20%	.50	235%	.30	10%	2.60	128.54	76.15	59.2%	EXC
158	110%	.35	117%	.45	10%	2.60	137.24	80.24	58.5%	EXC
159	20%	.35	235%	.30	10%	2.60	128.54	75.00	58.3%	EXC
160	110%	.50	117%	.30	10%	2.60	137.24	79.83	58.2%	EXC
161	20%	.50	235%	.30	10%	2.20	128.54	74.61	58.0%	EXC
162	110%	.35	0%	.00	10%	2.60	103.55	60.02	58.0%	EXC
163	110%	.35	117%	.30	20%	2.60	145.31	83.48	57.5%	EXC
164	110%	.35	117%	.45	10%	2.20	137.24	78.70	57.3%	EXC
165	200%	.50	0%	.00	10%	2.60	146.23	83.64	57.2%	EXC
166	20%	.35	235%	.30	10%	2.20	128.54	73.46	57.1%	EXC
167	110%	.50	117%	.30	10%	2.20	137.24	78.30	57.1%	EXC
168	110%	.35	0%	.00	10%	2.20	103.55	58.48	56.5%	EXC
169	200%	.50	0%	.00	10%	2.20	146.23	82.10	56.1%	EXC
170	110%	.35	117%	.30	20%	2.20	145.31	80.41	55.3%	EXC
171	110%	.35	117%	.30	10%	2.60	137.24	73.50	53.6%	EXC
172	200%	.35	0%	.00	20%	2.60	154.29	82.10	53.2%	EXC
173	110%	.35	117%	.30	10%	2.20	137.24	71.96	52.4%	EXC
174	200%	.35	0%	.00	20%	2.20	154.29	79.03	51.2%	EXC
175	110%	.35	235%	.30	10%	2.60	171.23	87.09	50.9%	EXC
176	110%	.35	235%	.30	10%	2.20	171.23	85.56	50.0%	EXC
177	200%	.35	0%	.00	10%	2.60	146.23	72.12	49.3%	EXC
178	200%	.35	0%	.00	10%	2.20	146.23	70.58	48.3%	EXC
179	200%	.35	117%	.30	10%	2.60	179.92	85.59	47.6%	EXC
180	200%	.35	117%	.30	10%	2.20	179.92	84.06	46.7%	EXC

tabela 1.10

zona climática de inverno I1
com ganhos solares
soluções grupo 1

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni1	Nic1	Nic/Ni	cls
1	200%	2.70	235%	1.25	10%	4.80	72.60	81.56	112.3%	INS
2	200%	2.70	117%	1.25	10%	4.80	60.14	67.40	112.1%	INS
3	200%	2.70	0%	.00	10%	4.80	47.79	53.37	111.7%	INS
4	200%	2.70	235%	1.25	10%	4.20	72.60	80.99	111.5%	INS
5	200%	2.70	117%	1.25	10%	4.20	60.14	66.83	111.1%	INS
6	200%	2.70	0%	.00	10%	4.20	47.79	52.79	110.5%	INS
7	200%	2.70	117%	1.10	10%	4.80	60.14	65.72	109.3%	INS
8	200%	2.70	117%	1.10	10%	4.20	60.14	65.14	108.3%	INS
9	200%	2.70	235%	1.10	10%	4.80	72.60	78.18	107.7%	INS
10	200%	2.70	235%	1.10	10%	4.20	72.60	77.60	106.9%	INS
11	110%	2.70	235%	1.25	10%	4.80	56.88	58.24	102.4%	INS
12	110%	2.70	235%	1.25	10%	4.20	56.88	57.66	101.4%	INS
13	200%	2.70	235%	1.25	20%	4.80	74.62	74.38	99.7%	SUF
14	110%	2.70	117%	1.25	10%	4.80	44.42	44.10	99.3%	SUF
15	200%	2.70	235%	1.25	20%	4.20	74.62	73.24	98.1%	SUF
16	110%	2.70	117%	1.25	10%	4.20	44.42	43.52	98.0%	SUF
17	200%	2.70	117%	1.25	20%	4.80	62.16	60.35	97.1%	SUF
18	200%	2.10	235%	1.25	10%	4.80	72.60	70.04	96.5%	SUF
19	110%	2.70	235%	1.10	10%	4.80	56.88	54.86	96.4%	SUF
20	200%	2.10	235%	1.25	10%	4.20	72.60	69.47	95.7%	SUF
21	110%	2.70	117%	1.10	10%	4.80	44.42	42.42	95.5%	SUF
22	110%	2.70	235%	1.10	10%	4.20	56.88	54.28	95.4%	SUF
23	200%	2.70	117%	1.25	20%	4.20	62.16	59.22	95.3%	SUF
24	200%	2.70	235%	1.10	20%	4.80	74.62	71.02	95.2%	SUF
25	200%	2.70	235%	1.10	20%	4.20	74.62	69.88	93.6%	SUF
26	200%	2.10	235%	1.10	10%	4.80	72.60	66.66	91.8%	SUF
27	200%	2.10	235%	1.10	10%	4.20	72.60	66.08	91.0%	SUF
28	200%	2.70	235%	1.25	35%	4.80	74.62	64.90	87.0%	SUF
29	200%	2.70	235%	1.25	35%	4.20	74.62	62.99	84.4%	SUF
30	200%	2.10	235%	1.25	20%	4.80	74.62	62.96	84.4%	SUF
31	200%	2.10	235%	1.25	20%	4.20	74.62	61.82	82.8%	SUF
32	200%	2.70	235%	1.10	35%	4.80	74.62	61.69	82.7%	SUF
33	200%	2.70	117%	1.10	20%	4.80	62.16	58.69	94.4%	BOM
34	110%	2.70	117%	1.10	10%	4.20	44.42	41.85	94.2%	BOM
35	110%	2.70	0%	.00	10%	4.80	32.06	30.15	94.0%	BOM
36	200%	2.70	0%	.00	20%	4.80	49.80	46.59	93.6%	BOM
37	200%	2.10	117%	1.25	10%	4.80	60.14	55.89	92.9%	BOM
38	200%	2.70	117%	1.10	20%	4.20	62.16	57.56	92.6%	BOM
39	110%	2.70	0%	.00	10%	4.20	32.06	29.59	92.3%	BOM
40	200%	2.10	117%	1.25	10%	4.20	60.14	55.31	92.0%	BOM
41	110%	2.10	235%	1.25	10%	4.80	56.88	51.91	91.3%	BOM
42	200%	2.70	0%	.00	20%	4.20	49.80	45.47	91.3%	BOM
43	110%	2.10	235%	1.25	10%	4.20	56.88	51.33	90.2%	BOM
44	200%	2.10	117%	1.10	10%	4.80	60.14	54.20	90.1%	BOM
45	200%	2.10	117%	1.10	10%	4.20	60.14	53.63	89.2%	BOM
46	200%	2.10	0%	.00	10%	4.80	47.79	41.87	87.6%	BOM
47	110%	2.70	235%	1.25	20%	4.80	58.90	51.34	87.2%	BOM
48	200%	2.10	0%	.00	10%	4.20	47.79	41.30	86.4%	BOM
49	110%	2.70	235%	1.25	20%	4.20	58.90	50.22	85.3%	BOM
50	110%	2.10	235%	1.10	10%	4.80	56.88	48.53	85.3%	BOM
51	110%	2.10	117%	1.25	10%	4.80	44.42	37.79	85.1%	BOM
52	20%	2.70	235%	1.25	10%	4.80	41.16	34.98	85.0%	BOM
53	110%	2.10	235%	1.10	10%	4.20	56.88	47.95	84.3%	BOM
54	110%	2.10	117%	1.25	10%	4.20	44.42	37.22	83.8%	BOM
55	20%	2.70	235%	1.25	10%	4.20	41.16	34.41	83.6%	BOM

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni1	Nic1	Nic/Ni	cls
56	200%	2.70	117%	1.25	35%	4.80	62.16	51.62	83.0%	BOM
57	20%	2.10	235%	1.25	10%	4.80	41.16	33.83	82.2%	BOM
58	110%	2.70	235%	1.10	20%	4.80	58.90	48.04	81.6%	BOM
59	110%	2.10	117%	1.10	10%	4.80	44.42	36.12	81.3%	BOM
60	110%	2.70	117%	1.25	20%	4.80	46.44	37.65	81.1%	BOM
61	20%	2.10	235%	1.25	10%	4.20	41.16	33.26	80.8%	BOM
62	200%	2.70	117%	1.10	35%	4.80	62.16	50.06	80.5%	BOM
63	200%	2.70	117%	1.25	35%	4.20	62.16	49.76	80.1%	BOM
64	200%	2.70	235%	1.10	35%	4.20	74.62	59.79	80.1%	BOM
65	110%	2.10	117%	1.10	10%	4.20	44.42	35.54	80.0%	BOM
66	200%	2.10	235%	1.10	20%	4.80	74.62	59.62	79.9%	BOM
67	110%	2.70	235%	1.10	20%	4.20	58.90	46.92	79.7%	BOM
68	200%	2.10	117%	1.25	20%	4.80	62.16	49.05	78.9%	BOM
69	110%	2.70	117%	1.25	20%	4.20	46.44	36.56	78.7%	BOM
70	200%	2.10	235%	1.10	20%	4.20	74.62	58.48	78.4%	BOM
71	200%	2.70	0%	.00	35%	4.80	49.80	38.92	78.1%	BOM
72	110%	2.70	117%	1.10	20%	4.80	46.44	36.05	77.6%	BOM
73	200%	2.70	117%	1.10	35%	4.20	62.16	48.22	77.6%	BOM
74	200%	2.10	117%	1.25	20%	4.20	62.16	47.92	77.1%	BOM
75	20%	2.70	235%	1.10	10%	4.80	41.16	31.62	76.8%	BOM
76	110%	2.10	235%	1.25	20%	4.80	58.90	45.17	76.7%	BOM
77	200%	2.10	117%	1.10	20%	4.80	62.16	47.40	76.3%	BOM
78	20%	2.70	235%	1.10	10%	4.20	41.16	31.06	75.5%	BOM
79	110%	2.70	117%	1.10	20%	4.20	46.44	34.96	75.3%	BOM
80	110%	2.10	235%	1.25	20%	4.20	58.90	44.06	74.8%	BOM
81	110%	2.10	0%	.00	10%	4.80	32.06	23.94	74.7%	BOM
82	200%	2.70	0%	.00	35%	4.20	49.80	37.15	74.6%	BOM
83	200%	2.10	117%	1.10	20%	4.20	62.16	46.28	74.5%	BOM
84	20%	2.10	235%	1.10	10%	4.80	41.16	30.49	74.1%	BOM
85	20%	2.70	117%	1.25	10%	4.80	28.69	21.08	73.5%	BOM
86	110%	2.70	235%	1.25	35%	4.80	58.90	43.26	73.5%	BOM
87	110%	2.10	0%	.00	10%	4.20	32.06	23.38	72.9%	BOM
88	20%	2.10	235%	1.10	10%	4.20	41.16	29.92	72.7%	BOM
89	200%	2.10	235%	1.25	35%	4.80	74.62	54.06	72.5%	BOM
90	110%	2.70	0%	.00	20%	4.80	34.08	24.61	72.2%	BOM
91	20%	2.70	117%	1.25	10%	4.20	28.69	20.53	71.5%	BOM
92	200%	2.10	0%	.00	20%	4.80	49.80	35.53	71.3%	BOM
93	110%	2.10	235%	1.10	20%	4.80	58.90	41.90	71.1%	BOM
94	110%	2.70	235%	1.25	35%	4.20	58.90	41.46	70.4%	BOM
95	200%	2.10	235%	1.25	35%	4.20	74.62	52.19	69.9%	BOM
96	20%	2.10	117%	1.25	10%	4.80	28.69	19.97	69.6%	BOM
97	110%	2.10	235%	1.10	20%	4.20	58.90	40.80	69.3%	BOM
98	110%	2.70	0%	.00	20%	4.20	34.08	23.58	69.2%	BOM
99	200%	2.10	0%	.00	20%	4.20	49.80	34.44	69.2%	BOM
100	110%	2.70	235%	1.10	35%	4.80	58.90	40.24	68.3%	BOM
101	200%	2.10	235%	1.10	35%	4.80	74.62	50.93	68.3%	BOM
102	110%	2.10	117%	1.25	20%	4.80	46.44	31.67	68.2%	BOM
103	20%	2.70	117%	1.10	10%	4.80	28.69	19.46	67.8%	BOM
104	20%	2.10	117%	1.25	10%	4.20	28.69	19.42	67.7%	BOM
105	20%	2.70	235%	1.25	20%	4.80	43.17	29.05	67.3%	BOM
106	110%	2.70	117%	1.25	35%	4.80	46.44	30.91	66.6%	BOM
107	200%	2.10	117%	1.25	35%	4.80	62.16	41.16	66.2%	BOM
108	20%	2.70	117%	1.10	10%	4.20	28.69	18.91	65.9%	BOM
109	110%	2.10	117%	1.25	20%	4.20	46.44	30.60	65.9%	BOM
110	200%	2.10	235%	1.10	35%	4.20	74.62	49.08	65.8%	BOM
111	110%	2.70	235%	1.10	35%	4.20	58.90	38.46	65.3%	BOM
112	20%	2.70	235%	1.25	20%	4.20	43.17	27.99	64.8%	BOM
113	20%	2.10	235%	1.25	20%	4.80	43.17	27.99	64.8%	BOM
114	110%	2.10	117%	1.10	20%	4.80	46.44	30.11	64.8%	BOM
115	20%	2.10	117%	1.10	10%	4.80	28.69	18.37	64.0%	BOM
116	110%	2.10	235%	1.25	35%	4.80	58.90	37.64	63.9%	BOM
117	200%	2.10	117%	1.10	35%	4.80	62.16	39.66	63.8%	BOM
118	110%	2.70	117%	1.10	35%	4.80	46.44	29.50	63.5%	BOM
119	200%	2.10	117%	1.25	35%	4.20	62.16	39.37	63.3%	BOM
120	110%	2.70	117%	1.25	35%	4.20	46.44	29.22	62.9%	BOM
121	110%	2.10	117%	1.10	20%	4.20	46.44	29.04	62.5%	BOM

linha	af	Kfc	ah	Kh	aenv	KenV	Ni1	Nic1	Nic/Ni	cls
122	20%	2.10	235%	1.25	20%	4.20	43.17	26.94	62.4%	BOM
123	20%	2.10	117%	1.10	10%	4.20	28.69	17.82	62.1%	BOM
124	110%	2.10	235%	1.25	35%	4.20	58.90	35.88	60.9%	BOM
125	200%	2.10	117%	1.10	35%	4.20	62.16	37.88	60.9%	BOM
126	20%	2.70	235%	1.10	20%	4.80	43.17	25.96	60.1%	BOM
127	110%	2.70	117%	1.10	35%	4.20	46.44	27.83	59.9%	BOM
128	110%	2.10	235%	1.10	35%	4.80	58.90	34.69	58.9%	BOM
129	200%	2.10	0%	.00	35%	4.80	49.80	29.04	58.3%	BOM
130	20%	2.70	235%	1.10	20%	4.20	43.17	24.92	57.7%	BOM
131	20%	2.10	235%	1.10	20%	4.80	43.17	24.92	57.7%	BOM
132	110%	2.70	0%	.00	35%	4.80	34.08	19.66	57.7%	BOM
133	110%	2.10	235%	1.10	35%	4.20	58.90	32.96	56.0%	BOM
134	110%	2.10	0%	.00	20%	4.80	34.08	19.05	55.9%	BOM
135	20%	2.10	235%	1.10	20%	4.20	43.17	23.88	55.3%	BOM
136	110%	2.10	117%	1.25	35%	4.80	46.44	25.68	55.3%	BOM
137	200%	2.10	0%	.00	35%	4.20	49.80	27.38	55.0%	BOM
138	20%	2.70	235%	1.25	35%	4.80	43.17	23.42	54.2%	BOM
139	20%	2.70	117%	1.25	20%	4.80	30.71	16.56	53.9%	BOM
140	110%	2.70	0%	.00	35%	4.20	34.08	18.15	53.3%	BOM
141	110%	2.10	0%	.00	20%	4.20	34.08	18.07	53.0%	BOM
142	110%	2.10	117%	1.10	35%	4.80	46.44	24.33	52.4%	BOM
143	20%	2.10	235%	1.25	35%	4.80	43.17	22.52	52.2%	BOM
144	110%	2.10	117%	1.25	35%	4.20	46.44	24.07	51.8%	BOM
145	20%	2.70	117%	1.25	20%	4.20	30.71	15.61	50.8%	BOM
146	20%	2.10	117%	1.25	20%	4.80	30.71	15.61	50.8%	BOM
147	20%	2.70	0%	.00	10%	4.80	16.34	8.26	50.6%	BOM
148	20%	2.70	235%	1.25	35%	4.20	43.17	21.84	50.6%	BOM
149	20%	2.70	117%	1.10	20%	4.80	30.71	15.18	49.4%	BOM
150	110%	2.10	117%	1.10	35%	4.20	46.44	22.74	49.0%	BOM
151	20%	2.10	235%	1.25	35%	4.20	43.17	20.95	48.5%	BOM
152	20%	2.70	235%	1.10	35%	4.80	43.17	20.79	48.2%	BOM
153	20%	2.10	117%	1.25	20%	4.20	30.71	14.68	47.8%	BOM
154	20%	2.70	0%	.00	10%	4.20	16.34	7.79	47.7%	BOM
155	20%	2.70	117%	1.10	20%	4.20	30.71	14.25	46.4%	BOM
156	20%	2.10	117%	1.10	20%	4.80	30.71	14.25	46.4%	BOM
157	20%	2.10	235%	1.10	35%	4.80	43.17	19.91	46.1%	BOM
158	20%	2.10	0%	.00	10%	4.80	16.34	7.32	44.8%	BOM
159	20%	2.70	235%	1.10	35%	4.20	43.17	19.26	44.6%	BOM
160	110%	2.10	0%	.00	35%	4.80	34.08	15.04	44.1%	BOM
161	20%	2.10	117%	1.10	20%	4.20	30.71	13.33	43.4%	BOM
162	20%	2.10	235%	1.10	35%	4.20	43.17	18.40	42.6%	BOM
163	20%	2.70	117%	1.25	35%	4.80	30.71	13.01	42.4%	BOM
164	20%	2.10	0%	.00	10%	4.20	16.34	6.86	42.0%	BOM
165	110%	2.10	0%	.00	35%	4.20	34.08	13.64	40.0%	BOM
166	20%	2.10	117%	1.25	35%	4.80	30.71	12.24	39.9%	BOM
167	20%	2.70	117%	1.10	35%	4.80	30.71	11.89	38.7%	BOM
168	20%	2.70	117%	1.25	35%	4.20	30.71	11.67	38.0%	BOM
169	20%	2.10	117%	1.10	35%	4.80	30.71	11.14	36.3%	BOM
170	20%	2.10	117%	1.25	35%	4.20	30.71	10.93	35.6%	BOM
171	20%	2.70	117%	1.10	35%	4.20	30.71	10.59	34.5%	BOM
172	20%	2.70	0%	.00	20%	4.80	18.36	6.11	33.3%	BOM
173	20%	2.10	117%	1.10	35%	4.20	30.71	9.87	32.1%	BOM
174	20%	2.70	0%	.00	20%	4.20	18.36	5.39	29.4%	BOM
175	20%	2.10	0%	.00	20%	4.80	18.36	5.39	29.4%	BOM
176	20%	2.70	0%	.00	35%	4.80	18.36	4.74	25.8%	BOM
177	20%	2.10	0%	.00	20%	4.20	18.36	4.70	25.6%	BOM
178	20%	2.10	0%	.00	35%	4.80	18.36	4.18	22.8%	BOM
179	20%	2.70	0%	.00	35%	4.20	18.36	3.78	20.6%	BOM
180	20%	2.10	0%	.00	35%	4.20	18.36	3.26	17.8%	BOM

tabela 1.11

zona climática de inverno I1
com ganhos solares
soluções grupo 2

linha	af	Kfc	ah	Kh	aenv	KenV	Ni1	Nic1	Nic/Ni	cls
1	200%	1.80	235%	.90	10%	3.00	72.60	56.06	77.2%	BOM
2	200%	1.80	117%	.90	10%	3.00	60.14	45.87	76.3%	BOM
3	200%	1.80	235%	.90	10%	3.60	72.60	55.24	76.1%	BOM
4	200%	1.80	0%	.00	10%	3.00	47.79	35.79	74.9%	BOM
5	200%	1.80	117%	.90	10%	3.60	60.14	45.06	74.9%	BOM
6	200%	1.80	0%	.00	10%	3.60	47.79	35.00	73.2%	BOM
7	110%	1.80	235%	.90	10%	3.00	56.88	40.52	71.2%	BOM
8	200%	1.80	117%	.60	10%	3.00	60.14	42.51	70.7%	BOM
9	110%	1.80	235%	.90	10%	3.60	56.88	39.72	69.8%	BOM
10	200%	1.80	117%	.60	10%	3.60	60.14	41.70	69.3%	BOM
11	110%	1.80	117%	.90	10%	3.00	44.42	30.38	68.4%	BOM
12	200%	1.80	235%	.60	10%	3.00	72.60	49.30	67.9%	BOM
13	200%	1.80	235%	.60	10%	3.60	72.60	48.48	66.8%	BOM
14	110%	1.80	117%	.90	10%	3.60	44.42	29.62	66.7%	BOM
15	200%	1.80	235%	.90	20%	3.00	74.62	48.72	65.3%	BOM
16	110%	1.80	0%	.00	10%	3.00	32.06	20.44	63.7%	BOM
17	200%	1.80	235%	.90	20%	3.60	74.62	47.29	63.4%	BOM
18	200%	1.80	117%	.90	20%	3.00	62.16	38.78	62.4%	BOM
19	110%	1.80	0%	.00	10%	3.60	32.06	19.77	61.6%	BOM
20	20%	1.80	235%	.90	10%	3.00	41.16	25.08	60.9%	BOM
21	110%	1.80	117%	.60	10%	3.00	44.42	27.04	60.9%	BOM
22	200%	1.80	117%	.90	20%	3.60	62.16	37.47	60.3%	BOM
23	110%	1.80	235%	.60	10%	3.00	56.88	33.78	59.4%	BOM
24	20%	1.80	235%	.90	10%	3.60	41.16	24.36	59.2%	BOM
25	110%	1.80	117%	.60	10%	3.60	44.42	26.30	59.2%	BOM
26	200%	1.80	0%	.00	20%	3.00	49.80	29.14	58.5%	BOM
27	110%	1.80	235%	.60	10%	3.60	56.88	33.00	58.0%	BOM
28	200%	1.80	117%	.60	20%	3.00	62.16	35.53	57.2%	BOM
29	110%	1.80	235%	.90	20%	3.00	58.90	33.63	57.1%	BOM
30	200%	1.80	235%	.60	20%	3.00	74.62	42.10	56.4%	BOM
31	200%	1.80	0%	.00	20%	3.60	49.80	28.01	56.2%	BOM
32	200%	1.80	117%	.60	20%	3.60	62.16	34.28	55.1%	BOM
33	110%	1.80	235%	.90	20%	3.60	58.90	32.41	55.0%	BOM
34	200%	1.80	235%	.60	20%	3.60	74.62	40.75	54.6%	BOM
35	200%	1.80	235%	.90	35%	3.00	74.62	39.71	53.2%	BOM
36	20%	1.80	117%	.90	10%	3.00	28.69	15.22	53.0%	BOM
37	110%	1.80	117%	.90	20%	3.00	46.44	24.09	51.9%	BOM
38	20%	1.80	117%	.90	10%	3.60	28.69	14.64	51.0%	BOM
39	200%	1.80	235%	.90	35%	3.60	74.62	38.04	51.0%	BOM
40	110%	1.80	117%	.90	20%	3.60	46.44	23.10	49.7%	BOM
41	200%	1.80	117%	.90	35%	3.00	62.16	30.69	49.4%	BOM
42	200%	1.80	117%	.90	35%	3.60	62.16	29.31	47.1%	BOM
43	110%	1.80	235%	.60	20%	3.00	58.90	27.25	46.3%	BOM
44	110%	1.80	117%	.60	20%	3.00	46.44	21.05	45.3%	BOM
45	200%	1.80	235%	.60	35%	3.00	74.62	33.68	45.1%	BOM
46	20%	1.80	235%	.60	10%	3.00	41.16	18.49	44.9%	BOM
47	20%	1.80	235%	.90	20%	3.00	43.17	19.29	44.7%	BOM
48	200%	1.80	0%	.00	35%	3.00	49.80	22.25	44.7%	BOM
49	200%	1.80	117%	.60	35%	3.00	62.16	27.81	44.7%	BOM
50	110%	1.80	0%	.00	20%	3.00	34.08	15.21	44.6%	BOM
51	110%	1.80	235%	.90	35%	3.00	58.90	26.14	44.4%	BOM
52	110%	1.80	235%	.60	20%	3.60	58.90	26.17	44.4%	BOM
53	20%	1.80	235%	.60	10%	3.60	41.16	17.85	43.4%	BOM
54	110%	1.80	117%	.60	20%	3.60	46.44	20.14	43.4%	BOM
55	200%	1.80	235%	.60	35%	3.60	74.62	32.19	43.1%	BOM
56	20%	1.80	235%	.90	20%	3.60	43.17	18.44	42.7%	BOM
57	200%	1.80	117%	.60	35%	3.60	62.16	26.53	42.7%	BOM

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni1	Nic1	Nic/Ni	cls
58	110%	1.80	0%	.00	20%	3.60	34.08	14.50	42.6%	BOM
59	200%	1.80	0%	.00	35%	3.60	49.80	21.19	42.6%	BOM
60	110%	1.80	235%	.90	35%	3.60	58.90	24.93	42.3%	BOM
61	20%	1.80	117%	.60	10%	3.00	28.69	12.09	42.1%	BOM
62	20%	1.80	117%	.60	10%	3.60	28.69	11.59	40.4%	BOM
63	110%	1.80	117%	.90	35%	3.00	46.44	17.98	38.7%	BOM
64	20%	1.80	0%	.00	10%	3.00	16.34	6.26	38.3%	BOM
65	110%	1.80	117%	.90	35%	3.60	46.44	17.12	36.9%	BOM
66	20%	1.80	0%	.00	10%	3.60	16.34	5.96	36.5%	BOM
67	20%	1.80	117%	.90	20%	3.00	30.71	10.82	35.2%	BOM
68	110%	1.80	235%	.60	35%	3.00	58.90	20.64	35.1%	BOM
69	20%	1.80	117%	.90	20%	3.60	30.71	10.30	33.5%	BOM
70	110%	1.80	235%	.60	35%	3.60	58.90	19.66	33.4%	BOM
71	110%	1.80	117%	.60	35%	3.00	46.44	15.47	33.3%	BOM
72	20%	1.80	235%	.90	35%	3.00	43.17	14.03	32.5%	BOM
73	110%	1.80	117%	.60	35%	3.60	46.44	14.71	31.7%	BOM
74	110%	1.80	0%	.00	35%	3.00	34.08	10.77	31.6%	BOM
75	20%	1.80	235%	.60	20%	3.00	43.17	13.54	31.4%	BOM
76	20%	1.80	235%	.90	35%	3.60	43.17	13.35	30.9%	BOM
77	110%	1.80	0%	.00	35%	3.60	34.08	10.25	30.1%	BOM
78	20%	1.80	235%	.60	20%	3.60	43.17	12.90	29.9%	BOM
79	20%	1.80	117%	.60	20%	3.00	30.71	8.30	27.0%	BOM
80	20%	1.80	117%	.60	20%	3.60	30.71	7.90	25.7%	BOM
81	20%	1.80	117%	.90	35%	3.00	30.71	7.37	24.0%	BOM
82	20%	1.80	117%	.90	35%	3.60	30.71	7.02	22.9%	BOM
83	20%	1.80	235%	.60	35%	3.00	43.17	9.46	21.9%	BOM
84	20%	1.80	0%	.00	20%	3.00	18.36	3.91	21.3%	BOM
85	20%	1.80	235%	.60	35%	3.60	43.17	9.01	20.9%	BOM
86	20%	1.80	0%	.00	20%	3.60	18.36	3.73	20.3%	BOM
87	20%	1.80	117%	.60	35%	3.00	30.71	5.47	17.8%	BOM
88	20%	1.80	117%	.60	35%	3.60	30.71	5.23	17.0%	BOM
89	20%	1.80	0%	.00	35%	3.00	18.36	2.27	12.4%	BOM
90	20%	1.80	0%	.00	35%	3.60	18.36	2.18	11.9%	BOM
91	110%	.80	235%	.90	10%	3.00	56.88	30.02	52.8%	MB
92	110%	.80	235%	.90	10%	3.60	56.88	29.26	51.4%	MB
93	200%	.80	235%	.90	10%	3.00	72.60	36.89	50.8%	MB
94	200%	.80	235%	.90	10%	3.60	72.60	36.10	49.7%	MB
95	200%	.80	117%	.90	10%	3.00	60.14	26.77	44.5%	MB
96	200%	.80	117%	.90	10%	3.60	60.14	26.03	43.3%	MB
97	200%	.80	235%	.60	10%	3.00	72.60	30.16	41.5%	MB
98	200%	.80	235%	.60	10%	3.60	72.60	29.40	40.5%	MB
99	200%	.80	235%	.90	20%	3.00	74.62	30.17	40.4%	MB
100	200%	.80	235%	.90	20%	3.60	74.62	29.03	38.9%	MB
101	20%	.80	235%	.90	10%	3.00	41.16	23.20	56.4%	EXC
102	20%	.80	235%	.90	10%	3.60	41.16	22.50	54.7%	EXC
103	20%	.80	117%	.90	10%	3.00	28.69	13.42	46.8%	EXC
104	110%	.80	117%	.90	10%	3.00	44.42	20.00	45.0%	EXC
105	20%	.80	117%	.90	10%	3.60	28.69	12.89	44.9%	EXC
106	110%	.80	117%	.90	10%	3.60	44.42	19.34	43.5%	EXC
107	110%	.80	235%	.60	10%	3.00	56.88	23.34	41.0%	EXC
108	20%	.80	235%	.90	20%	3.00	43.17	17.62	40.8%	EXC
109	20%	.80	235%	.60	10%	3.00	41.16	16.65	40.4%	EXC
110	110%	.80	235%	.90	20%	3.00	58.90	23.76	40.3%	EXC
111	110%	.80	235%	.60	10%	3.60	56.88	22.63	39.8%	EXC
112	20%	.80	235%	.90	20%	3.60	43.17	16.82	39.0%	EXC
113	20%	.80	235%	.60	10%	3.60	41.16	16.04	39.0%	EXC
114	200%	.80	117%	.60	10%	3.00	60.14	23.45	39.0%	EXC
115	110%	.80	235%	.90	20%	3.60	58.90	22.77	38.7%	EXC
116	200%	.80	117%	.60	10%	3.60	60.14	22.75	37.8%	EXC
117	110%	.80	117%	.60	10%	3.00	44.42	16.76	37.7%	EXC
118	110%	.80	117%	.60	10%	3.60	44.42	16.15	36.4%	EXC
119	20%	.80	117%	.60	10%	3.00	28.69	10.35	36.1%	EXC
120	200%	.80	0%	.00	10%	3.00	47.79	16.92	35.4%	EXC
121	20%	.80	117%	.60	10%	3.60	28.69	9.91	34.5%	EXC

linha	af	Kfc	ah	Kh	aenv	KenV	Ni1	Nic1	Nic/Ni	cls
122	200%	.80	0%	.00	10%	3.60	47.79	16.31	34.1%	EXC
123	200%	.80	117%	.90	20%	3.00	62.16	20.80	33.5%	EXC
124	110%	.80	0%	.00	10%	3.00	32.06	10.51	32.8%	EXC
125	200%	.80	117%	.90	20%	3.60	62.16	19.90	32.0%	EXC
126	200%	.80	235%	.60	20%	3.00	74.62	23.89	32.0%	EXC
127	110%	.80	117%	.90	20%	3.00	46.44	14.83	31.9%	EXC
128	110%	.80	0%	.00	10%	3.60	32.06	10.05	31.4%	EXC
129	200%	.80	235%	.90	35%	3.00	74.62	23.14	31.0%	EXC
130	200%	.80	235%	.60	20%	3.60	74.62	22.90	30.7%	EXC
131	20%	.80	117%	.90	20%	3.00	30.71	9.36	30.5%	EXC
132	110%	.80	117%	.90	20%	3.60	46.44	14.14	30.5%	EXC
133	110%	.80	235%	.90	35%	3.00	58.90	17.71	30.1%	EXC
134	110%	.80	235%	.60	20%	3.00	58.90	17.74	30.1%	EXC
135	200%	.80	235%	.90	35%	3.60	74.62	22.05	29.5%	EXC
136	20%	.80	235%	.90	35%	3.00	43.17	12.68	29.4%	EXC
137	20%	.80	0%	.00	10%	3.00	16.34	4.77	29.2%	EXC
138	20%	.80	117%	.90	20%	3.60	30.71	8.91	29.0%	EXC
139	110%	.80	235%	.60	20%	3.60	58.90	16.94	28.8%	EXC
140	200%	.80	117%	.60	20%	3.00	62.16	17.84	28.7%	EXC
141	110%	.80	235%	.90	35%	3.60	58.90	16.85	28.6%	EXC
142	20%	.80	235%	.90	35%	3.60	43.17	12.07	28.0%	EXC
143	20%	.80	0%	.00	10%	3.60	16.34	4.54	27.8%	EXC
144	20%	.80	235%	.60	20%	3.00	43.17	12.00	27.8%	EXC
145	200%	.80	117%	.60	20%	3.60	62.16	17.04	27.4%	EXC
146	20%	.80	235%	.60	20%	3.60	43.17	11.42	26.5%	EXC
147	110%	.80	117%	.60	20%	3.00	46.44	12.09	26.0%	EXC
148	110%	.80	117%	.60	20%	3.60	46.44	11.51	24.8%	EXC
149	200%	.80	117%	.90	35%	3.00	62.16	15.26	24.6%	EXC
150	200%	.80	0%	.00	20%	3.00	49.80	12.22	24.5%	EXC
151	200%	.80	235%	.60	35%	3.00	74.62	17.82	23.9%	EXC
152	200%	.80	0%	.00	20%	3.60	49.80	11.64	23.4%	EXC
153	200%	.80	117%	.90	35%	3.60	62.16	14.52	23.4%	EXC
154	200%	.80	235%	.60	35%	3.60	74.62	16.95	22.7%	EXC
155	20%	.80	117%	.60	20%	3.00	30.71	6.95	22.6%	EXC
156	110%	.80	117%	.90	35%	3.00	46.44	10.47	22.5%	EXC
157	110%	.80	235%	.60	35%	3.00	58.90	12.78	21.7%	EXC
158	20%	.80	117%	.60	20%	3.60	30.71	6.62	21.5%	EXC
159	110%	.80	117%	.90	35%	3.60	46.44	9.97	21.5%	EXC
160	110%	.80	0%	.00	20%	3.00	34.08	7.07	20.7%	EXC
161	200%	.80	117%	.60	35%	3.00	62.16	12.86	20.7%	EXC
162	110%	.80	235%	.60	35%	3.60	58.90	12.16	20.6%	EXC
163	20%	.80	117%	.90	35%	3.00	30.71	6.26	20.4%	EXC
164	110%	.80	0%	.00	20%	3.60	34.08	6.73	19.7%	EXC
165	200%	.80	117%	.60	35%	3.60	62.16	12.24	19.7%	EXC
166	20%	.80	117%	.90	35%	3.60	30.71	5.98	19.5%	EXC
167	20%	.80	235%	.60	35%	3.00	43.17	8.27	19.2%	EXC
168	20%	.80	235%	.60	35%	3.60	43.17	7.88	18.3%	EXC
169	110%	.80	117%	.60	35%	3.00	46.44	8.34	18.0%	EXC
170	110%	.80	117%	.60	35%	3.60	46.44	7.95	17.1%	EXC
171	200%	.80	0%	.00	35%	3.00	49.80	8.44	17.0%	EXC
172	200%	.80	0%	.00	35%	3.60	49.80	8.05	16.2%	EXC
173	20%	.80	0%	.00	20%	3.00	18.36	2.86	15.6%	EXC
174	20%	.80	0%	.00	20%	3.60	18.36	2.73	14.9%	EXC
175	20%	.80	117%	.60	35%	3.00	30.71	4.47	14.6%	EXC
176	20%	.80	117%	.60	35%	3.60	30.71	4.28	13.9%	EXC
177	110%	.80	0%	.00	35%	3.00	34.08	4.56	13.4%	EXC
178	110%	.80	0%	.00	35%	3.60	34.08	4.37	12.8%	EXC
179	20%	.80	0%	.00	35%	3.00	18.36	1.52	8.3%	EXC
180	20%	.80	0%	.00	35%	3.60	18.36	1.47	8.0%	EXC

tabela 1.12

zona climática de inverno I1
com ganhos solares
soluções grupo 3

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni1	Nic1	Nic/Ni	cls
1	20%	.50	235%	.45	10%	2.60	41.16	12.57	30.6%	EXC
2	20%	.35	235%	.45	10%	2.60	41.16	12.31	29.9%	EXC
3	20%	.50	235%	.45	10%	2.20	41.16	12.22	29.7%	EXC
4	110%	.50	235%	.45	10%	2.60	56.88	16.62	29.2%	EXC
5	20%	.35	235%	.45	10%	2.20	41.16	11.96	29.1%	EXC
6	110%	.50	235%	.45	10%	2.20	56.88	16.26	28.6%	EXC
7	200%	.50	235%	.45	10%	2.60	72.60	20.79	28.6%	EXC
8	20%	.50	117%	.45	10%	2.60	28.69	8.05	28.1%	EXC
9	200%	.50	235%	.45	10%	2.20	72.60	20.41	28.1%	EXC
10	20%	.35	117%	.45	10%	2.60	28.69	7.81	27.2%	EXC
11	20%	.50	117%	.45	10%	2.20	28.69	7.73	26.9%	EXC
12	110%	.50	117%	.45	10%	2.60	44.42	11.86	26.7%	EXC
13	110%	.35	235%	.45	10%	2.60	56.88	15.12	26.6%	EXC
14	200%	.50	117%	.45	10%	2.60	60.14	15.89	26.4%	EXC
15	20%	.35	117%	.45	10%	2.20	28.69	7.49	26.1%	EXC
16	110%	.35	235%	.45	10%	2.20	56.88	14.76	26.0%	EXC
17	110%	.50	117%	.45	10%	2.20	44.42	11.51	25.9%	EXC
18	200%	.50	117%	.45	10%	2.20	60.14	15.52	25.8%	EXC
19	20%	.50	0%	.00	10%	2.60	16.34	4.07	24.9%	EXC
20	200%	.35	235%	.45	10%	2.60	72.60	18.00	24.8%	EXC
21	200%	.35	235%	.45	10%	2.20	72.60	17.63	24.3%	EXC
22	200%	.50	235%	.30	10%	2.60	72.60	17.52	24.1%	EXC
23	200%	.50	117%	.30	10%	2.60	60.14	14.30	23.8%	EXC
24	20%	.35	0%	.00	10%	2.60	16.34	3.86	23.6%	EXC
25	110%	.50	235%	.30	10%	2.60	56.88	13.44	23.6%	EXC
26	200%	.50	235%	.30	10%	2.20	72.60	17.15	23.6%	EXC
27	110%	.35	117%	.45	10%	2.60	44.42	10.44	23.5%	EXC
28	200%	.50	0%	.00	10%	2.60	47.79	11.20	23.4%	EXC
29	110%	.50	117%	.30	10%	2.60	44.42	10.35	23.3%	EXC
30	20%	.50	0%	.00	10%	2.20	16.34	3.80	23.2%	EXC
31	20%	.50	117%	.30	10%	2.60	28.69	6.65	23.2%	EXC
32	20%	.50	235%	.30	10%	2.60	41.16	9.53	23.2%	EXC
33	110%	.50	0%	.00	10%	2.60	32.06	7.44	23.2%	EXC
34	200%	.50	117%	.30	10%	2.20	60.14	13.94	23.2%	EXC
35	110%	.50	235%	.30	10%	2.20	56.88	13.08	23.0%	EXC
36	110%	.35	117%	.45	10%	2.20	44.42	10.09	22.7%	EXC
37	200%	.50	0%	.00	10%	2.20	47.79	10.85	22.7%	EXC
38	20%	.35	235%	.30	10%	2.60	41.16	9.28	22.5%	EXC
39	110%	.50	117%	.30	10%	2.20	44.42	10.00	22.5%	EXC
40	20%	.35	117%	.30	10%	2.60	28.69	6.42	22.4%	EXC
41	20%	.50	235%	.30	10%	2.20	41.16	9.20	22.3%	EXC
42	110%	.50	0%	.00	10%	2.20	32.06	7.12	22.2%	EXC
43	20%	.50	117%	.30	10%	2.20	28.69	6.34	22.1%	EXC
44	20%	.35	0%	.00	10%	2.20	16.34	3.60	22.0%	EXC
45	200%	.35	117%	.45	10%	2.60	60.14	13.19	21.9%	EXC
46	20%	.35	235%	.30	10%	2.20	41.16	8.95	21.7%	EXC
47	20%	.35	117%	.30	10%	2.20	28.69	6.11	21.3%	EXC
48	200%	.35	117%	.45	10%	2.20	60.14	12.83	21.3%	EXC
49	110%	.35	235%	.30	10%	2.60	56.88	11.98	21.1%	EXC
50	110%	.35	235%	.30	10%	2.20	56.88	11.63	20.5%	EXC
51	200%	.50	235%	.45	20%	2.60	74.62	15.19	20.4%	EXC
52	200%	.35	235%	.30	10%	2.60	72.60	14.78	20.4%	EXC
53	110%	.35	117%	.30	10%	2.60	44.42	8.95	20.2%	EXC
54	200%	.35	235%	.30	10%	2.20	72.60	14.42	19.9%	EXC
55	110%	.50	235%	.45	20%	2.60	58.90	11.67	19.8%	EXC
56	20%	.50	235%	.45	20%	2.60	43.17	8.41	19.5%	EXC
57	200%	.50	235%	.45	20%	2.20	74.62	14.55	19.5%	EXC

linha	af	Kfc	ah	Kh	aenv	KenV	Ni1	Nic1	Nic/Ni	cls
58	110%	.35	117%	.30	10%	2.20	44.42	8.62	19.4%	EXC
59	200%	.35	117%	.30	10%	2.60	60.14	11.64	19.4%	EXC
60	110%	.35	0%	.00	10%	2.60	32.06	6.14	19.2%	EXC
61	20%	.35	235%	.45	20%	2.60	43.17	8.20	19.0%	EXC
62	110%	.50	235%	.45	20%	2.20	58.90	11.07	18.8%	EXC
63	200%	.35	117%	.30	10%	2.20	60.14	11.29	18.8%	EXC
64	20%	.50	235%	.45	20%	2.20	43.17	7.86	18.2%	EXC
65	110%	.35	0%	.00	10%	2.20	32.06	5.84	18.2%	EXC
66	200%	.35	0%	.00	10%	2.60	47.79	8.66	18.1%	EXC
67	200%	.50	117%	.45	20%	2.60	62.16	11.07	17.8%	EXC
68	20%	.35	235%	.45	20%	2.20	43.17	7.66	17.7%	EXC
69	110%	.35	235%	.45	20%	2.60	58.90	10.44	17.7%	EXC
70	200%	.35	0%	.00	10%	2.20	47.79	8.33	17.4%	EXC
71	200%	.35	235%	.45	20%	2.60	74.62	12.82	17.2%	EXC
72	110%	.50	117%	.45	20%	2.60	46.44	7.85	16.9%	EXC
73	200%	.50	117%	.45	20%	2.20	62.16	10.47	16.8%	EXC
74	110%	.35	235%	.45	20%	2.20	58.90	9.86	16.7%	EXC
75	200%	.50	235%	.30	20%	2.60	74.62	12.42	16.6%	EXC
76	200%	.35	235%	.45	20%	2.20	74.62	12.21	16.4%	EXC
77	20%	.50	117%	.45	20%	2.60	30.71	4.98	16.2%	EXC
78	200%	.50	235%	.30	20%	2.20	74.62	11.81	15.8%	EXC
79	110%	.50	117%	.45	20%	2.20	46.44	7.31	15.7%	EXC
80	200%	.50	117%	.30	20%	2.60	62.16	9.78	15.7%	EXC
81	20%	.35	117%	.45	20%	2.60	30.71	4.80	15.6%	EXC
82	110%	.50	235%	.30	20%	2.60	58.90	9.09	15.4%	EXC
83	200%	.50	117%	.30	20%	2.20	62.16	9.20	14.8%	EXC
84	20%	.50	117%	.45	20%	2.20	30.71	4.51	14.7%	EXC
85	200%	.50	0%	.00	20%	2.60	49.80	7.34	14.7%	EXC
86	110%	.50	235%	.30	20%	2.20	58.90	8.53	14.5%	EXC
87	110%	.35	117%	.45	20%	2.60	46.44	6.75	14.5%	EXC
88	110%	.50	117%	.30	20%	2.60	46.44	6.68	14.4%	EXC
89	200%	.35	117%	.45	20%	2.60	62.16	8.89	14.3%	EXC
90	20%	.50	235%	.30	20%	2.60	43.17	6.07	14.1%	EXC
91	20%	.35	117%	.45	20%	2.20	30.71	4.34	14.1%	EXC
92	200%	.50	235%	.45	35%	2.60	74.62	10.37	13.9%	EXC
93	200%	.50	0%	.00	20%	2.20	49.80	6.81	13.7%	EXC
94	20%	.35	235%	.30	20%	2.60	43.17	5.88	13.6%	EXC
95	200%	.35	235%	.30	20%	2.60	74.62	10.17	13.6%	EXC
96	110%	.35	235%	.30	20%	2.60	58.90	7.94	13.5%	EXC
97	110%	.35	117%	.45	20%	2.20	46.44	6.24	13.4%	EXC
98	200%	.35	117%	.45	20%	2.20	62.16	8.33	13.4%	EXC
99	110%	.50	0%	.00	20%	2.60	34.08	4.53	13.3%	EXC
100	110%	.50	117%	.30	20%	2.20	46.44	6.17	13.3%	EXC
101	110%	.50	235%	.45	35%	2.60	58.90	7.67	13.0%	EXC
102	20%	.50	117%	.30	20%	2.60	30.71	3.97	12.9%	EXC
103	20%	.50	235%	.30	20%	2.20	43.17	5.57	12.9%	EXC
104	200%	.35	235%	.30	20%	2.20	74.62	9.59	12.9%	EXC
105	200%	.50	235%	.45	35%	2.20	74.62	9.51	12.7%	EXC
106	110%	.35	235%	.30	20%	2.20	58.90	7.40	12.6%	EXC
107	20%	.35	235%	.30	20%	2.20	43.17	5.39	12.5%	EXC
108	20%	.35	117%	.30	20%	2.60	30.71	3.80	12.4%	EXC
109	200%	.35	117%	.30	20%	2.60	62.16	7.68	12.4%	EXC
110	20%	.50	235%	.45	35%	2.60	43.17	5.24	12.1%	EXC
111	110%	.35	117%	.30	20%	2.60	46.44	5.64	12.1%	EXC
112	110%	.50	0%	.00	20%	2.20	34.08	4.07	12.0%	EXC
113	20%	.50	0%	.00	20%	2.60	18.36	2.18	11.9%	EXC
114	20%	.35	235%	.45	35%	2.60	43.17	5.09	11.8%	EXC
115	110%	.50	235%	.45	35%	2.20	58.90	6.89	11.7%	EXC
116	200%	.50	117%	.45	35%	2.60	62.16	7.22	11.6%	EXC
117	20%	.50	117%	.30	20%	2.20	30.71	3.53	11.5%	EXC
118	110%	.35	235%	.45	35%	2.60	58.90	6.75	11.5%	EXC
119	200%	.35	117%	.30	20%	2.20	62.16	7.14	11.5%	EXC
120	200%	.35	235%	.45	35%	2.60	74.62	8.55	11.5%	EXC
121	20%	.35	0%	.00	20%	2.60	18.36	2.05	11.2%	EXC
122	110%	.35	117%	.30	20%	2.20	46.44	5.15	11.1%	EXC
123	20%	.35	117%	.30	20%	2.20	30.71	3.37	11.0%	EXC

Linha	af	Kfc	ah	Kh	aenv	KenV	Ni1	Nic1	Nic/Ni	cls
124	200%	.50	235%	.30	35%	2.60	74.62	8.24	11.0%	EXC
125	200%	.35	0%	.00	20%	2.60	49.80	5.42	10.9%	EXC
126	110%	.35	0%	.00	20%	2.60	34.08	3.61	10.6%	EXC
127	20%	.50	235%	.45	35%	2.20	43.17	4.55	10.5%	EXC
128	110%	.50	117%	.45	35%	2.60	46.44	4.84	10.4%	EXC
129	200%	.50	117%	.45	35%	2.20	62.16	6.45	10.4%	EXC
130	200%	.35	235%	.45	35%	2.20	74.62	7.73	10.4%	EXC
131	20%	.35	235%	.45	35%	2.20	43.17	4.40	10.2%	EXC
132	110%	.35	235%	.45	35%	2.20	58.90	6.00	10.2%	EXC
133	200%	.50	117%	.30	35%	2.60	62.16	6.25	10.1%	EXC
134	200%	.50	235%	.30	35%	2.20	74.62	7.43	10.0%	EXC
135	20%	.50	0%	.00	20%	2.20	18.36	1.83	9.9%	EXC
136	200%	.35	0%	.00	20%	2.20	49.80	4.94	9.9%	EXC
137	110%	.50	235%	.30	35%	2.60	58.90	5.75	9.8%	EXC
138	110%	.35	0%	.00	20%	2.20	34.08	3.19	9.3%	EXC
139	20%	.35	0%	.00	20%	2.20	18.36	1.70	9.2%	EXC
140	20%	.50	117%	.45	35%	2.60	30.71	2.78	9.1%	EXC
141	110%	.50	117%	.45	35%	2.20	46.44	4.16	9.0%	EXC
142	200%	.50	0%	.00	35%	2.60	49.80	4.46	9.0%	EXC
143	200%	.35	117%	.45	35%	2.60	62.16	5.60	9.0%	EXC
144	200%	.50	117%	.30	35%	2.20	62.16	5.52	8.9%	EXC
145	200%	.35	235%	.30	35%	2.60	74.62	6.55	8.8%	EXC
146	20%	.35	117%	.45	35%	2.60	30.71	2.66	8.7%	EXC
147	110%	.35	117%	.45	35%	2.60	46.44	4.04	8.7%	EXC
148	110%	.50	117%	.30	35%	2.60	46.44	4.00	8.6%	EXC
149	110%	.50	235%	.30	35%	2.20	58.90	5.03	8.5%	EXC
150	110%	.35	235%	.30	35%	2.60	58.90	4.91	8.3%	EXC
151	20%	.50	235%	.30	35%	2.60	43.17	3.56	8.2%	EXC
152	20%	.35	235%	.30	35%	2.60	43.17	3.42	7.9%	EXC
153	200%	.35	117%	.45	35%	2.20	62.16	4.89	7.9%	EXC
154	200%	.35	235%	.30	35%	2.20	74.62	5.80	7.8%	EXC
155	200%	.50	0%	.00	35%	2.20	49.80	3.81	7.6%	EXC
156	200%	.35	117%	.30	35%	2.60	62.16	4.71	7.6%	EXC
157	110%	.35	117%	.45	35%	2.20	46.44	3.41	7.3%	EXC
158	20%	.50	117%	.45	35%	2.20	30.71	2.22	7.2%	EXC
159	110%	.50	0%	.00	35%	2.60	34.08	2.47	7.2%	EXC
160	110%	.50	117%	.30	35%	2.20	46.44	3.36	7.2%	EXC
161	110%	.35	235%	.30	35%	2.20	58.90	4.23	7.2%	EXC
162	110%	.35	117%	.30	35%	2.60	46.44	3.25	7.0%	EXC
163	20%	.50	117%	.30	35%	2.60	30.71	2.08	6.8%	EXC
164	20%	.50	235%	.30	35%	2.20	43.17	2.94	6.8%	EXC
165	20%	.35	117%	.45	35%	2.20	30.71	2.10	6.8%	EXC
166	20%	.35	235%	.30	35%	2.20	43.17	2.82	6.5%	EXC
167	200%	.35	117%	.30	35%	2.20	62.16	4.04	6.5%	EXC
168	20%	.35	117%	.30	35%	2.60	30.71	1.96	6.4%	EXC
169	200%	.35	0%	.00	35%	2.60	49.80	3.09	6.2%	EXC
170	110%	.35	117%	.30	35%	2.20	46.44	2.66	5.7%	EXC
171	110%	.50	0%	.00	35%	2.20	34.08	1.92	5.6%	EXC
172	110%	.35	0%	.00	35%	2.60	34.08	1.83	5.4%	EXC
173	20%	.50	117%	.30	35%	2.20	30.71	1.56	5.1%	EXC
174	200%	.35	0%	.00	35%	2.20	49.80	2.51	5.0%	EXC
175	20%	.35	117%	.30	35%	2.20	30.71	1.45	4.7%	EXC
176	20%	.50	0%	.00	35%	2.60	18.36	.85	4.6%	EXC
177	20%	.35	0%	.00	35%	2.60	18.36	.76	4.1%	EXC
178	110%	.35	0%	.00	35%	2.20	34.08	1.33	3.9%	EXC
179	20%	.50	0%	.00	35%	2.20	18.36	.44	2.4%	EXC
180	20%	.35	0%	.00	35%	2.20	18.36	.36	1.9%	EXC

tabela 1.13

zona climática de inverno I2
com ganhos solares
soluções grupo 1

linha	af	Kfc	ah	Kh	aenv	KenV	Ni2	Nic2	Nic/Ni	cls
1	200%	2.40	0%	.00	10%	4.80	85.59	104.13	121.7%	INS
2	200%	2.40	117%	1.00	10%	4.80	104.69	126.59	120.9%	INS
3	200%	2.40	235%	1.00	10%	4.80	123.95	149.25	120.4%	INS
4	200%	2.40	0%	.00	10%	4.20	85.59	102.98	120.3%	INS
5	200%	2.40	117%	1.00	10%	4.20	104.69	125.44	119.8%	INS
6	200%	2.40	235%	1.00	10%	4.20	123.95	148.09	119.5%	INS
7	200%	2.40	117%	.85	10%	4.80	104.69	123.22	117.7%	INS
8	200%	2.40	117%	.85	10%	4.20	104.69	122.07	116.6%	INS
9	200%	2.40	235%	.85	10%	4.80	123.95	142.48	115.0%	INS
10	200%	2.40	235%	.85	10%	4.20	123.95	141.33	114.0%	INS
11	200%	2.40	235%	1.00	20%	4.80	127.98	143.60	112.2%	INS
12	200%	2.40	117%	1.00	20%	4.80	108.72	120.97	111.3%	INS
13	110%	2.40	235%	1.00	10%	4.80	96.99	107.77	111.1%	INS
14	200%	2.40	235%	1.00	20%	4.20	127.98	141.30	110.4%	INS
15	200%	2.40	0%	.00	20%	4.80	89.63	98.58	110.0%	INS
16	110%	2.40	235%	1.00	10%	4.20	96.99	106.62	109.9%	INS
17	110%	2.40	117%	1.00	10%	4.80	77.73	85.12	109.5%	INS
18	200%	2.40	117%	1.00	20%	4.20	108.72	118.67	109.2%	INS
19	200%	2.40	117%	.85	20%	4.80	108.72	117.61	108.2%	INS
20	110%	2.40	117%	1.00	10%	4.20	77.73	83.97	108.0%	INS
21	200%	2.40	0%	.00	20%	4.20	89.63	96.28	107.4%	INS
22	110%	2.40	0%	.00	10%	4.80	58.64	62.67	106.9%	INS
23	200%	2.40	235%	.85	20%	4.80	127.98	136.84	106.9%	INS
24	200%	2.40	117%	.85	20%	4.20	108.72	115.31	106.1%	INS
25	200%	2.40	235%	1.00	35%	4.80	127.98	135.59	105.9%	INS
26	110%	2.40	117%	.85	10%	4.80	77.73	81.75	105.2%	INS
27	200%	2.40	235%	.85	20%	4.20	127.98	134.54	105.1%	INS
28	110%	2.40	0%	.00	10%	4.20	58.64	61.52	104.9%	INS
29	200%	2.40	117%	1.00	35%	4.80	108.72	113.30	104.2%	INS
30	110%	2.40	235%	.85	10%	4.80	96.99	101.01	104.1%	INS
31	110%	2.40	117%	.85	10%	4.20	77.73	80.60	103.7%	INS
32	110%	2.40	235%	.85	10%	4.20	96.99	99.86	103.0%	INS
33	200%	2.40	235%	1.00	35%	4.20	127.98	131.60	102.8%	INS
34	200%	2.40	0%	.00	35%	4.80	89.63	91.48	102.1%	INS
35	200%	1.80	235%	1.00	10%	4.80	123.95	126.21	101.8%	INS
36	110%	2.40	235%	1.00	20%	4.80	101.02	102.21	101.2%	INS
37	200%	2.40	117%	.85	35%	4.80	108.72	110.00	101.2%	INS
38	200%	1.80	235%	1.00	10%	4.20	123.95	125.05	100.9%	INS
39	200%	2.40	235%	.85	35%	4.80	127.98	128.91	100.7%	INS
40	200%	2.40	117%	1.00	35%	4.20	108.72	109.36	100.6%	INS
41	110%	2.40	235%	1.00	20%	4.20	101.02	99.92	98.9%	SUF
42	200%	1.80	117%	1.00	10%	4.80	104.69	103.55	98.9%	SUF
43	110%	1.80	235%	1.00	10%	4.80	96.99	95.10	98.1%	SUF
44	200%	1.80	117%	1.00	10%	4.20	104.69	102.40	97.8%	SUF
45	200%	2.40	0%	.00	35%	4.20	89.63	87.61	97.7%	SUF
46	200%	2.40	117%	.85	35%	4.20	108.72	106.07	97.6%	SUF
47	200%	2.40	235%	.85	35%	4.20	127.98	124.94	97.6%	SUF
48	110%	2.40	117%	1.00	20%	4.80	81.76	79.71	97.5%	SUF
49	110%	1.80	235%	1.00	10%	4.20	96.99	93.95	96.9%	SUF
50	200%	1.80	235%	.85	10%	4.80	123.95	119.44	96.4%	SUF
51	200%	1.80	117%	.85	10%	4.80	104.69	100.18	95.7%	SUF
52	200%	1.80	235%	.85	10%	4.20	123.95	118.29	95.4%	SUF
53	200%	1.80	117%	.85	10%	4.20	104.69	99.03	94.6%	SUF
54	110%	2.40	235%	.85	20%	4.80	101.02	95.47	94.5%	SUF
55	200%	1.80	235%	1.00	20%	4.80	127.98	120.59	94.2%	SUF
56	110%	2.40	235%	1.00	35%	4.80	101.02	95.00	94.0%	SUF

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni2	Nic2	Nic/Ni	cls
57	200%	1.80	235%	1.00	20%	4.20	127.98	118.29	92.4%	SUF
58	110%	2.40	235%	.85	20%	4.20	101.02	93.18	92.2%	SUF
59	110%	2.40	235%	1.00	35%	4.20	101.02	91.11	90.2%	SUF
60	200%	1.80	117%	1.00	20%	4.80	108.72	98.00	90.1%	SUF
61	200%	1.80	235%	.85	20%	4.80	127.98	113.84	88.9%	SUF
62	200%	1.80	235%	1.00	35%	4.80	127.98	112.92	88.2%	SUF
63	200%	1.80	117%	1.00	20%	4.20	108.72	95.71	88.0%	SUF
64	200%	1.80	235%	.85	20%	4.20	127.98	111.54	87.2%	SUF
65	200%	1.80	117%	.85	20%	4.80	108.72	94.65	87.1%	SUF
66	200%	1.80	235%	1.00	35%	4.20	127.98	108.98	85.2%	SUF
67	200%	1.80	117%	.85	20%	4.20	108.72	92.36	85.0%	SUF
68	200%	1.80	117%	1.00	35%	4.80	108.72	90.93	83.6%	SUF
69	200%	1.80	235%	.85	35%	4.80	127.98	106.31	83.1%	SUF
70	200%	1.80	235%	.85	35%	4.20	127.98	102.39	80.0%	SUF
71	20%	2.40	235%	1.00	10%	4.80	70.03	66.31	94.7%	BOM
72	110%	2.40	117%	1.00	20%	4.20	81.76	77.43	94.7%	BOM
73	200%	1.80	0%	.00	10%	4.80	85.59	81.09	94.7%	BOM
74	110%	2.40	117%	.85	20%	4.80	81.76	76.38	93.4%	BOM
75	200%	1.80	0%	.00	10%	4.20	85.59	79.94	93.4%	BOM
76	110%	1.80	117%	1.00	10%	4.80	77.73	72.45	93.2%	BOM
77	20%	2.40	235%	1.00	10%	4.20	70.03	65.16	93.0%	BOM
78	110%	2.40	0%	.00	20%	4.80	62.67	57.67	92.0%	BOM
79	110%	1.80	117%	1.00	10%	4.20	77.73	71.30	91.7%	BOM
80	20%	1.80	235%	1.00	10%	4.80	70.03	64.01	91.4%	BOM
81	110%	1.80	235%	.85	10%	4.80	96.99	88.34	91.1%	BOM
82	110%	2.40	117%	.85	20%	4.20	81.76	74.11	90.6%	BOM
83	110%	1.80	235%	.85	10%	4.20	96.99	87.18	89.9%	BOM
84	20%	1.80	235%	1.00	10%	4.20	70.03	62.86	89.8%	BOM
85	110%	2.40	117%	1.00	35%	4.80	81.76	73.38	89.8%	BOM
86	110%	1.80	117%	.85	10%	4.80	77.73	69.09	88.9%	BOM
87	110%	1.80	235%	1.00	20%	4.80	101.02	89.61	88.7%	BOM
88	110%	2.40	0%	.00	20%	4.20	62.67	55.43	88.5%	BOM
89	110%	2.40	235%	.85	35%	4.80	101.02	88.48	87.6%	BOM
90	110%	1.80	117%	.85	10%	4.20	77.73	67.94	87.4%	BOM
91	110%	1.80	235%	1.00	20%	4.20	101.02	87.32	86.4%	BOM
92	20%	2.40	117%	1.00	10%	4.80	50.77	43.74	86.1%	BOM
93	110%	2.40	117%	.85	35%	4.80	81.76	70.22	85.9%	BOM
94	110%	1.80	0%	.00	10%	4.80	58.64	50.03	85.3%	BOM
95	110%	2.40	117%	1.00	35%	4.20	81.76	69.61	85.1%	BOM
96	20%	2.40	235%	.85	10%	4.80	70.03	59.56	85.0%	BOM
97	200%	1.80	0%	.00	20%	4.80	89.63	75.73	84.5%	BOM
98	110%	2.40	0%	.00	35%	4.80	62.67	52.73	84.1%	BOM
99	20%	2.40	117%	1.00	10%	4.20	50.77	42.59	83.9%	BOM
100	110%	2.40	235%	.85	35%	4.20	101.02	84.62	83.8%	BOM
101	20%	2.40	235%	.85	10%	4.20	70.03	58.41	83.4%	BOM
102	110%	1.80	0%	.00	10%	4.20	58.64	48.89	83.4%	BOM
103	20%	2.40	235%	1.00	20%	4.80	74.06	61.22	82.7%	BOM
104	110%	1.80	117%	1.00	20%	4.80	81.76	67.23	82.2%	BOM
105	110%	1.80	235%	.85	20%	4.80	101.02	82.89	82.1%	BOM
106	110%	1.80	235%	1.00	35%	4.80	101.02	82.83	82.0%	BOM
107	200%	1.80	0%	.00	20%	4.20	89.63	73.46	82.0%	BOM
108	20%	1.80	235%	.85	10%	4.80	70.03	57.26	81.8%	BOM
109	20%	1.80	117%	1.00	10%	4.80	50.77	41.45	81.6%	BOM
110	110%	2.40	117%	.85	35%	4.20	81.76	66.47	81.3%	BOM
111	200%	1.80	117%	.85	35%	4.80	108.72	87.69	80.7%	BOM
112	20%	1.80	235%	.85	10%	4.20	70.03	56.11	80.1%	BOM
113	200%	1.80	117%	1.00	35%	4.20	108.72	87.05	80.1%	BOM
114	110%	1.80	235%	.85	20%	4.20	101.02	80.61	79.8%	BOM
115	20%	2.40	117%	.85	10%	4.80	50.77	40.40	79.6%	BOM
116	20%	2.40	235%	1.00	20%	4.20	74.06	58.97	79.6%	BOM
117	20%	1.80	235%	1.00	20%	4.80	74.06	58.97	79.6%	BOM
118	110%	1.80	117%	1.00	20%	4.20	81.76	64.97	79.5%	BOM
119	20%	1.80	117%	1.00	10%	4.20	50.77	40.31	79.4%	BOM
120	110%	2.40	0%	.00	35%	4.20	62.67	49.15	78.4%	BOM
121	110%	1.80	117%	.85	20%	4.80	81.76	63.93	78.2%	BOM

linha	af	Kfc	ah	Kh	aenv	KenV	Ni2	Nic2	Nic/Ni	cls
122	110%	1.80	235%	1.00	35%	4.20	101.02	79.00	78.2%	BOM
123	200%	1.80	0%	.00	35%	4.80	89.63	69.61	77.7%	BOM
124	20%	2.40	117%	.85	10%	4.20	50.77	39.26	77.3%	BOM
125	200%	1.80	117%	.85	35%	4.20	108.72	83.83	77.1%	BOM
126	20%	1.80	235%	1.00	20%	4.20	74.06	56.74	76.6%	BOM
127	20%	2.40	235%	1.00	35%	4.80	74.06	56.01	75.6%	BOM
128	110%	1.80	235%	.85	35%	4.80	101.02	76.41	75.6%	BOM
129	110%	1.80	117%	.85	20%	4.20	81.76	61.68	75.4%	BOM
130	110%	1.80	117%	1.00	35%	4.80	81.76	61.61	75.3%	BOM
131	20%	1.80	117%	.85	10%	4.80	50.77	38.12	75.1%	BOM
132	20%	2.40	235%	.85	20%	4.80	74.06	54.65	73.8%	BOM
133	200%	1.80	0%	.00	35%	4.20	89.63	65.86	73.5%	BOM
134	20%	1.80	117%	.85	10%	4.20	50.77	36.98	72.8%	BOM
135	20%	1.80	235%	1.00	35%	4.80	74.06	53.94	72.8%	BOM
136	110%	1.80	0%	.00	20%	4.80	62.67	45.49	72.6%	BOM
137	20%	2.40	117%	1.00	20%	4.80	54.81	39.53	72.1%	BOM
138	110%	1.80	235%	.85	35%	4.20	101.02	72.62	71.9%	BOM
139	110%	1.80	117%	.85	35%	4.80	81.76	58.53	71.6%	BOM
140	20%	2.40	235%	.85	20%	4.20	74.06	52.42	70.8%	BOM
141	20%	1.80	235%	.85	20%	4.80	74.06	52.42	70.8%	BOM
142	110%	1.80	117%	1.00	35%	4.20	81.76	57.93	70.8%	BOM
143	20%	2.40	235%	1.00	35%	4.20	74.06	52.39	70.7%	BOM
144	110%	1.80	0%	.00	20%	4.20	62.67	43.31	69.1%	BOM
145	20%	2.40	0%	.00	10%	4.80	31.68	21.82	68.9%	BOM
146	20%	2.40	117%	1.00	20%	4.20	54.81	37.39	68.2%	BOM
147	20%	1.80	117%	1.00	20%	4.80	54.81	37.39	68.2%	BOM
148	20%	1.80	235%	1.00	35%	4.20	74.06	50.34	68.0%	BOM
149	20%	1.80	235%	.85	20%	4.20	74.06	50.21	67.8%	BOM
150	20%	2.40	235%	.85	35%	4.80	74.06	49.96	67.4%	BOM
151	110%	1.80	117%	.85	35%	4.20	81.76	54.88	67.1%	BOM
152	20%	2.40	117%	.85	20%	4.80	54.81	36.40	66.4%	BOM
153	110%	1.80	0%	.00	35%	4.80	62.67	41.63	66.4%	BOM
154	20%	2.40	117%	1.00	35%	4.80	54.81	36.29	66.2%	BOM
155	20%	2.40	0%	.00	10%	4.20	31.68	20.73	65.5%	BOM
156	20%	1.80	235%	.85	35%	4.80	74.06	47.92	64.7%	BOM
157	20%	1.80	117%	1.00	20%	4.20	54.81	35.27	64.3%	BOM
158	20%	2.40	235%	.85	35%	4.20	74.06	46.41	62.7%	BOM
159	20%	1.80	117%	1.00	35%	4.80	54.81	34.39	62.7%	BOM
160	20%	2.40	117%	.85	20%	4.20	54.81	34.29	62.6%	BOM
161	20%	1.80	117%	.85	20%	4.80	54.81	34.29	62.6%	BOM
162	20%	1.80	0%	.00	10%	4.80	31.68	19.66	62.0%	BOM
163	20%	2.40	117%	.85	35%	4.80	54.81	33.52	61.2%	BOM
164	110%	1.80	0%	.00	35%	4.20	62.67	38.22	61.0%	BOM
165	20%	2.40	117%	1.00	35%	4.20	54.81	32.98	60.2%	BOM
166	20%	1.80	235%	.85	35%	4.20	74.06	44.40	60.0%	BOM
167	20%	1.80	0%	.00	10%	4.20	31.68	18.59	58.7%	BOM
168	20%	1.80	117%	.85	20%	4.20	54.81	32.19	58.7%	BOM
169	20%	1.80	117%	.85	35%	4.80	54.81	31.65	57.8%	BOM
170	20%	1.80	117%	1.00	35%	4.20	54.81	31.12	56.8%	BOM
171	20%	2.40	117%	.85	35%	4.20	54.81	30.27	55.2%	BOM
172	20%	2.40	0%	.00	20%	4.80	35.71	19.64	55.0%	BOM
173	20%	2.40	0%	.00	35%	4.80	35.71	18.94	53.0%	BOM
174	20%	1.80	117%	.85	35%	4.20	54.81	28.45	51.9%	BOM
175	20%	2.40	0%	.00	20%	4.20	35.71	17.77	49.8%	BOM
176	20%	1.80	0%	.00	20%	4.80	35.71	17.77	49.8%	BOM
177	20%	1.80	0%	.00	35%	4.80	35.71	17.34	48.6%	BOM
178	20%	2.40	0%	.00	35%	4.20	35.71	16.17	45.3%	BOM
179	20%	1.80	0%	.00	20%	4.20	35.71	15.95	44.7%	BOM
180	20%	1.80	0%	.00	35%	4.20	35.71	14.64	41.0%	BOM

tabela 1.14

zona climática de inverno I2
com ganhos solares
soluções grupo 2

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni2	Nic2	Nic/Ni	cls
1	200%	1.42	235%	.75	10%	3.60	123.95	98.03	79.1%	SUF
2	200%	1.42	235%	.75	10%	3.00	123.95	98.63	79.6%	SUF
3	200%	1.42	235%	.75	20%	3.60	127.98	90.23	70.5%	SUF
4	200%	1.42	235%	.75	20%	3.00	127.98	91.34	71.4%	SUF
5	20%	1.42	0%	.00	10%	3.60	31.68	16.20	51.1%	BOM
6	20%	1.42	0%	.00	10%	3.00	31.68	16.47	52.0%	BOM
7	20%	1.42	0%	.00	20%	3.60	35.71	13.08	36.6%	BOM
8	20%	1.42	0%	.00	20%	3.00	35.71	13.08	36.6%	BOM
9	20%	1.42	0%	.00	35%	3.60	35.71	11.20	31.4%	BOM
10	20%	1.42	0%	.00	35%	3.00	35.71	10.81	30.3%	BOM
11	20%	1.42	117%	.75	10%	3.60	50.77	32.21	63.4%	BOM
12	20%	1.42	117%	.75	10%	3.00	50.77	32.70	64.4%	BOM
13	20%	1.42	117%	.75	20%	3.60	54.81	26.84	49.0%	BOM
14	20%	1.42	117%	.75	20%	3.00	54.81	27.25	49.7%	BOM
15	20%	1.42	117%	.75	35%	3.60	54.81	22.56	41.2%	BOM
16	20%	1.42	117%	.75	35%	3.00	54.81	22.54	41.1%	BOM
17	20%	1.42	117%	.50	10%	3.60	50.77	26.75	52.7%	BOM
18	20%	1.42	117%	.50	10%	3.00	50.77	27.19	53.6%	BOM
19	20%	1.42	117%	.50	20%	3.60	54.81	22.02	40.2%	BOM
20	20%	1.42	117%	.50	20%	3.00	54.81	22.29	40.7%	BOM
21	20%	1.42	117%	.50	35%	3.60	54.81	18.52	33.8%	BOM
22	20%	1.42	117%	.50	35%	3.00	54.81	18.37	33.5%	BOM
23	20%	1.42	235%	.75	10%	3.60	70.03	49.01	70.0%	BOM
24	20%	1.42	235%	.75	10%	3.00	70.03	49.58	70.8%	BOM
25	20%	1.42	235%	.75	20%	3.60	74.06	42.34	57.2%	BOM
26	20%	1.42	235%	.75	20%	3.00	74.06	43.07	58.2%	BOM
27	20%	1.42	235%	.75	35%	3.60	74.06	35.92	48.5%	BOM
28	20%	1.42	235%	.75	35%	3.00	74.06	36.33	49.0%	BOM
29	20%	1.42	235%	.50	10%	3.60	70.03	37.83	54.0%	BOM
30	20%	1.42	235%	.50	10%	3.00	70.03	38.35	54.8%	BOM
31	20%	1.42	235%	.50	20%	3.60	74.06	31.93	43.1%	BOM
32	20%	1.42	235%	.50	20%	3.00	74.06	32.46	43.8%	BOM
33	20%	1.42	235%	.50	35%	3.60	74.06	26.87	36.3%	BOM
34	20%	1.42	235%	.50	35%	3.00	74.06	27.00	36.5%	BOM
35	20%	.80	0%	.00	10%	3.60	31.68	14.07	44.4%	BOM
36	20%	.80	0%	.00	20%	3.60	35.71	11.35	31.8%	BOM
37	20%	.80	0%	.00	35%	3.60	35.71	9.80	27.4%	BOM
38	20%	.80	117%	.75	10%	3.60	50.77	29.89	58.9%	BOM
39	20%	.80	117%	.75	20%	3.60	54.81	24.77	45.2%	BOM
40	20%	.80	117%	.75	35%	3.60	54.81	20.82	38.0%	BOM
41	20%	.80	117%	.50	10%	3.60	50.77	24.47	48.2%	BOM
42	20%	.80	117%	.50	20%	3.60	54.81	20.03	36.6%	BOM
43	20%	.80	117%	.50	35%	3.60	54.81	16.88	30.8%	BOM
44	20%	.80	235%	.75	10%	3.60	70.03	46.64	66.6%	BOM
45	20%	.80	235%	.75	20%	3.60	74.06	40.11	54.2%	BOM
46	20%	.80	235%	.75	35%	3.60	74.06	33.96	45.8%	BOM
47	20%	.80	235%	.50	10%	3.60	70.03	35.48	50.7%	BOM
48	20%	.80	235%	.50	20%	3.60	74.06	29.79	40.2%	BOM
49	20%	.80	235%	.50	35%	3.60	74.06	25.05	33.8%	BOM
50	110%	1.42	0%	.00	10%	3.60	58.64	39.78	67.8%	BOM
51	110%	1.42	0%	.00	10%	3.00	58.64	40.32	68.8%	BOM
52	110%	1.42	0%	.00	20%	3.60	62.67	33.72	53.8%	BOM
53	110%	1.42	0%	.00	20%	3.00	62.67	34.29	54.7%	BOM
54	110%	1.42	0%	.00	35%	3.60	62.67	28.41	45.3%	BOM
55	110%	1.42	0%	.00	35%	3.00	62.67	28.59	45.6%	BOM
56	110%	1.42	117%	.75	10%	3.60	77.73	56.53	72.7%	BOM

linha	af	Kfc	ah	Kh	aenv	KenV	Ni2	Nic2	Nic/Ni	cls
57	110%	1.42	117%	.75	10%	3.00	77.73	57.11	73.5%	BOM
58	110%	1.42	117%	.75	20%	3.60	81.76	49.51	60.6%	BOM
59	110%	1.42	117%	.75	20%	3.00	81.76	50.34	61.6%	BOM
60	110%	1.42	117%	.75	35%	3.60	81.76	42.28	51.7%	BOM
61	110%	1.42	117%	.75	35%	3.00	81.76	42.88	52.4%	BOM
62	110%	1.42	117%	.50	10%	3.60	77.73	50.93	65.5%	BOM
63	110%	1.42	117%	.50	10%	3.00	77.73	51.50	66.3%	BOM
64	110%	1.42	117%	.50	20%	3.60	81.76	44.16	54.0%	BOM
65	110%	1.42	117%	.50	20%	3.00	81.76	44.92	54.9%	BOM
66	110%	1.42	117%	.50	35%	3.60	81.76	37.52	45.9%	BOM
67	110%	1.42	117%	.50	35%	3.00	81.76	37.98	46.5%	BOM
68	110%	1.42	235%	.75	10%	3.60	96.99	73.50	75.8%	BOM
69	110%	1.42	235%	.75	10%	3.00	96.99	74.09	76.4%	BOM
70	110%	1.42	235%	.75	20%	3.60	101.02	65.99	65.3%	BOM
71	110%	1.42	235%	.75	20%	3.00	101.02	66.99	66.3%	BOM
72	110%	1.42	235%	.75	35%	3.60	101.02	57.31	56.7%	BOM
73	110%	1.42	235%	.75	35%	3.00	101.02	58.27	57.7%	BOM
74	110%	1.42	235%	.50	10%	3.60	96.99	62.23	64.2%	BOM
75	110%	1.42	235%	.50	10%	3.00	96.99	62.82	64.8%	BOM
76	110%	1.42	235%	.50	20%	3.60	101.02	55.01	54.5%	BOM
77	110%	1.42	235%	.50	20%	3.00	101.02	55.91	55.3%	BOM
78	110%	1.42	235%	.50	35%	3.60	101.02	47.24	46.8%	BOM
79	110%	1.42	235%	.50	35%	3.00	101.02	47.96	47.5%	BOM
80	110%	.80	0%	.00	10%	3.60	58.64	26.96	46.0%	BOM
81	110%	.80	0%	.00	20%	3.60	62.67	22.19	35.4%	BOM
82	110%	.80	0%	.00	35%	3.60	62.67	18.67	29.8%	BOM
83	110%	.80	117%	.75	10%	3.60	77.73	43.50	56.0%	BOM
84	110%	.80	117%	.75	20%	3.60	81.76	37.17	45.5%	BOM
85	110%	.80	117%	.75	35%	3.60	81.76	31.39	38.4%	BOM
86	110%	.80	117%	.50	10%	3.60	77.73	37.94	48.8%	BOM
87	110%	.80	117%	.50	20%	3.60	81.76	32.03	39.2%	BOM
88	110%	.80	117%	.50	35%	3.60	81.76	26.96	33.0%	BOM
89	110%	.80	235%	.75	10%	3.60	96.99	60.42	62.3%	BOM
90	110%	.80	235%	.75	10%	3.00	96.99	61.01	62.9%	BOM
91	110%	.80	235%	.75	20%	3.60	101.02	53.26	52.7%	BOM
92	110%	.80	235%	.75	35%	3.60	101.02	45.65	45.2%	BOM
93	110%	.80	235%	.50	10%	3.60	96.99	49.17	50.7%	BOM
94	110%	.80	235%	.50	20%	3.60	101.02	42.50	42.1%	BOM
95	110%	.80	235%	.50	35%	3.60	101.02	36.05	35.7%	BOM
96	200%	1.42	0%	.00	10%	3.60	85.59	64.21	75.0%	BOM
97	200%	1.42	0%	.00	10%	3.00	85.59	64.79	75.7%	BOM
98	200%	1.42	0%	.00	20%	3.60	89.63	56.92	63.5%	BOM
99	200%	1.42	0%	.00	20%	3.00	89.63	57.84	64.5%	BOM
100	200%	1.42	0%	.00	35%	3.60	89.63	48.98	54.6%	BOM
101	200%	1.42	0%	.00	35%	3.00	89.63	49.75	55.5%	BOM
102	200%	1.42	117%	.75	10%	3.60	104.69	81.04	77.4%	BOM
103	200%	1.42	117%	.75	10%	3.00	104.69	81.64	78.0%	BOM
104	200%	1.42	117%	.75	20%	3.60	108.72	73.41	67.5%	BOM
105	200%	1.42	117%	.75	20%	3.00	108.72	74.45	68.5%	BOM
106	200%	1.42	117%	.75	35%	3.60	108.72	64.21	59.1%	BOM
107	200%	1.42	117%	.75	35%	3.00	108.72	65.32	60.1%	BOM
108	200%	1.42	117%	.50	10%	3.60	104.69	75.43	72.1%	BOM
109	200%	1.42	117%	.50	10%	3.00	104.69	76.02	72.6%	BOM
110	200%	1.42	117%	.50	20%	3.60	108.72	67.88	62.4%	BOM
111	200%	1.42	117%	.50	20%	3.00	108.72	68.89	63.4%	BOM
112	200%	1.42	117%	.50	35%	3.60	108.72	59.06	54.3%	BOM
113	200%	1.42	117%	.50	35%	3.00	108.72	60.06	55.2%	BOM
114	200%	1.42	235%	.75	35%	3.60	127.98	80.14	62.6%	BOM
115	200%	1.42	235%	.75	35%	3.00	127.98	81.51	63.7%	BOM
116	200%	1.42	235%	.50	10%	3.60	123.95	86.75	70.0%	BOM
117	200%	1.42	235%	.50	10%	3.00	123.95	87.35	70.5%	BOM
118	200%	1.42	235%	.50	20%	3.60	127.98	79.05	61.8%	BOM
119	200%	1.42	235%	.50	20%	3.00	127.98	80.12	62.6%	BOM
120	200%	1.42	235%	.50	35%	3.60	127.98	69.52	54.3%	BOM
121	200%	1.42	235%	.50	35%	3.00	127.98	70.72	55.3%	BOM
122	200%	.80	0%	.00	10%	3.60	85.59	40.50	47.3%	BOM

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni2	Nic2	Nic/Ni	cls
123	200%	.80	0%	.00	20%	3.60	89.63	34.39	38.4%	BOM
124	200%	.80	0%	.00	35%	3.60	89.63	28.98	32.3%	BOM
125	200%	.80	117%	.75	10%	3.60	104.69	57.26	54.7%	BOM
126	200%	.80	117%	.75	20%	3.60	108.72	50.21	46.2%	BOM
127	200%	.80	117%	.75	35%	3.60	108.72	42.91	39.5%	BOM
128	200%	.80	117%	.50	10%	3.60	104.69	51.66	49.3%	BOM
129	200%	.80	117%	.50	20%	3.60	108.72	44.86	41.3%	BOM
130	200%	.80	117%	.50	35%	3.60	108.72	38.14	35.1%	BOM
131	200%	.80	235%	.75	10%	3.60	123.95	74.23	59.9%	BOM
132	200%	.80	235%	.75	10%	3.00	123.95	74.82	60.4%	BOM
133	200%	.80	235%	.75	20%	3.60	127.98	66.71	52.1%	BOM
134	200%	.80	235%	.75	20%	3.00	127.98	67.71	52.9%	BOM
135	200%	.80	235%	.75	35%	3.60	127.98	57.97	45.3%	BOM
136	200%	.80	235%	.50	10%	3.60	123.95	62.96	50.8%	BOM
137	200%	.80	235%	.50	10%	3.00	123.95	63.55	51.3%	BOM
138	200%	.80	235%	.50	20%	3.60	127.98	55.71	43.5%	BOM
139	200%	.80	235%	.50	35%	3.60	127.98	47.88	37.4%	BOM
140	20%	.80	235%	.75	10%	3.00	70.03	47.21	67.4%	MB
141	110%	.80	235%	.75	20%	3.00	101.02	54.13	53.6%	MB
142	110%	.80	235%	.75	35%	3.00	101.02	46.34	45.9%	MB
143	110%	.80	235%	.50	10%	3.00	96.99	49.74	51.3%	MB
144	200%	.80	117%	.75	10%	3.00	104.69	57.84	55.3%	MB
145	200%	.80	117%	.75	20%	3.00	108.72	51.05	47.0%	MB
146	200%	.80	117%	.50	10%	3.00	104.69	52.23	49.9%	MB
147	200%	.80	117%	.50	20%	3.00	108.72	45.62	42.0%	MB
148	200%	.80	235%	.75	35%	3.00	127.98	58.95	46.1%	MB
149	200%	.80	235%	.50	20%	3.00	127.98	56.62	44.2%	MB
150	200%	.80	235%	.50	35%	3.00	127.98	48.62	38.0%	MB
151	20%	.80	0%	.00	10%	3.00	31.68	14.29	45.1%	EXC
152	20%	.80	0%	.00	20%	3.00	35.71	11.29	31.6%	EXC
153	20%	.80	0%	.00	35%	3.00	35.71	9.38	26.3%	EXC
154	20%	.80	117%	.75	10%	3.00	50.77	30.36	59.8%	EXC
155	20%	.80	117%	.75	20%	3.00	54.81	25.13	45.8%	EXC
156	20%	.80	117%	.75	35%	3.00	54.81	20.74	37.8%	EXC
157	20%	.80	117%	.50	10%	3.00	50.77	24.88	49.0%	EXC
158	20%	.80	117%	.50	20%	3.00	54.81	20.25	37.0%	EXC
159	20%	.80	117%	.50	35%	3.00	54.81	16.67	30.4%	EXC
160	20%	.80	235%	.75	20%	3.00	74.06	40.80	55.1%	EXC
161	20%	.80	235%	.75	35%	3.00	74.06	34.31	46.3%	EXC
162	20%	.80	235%	.50	10%	3.00	70.03	35.99	51.4%	EXC
163	20%	.80	235%	.50	20%	3.00	74.06	30.27	40.9%	EXC
164	20%	.80	235%	.50	35%	3.00	74.06	25.11	33.9%	EXC
165	110%	.80	0%	.00	10%	3.00	58.64	27.40	46.7%	EXC
166	110%	.80	0%	.00	20%	3.00	62.67	22.48	35.9%	EXC
167	110%	.80	0%	.00	35%	3.00	62.67	18.52	29.6%	EXC
168	110%	.80	117%	.75	10%	3.00	77.73	44.05	56.7%	EXC
169	110%	.80	117%	.75	20%	3.00	81.76	37.81	46.2%	EXC
170	110%	.80	117%	.75	35%	3.00	81.76	31.66	38.7%	EXC
171	110%	.80	117%	.50	10%	3.00	77.73	38.47	49.5%	EXC
172	110%	.80	117%	.50	20%	3.00	81.76	32.56	39.8%	EXC
173	110%	.80	117%	.50	35%	3.00	81.76	27.09	33.1%	EXC
174	110%	.80	235%	.50	20%	3.00	101.02	43.23	42.8%	EXC
175	110%	.80	235%	.50	35%	3.00	101.02	36.47	36.1%	EXC
176	200%	.80	0%	.00	10%	3.00	85.59	41.04	48.0%	EXC
177	200%	.80	0%	.00	20%	3.00	89.63	34.97	39.0%	EXC
178	200%	.80	0%	.00	35%	3.00	89.63	29.18	32.6%	EXC
179	200%	.80	117%	.75	35%	3.00	108.72	43.52	40.0%	EXC
180	200%	.80	117%	.50	35%	3.00	108.72	38.61	35.5%	EXC

tabela 1.15

zona climática de inverno I2
com ganhos solares
soluções grupo 3

linha	af	Kfc	ah	Kh	aenv	KenV	Ni2	Nic2	Nic/Ni	cls
1	200%	.50	235%	.45	10%	2.60	123.95	49.02	39.6%	MB
2	200%	.50	235%	.45	10%	2.20	123.95	48.26	38.9%	MB
3	20%	.50	235%	.45	10%	2.60	70.03	31.87	45.5%	EXC
4	20%	.35	235%	.45	10%	2.60	70.03	31.30	44.7%	EXC
5	20%	.50	235%	.45	10%	2.20	70.03	31.12	44.4%	EXC
6	20%	.35	235%	.45	10%	2.20	70.03	30.55	43.6%	EXC
7	20%	.50	117%	.45	10%	2.60	50.77	21.95	43.2%	EXC
8	20%	.35	117%	.45	10%	2.60	50.77	21.39	42.1%	EXC
9	20%	.50	117%	.45	10%	2.20	50.77	21.21	41.8%	EXC
10	110%	.50	235%	.45	10%	2.60	96.99	40.42	41.7%	EXC
11	110%	.50	235%	.45	10%	2.20	96.99	39.66	40.9%	EXC
12	20%	.35	117%	.45	10%	2.20	50.77	20.66	40.7%	EXC
13	20%	.50	0%	.00	10%	2.60	31.68	12.57	39.7%	EXC
14	110%	.50	117%	.45	10%	2.60	77.73	30.34	39.0%	EXC
15	110%	.35	235%	.45	10%	2.60	96.99	37.28	38.4%	EXC
16	20%	.35	0%	.00	10%	2.60	31.68	12.06	38.1%	EXC
17	110%	.50	117%	.45	10%	2.20	77.73	29.59	38.1%	EXC
18	110%	.35	235%	.45	10%	2.20	96.99	36.52	37.7%	EXC
19	20%	.50	0%	.00	10%	2.20	31.68	11.89	37.5%	EXC
20	200%	.50	117%	.45	10%	2.60	104.69	38.88	37.1%	EXC
21	20%	.50	117%	.30	10%	2.60	50.77	18.74	36.9%	EXC
22	200%	.50	117%	.45	10%	2.20	104.69	38.12	36.4%	EXC
23	20%	.50	235%	.30	10%	2.60	70.03	25.25	36.1%	EXC
24	20%	.35	0%	.00	10%	2.20	31.68	11.39	35.9%	EXC
25	20%	.35	117%	.30	10%	2.60	50.77	18.20	35.9%	EXC
26	20%	.50	117%	.30	10%	2.20	50.77	18.02	35.5%	EXC
27	20%	.35	235%	.30	10%	2.60	70.03	24.69	35.3%	EXC
28	20%	.50	235%	.30	10%	2.20	70.03	24.51	35.0%	EXC
29	110%	.50	0%	.00	10%	2.60	58.64	20.54	35.0%	EXC
30	110%	.35	117%	.45	10%	2.60	77.73	27.24	35.0%	EXC
31	200%	.35	235%	.45	10%	2.60	123.95	43.29	34.9%	EXC
32	20%	.50	235%	.45	20%	2.60	74.06	25.81	34.8%	EXC
33	110%	.50	117%	.30	10%	2.60	77.73	27.04	34.8%	EXC
34	110%	.50	235%	.30	10%	2.60	96.99	33.72	34.8%	EXC
35	20%	.35	117%	.30	10%	2.20	50.77	17.48	34.4%	EXC
36	200%	.35	235%	.45	10%	2.20	123.95	42.52	34.3%	EXC
37	20%	.35	235%	.45	20%	2.60	74.06	25.30	34.2%	EXC
38	20%	.35	235%	.30	10%	2.20	70.03	23.95	34.2%	EXC
39	110%	.35	117%	.45	10%	2.20	77.73	26.49	34.1%	EXC
40	200%	.50	235%	.30	10%	2.60	123.95	42.28	34.1%	EXC
41	110%	.50	235%	.30	10%	2.20	96.99	32.96	34.0%	EXC
42	200%	.50	117%	.30	10%	2.60	104.69	35.54	33.9%	EXC
43	110%	.50	0%	.00	10%	2.20	58.64	19.81	33.8%	EXC
44	110%	.50	117%	.30	10%	2.20	77.73	26.30	33.8%	EXC
45	200%	.50	0%	.00	10%	2.60	85.59	28.90	33.8%	EXC
46	200%	.50	235%	.30	10%	2.20	123.95	41.52	33.5%	EXC
47	110%	.50	235%	.45	20%	2.60	101.02	33.67	33.3%	EXC
48	200%	.50	117%	.30	10%	2.20	104.69	34.78	33.2%	EXC
49	20%	.50	235%	.45	20%	2.20	74.06	24.45	33.0%	EXC
50	200%	.50	0%	.00	10%	2.20	85.59	28.15	32.9%	EXC
51	200%	.50	235%	.45	20%	2.60	127.98	41.81	32.7%	EXC
52	20%	.35	235%	.45	20%	2.20	74.06	23.94	32.3%	EXC
53	110%	.50	235%	.45	20%	2.20	101.02	32.25	31.9%	EXC
54	200%	.35	117%	.45	10%	2.60	104.69	33.18	31.7%	EXC
55	110%	.35	235%	.30	10%	2.60	96.99	30.60	31.5%	EXC
56	200%	.50	235%	.45	20%	2.20	127.98	40.35	31.5%	EXC

linha	af	Kfc	ah	Kh	aenv	KenV	Ni2	Nic2	Nic/Ni	cls
57	20%	.50	117%	.45	20%	2.60	54.81	17.07	31.2%	EXC
58	200%	.35	117%	.45	10%	2.20	104.69	32.42	31.0%	EXC
59	110%	.35	117%	.30	10%	2.60	77.73	23.97	30.8%	EXC
60	110%	.35	235%	.30	10%	2.20	96.99	29.84	30.8%	EXC
61	110%	.35	235%	.45	20%	2.60	101.02	30.75	30.4%	EXC
62	20%	.35	117%	.45	20%	2.60	54.81	16.61	30.3%	EXC
63	110%	.50	117%	.45	20%	2.60	81.76	24.43	29.9%	EXC
64	110%	.35	0%	.00	10%	2.60	58.64	17.56	29.9%	EXC
65	110%	.35	117%	.30	10%	2.20	77.73	23.23	29.9%	EXC
66	200%	.50	117%	.45	20%	2.60	108.72	32.23	29.6%	EXC
67	200%	.35	235%	.30	10%	2.60	123.95	36.57	29.5%	EXC
68	110%	.35	235%	.45	20%	2.20	101.02	29.35	29.1%	EXC
69	20%	.50	117%	.45	20%	2.20	54.81	15.83	28.9%	EXC
70	200%	.35	235%	.30	10%	2.20	123.95	35.80	28.9%	EXC
71	110%	.35	0%	.00	10%	2.20	58.64	16.84	28.7%	EXC
72	200%	.35	117%	.30	10%	2.60	104.69	29.86	28.5%	EXC
73	200%	.50	117%	.45	20%	2.20	108.72	30.82	28.4%	EXC
74	200%	.35	235%	.45	20%	2.60	127.98	36.36	28.4%	EXC
75	110%	.50	117%	.45	20%	2.20	81.76	23.09	28.2%	EXC
76	20%	.35	117%	.45	20%	2.20	54.81	15.37	28.0%	EXC
77	200%	.35	117%	.30	10%	2.20	104.69	29.11	27.8%	EXC
78	200%	.50	235%	.30	20%	2.60	127.98	35.42	27.7%	EXC
79	20%	.50	235%	.45	35%	2.60	74.06	20.46	27.6%	EXC
80	200%	.35	235%	.45	20%	2.20	127.98	34.92	27.3%	EXC
81	110%	.50	235%	.30	20%	2.60	101.02	27.48	27.2%	EXC
82	200%	.35	0%	.00	10%	2.60	85.59	23.30	27.2%	EXC
83	20%	.35	235%	.45	35%	2.60	74.06	20.03	27.0%	EXC
84	20%	.50	235%	.30	20%	2.60	74.06	19.93	26.9%	EXC
85	110%	.50	235%	.45	35%	2.60	101.02	27.13	26.9%	EXC
86	200%	.50	117%	.30	20%	2.60	108.72	29.15	26.8%	EXC
87	200%	.50	235%	.45	35%	2.60	127.98	34.23	26.7%	EXC
88	200%	.50	235%	.30	20%	2.20	127.98	33.99	26.6%	EXC
89	110%	.35	117%	.45	20%	2.60	81.76	21.67	26.5%	EXC
90	200%	.35	0%	.00	10%	2.20	85.59	22.56	26.4%	EXC
91	110%	.50	117%	.30	20%	2.60	81.76	21.50	26.3%	EXC
92	20%	.50	0%	.00	20%	2.60	35.71	9.36	26.2%	EXC
93	20%	.50	117%	.30	20%	2.60	54.81	14.37	26.2%	EXC
94	20%	.35	235%	.30	20%	2.60	74.06	19.44	26.2%	EXC
95	110%	.50	235%	.30	20%	2.20	101.02	26.11	25.8%	EXC
96	200%	.50	0%	.00	20%	2.60	89.63	23.14	25.8%	EXC
97	200%	.50	117%	.30	20%	2.20	108.72	27.76	25.5%	EXC
98	20%	.35	117%	.30	20%	2.60	54.81	13.92	25.4%	EXC
99	110%	.50	0%	.00	20%	2.60	62.67	15.88	25.3%	EXC
100	20%	.50	235%	.30	20%	2.20	74.06	18.64	25.2%	EXC
101	20%	.35	0%	.00	20%	2.60	35.71	8.96	25.1%	EXC
102	20%	.50	235%	.45	35%	2.20	74.06	18.48	25.0%	EXC
103	200%	.50	235%	.45	35%	2.20	127.98	31.98	25.0%	EXC
104	110%	.35	117%	.45	20%	2.20	81.76	20.36	24.9%	EXC
105	200%	.35	117%	.45	20%	2.60	108.72	26.99	24.8%	EXC
106	110%	.50	117%	.30	20%	2.20	81.76	20.19	24.7%	EXC
107	110%	.50	235%	.45	35%	2.20	101.02	25.00	24.7%	EXC
108	20%	.35	235%	.30	20%	2.20	74.06	18.16	24.5%	EXC
109	20%	.35	235%	.45	35%	2.20	74.06	18.07	24.4%	EXC
110	110%	.35	235%	.45	35%	2.60	101.02	24.63	24.4%	EXC
111	110%	.35	235%	.30	20%	2.60	101.02	24.66	24.4%	EXC
112	20%	.50	117%	.45	35%	2.60	54.81	13.29	24.3%	EXC
113	200%	.50	0%	.00	20%	2.20	89.63	21.81	24.3%	EXC
114	20%	.50	117%	.30	20%	2.20	54.81	13.18	24.1%	EXC
115	200%	.50	117%	.45	35%	2.60	108.72	25.89	23.8%	EXC
116	20%	.35	117%	.45	35%	2.60	54.81	12.92	23.6%	EXC
117	110%	.50	117%	.45	35%	2.60	81.76	19.31	23.6%	EXC
118	200%	.35	117%	.45	20%	2.20	108.72	25.62	23.6%	EXC
119	200%	.35	235%	.30	20%	2.60	127.98	30.09	23.5%	EXC
120	110%	.50	0%	.00	20%	2.20	62.67	14.66	23.4%	EXC
121	20%	.50	0%	.00	20%	2.20	35.71	8.31	23.3%	EXC
122	20%	.35	117%	.30	20%	2.20	54.81	12.74	23.3%	EXC

linha	af	Kfc	ah	Kh	aenv	KenV	Ni2	Nic2	Nic/Ni	cls
123	110%	.35	235%	.30	20%	2.20	101.02	23.31	23.1%	EXC
124	110%	.35	117%	.30	20%	2.60	81.76	18.81	23.0%	EXC
125	200%	.35	235%	.45	35%	2.60	127.98	29.45	23.0%	EXC
126	200%	.50	235%	.30	35%	2.60	127.98	28.63	22.4%	EXC
127	200%	.35	235%	.30	20%	2.20	127.98	28.70	22.4%	EXC
128	110%	.35	235%	.45	35%	2.20	101.02	22.55	22.3%	EXC
129	20%	.35	0%	.00	20%	2.20	35.71	7.92	22.2%	EXC
130	200%	.35	117%	.30	20%	2.60	108.72	24.00	22.1%	EXC
131	200%	.50	117%	.45	35%	2.20	108.72	23.79	21.9%	EXC
132	110%	.50	235%	.30	35%	2.60	101.02	21.86	21.6%	EXC
133	110%	.35	117%	.30	20%	2.20	81.76	17.54	21.5%	EXC
134	110%	.35	0%	.00	20%	2.60	62.67	13.39	21.4%	EXC
135	200%	.50	117%	.30	35%	2.60	108.72	23.27	21.4%	EXC
136	200%	.35	235%	.45	35%	2.20	127.98	27.28	21.3%	EXC
137	110%	.50	117%	.45	35%	2.20	81.76	17.37	21.2%	EXC
138	20%	.50	117%	.45	35%	2.20	54.81	11.56	21.1%	EXC
139	20%	.50	235%	.30	35%	2.60	74.06	15.60	21.1%	EXC
140	110%	.35	117%	.45	35%	2.60	81.76	17.03	20.8%	EXC
141	200%	.35	117%	.30	20%	2.20	108.72	22.66	20.8%	EXC
142	110%	.50	117%	.30	35%	2.60	81.76	16.89	20.7%	EXC
143	200%	.50	235%	.30	35%	2.20	127.98	26.48	20.7%	EXC
144	20%	.35	235%	.30	35%	2.60	74.06	15.21	20.5%	EXC
145	20%	.35	117%	.45	35%	2.20	54.81	11.20	20.4%	EXC
146	200%	.50	0%	.00	35%	2.60	89.63	18.24	20.4%	EXC
147	20%	.50	117%	.30	35%	2.60	54.81	11.14	20.3%	EXC
148	200%	.35	0%	.00	20%	2.60	89.63	18.24	20.3%	EXC
149	20%	.50	0%	.00	35%	2.60	35.71	7.19	20.1%	EXC
150	20%	.35	117%	.30	35%	2.60	54.81	10.78	19.7%	EXC
151	110%	.50	0%	.00	35%	2.60	62.67	12.34	19.7%	EXC
152	110%	.50	235%	.30	35%	2.20	101.02	19.85	19.7%	EXC
153	200%	.35	117%	.45	35%	2.60	108.72	21.45	19.7%	EXC
154	110%	.35	0%	.00	20%	2.20	62.67	12.22	19.5%	EXC
155	200%	.50	117%	.30	35%	2.20	108.72	21.22	19.5%	EXC
156	20%	.35	0%	.00	35%	2.60	35.71	6.88	19.3%	EXC
157	110%	.35	235%	.30	35%	2.60	101.02	19.50	19.3%	EXC
158	200%	.35	0%	.00	20%	2.20	89.63	16.97	18.9%	EXC
159	200%	.35	235%	.30	35%	2.60	127.98	24.07	18.8%	EXC
160	20%	.50	235%	.30	35%	2.20	74.06	13.78	18.6%	EXC
161	110%	.35	117%	.45	35%	2.20	81.76	15.16	18.5%	EXC
162	110%	.50	117%	.30	35%	2.20	81.76	15.02	18.4%	EXC
163	200%	.50	0%	.00	35%	2.20	89.63	16.33	18.2%	EXC
164	20%	.35	235%	.30	35%	2.20	74.06	13.40	18.1%	EXC
165	110%	.35	117%	.30	35%	2.60	81.76	14.70	18.0%	EXC
166	200%	.35	117%	.45	35%	2.20	108.72	19.45	17.9%	EXC
167	110%	.35	235%	.30	35%	2.20	101.02	17.55	17.4%	EXC
168	200%	.35	117%	.30	35%	2.60	108.72	18.95	17.4%	EXC
169	20%	.50	117%	.30	35%	2.20	54.81	9.50	17.3%	EXC
170	200%	.35	235%	.30	35%	2.20	127.98	22.00	17.2%	EXC
171	110%	.50	0%	.00	35%	2.20	62.67	10.65	17.0%	EXC
172	20%	.35	117%	.30	35%	2.20	54.81	9.16	16.7%	EXC
173	110%	.35	0%	.00	35%	2.60	62.67	10.35	16.5%	EXC
174	20%	.50	0%	.00	35%	2.20	35.71	5.78	16.2%	EXC
175	200%	.35	0%	.00	35%	2.60	89.63	14.23	15.9%	EXC
176	110%	.35	117%	.30	35%	2.20	81.76	12.91	15.8%	EXC
177	200%	.35	117%	.30	35%	2.20	108.72	17.02	15.7%	EXC
178	20%	.35	0%	.00	35%	2.20	35.71	5.49	15.4%	EXC
179	110%	.35	0%	.00	35%	2.20	62.67	8.76	14.0%	EXC
180	200%	.35	0%	.00	35%	2.20	89.63	12.46	13.9%	EXC

tabela 1.16

zona climática de inverno 13
com ganhos solares
soluções grupo 1

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni3	Nic3	Nic/Ni	cls
1	20%	2.17	235%	.90	10%	4.80	128.54	130.74	101.7%	INS
2	110%	2.17	0%	.00	10%	4.80	103.55	124.52	120.3%	INS
3	110%	2.17	0%	.00	10%	4.20	103.55	122.22	118.0%	INS
4	110%	2.17	0%	.00	20%	4.80	111.61	122.38	109.6%	INS
5	110%	2.17	0%	.00	20%	4.20	111.61	117.81	105.6%	INS
6	110%	2.17	0%	.00	35%	4.80	111.61	120.93	108.4%	INS
7	110%	2.17	0%	.00	35%	4.20	111.61	113.24	101.5%	INS
8	110%	2.17	117%	.90	10%	4.80	137.24	164.95	120.2%	INS
9	110%	2.17	117%	.90	10%	4.20	137.24	162.65	118.5%	INS
10	110%	2.17	117%	.90	20%	4.80	145.31	162.63	111.9%	INS
11	110%	2.17	117%	.90	20%	4.20	145.31	158.04	108.8%	INS
12	110%	2.17	117%	.90	35%	4.80	145.31	160.14	110.2%	INS
13	110%	2.17	117%	.90	35%	4.20	145.31	152.25	104.8%	INS
14	110%	2.17	117%	.75	10%	4.80	137.24	158.22	115.3%	INS
15	110%	2.17	117%	.75	10%	4.20	137.24	155.91	113.6%	INS
16	110%	2.17	117%	.75	20%	4.80	145.31	155.91	107.3%	INS
17	110%	2.17	117%	.75	20%	4.20	145.31	151.32	104.1%	INS
18	110%	2.17	117%	.75	35%	4.80	145.31	153.55	105.7%	INS
19	110%	2.17	117%	.75	35%	4.20	145.31	145.69	100.3%	INS
20	110%	2.17	235%	.90	10%	4.80	171.23	205.74	120.2%	INS
21	110%	2.17	235%	.90	10%	4.20	171.23	203.43	118.8%	INS
22	110%	2.17	235%	.90	20%	4.80	179.29	203.36	113.4%	INS
23	110%	2.17	235%	.90	20%	4.20	179.29	198.76	110.9%	INS
24	110%	2.17	235%	.90	35%	4.80	179.29	200.32	111.7%	INS
25	110%	2.17	235%	.90	35%	4.20	179.29	192.34	107.3%	INS
26	110%	2.17	235%	.75	10%	4.80	171.23	192.20	112.2%	INS
27	110%	2.17	235%	.75	10%	4.20	171.23	189.90	110.9%	INS
28	110%	2.17	235%	.75	20%	4.80	179.29	189.84	105.9%	INS
29	110%	2.17	235%	.75	20%	4.20	179.29	185.23	103.3%	INS
30	110%	2.17	235%	.75	35%	4.80	179.29	186.93	104.3%	INS
31	110%	1.42	235%	.90	10%	4.80	171.23	174.06	101.7%	INS
32	110%	1.42	235%	.90	10%	4.20	171.23	171.75	100.3%	INS
33	200%	2.17	0%	.00	10%	4.80	146.23	199.51	136.4%	INS
34	200%	2.17	0%	.00	10%	4.20	146.23	197.21	134.9%	INS
35	200%	2.17	0%	.00	20%	4.80	154.29	197.15	127.8%	INS
36	200%	2.17	0%	.00	20%	4.20	154.29	192.54	124.8%	INS
37	200%	2.17	0%	.00	35%	4.80	154.29	194.16	125.8%	INS
38	200%	2.17	0%	.00	35%	4.20	154.29	186.19	120.7%	INS
39	200%	2.17	117%	.90	10%	4.80	179.92	239.95	133.4%	INS
40	200%	2.17	117%	.90	10%	4.20	179.92	237.65	132.1%	INS
41	200%	2.17	117%	.90	20%	4.80	187.99	237.56	126.4%	INS
42	200%	2.17	117%	.90	20%	4.20	187.99	232.96	123.9%	INS
43	200%	2.17	117%	.90	35%	4.80	187.99	234.27	124.6%	INS
44	200%	2.17	117%	.90	35%	4.20	187.99	226.26	120.4%	INS
45	200%	2.17	117%	.75	10%	4.80	179.92	233.21	129.6%	INS
46	200%	2.17	117%	.75	10%	4.20	179.92	230.91	128.3%	INS
47	200%	2.17	117%	.75	20%	4.80	187.99	230.83	122.8%	INS
48	200%	2.17	117%	.75	20%	4.20	187.99	226.22	120.3%	INS
49	200%	2.17	117%	.75	35%	4.80	187.99	227.57	121.1%	INS
50	200%	2.17	117%	.75	35%	4.20	187.99	219.56	116.8%	INS
51	200%	2.17	235%	.90	10%	4.80	213.91	280.73	131.2%	INS
52	200%	2.17	235%	.90	10%	4.20	213.91	278.43	130.2%	INS
53	200%	2.17	235%	.90	20%	4.80	221.97	278.34	125.4%	INS
54	200%	2.17	235%	.90	20%	4.20	221.97	273.73	123.3%	INS
55	200%	2.17	235%	.90	35%	4.80	221.97	274.90	123.8%	INS
56	200%	2.17	235%	.90	35%	4.20	221.97	266.85	120.2%	INS
57	200%	2.17	235%	.75	10%	4.80	213.91	267.19	124.9%	INS

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni3	Nic3	Nic/Ni	cls
58	200%	2.17	235%	.75	10%	4.20	213.91	264.89	123.8%	INS
59	200%	2.17	235%	.75	20%	4.80	221.97	264.80	119.3%	INS
60	200%	2.17	235%	.75	20%	4.20	221.97	260.20	117.2%	INS
61	200%	2.17	235%	.75	35%	4.80	221.97	261.40	117.8%	INS
62	200%	2.17	235%	.75	35%	4.20	221.97	253.37	114.1%	INS
63	200%	1.42	117%	.90	10%	4.80	179.92	182.35	101.3%	INS
64	200%	1.42	117%	.90	10%	4.20	179.92	180.05	100.1%	INS
65	200%	1.42	235%	.90	10%	4.80	213.91	223.13	104.3%	INS
66	200%	1.42	235%	.90	10%	4.20	213.91	220.83	103.2%	INS
67	20%	2.17	117%	.90	10%	4.80	94.56	89.98	95.2%	SUF
68	20%	2.17	235%	.90	10%	4.20	128.54	128.44	99.9%	SUF
69	20%	1.42	235%	.90	10%	4.80	128.54	124.98	97.2%	SUF
70	20%	1.42	235%	.90	10%	4.20	128.54	122.68	95.4%	SUF
71	110%	2.17	235%	.75	35%	4.20	179.29	178.98	99.8%	SUF
72	110%	1.42	117%	.90	10%	4.80	137.24	133.28	97.1%	SUF
73	110%	1.42	117%	.90	10%	4.20	137.24	130.97	95.4%	SUF
74	110%	1.42	235%	.90	20%	4.80	179.29	171.72	95.8%	SUF
75	110%	1.42	235%	.90	20%	4.20	179.29	167.12	93.2%	SUF
76	110%	1.42	235%	.90	35%	4.80	179.29	169.06	94.3%	SUF
77	110%	1.42	235%	.90	35%	4.20	179.29	161.15	89.9%	SUF
78	110%	1.42	235%	.75	10%	4.80	171.23	160.52	93.7%	SUF
79	200%	1.42	0%	.00	10%	4.80	146.23	141.91	97.1%	SUF
80	200%	1.42	0%	.00	10%	4.20	146.23	139.61	95.5%	SUF
81	200%	1.42	117%	.90	20%	4.80	187.99	180.00	95.7%	SUF
82	200%	1.42	117%	.90	20%	4.20	187.99	175.40	93.3%	SUF
83	200%	1.42	117%	.90	35%	4.80	187.99	177.22	94.3%	SUF
84	200%	1.42	117%	.90	35%	4.20	187.99	169.29	90.1%	SUF
85	200%	1.42	117%	.75	10%	4.80	179.92	175.61	97.6%	SUF
86	200%	1.42	117%	.75	10%	4.20	179.92	173.31	96.3%	SUF
87	200%	1.42	117%	.75	20%	4.80	187.99	173.27	92.2%	SUF
88	200%	1.42	117%	.75	20%	4.20	187.99	168.67	89.7%	SUF
89	200%	1.42	117%	.75	35%	4.80	187.99	170.59	90.7%	SUF
90	200%	1.42	117%	.75	35%	4.20	187.99	162.68	86.5%	SUF
91	200%	1.42	235%	.90	20%	4.80	221.97	220.75	99.4%	SUF
92	200%	1.42	235%	.90	20%	4.20	221.97	216.14	97.4%	SUF
93	200%	1.42	235%	.90	35%	4.80	221.97	217.56	98.0%	SUF
94	200%	1.42	235%	.90	35%	4.20	221.97	209.56	94.4%	SUF
95	200%	1.42	235%	.75	10%	4.80	213.91	209.59	98.0%	SUF
96	200%	1.42	235%	.75	10%	4.20	213.91	207.29	96.9%	SUF
97	200%	1.42	235%	.75	20%	4.80	221.97	207.22	93.4%	SUF
98	200%	1.42	235%	.75	20%	4.20	221.97	202.61	91.3%	SUF
99	200%	1.42	235%	.75	35%	4.80	221.97	204.14	92.0%	SUF
100	200%	1.42	235%	.75	35%	4.20	221.97	196.15	88.4%	SUF
101	20%	2.17	0%	.00	10%	4.80	60.86	49.78	81.8%	BOM
102	20%	2.17	0%	.00	10%	4.20	60.86	47.52	78.1%	BOM
103	20%	2.17	0%	.00	20%	4.80	68.93	49.74	72.2%	BOM
104	20%	2.17	0%	.00	20%	4.20	68.93	45.53	66.1%	BOM
105	20%	2.17	0%	.00	35%	4.80	68.93	52.68	76.4%	BOM
106	20%	2.17	0%	.00	35%	4.20	68.93	46.03	66.8%	BOM
107	20%	2.17	117%	.90	10%	4.20	94.56	87.68	92.7%	BOM
108	20%	2.17	117%	.90	20%	4.80	102.62	88.30	86.0%	BOM
109	20%	2.17	117%	.90	20%	4.20	102.62	83.81	81.7%	BOM
110	20%	2.17	117%	.90	35%	4.80	102.62	88.42	86.2%	BOM
111	20%	2.17	117%	.90	35%	4.20	102.62	81.04	79.0%	BOM
112	20%	2.17	117%	.75	10%	4.80	94.56	83.25	88.0%	BOM
113	20%	2.17	117%	.75	10%	4.20	94.56	80.95	85.6%	BOM
114	20%	2.17	117%	.75	20%	4.80	102.62	81.74	79.6%	BOM
115	20%	2.17	117%	.75	20%	4.20	102.62	77.27	75.3%	BOM
116	20%	2.17	117%	.75	35%	4.80	102.62	82.25	80.1%	BOM
117	20%	2.17	117%	.75	35%	4.20	102.62	74.96	73.0%	BOM
118	20%	2.17	235%	.90	20%	4.80	136.61	128.55	94.1%	BOM
119	20%	2.17	235%	.90	20%	4.20	136.61	123.98	90.8%	BOM
120	20%	2.17	235%	.90	35%	4.80	136.61	126.90	92.9%	BOM
121	20%	2.17	235%	.90	35%	4.20	136.61	119.17	87.2%	BOM

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni3	Nic3	Nic/Ni	cls
122	20%	2.17	235%	.75	10%	4.80	128.54	117.21	91.2%	BOM
123	20%	2.17	235%	.75	10%	4.20	128.54	114.90	89.4%	BOM
124	20%	2.17	235%	.75	20%	4.80	136.61	115.13	84.3%	BOM
125	20%	2.17	235%	.75	20%	4.20	136.61	110.57	80.9%	BOM
126	20%	2.17	235%	.75	35%	4.80	136.61	113.95	83.4%	BOM
127	20%	2.17	235%	.75	35%	4.20	136.61	106.31	77.8%	BOM
128	20%	1.42	0%	.00	10%	4.80	60.86	44.13	72.5%	BOM
129	20%	1.42	0%	.00	10%	4.20	60.86	41.89	68.8%	BOM
130	20%	1.42	0%	.00	20%	4.80	68.93	44.49	64.5%	BOM
131	20%	1.42	0%	.00	20%	4.20	68.93	40.37	58.6%	BOM
132	20%	1.42	0%	.00	35%	4.80	68.93	47.91	69.5%	BOM
133	20%	1.42	0%	.00	35%	4.20	68.93	41.41	60.1%	BOM
134	20%	1.42	117%	.90	10%	4.80	94.56	84.23	89.1%	BOM
135	20%	1.42	117%	.90	10%	4.20	94.56	81.93	86.6%	BOM
136	20%	1.42	117%	.90	20%	4.80	102.62	82.69	80.6%	BOM
137	20%	1.42	117%	.90	20%	4.20	102.62	78.22	76.2%	BOM
138	20%	1.42	117%	.90	35%	4.80	102.62	83.14	81.0%	BOM
139	20%	1.42	117%	.90	35%	4.20	102.62	75.84	73.9%	BOM
140	20%	1.42	117%	.75	10%	4.80	94.56	77.50	82.0%	BOM
141	20%	1.42	117%	.75	10%	4.20	94.56	75.21	79.5%	BOM
142	20%	1.42	117%	.75	20%	4.80	102.62	76.16	74.2%	BOM
143	20%	1.42	117%	.75	20%	4.20	102.62	71.72	69.9%	BOM
144	20%	1.42	117%	.75	35%	4.80	102.62	77.03	75.1%	BOM
145	20%	1.42	117%	.75	35%	4.20	102.62	69.82	68.0%	BOM
146	20%	1.42	235%	.90	20%	4.80	136.61	122.83	89.9%	BOM
147	20%	1.42	235%	.90	20%	4.20	136.61	118.26	86.6%	BOM
148	20%	1.42	235%	.90	35%	4.80	136.61	121.38	88.8%	BOM
149	20%	1.42	235%	.90	35%	4.20	136.61	113.68	83.2%	BOM
150	20%	1.42	235%	.75	10%	4.80	128.54	111.45	86.7%	BOM
151	20%	1.42	235%	.75	10%	4.20	128.54	109.15	84.9%	BOM
152	20%	1.42	235%	.75	20%	4.80	136.61	109.43	80.1%	BOM
153	20%	1.42	235%	.75	20%	4.20	136.61	104.88	76.8%	BOM
154	20%	1.42	235%	.75	35%	4.80	136.61	108.49	79.4%	BOM
155	20%	1.42	235%	.75	35%	4.20	136.61	100.89	73.9%	BOM
156	110%	1.42	0%	.00	10%	4.80	103.55	92.86	89.7%	BOM
157	110%	1.42	0%	.00	10%	4.20	103.55	90.55	87.5%	BOM
158	110%	1.42	0%	.00	20%	4.80	111.61	91.12	81.6%	BOM
159	110%	1.42	0%	.00	20%	4.20	111.61	86.62	77.6%	BOM
160	110%	1.42	0%	.00	35%	4.80	111.61	91.08	81.6%	BOM
161	110%	1.42	0%	.00	35%	4.20	111.61	83.66	75.0%	BOM
162	110%	1.42	117%	.90	20%	4.80	145.31	131.07	90.2%	BOM
163	110%	1.42	117%	.90	20%	4.20	145.31	126.49	87.1%	BOM
164	110%	1.42	117%	.90	35%	4.80	145.31	129.34	89.0%	BOM
165	110%	1.42	117%	.90	35%	4.20	145.31	121.60	83.7%	BOM
166	110%	1.42	117%	.75	10%	4.80	137.24	126.54	92.2%	BOM
167	110%	1.42	117%	.75	10%	4.20	137.24	124.23	90.5%	BOM
168	110%	1.42	117%	.75	20%	4.80	145.31	124.38	85.6%	BOM
169	110%	1.42	117%	.75	20%	4.20	145.31	119.81	82.5%	BOM
170	110%	1.42	117%	.75	35%	4.80	145.31	122.87	84.6%	BOM
171	110%	1.42	117%	.75	35%	4.20	145.31	115.16	79.3%	BOM
172	110%	1.42	235%	.75	10%	4.20	171.23	158.22	92.4%	BOM
173	110%	1.42	235%	.75	20%	4.80	179.29	158.21	88.2%	BOM
174	110%	1.42	235%	.75	20%	4.20	179.29	153.61	85.7%	BOM
175	110%	1.42	235%	.75	35%	4.80	179.29	155.80	86.9%	BOM
176	110%	1.42	235%	.75	35%	4.20	179.29	147.93	82.5%	BOM
177	200%	1.42	0%	.00	20%	4.80	154.29	139.67	90.5%	BOM
178	200%	1.42	0%	.00	20%	4.20	154.29	135.08	87.5%	BOM
179	200%	1.42	0%	.00	35%	4.80	154.29	137.69	89.2%	BOM
180	200%	1.42	0%	.00	35%	4.20	154.29	129.90	84.2%	BOM

tabela 1.17

zona climática de inverno I3
com ganhos solares
soluções grupo 2

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni3	Nic3	Nic/Ni	cls
1	200%	1.25	235%	.65	10%	3.60	213.91	182.91	85.5%	SUF
2	200%	1.25	235%	.65	10%	3.00	213.91	183.05	85.6%	SUF
3	200%	1.25	235%	.65	20%	3.60	221.97	175.95	79.3%	SUF
4	200%	1.25	235%	.65	20%	3.00	221.97	176.22	79.4%	SUF
5	200%	1.25	235%	.65	35%	3.60	221.97	166.44	75.0%	SUF
6	200%	1.25	235%	.65	35%	3.00	221.97	166.53	75.0%	SUF
7	200%	1.25	235%	.50	10%	3.60	213.91	169.37	79.2%	SUF
8	200%	1.25	235%	.50	10%	3.00	213.91	169.52	79.2%	SUF
9	200%	1.25	235%	.50	20%	3.60	221.97	162.44	73.2%	SUF
10	200%	1.25	235%	.50	20%	3.00	221.97	162.69	73.3%	SUF
11	20%	1.25	0%	.00	10%	3.60	60.86	38.38	63.1%	BOM
12	20%	1.25	0%	.00	10%	3.00	60.86	38.34	63.0%	BOM
13	20%	1.25	0%	.00	20%	3.60	68.93	35.18	51.0%	BOM
14	20%	1.25	0%	.00	20%	3.00	68.93	34.47	50.0%	BOM
15	20%	1.25	0%	.00	35%	3.60	68.93	34.17	49.6%	BOM
16	20%	1.25	0%	.00	35%	3.00	68.93	32.36	46.9%	BOM
17	20%	1.25	117%	.65	10%	3.60	94.56	67.14	71.0%	BOM
18	20%	1.25	117%	.65	10%	3.00	94.56	67.24	71.1%	BOM
19	20%	1.25	117%	.65	20%	3.60	102.62	61.79	60.2%	BOM
20	20%	1.25	117%	.65	20%	3.00	102.62	61.53	60.0%	BOM
21	20%	1.25	117%	.65	35%	3.60	102.62	57.76	56.3%	BOM
22	20%	1.25	117%	.65	35%	3.00	102.62	56.43	55.0%	BOM
23	20%	1.25	117%	.50	10%	3.60	94.56	60.45	63.9%	BOM
24	20%	1.25	117%	.50	10%	3.00	94.56	60.53	64.0%	BOM
25	20%	1.25	117%	.50	20%	3.60	102.62	55.46	54.0%	BOM
26	20%	1.25	117%	.50	20%	3.00	102.62	55.11	53.7%	BOM
27	20%	1.25	117%	.50	35%	3.60	102.62	52.07	50.7%	BOM
28	20%	1.25	117%	.50	35%	3.00	102.62	50.62	49.3%	BOM
29	20%	1.25	235%	.65	10%	3.60	128.54	96.52	75.1%	BOM
30	20%	1.25	235%	.65	10%	3.00	128.54	96.66	75.2%	BOM
31	20%	1.25	235%	.65	20%	3.60	136.61	90.20	66.0%	BOM
32	20%	1.25	235%	.65	20%	3.00	136.61	90.22	66.0%	BOM
33	20%	1.25	235%	.65	35%	3.60	136.61	83.86	61.4%	BOM
34	20%	1.25	235%	.65	35%	3.00	136.61	83.03	60.8%	BOM
35	20%	1.25	235%	.50	10%	3.60	128.54	83.00	64.6%	BOM
36	20%	1.25	235%	.50	10%	3.00	128.54	83.13	64.7%	BOM
37	20%	1.25	235%	.50	20%	3.60	136.61	77.03	56.4%	BOM
38	20%	1.25	235%	.50	20%	3.00	136.61	76.94	56.3%	BOM
39	20%	1.25	235%	.50	35%	3.60	136.61	71.65	52.4%	BOM
40	20%	1.25	235%	.50	35%	3.00	136.61	70.60	51.7%	BOM
41	20%	.80	0%	.00	10%	3.60	60.86	35.06	57.6%	BOM
42	20%	.80	0%	.00	20%	3.60	68.93	32.22	46.7%	BOM
43	20%	.80	0%	.00	35%	3.60	68.93	31.59	45.8%	BOM
44	20%	.80	117%	.65	10%	3.60	94.56	63.70	67.4%	BOM
45	20%	.80	117%	.65	20%	3.60	102.62	58.54	57.0%	BOM
46	20%	.80	117%	.65	35%	3.60	102.62	54.83	53.4%	BOM
47	20%	.80	117%	.50	10%	3.60	94.56	57.02	60.3%	BOM
48	20%	.80	117%	.50	20%	3.60	102.62	52.25	50.9%	BOM
49	20%	.80	117%	.50	35%	3.60	102.62	49.20	47.9%	BOM
50	20%	.80	235%	.65	10%	3.60	128.54	93.07	72.4%	BOM
51	20%	.80	235%	.65	20%	3.60	136.61	86.82	63.6%	BOM
52	20%	.80	235%	.65	35%	3.60	136.61	80.71	59.1%	BOM
53	20%	.80	235%	.50	10%	3.60	128.54	79.55	61.9%	BOM
54	20%	.80	235%	.50	20%	3.60	136.61	73.69	53.9%	BOM
55	20%	.80	235%	.50	35%	3.60	136.61	68.58	50.2%	BOM

linha	af	Kfc	ah	Kh	aenv	KenV	Ni3	Nic3	Nic/Ni	cls
56	110%	1.25	0%	.00	10%	3.60	103.55	81.09	78.3%	BOM
57	110%	1.25	0%	.00	10%	3.00	103.55	81.21	78.4%	BOM
58	110%	1.25	0%	.00	20%	3.60	111.61	75.17	67.4%	BOM
59	110%	1.25	0%	.00	20%	3.00	111.61	75.06	67.3%	BOM
60	110%	1.25	0%	.00	35%	3.60	111.61	69.94	62.7%	BOM
61	110%	1.25	0%	.00	35%	3.00	111.61	68.86	61.7%	BOM
62	110%	1.25	117%	.65	10%	3.60	137.24	110.26	80.3%	BOM
63	110%	1.25	117%	.65	10%	3.00	137.24	110.40	80.4%	BOM
64	110%	1.25	117%	.65	20%	3.60	145.31	103.70	71.4%	BOM
65	110%	1.25	117%	.65	20%	3.00	145.31	103.80	71.4%	BOM
66	110%	1.25	117%	.65	35%	3.60	145.31	96.55	66.4%	BOM
67	110%	1.25	117%	.65	35%	3.00	145.31	95.92	66.0%	BOM
68	110%	1.25	117%	.50	10%	3.60	137.24	103.52	75.4%	BOM
69	110%	1.25	117%	.50	10%	3.00	137.24	103.66	75.5%	BOM
70	110%	1.25	117%	.50	20%	3.60	145.31	97.07	66.8%	BOM
71	110%	1.25	117%	.50	20%	3.00	145.31	97.13	66.8%	BOM
72	110%	1.25	117%	.50	35%	3.60	145.31	90.30	62.1%	BOM
73	110%	1.25	117%	.50	35%	3.00	145.31	89.57	61.6%	BOM
74	110%	1.25	235%	.65	10%	3.60	171.23	139.71	81.6%	BOM
75	110%	1.25	235%	.65	10%	3.00	171.23	139.85	81.7%	BOM
76	110%	1.25	235%	.65	20%	3.60	179.29	132.89	74.1%	BOM
77	110%	1.25	235%	.65	20%	3.00	179.29	133.09	74.2%	BOM
78	110%	1.25	235%	.65	35%	3.60	179.29	124.45	69.4%	BOM
79	110%	1.25	235%	.65	35%	3.00	179.29	124.18	69.3%	BOM
80	110%	1.25	235%	.50	10%	3.60	171.23	126.17	73.7%	BOM
81	110%	1.25	235%	.50	10%	3.00	171.23	126.32	73.8%	BOM
82	110%	1.25	235%	.50	20%	3.60	179.29	119.44	66.6%	BOM
83	110%	1.25	235%	.50	20%	3.00	179.29	119.61	66.7%	BOM
84	110%	1.25	235%	.50	35%	3.60	179.29	111.53	62.2%	BOM
85	110%	1.25	235%	.50	35%	3.00	179.29	111.11	62.0%	BOM
86	110%	.80	0%	.00	10%	3.60	103.55	62.16	60.0%	BOM
87	110%	.80	0%	.00	20%	3.60	111.61	57.08	51.1%	BOM
88	110%	.80	0%	.00	35%	3.60	111.61	53.52	47.9%	BOM
89	110%	.80	117%	.65	10%	3.60	137.24	91.26	66.5%	BOM
90	110%	.80	117%	.65	20%	3.60	145.31	85.06	58.5%	BOM
91	110%	.80	117%	.65	35%	3.60	145.31	79.07	54.4%	BOM
92	110%	.80	117%	.50	10%	3.60	137.24	84.54	61.6%	BOM
93	110%	.80	117%	.50	20%	3.60	145.31	78.52	54.0%	BOM
94	110%	.80	117%	.50	35%	3.60	145.31	73.02	50.3%	BOM
95	110%	.80	235%	.65	10%	3.60	171.23	120.70	70.5%	BOM
96	110%	.80	235%	.65	10%	3.00	171.23	120.85	70.6%	BOM
97	110%	.80	235%	.65	20%	3.60	179.29	114.02	63.6%	BOM
98	110%	.80	235%	.65	35%	3.60	179.29	106.35	59.3%	BOM
99	110%	.80	235%	.50	10%	3.60	171.23	107.17	62.6%	BOM
100	110%	.80	235%	.50	20%	3.60	179.29	100.66	56.1%	BOM
101	110%	.80	235%	.50	35%	3.60	179.29	93.67	52.2%	BOM
102	200%	1.25	0%	.00	10%	3.60	146.23	124.25	85.0%	BOM
103	200%	1.25	0%	.00	10%	3.00	146.23	124.40	85.1%	BOM
104	200%	1.25	0%	.00	20%	3.60	154.29	117.54	76.2%	BOM
105	200%	1.25	0%	.00	20%	3.00	154.29	117.70	76.3%	BOM
106	200%	1.25	0%	.00	35%	3.60	154.29	109.71	71.1%	BOM
107	200%	1.25	0%	.00	35%	3.00	154.29	109.26	70.8%	BOM
108	200%	1.25	117%	.65	10%	3.60	179.92	153.45	85.3%	BOM
109	200%	1.25	117%	.65	10%	3.00	179.92	153.60	85.4%	BOM
110	200%	1.25	117%	.65	20%	3.60	187.99	146.57	78.0%	BOM
111	200%	1.25	117%	.65	20%	3.00	187.99	146.80	78.1%	BOM
112	200%	1.25	117%	.65	35%	3.60	187.99	137.71	73.3%	BOM
113	200%	1.25	117%	.65	35%	3.00	187.99	137.57	73.2%	BOM
114	200%	1.25	117%	.50	10%	3.60	179.92	146.71	81.5%	BOM
115	200%	1.25	117%	.50	10%	3.00	179.92	146.86	81.6%	BOM
116	200%	1.25	117%	.50	20%	3.60	187.99	139.86	74.4%	BOM
117	200%	1.25	117%	.50	20%	3.00	187.99	140.08	74.5%	BOM
118	200%	1.25	117%	.50	35%	3.60	187.99	131.19	69.8%	BOM
119	200%	1.25	117%	.50	35%	3.00	187.99	131.00	69.7%	BOM
120	200%	1.25	235%	.50	35%	3.60	221.97	153.19	69.0%	BOM
121	200%	1.25	235%	.50	35%	3.00	221.97	153.18	69.0%	BOM

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni3	Nic3	Nic/Ni	cls
122	200%	.80	0%	.00	10%	3.60	146.23	89.71	61.4%	BOM
123	200%	.80	0%	.00	20%	3.60	154.29	83.55	54.1%	BOM
124	200%	.80	0%	.00	35%	3.60	154.29	77.67	50.3%	BOM
125	200%	.80	117%	.65	10%	3.60	179.92	118.90	66.1%	BOM
126	200%	.80	117%	.65	20%	3.60	187.99	112.24	59.7%	BOM
127	200%	.80	117%	.65	35%	3.60	187.99	104.65	55.7%	BOM
128	200%	.80	117%	.50	10%	3.60	179.92	112.16	62.3%	BOM
129	200%	.80	117%	.50	20%	3.60	187.99	105.58	56.2%	BOM
130	200%	.80	117%	.50	35%	3.60	187.99	98.32	52.3%	BOM
131	200%	.80	235%	.65	10%	3.60	213.91	148.35	69.4%	BOM
132	200%	.80	235%	.65	10%	3.00	213.91	148.49	69.4%	BOM
133	200%	.80	235%	.65	20%	3.60	221.97	141.48	63.7%	BOM
134	200%	.80	235%	.65	20%	3.00	221.97	141.70	63.8%	BOM
135	200%	.80	235%	.65	35%	3.60	221.97	132.77	59.8%	BOM
136	200%	.80	235%	.65	35%	3.00	221.97	132.59	59.7%	BOM
137	200%	.80	235%	.50	10%	3.60	213.91	134.81	63.0%	BOM
138	200%	.80	235%	.50	10%	3.00	213.91	134.96	63.1%	BOM
139	200%	.80	235%	.50	20%	3.60	221.97	128.02	57.7%	BOM
140	200%	.80	235%	.50	20%	3.00	221.97	128.21	57.8%	BOM
141	200%	.80	235%	.50	35%	3.60	221.97	119.76	54.0%	BOM
142	20%	.80	235%	.65	10%	3.00	128.54	93.20	72.5%	MB
143	110%	.80	117%	.65	10%	3.00	137.24	91.40	66.6%	MB
144	110%	.80	235%	.65	20%	3.00	179.29	114.17	63.7%	MB
145	110%	.80	235%	.65	35%	3.00	179.29	105.86	59.0%	MB
146	110%	.80	235%	.50	10%	3.00	171.23	107.31	62.7%	MB
147	110%	.80	235%	.50	20%	3.00	179.29	100.74	56.2%	MB
148	110%	.80	235%	.50	35%	3.00	179.29	93.00	51.9%	MB
149	200%	.80	117%	.65	10%	3.00	179.92	119.04	66.2%	MB
150	200%	.80	117%	.65	20%	3.00	187.99	112.37	59.8%	MB
151	200%	.80	117%	.65	35%	3.00	187.99	104.14	55.4%	MB
152	200%	.80	117%	.50	10%	3.00	179.92	112.30	62.4%	MB
153	200%	.80	117%	.50	20%	3.00	187.99	105.69	56.2%	MB
154	200%	.80	117%	.50	35%	3.00	187.99	97.72	52.0%	MB
155	200%	.80	235%	.50	35%	3.00	221.97	119.44	53.8%	MB
156	20%	.80	0%	.00	10%	3.00	60.86	34.98	57.5%	EXC
157	20%	.80	0%	.00	20%	3.00	68.93	31.45	45.6%	EXC
158	20%	.80	0%	.00	35%	3.00	68.93	29.73	43.1%	EXC
159	20%	.80	117%	.65	10%	3.00	94.56	63.80	67.5%	EXC
160	20%	.80	117%	.65	20%	3.00	102.62	58.23	56.7%	EXC
161	20%	.80	117%	.65	35%	3.00	102.62	53.44	52.1%	EXC
162	20%	.80	117%	.50	10%	3.00	94.56	57.09	60.4%	EXC
163	20%	.80	117%	.50	20%	3.00	102.62	51.85	50.5%	EXC
164	20%	.80	117%	.50	35%	3.00	102.62	47.70	46.5%	EXC
165	20%	.80	235%	.65	20%	3.00	136.61	86.81	63.5%	EXC
166	20%	.80	235%	.65	35%	3.00	136.61	79.83	58.4%	EXC
167	20%	.80	235%	.50	10%	3.00	128.54	79.68	62.0%	EXC
168	20%	.80	235%	.50	20%	3.00	136.61	73.57	53.9%	EXC
169	20%	.80	235%	.50	35%	3.00	136.61	67.48	49.4%	EXC
170	110%	.80	0%	.00	10%	3.00	103.55	62.25	60.1%	EXC
171	110%	.80	0%	.00	20%	3.00	111.61	56.75	50.8%	EXC
172	110%	.80	0%	.00	35%	3.00	111.61	52.10	46.7%	EXC
173	110%	.80	117%	.65	20%	3.00	145.31	85.04	58.5%	EXC
174	110%	.80	117%	.65	35%	3.00	145.31	78.16	53.8%	EXC
175	110%	.80	117%	.50	10%	3.00	137.24	84.66	61.7%	EXC
176	110%	.80	117%	.50	20%	3.00	145.31	78.44	54.0%	EXC
177	110%	.80	117%	.50	35%	3.00	145.31	71.99	49.5%	EXC
178	200%	.80	0%	.00	10%	3.00	146.23	89.84	61.4%	EXC
179	200%	.80	0%	.00	20%	3.00	154.29	83.51	54.1%	EXC
180	200%	.80	0%	.00	35%	3.00	154.29	76.73	49.7%	EXC

tabela 1.18

zona climática de inverno 13
com ganhos solares
soluções grupo 3

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni3	Nic3	Nic/Ni	cls
1	200%	.50	235%	.45	10%	2.60	213.91	105.87	49.5%	MB
2	200%	.50	235%	.45	10%	2.20	213.91	104.34	48.8%	MB
3	200%	.50	235%	.45	20%	2.60	221.97	97.80	44.1%	MB
4	200%	.35	235%	.45	10%	2.60	213.91	94.35	44.1%	MB
5	200%	.35	235%	.45	10%	2.20	213.91	92.82	43.4%	MB
6	200%	.50	235%	.30	10%	2.60	213.91	92.34	43.2%	MB
7	200%	.50	235%	.45	20%	2.20	221.97	94.76	42.7%	MB
8	200%	.50	235%	.30	10%	2.20	213.91	90.80	42.5%	MB
9	20%	.50	235%	.45	10%	2.60	128.54	71.34	55.5%	EXC
10	20%	.35	235%	.45	10%	2.60	128.54	70.19	54.6%	EXC
11	20%	.50	235%	.45	10%	2.20	128.54	69.81	54.3%	EXC
12	20%	.50	117%	.45	10%	2.60	94.56	51.05	54.0%	EXC
13	20%	.35	235%	.45	10%	2.20	128.54	68.66	53.4%	EXC
14	20%	.35	117%	.45	10%	2.60	94.56	49.91	52.8%	EXC
15	20%	.50	117%	.45	10%	2.20	94.56	49.53	52.4%	EXC
16	110%	.50	235%	.45	10%	2.60	171.23	88.60	51.7%	EXC
17	20%	.50	0%	.00	10%	2.60	60.86	31.27	51.4%	EXC
18	20%	.35	117%	.45	10%	2.20	94.56	48.39	51.2%	EXC
19	110%	.50	235%	.45	10%	2.20	171.23	87.06	50.8%	EXC
20	110%	.50	117%	.45	10%	2.60	137.24	68.24	49.7%	EXC
21	20%	.35	0%	.00	10%	2.60	60.86	30.17	49.6%	EXC
22	20%	.50	0%	.00	10%	2.20	60.86	29.80	49.0%	EXC
23	110%	.50	117%	.45	10%	2.20	137.24	66.71	48.6%	EXC
24	110%	.35	235%	.45	10%	2.60	171.23	82.27	48.0%	EXC
25	200%	.50	117%	.45	10%	2.60	179.92	85.49	47.5%	EXC
26	20%	.35	0%	.00	10%	2.20	60.86	28.70	47.2%	EXC
27	110%	.35	235%	.45	10%	2.20	171.23	80.73	47.1%	EXC
28	20%	.50	117%	.30	10%	2.60	94.56	44.40	47.0%	EXC
29	20%	.50	235%	.45	20%	2.60	136.61	64.00	46.8%	EXC
30	200%	.50	117%	.45	10%	2.20	179.92	83.95	46.7%	EXC
31	110%	.50	0%	.00	10%	2.60	103.55	48.15	46.5%	EXC
32	20%	.35	235%	.45	20%	2.60	136.61	62.89	46.0%	EXC
33	20%	.35	117%	.30	10%	2.60	94.56	43.27	45.8%	EXC
34	20%	.50	117%	.30	10%	2.20	94.56	42.89	45.4%	EXC
35	110%	.50	235%	.45	20%	2.60	179.29	80.78	45.1%	EXC
36	110%	.35	117%	.45	10%	2.60	137.24	61.92	45.1%	EXC
37	20%	.50	235%	.30	10%	2.60	128.54	57.86	45.0%	EXC
38	110%	.50	0%	.00	10%	2.20	103.55	46.63	45.0%	EXC
39	110%	.50	117%	.30	10%	2.60	137.24	61.52	44.8%	EXC
40	20%	.50	235%	.45	20%	2.20	136.61	61.05	44.7%	EXC
41	200%	.50	0%	.00	10%	2.60	146.23	65.31	44.7%	EXC
42	20%	.35	117%	.30	10%	2.20	94.56	41.76	44.2%	EXC
43	20%	.35	235%	.30	10%	2.60	128.54	56.71	44.1%	EXC
44	110%	.35	117%	.45	10%	2.20	137.24	60.40	44.0%	EXC
45	20%	.35	235%	.45	20%	2.20	136.61	59.95	43.9%	EXC
46	20%	.50	235%	.30	10%	2.20	128.54	56.33	43.8%	EXC
47	110%	.50	235%	.30	10%	2.60	171.23	75.08	43.8%	EXC
48	200%	.50	117%	.30	10%	2.60	179.92	78.76	43.8%	EXC
49	110%	.50	117%	.30	10%	2.20	137.24	59.99	43.7%	EXC
50	20%	.50	117%	.45	20%	2.60	102.62	44.75	43.6%	EXC
51	200%	.50	0%	.00	10%	2.20	146.23	63.78	43.6%	EXC
52	110%	.50	235%	.45	20%	2.20	179.29	77.78	43.4%	EXC
53	110%	.50	235%	.30	10%	2.20	171.23	73.54	43.0%	EXC
54	20%	.35	235%	.30	10%	2.20	128.54	55.19	42.9%	EXC
55	200%	.50	117%	.30	10%	2.20	179.92	77.22	42.9%	EXC
56	20%	.35	117%	.45	20%	2.60	102.62	43.69	42.6%	EXC

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni3	Nic3	Nic/Ni	cls
57	110%	.50	117%	.45	20%	2.60	145.31	61.01	42.0%	EXC
58	110%	.35	235%	.45	20%	2.60	179.29	74.60	41.6%	EXC
59	20%	.50	235%	.45	35%	2.60	136.61	56.67	41.5%	EXC
60	200%	.50	117%	.45	20%	2.60	187.99	77.74	41.4%	EXC
61	200%	.35	117%	.45	10%	2.60	179.92	73.98	41.1%	EXC
62	20%	.50	117%	.45	20%	2.20	102.62	41.94	40.9%	EXC
63	20%	.35	235%	.45	35%	2.60	136.61	55.66	40.7%	EXC
64	110%	.35	0%	.00	10%	2.60	103.55	41.91	40.5%	EXC
65	200%	.35	117%	.45	10%	2.20	179.92	72.45	40.3%	EXC
66	110%	.50	235%	.45	35%	2.60	179.29	72.08	40.2%	EXC
67	110%	.35	117%	.30	10%	2.60	137.24	55.22	40.2%	EXC
68	110%	.35	235%	.30	10%	2.60	171.23	68.75	40.2%	EXC
69	110%	.50	117%	.45	20%	2.20	145.31	58.08	40.0%	EXC
70	110%	.35	235%	.45	20%	2.20	179.29	71.61	39.9%	EXC
71	20%	.35	117%	.45	20%	2.20	102.62	40.89	39.8%	EXC
72	200%	.50	117%	.45	20%	2.20	187.99	74.75	39.8%	EXC
73	200%	.50	235%	.45	35%	2.60	221.97	88.04	39.7%	EXC
74	110%	.35	235%	.30	10%	2.20	171.23	67.22	39.3%	EXC
75	110%	.35	117%	.30	10%	2.20	137.24	53.70	39.1%	EXC
76	20%	.50	0%	.00	20%	2.60	68.93	26.86	39.0%	EXC
77	110%	.35	0%	.00	10%	2.20	103.55	40.40	39.0%	EXC
78	200%	.35	235%	.45	20%	2.60	221.97	86.44	38.9%	EXC
79	20%	.50	117%	.45	35%	2.60	102.62	39.51	38.5%	EXC
80	20%	.50	235%	.45	35%	2.20	136.61	52.02	38.1%	EXC
81	200%	.50	235%	.30	20%	2.60	221.97	84.46	38.0%	EXC
82	200%	.50	117%	.30	20%	2.60	187.99	71.18	37.9%	EXC
83	110%	.35	117%	.45	20%	2.60	145.31	54.98	37.8%	EXC
84	200%	.35	235%	.30	10%	2.60	213.91	80.83	37.8%	EXC
85	110%	.50	0%	.00	20%	2.60	111.61	42.06	37.7%	EXC
86	110%	.50	235%	.30	20%	2.60	179.29	67.61	37.7%	EXC
87	200%	.50	0%	.00	20%	2.60	154.29	58.21	37.7%	EXC
88	20%	.50	117%	.30	20%	2.60	102.62	38.61	37.6%	EXC
89	20%	.35	0%	.00	20%	2.60	68.93	25.90	37.6%	EXC
90	20%	.35	117%	.45	35%	2.60	102.62	38.58	37.6%	EXC
91	110%	.50	117%	.30	20%	2.60	145.31	54.60	37.6%	EXC
92	200%	.35	235%	.45	20%	2.20	221.97	83.42	37.6%	EXC
93	110%	.50	235%	.45	35%	2.20	179.29	67.22	37.5%	EXC
94	20%	.50	235%	.30	20%	2.60	136.61	51.13	37.4%	EXC
95	20%	.35	235%	.45	35%	2.20	136.61	51.03	37.4%	EXC
96	200%	.50	235%	.45	35%	2.20	221.97	83.03	37.4%	EXC
97	200%	.35	117%	.30	10%	2.60	179.92	67.26	37.4%	EXC
98	110%	.50	117%	.45	35%	2.60	145.31	53.97	37.1%	EXC
99	200%	.35	235%	.30	10%	2.20	213.91	79.29	37.1%	EXC
100	110%	.35	235%	.45	35%	2.60	179.29	66.35	37.0%	EXC
101	200%	.50	117%	.45	35%	2.60	187.99	69.26	36.8%	EXC
102	200%	.35	0%	.00	10%	2.60	146.23	53.85	36.8%	EXC
103	200%	.50	235%	.30	20%	2.20	221.97	81.44	36.7%	EXC
104	20%	.35	117%	.30	20%	2.60	102.62	37.58	36.6%	EXC
105	20%	.35	235%	.30	20%	2.60	136.61	50.05	36.6%	EXC
106	200%	.35	117%	.30	10%	2.20	179.92	65.73	36.5%	EXC
107	200%	.50	117%	.30	20%	2.20	187.99	68.20	36.3%	EXC
108	110%	.50	235%	.30	20%	2.20	179.29	64.65	36.1%	EXC
109	110%	.35	117%	.45	20%	2.20	145.31	52.08	35.8%	EXC
110	200%	.50	0%	.00	20%	2.20	154.29	55.29	35.8%	EXC
111	200%	.35	0%	.00	10%	2.20	146.23	52.33	35.8%	EXC
112	110%	.50	117%	.30	20%	2.20	145.31	51.70	35.6%	EXC
113	200%	.35	117%	.45	20%	2.60	187.99	66.55	35.4%	EXC
114	20%	.50	0%	.00	20%	2.20	68.93	24.31	35.3%	EXC
115	20%	.50	235%	.30	20%	2.20	136.61	48.26	35.3%	EXC
116	110%	.50	0%	.00	20%	2.20	111.61	39.27	35.2%	EXC
117	20%	.50	0%	.00	35%	2.60	68.93	24.12	35.0%	EXC
118	20%	.50	117%	.30	20%	2.20	102.62	35.86	34.9%	EXC
119	200%	.35	235%	.45	35%	2.60	221.97	77.35	34.8%	EXC
120	20%	.35	235%	.30	20%	2.20	136.61	47.18	34.5%	EXC
121	20%	.50	117%	.45	35%	2.20	102.62	35.23	34.3%	EXC
122	110%	.35	235%	.45	35%	2.20	179.29	61.56	34.3%	EXC

linha	af	Kfc	ah	Kh	aenv	Kenv	Ni3	Nic3	Nic/Ni	cls
123	110%	.35	235%	.30	20%	2.60	179.29	61.51	34.3%	EXC
124	200%	.50	117%	.45	35%	2.20	187.99	64.43	34.3%	EXC
125	20%	.35	117%	.30	20%	2.20	102.62	34.84	34.0%	EXC
126	110%	.50	117%	.45	35%	2.20	145.31	49.37	34.0%	EXC
127	200%	.50	235%	.30	35%	2.60	221.97	75.50	34.0%	EXC
128	20%	.35	0%	.00	20%	2.20	68.93	23.37	33.9%	EXC
129	20%	.35	0%	.00	35%	2.60	68.93	23.31	33.8%	EXC
130	200%	.35	117%	.45	20%	2.20	187.99	63.59	33.8%	EXC
131	200%	.50	117%	.30	35%	2.60	187.99	63.21	33.6%	EXC
132	20%	.35	117%	.45	35%	2.20	102.62	34.33	33.5%	EXC
133	110%	.35	117%	.30	20%	2.60	145.31	48.65	33.5%	EXC
134	110%	.50	235%	.30	35%	2.60	179.29	59.95	33.4%	EXC
135	110%	.35	117%	.45	35%	2.60	145.31	48.55	33.4%	EXC
136	20%	.50	117%	.30	35%	2.60	102.62	34.17	33.3%	EXC
137	110%	.50	0%	.00	35%	2.60	111.61	37.16	33.3%	EXC
138	200%	.50	0%	.00	35%	2.60	154.29	51.44	33.3%	EXC
139	110%	.50	117%	.30	35%	2.60	145.31	48.21	33.2%	EXC
140	20%	.50	235%	.30	35%	2.60	136.61	45.13	33.0%	EXC
141	200%	.35	235%	.30	20%	2.60	221.97	73.19	33.0%	EXC
142	110%	.35	235%	.30	20%	2.20	179.29	58.57	32.7%	EXC
143	110%	.35	0%	.00	20%	2.60	111.61	36.34	32.6%	EXC
144	200%	.35	235%	.45	35%	2.20	221.97	72.43	32.6%	EXC
145	20%	.35	117%	.30	35%	2.60	102.62	33.27	32.4%	EXC
146	20%	.35	235%	.30	35%	2.60	136.61	44.17	32.3%	EXC
147	200%	.35	117%	.30	20%	2.60	187.99	60.08	32.0%	EXC
148	200%	.50	235%	.30	35%	2.20	221.97	70.60	31.8%	EXC
149	200%	.35	235%	.30	20%	2.20	221.97	70.21	31.6%	EXC
150	110%	.35	117%	.30	20%	2.20	145.31	45.80	31.5%	EXC
151	200%	.35	117%	.45	35%	2.60	187.99	58.99	31.4%	EXC
152	200%	.50	117%	.30	35%	2.20	187.99	58.46	31.1%	EXC
153	110%	.50	235%	.30	35%	2.20	179.29	55.25	30.8%	EXC
154	200%	.35	0%	.00	20%	2.60	154.29	47.36	30.7%	EXC
155	110%	.35	235%	.30	35%	2.60	179.29	54.42	30.4%	EXC
156	200%	.50	0%	.00	35%	2.20	154.29	46.89	30.4%	EXC
157	200%	.35	117%	.30	20%	2.20	187.99	57.15	30.4%	EXC
158	110%	.35	117%	.45	35%	2.20	145.31	44.06	30.3%	EXC
159	110%	.50	117%	.30	35%	2.20	145.31	43.73	30.1%	EXC
160	110%	.35	0%	.00	20%	2.20	111.61	33.62	30.1%	EXC
161	20%	.50	235%	.30	35%	2.20	136.61	40.71	29.8%	EXC
162	20%	.50	0%	.00	35%	2.20	68.93	20.40	29.6%	EXC
163	110%	.50	0%	.00	35%	2.20	111.61	32.95	29.5%	EXC
164	110%	.35	117%	.30	35%	2.60	145.31	42.93	29.5%	EXC
165	20%	.50	117%	.30	35%	2.20	102.62	30.05	29.3%	EXC
166	200%	.35	235%	.30	35%	2.60	221.97	65.06	29.3%	EXC
167	20%	.35	235%	.30	35%	2.20	136.61	39.77	29.1%	EXC
168	110%	.35	0%	.00	35%	2.60	111.61	32.21	28.9%	EXC
169	200%	.35	0%	.00	20%	2.20	154.29	44.52	28.9%	EXC
170	200%	.35	117%	.45	35%	2.20	187.99	54.30	28.9%	EXC
171	20%	.35	0%	.00	35%	2.20	68.93	19.63	28.5%	EXC
172	20%	.35	117%	.30	35%	2.20	102.62	29.19	28.4%	EXC
173	200%	.35	117%	.30	35%	2.60	187.99	53.12	28.3%	EXC
174	110%	.35	235%	.30	35%	2.20	179.29	49.81	27.8%	EXC
175	200%	.35	235%	.30	35%	2.20	221.97	60.29	27.2%	EXC
176	200%	.35	0%	.00	35%	2.60	154.29	41.80	27.1%	EXC
177	110%	.35	117%	.30	35%	2.20	145.31	38.57	26.5%	EXC
178	200%	.35	117%	.30	35%	2.20	187.99	48.54	25.8%	EXC
179	110%	.35	0%	.00	35%	2.20	111.61	28.16	25.2%	EXC
180	200%	.35	0%	.00	35%	2.20	154.29	37.46	24.3%	EXC

ANEXO 2

tabela 2.1

habitação T2 piso intermédio
zona climática de inverno I1
sem ganhos solares

sol	par ext	isol ext	par int	isol int	vidro	caixilho	Kf	Kf_c	Kint	Kenv	Nic1	%Ni	cls
1	11+11	0	15	0	simples	metal	1.40	2.10	1.82	4.20	31.25	1.06	INS
2	11+11	0	15	0	simples	madeira	1.40	2.10	1.82	3.70	30.76	1.05	INS
5	11+11	0	22	0	simples	metal	1.40	2.10	1.42	4.20	30.48	1.04	INS
3	11+11	0	15	0	duplo	metal	1.40	2.10	1.82	3.10	30.17	1.03	INS
6	11+11	0	22	0	simples	madeira	1.40	2.10	1.42	3.70	29.98	1.02	INS
7	11+11	0	22	0	duplo	metal	1.40	2.10	1.42	3.10	29.39	1.00	SUF
4	11+11	0	15	0	duplo	plastico	1.40	2.10	1.82	2.20	29.28	1.00	SUF
9	11+11	0	11+11	20	simples	metal	1.40	2.10	.80	4.20	29.27	1.00	SUF
17	11+15	0	15	0	simples	metal	1.20	1.80	1.82	4.20	29.15	.99	SUF
13	11+11	0	11+11	40	simples	metal	1.40	2.10	.57	4.20	28.82	.98	SUF
10	11+11	0	11+11	20	simples	madeira	1.40	2.10	.80	3.70	28.78	.98	SUF
18	11+15	0	15	0	simples	madeira	1.20	1.80	1.82	3.70	28.65	.98	SUF
8	11+11	0	22	0	duplo	plastico	1.40	2.10	1.42	2.20	28.50	.97	SUF
21	11+15	0	22	0	simples	metal	1.20	1.80	1.42	4.20	28.37	.97	SUF
14	11+11	0	11+11	40	simples	madeira	1.40	2.10	.57	3.70	28.33	.96	SUF
11	11+11	0	11+11	20	duplo	metal	1.40	2.10	.80	3.10	28.18	.96	SUF
19	11+15	0	15	0	duplo	metal	1.20	1.80	1.82	3.10	28.06	.96	SUF
22	11+15	0	22	0	simples	madeira	1.20	1.80	1.42	3.70	27.88	.95	BOM
15	11+11	0	11+11	40	duplo	metal	1.40	2.10	.57	3.10	27.74	.94	BOM
12	11+11	0	11+11	20	duplo	plastico	1.40	2.10	.80	2.20	27.29	.93	BOM
23	11+15	0	22	0	duplo	metal	1.20	1.80	1.42	3.10	27.28	.93	BOM
20	11+15	0	15	0	duplo	plastico	1.20	1.80	1.82	2.20	27.17	.92	BOM
25	11+15	0	11+11	20	simples	metal	1.20	1.80	.80	4.20	27.17	.92	BOM
16	11+11	0	11+11	40	duplo	plastico	1.40	2.10	.57	2.20	26.85	.91	BOM
29	11+15	0	11+11	40	simples	metal	1.20	1.80	.57	4.20	26.72	.91	BOM
26	11+15	0	11+11	20	simples	madeira	1.20	1.80	.80	3.70	26.67	.91	BOM
24	11+15	0	22	0	duplo	plastico	1.20	1.80	1.42	2.20	26.39	.90	BOM
30	11+15	0	11+11	40	simples	madeira	1.20	1.80	.57	3.70	26.22	.89	BOM
27	11+15	0	11+11	20	duplo	metal	1.20	1.80	.80	3.10	26.08	.89	BOM
31	11+15	0	11+11	40	duplo	metal	1.20	1.80	.57	3.10	25.63	.87	BOM
28	11+15	0	11+11	20	duplo	plastico	1.20	1.80	.80	2.20	25.19	.86	BOM
33	11+15	20	15	0	simples	metal	.75	1.20	1.82	4.20	24.93	.85	BOM
32	11+15	0	11+11	40	duplo	plastico	1.20	1.80	.57	2.20	24.74	.84	BOM
34	11+15	20	15	0	simples	madeira	.75	1.20	1.82	3.70	24.44	.83	BOM
35	11+15	20	15	0	duplo	metal	.75	1.20	1.82	3.10	23.85	.81	BOM
49	22	20	15	0	simples	metal	.95	.95	1.82	4.20	23.18	.79	BOM
36	11+15	20	15	0	duplo	plastico	.75	1.20	1.82	2.20	22.96	.78	BOM
50	22	20	15	0	simples	madeira	.95	.95	1.82	3.70	22.68	.77	BOM
51	22	20	15	0	duplo	metal	.95	.95	1.82	3.10	22.09	.75	BOM
52	22	20	15	0	duplo	plastico	.95	.95	1.82	2.20	21.20	.72	BOM
65	22	60	15	0	simples	metal	.35	.35	1.82	4.20	18.96	.65	BOM
66	22	60	15	0	simples	madeira	.35	.35	1.82	3.70	18.47	.63	BOM
67	22	60	15	0	duplo	metal	.35	.35	1.82	3.10	17.88	.61	BOM
68	22	60	15	0	duplo	plastico	.35	.35	1.82	2.20	16.99	.58	BOM
37	11+15	20	22	0	simples	metal	.75	1.20	1.42	4.20	24.16	.82	MB
38	11+15	20	22	0	simples	madeira	.75	1.20	1.42	3.70	23.66	.81	MB
39	11+15	20	22	0	duplo	metal	.75	1.20	1.42	3.10	23.07	.79	MB
41	11+15	20	11+11	20	simples	metal	.75	1.20	.80	4.20	22.95	.78	MB
45	11+15	20	11+11	40	simples	metal	.75	1.20	.57	4.20	22.50	.77	MB
42	11+15	20	11+11	20	simples	madeira	.75	1.20	.80	3.70	22.46	.76	MB

sol	par ext	isol ext	par int	isol int	vidro	caixilho	Kf	Kf_c	Kint	Kenv	Nic1	%Ni	cls
40	11+15	20	22	0	duplo	plastico	.75	1.20	1.42	2.20	22.18	.75	MB
46	11+15	20	11+11	40	simples	madeira	.75	1.20	.57	3.70	22.01	.75	MB
43	11+15	20	11+11	20	duplo	metal	.75	1.20	.80	3.10	21.86	.74	MB
47	11+15	20	11+11	40	duplo	metal	.75	1.20	.57	3.10	21.42	.73	MB
44	11+15	20	11+11	20	duplo	plastico	.75	1.20	.80	2.20	20.97	.71	MB
48	11+15	20	11+11	40	duplo	plastico	.75	1.20	.57	2.20	20.53	.70	MB
53	22	20	22	0	simples	metal	.95	.95	1.42	4.20	22.40	.76	EXC
54	22	20	22	0	simples	madeira	.95	.95	1.42	3.70	21.91	.75	EXC
55	22	20	22	0	duplo	metal	.95	.95	1.42	3.10	21.31	.73	EXC
57	22	20	11+11	20	simples	metal	.95	.95	.80	4.20	21.20	.72	EXC
61	22	20	11+11	40	simples	metal	.95	.95	.57	4.20	20.75	.71	EXC
58	22	20	11+11	20	simples	madeira	.95	.95	.80	3.70	20.70	.70	EXC
56	22	20	22	0	duplo	plastico	.95	.95	1.42	2.20	20.42	.70	EXC
62	22	20	11+11	40	simples	madeira	.95	.95	.57	3.70	20.25	.69	EXC
59	22	20	11+11	20	duplo	metal	.95	.95	.80	3.10	20.11	.68	EXC
63	22	20	11+11	40	duplo	metal	.95	.95	.57	3.10	19.66	.67	EXC
60	22	20	11+11	20	duplo	plastico	.95	.95	.80	2.20	19.22	.65	EXC
64	22	20	11+11	40	duplo	plastico	.95	.95	.57	2.20	18.77	.64	EXC
69	22	60	22	0	simples	metal	.35	.35	1.42	4.20	18.19	.62	EXC
70	22	60	22	0	simples	madeira	.35	.35	1.42	3.70	17.69	.60	EXC
71	22	60	22	0	duplo	metal	.35	.35	1.42	3.10	17.10	.58	EXC
73	22	60	11+11	20	simples	metal	.35	.35	.80	4.20	16.98	.58	EXC
77	22	60	11+11	40	simples	metal	.35	.35	.57	4.20	16.53	.56	EXC
74	22	60	11+11	20	simples	madeira	.35	.35	.80	3.70	16.49	.56	EXC
72	22	60	22	0	duplo	plastico	.35	.35	1.42	2.20	16.21	.55	EXC
78	22	60	11+11	40	simples	madeira	.35	.35	.57	3.70	16.04	.55	EXC
75	22	60	11+11	20	duplo	metal	.35	.35	.80	3.10	15.89	.54	EXC
79	22	60	11+11	40	duplo	metal	.35	.35	.57	3.10	15.45	.53	EXC
76	22	60	11+11	20	duplo	plastico	.35	.35	.80	2.20	15.00	.51	EXC
80	22	60	11+11	40	duplo	plastico	.35	.35	.57	2.20	14.56	.50	EXC

tabela 2.2

habitação T2 piso intermédio
zona climática de inverno I2
sem ganhos solares

sol	par ext	isol ext	par int	isol int	vidro	caixilho	Kf	Kf_c	Kint	KenV	Nic2	%ni	cls
1	11+11	0	15	0	simples	metal	1.40	2.10	1.82	4.20	62.51	1.16	INS
2	11+11	0	15	0	simples	madeira	1.40	2.10	1.82	3.70	61.52	1.14	INS
5	11+11	0	22	0	simples	metal	1.40	2.10	1.42	4.20	60.95	1.13	INS
3	11+11	0	15	0	duplo	metal	1.40	2.10	1.82	3.10	60.33	1.12	INS
6	11+11	0	22	0	simples	madeira	1.40	2.10	1.42	3.70	59.96	1.11	INS
7	11+11	0	22	0	duplo	metal	1.40	2.10	1.42	3.10	58.78	1.09	INS
4	11+11	0	15	0	duplo	plastico	1.40	2.10	1.82	2.20	58.55	1.08	INS
9	11+11	0	11+11	20	simples	metal	1.40	2.10	.80	4.20	58.54	1.08	INS
17	11+15	0	15	0	simples	metal	1.20	1.80	1.82	4.20	58.30	1.08	INS
13	11+11	0	11+11	40	simples	metal	1.40	2.10	.57	4.20	57.65	1.07	INS
10	11+11	0	11+11	20	simples	madeira	1.40	2.10	.80	3.70	57.55	1.06	INS
18	11+15	0	15	0	simples	madeira	1.20	1.80	1.82	3.70	57.31	1.06	INS
8	11+11	0	22	0	duplo	plastico	1.40	2.10	1.42	2.20	57.00	1.05	INS
21	11+15	0	22	0	simples	metal	1.20	1.80	1.42	4.20	56.74	1.05	INS
14	11+11	0	11+11	40	simples	madeira	1.40	2.10	.57	3.70	56.66	1.05	INS
11	11+11	0	11+11	20	duplo	metal	1.40	2.10	.80	3.10	56.37	1.04	INS
19	11+15	0	15	0	duplo	metal	1.20	1.80	1.82	3.10	56.12	1.04	INS
22	11+15	0	22	0	simples	madeira	1.20	1.80	1.42	3.70	55.75	1.03	INS
15	11+11	0	11+11	40	duplo	metal	1.40	2.10	.57	3.10	55.47	1.03	INS
12	11+11	0	11+11	20	duplo	plastico	1.40	2.10	.80	2.20	54.59	1.01	INS
23	11+15	0	22	0	duplo	metal	1.20	1.80	1.42	3.10	54.56	1.01	INS
20	11+15	0	15	0	duplo	plastico	1.20	1.80	1.82	2.20	54.34	1.00	SUF
25	11+15	0	11+11	20	simples	metal	1.20	1.80	.80	4.20	54.33	1.00	SUF
16	11+11	0	11+11	40	duplo	plastico	1.40	2.10	.57	2.20	53.69	.99	SUF
29	11+15	0	11+11	40	simples	metal	1.20	1.80	.57	4.20	53.44	.99	SUF
26	11+15	0	11+11	20	simples	madeira	1.20	1.80	.80	3.70	53.34	.99	SUF
24	11+15	0	22	0	duplo	plastico	1.20	1.80	1.42	2.20	52.78	.98	SUF
30	11+15	0	11+11	40	simples	madeira	1.20	1.80	.57	3.70	52.45	.97	SUF
27	11+15	0	11+11	20	duplo	metal	1.20	1.80	.80	3.10	52.15	.96	SUF
31	11+15	0	11+11	40	duplo	metal	1.20	1.80	.57	3.10	51.26	.95	BOM
28	11+15	0	11+11	20	duplo	plastico	1.20	1.80	.80	2.20	50.37	.93	BOM
33	11+15	20	15	0	simples	metal	.75	1.20	1.82	4.20	49.87	.92	BOM
32	11+15	0	11+11	40	duplo	plastico	1.20	1.80	.57	2.20	49.48	.92	BOM
34	11+15	20	15	0	simples	madeira	.75	1.20	1.82	3.70	48.88	.90	BOM
37	11+15	20	22	0	simples	metal	.75	1.20	1.42	4.20	48.31	.89	BOM
35	11+15	20	15	0	duplo	metal	.75	1.20	1.82	3.10	47.69	.88	BOM
38	11+15	20	22	0	simples	madeira	.75	1.20	1.42	3.70	47.32	.88	BOM
49	22	20	15	0	simples	metal	.95	.95	1.82	4.20	46.36	.86	BOM
39	11+15	20	22	0	duplo	metal	.75	1.20	1.42	3.10	46.14	.85	BOM
36	11+15	20	15	0	duplo	plastico	.75	1.20	1.82	2.20	45.91	.85	BOM
41	11+15	20	11+11	20	simples	metal	.75	1.20	.80	4.20	45.90	.85	BOM
50	22	20	15	0	simples	madeira	.95	.95	1.82	3.70	45.37	.84	BOM
45	11+15	20	11+11	40	simples	metal	.75	1.20	.57	4.20	45.01	.83	BOM
42	11+15	20	11+11	20	simples	madeira	.75	1.20	.80	3.70	44.91	.83	BOM
53	22	20	22	0	simples	metal	.95	.95	1.42	4.20	44.80	.83	BOM
40	11+15	20	22	0	duplo	plastico	.75	1.20	1.42	2.20	44.36	.82	BOM
51	22	20	15	0	duplo	metal	.95	.95	1.82	3.10	44.18	.82	BOM
46	11+15	20	11+11	40	simples	madeira	.75	1.20	.57	3.70	44.02	.81	BOM
54	22	20	22	0	simples	madeira	.95	.95	1.42	3.70	43.81	.81	BOM
55	22	20	22	0	duplo	metal	.95	.95	1.42	3.10	42.62	.79	BOM
52	22	20	15	0	duplo	plastico	.95	.95	1.82	2.20	42.40	.78	BOM

sol	par ext	isol ext	par int	isol int	vidro	caixilho	Kf	Kf_c	Kint	Kenv	Nic2	%ni	cls
57	22	20	11+11	20	simples	metal	.95	.95	.80	4.20	42.39	.78	BOM
61	22	20	11+11	40	simples	metal	.95	.95	.57	4.20	41.50	.77	BOM
58	22	20	11+11	20	simples	madeira	.95	.95	.80	3.70	41.40	.77	BOM
56	22	20	22	0	duplo	plastico	.95	.95	1.42	2.20	40.84	.76	BOM
62	22	20	11+11	40	simples	madeira	.95	.95	.57	3.70	40.51	.75	BOM
65	22	60	15	0	simples	metal	.35	.35	1.82	4.20	37.93	.70	BOM
66	22	60	15	0	simples	madeira	.35	.35	1.82	3.70	36.94	.68	BOM
69	22	60	22	0	simples	metal	.35	.35	1.42	4.20	36.37	.67	BOM
67	22	60	15	0	duplo	metal	.35	.35	1.82	3.10	35.75	.66	BOM
70	22	60	22	0	simples	madeira	.35	.35	1.42	3.70	35.39	.65	BOM
71	22	60	22	0	duplo	metal	.35	.35	1.42	3.10	34.20	.63	BOM
68	22	60	15	0	duplo	plastico	.35	.35	1.82	2.20	33.97	.63	BOM
73	22	60	11+11	20	simples	metal	.35	.35	.80	4.20	33.96	.63	BOM
77	22	60	11+11	40	simples	metal	.35	.35	.57	4.20	33.07	.61	BOM
74	22	60	11+11	20	simples	madeira	.35	.35	.80	3.70	32.97	.61	BOM
72	22	60	22	0	duplo	plastico	.35	.35	1.42	2.20	32.42	.60	BOM
78	22	60	11+11	40	simples	madeira	.35	.35	.57	3.70	32.08	.59	BOM
43	11+15	20	11+11	20	duplo	metal	.75	1.20	.80	3.10	43.73	.81	MB
47	11+15	20	11+11	40	duplo	metal	.75	1.20	.57	3.10	42.83	.79	MB
44	11+15	20	11+11	20	duplo	plastico	.75	1.20	.80	2.20	41.94	.78	MB
48	11+15	20	11+11	40	duplo	plastico	.75	1.20	.57	2.20	41.05	.76	MB
59	22	20	11+11	20	duplo	metal	.95	.95	.80	3.10	40.21	.74	EXC
63	22	20	11+11	40	duplo	metal	.95	.95	.57	3.10	39.32	.73	EXC
60	22	20	11+11	20	duplo	plastico	.95	.95	.80	2.20	38.43	.71	EXC
64	22	20	11+11	40	duplo	plastico	.95	.95	.57	2.20	37.54	.69	EXC
75	22	60	11+11	20	duplo	metal	.35	.35	.80	3.10	31.79	.59	EXC
79	22	60	11+11	40	duplo	metal	.35	.35	.57	3.10	30.89	.57	EXC
76	22	60	11+11	20	duplo	plastico	.35	.35	.80	2.20	30.01	.55	EXC
80	22	60	11+11	40	duplo	plastico	.35	.35	.57	2.20	29.11	.54	EXC

tabela 2.3

habitação T2 piso intermédio
zona climática de inverno I3
sem ganhos solares

sol	par ext	isol ext	par int	isol int	vidro	caixilho	Kf	Kf_c	Kint	Kenv	Nic3	%Ni	cls
1	11+11	0	15	0	simples	metal	1.40	2.10	1.82	4.20	125.02	1.30	INS
2	11+11	0	15	0	simples	madeira	1.40	2.10	1.82	3.70	123.04	1.28	INS
5	11+11	0	22	0	simples	metal	1.40	2.10	1.42	4.20	121.91	1.26	INS
3	11+11	0	15	0	duplo	metal	1.40	2.10	1.82	3.10	120.67	1.25	INS
6	11+11	0	22	0	simples	madeira	1.40	2.10	1.42	3.70	119.93	1.24	INS
7	11+11	0	22	0	duplo	metal	1.40	2.10	1.42	3.10	117.55	1.22	INS
4	11+11	0	15	0	duplo	plastico	1.40	2.10	1.82	2.20	117.10	1.21	INS
9	11+11	0	11+11	20	simples	metal	1.40	2.10	.80	4.20	117.09	1.21	INS
17	11+15	0	15	0	simples	metal	1.20	1.80	1.82	4.20	116.59	1.21	INS
13	11+11	0	11+11	40	simples	metal	1.40	2.10	.57	4.20	115.30	1.20	INS
10	11+11	0	11+11	20	simples	madeira	1.40	2.10	.80	3.70	115.11	1.19	INS
18	11+15	0	15	0	simples	madeira	1.20	1.80	1.82	3.70	114.61	1.19	INS
8	11+11	0	22	0	duplo	plastico	1.40	2.10	1.42	2.20	113.99	1.18	INS
21	11+15	0	22	0	simples	metal	1.20	1.80	1.42	4.20	113.48	1.18	INS
14	11+11	0	11+11	40	simples	madeira	1.40	2.10	.57	3.70	113.32	1.18	INS
11	11+11	0	11+11	20	duplo	metal	1.40	2.10	.80	3.10	112.73	1.17	INS
19	11+15	0	15	0	duplo	metal	1.20	1.80	1.82	3.10	112.24	1.16	INS
22	11+15	0	22	0	simples	madeira	1.20	1.80	1.42	3.70	111.50	1.16	INS
15	11+11	0	11+11	40	duplo	metal	1.40	2.10	.57	3.10	110.95	1.15	INS
12	11+11	0	11+11	20	duplo	plastico	1.40	2.10	.80	2.20	109.17	1.13	INS
23	11+15	0	22	0	duplo	metal	1.20	1.80	1.42	3.10	109.13	1.13	INS
20	11+15	0	15	0	duplo	plastico	1.20	1.80	1.82	2.20	108.68	1.13	INS
25	11+15	0	11+11	20	simples	metal	1.20	1.80	.80	4.20	108.66	1.13	INS
16	11+11	0	11+11	40	duplo	plastico	1.40	2.10	.57	2.20	107.38	1.11	INS
29	11+15	0	11+11	40	simples	metal	1.20	1.80	.57	4.20	106.87	1.11	INS
26	11+15	0	11+11	20	simples	madeira	1.20	1.80	.80	3.70	106.68	1.11	INS
24	11+15	0	22	0	duplo	plastico	1.20	1.80	1.42	2.20	105.57	1.09	INS
30	11+15	0	11+11	40	simples	madeira	1.20	1.80	.57	3.70	104.89	1.09	INS
27	11+15	0	11+11	20	duplo	metal	1.20	1.80	.80	3.10	104.31	1.08	INS
31	11+15	0	11+11	40	duplo	metal	1.20	1.80	.57	3.10	102.52	1.06	INS
28	11+15	0	11+11	20	duplo	plastico	1.20	1.80	.80	2.20	100.74	1.04	INS
33	11+15	20	15	0	simples	metal	.75	1.20	1.82	4.20	99.74	1.03	INS
32	11+15	0	11+11	40	duplo	plastico	1.20	1.80	.57	2.20	98.96	1.03	INS
34	11+15	20	15	0	simples	madeira	.75	1.20	1.82	3.70	97.76	1.01	INS
37	11+15	20	22	0	simples	metal	.75	1.20	1.42	4.20	96.63	1.00	SUF
35	11+15	20	15	0	duplo	metal	.75	1.20	1.82	3.10	95.38	.99	SUF
38	11+15	20	22	0	simples	madeira	.75	1.20	1.42	3.70	94.65	.98	SUF
49	22	20	15	0	simples	metal	.95	.95	1.82	4.20	92.71	.96	SUF
39	11+15	20	22	0	duplo	metal	.75	1.20	1.42	3.10	92.27	.96	SUF
36	11+15	20	15	0	duplo	plastico	.75	1.20	1.82	2.20	91.82	.95	BOM
41	11+15	20	11+11	20	simples	metal	.75	1.20	.80	4.20	91.81	.95	BOM
50	22	20	15	0	simples	madeira	.95	.95	1.82	3.70	90.74	.94	BOM
45	11+15	20	11+11	40	simples	metal	.75	1.20	.57	4.20	90.02	.93	BOM
42	11+15	20	11+11	20	simples	madeira	.75	1.20	.80	3.70	89.83	.93	BOM
53	22	20	22	0	simples	metal	.95	.95	1.42	4.20	89.60	.93	BOM
40	11+15	20	22	0	duplo	plastico	.75	1.20	1.42	2.20	88.71	.92	BOM
51	22	20	15	0	duplo	metal	.95	.95	1.82	3.10	88.36	.92	BOM
46	11+15	20	11+11	40	simples	madeira	.75	1.20	.57	3.70	88.04	.91	BOM
54	22	20	22	0	simples	madeira	.95	.95	1.42	3.70	87.62	.91	BOM
43	11+15	20	11+11	20	duplo	metal	.75	1.20	.80	3.10	87.45	.91	BOM
47	11+15	20	11+11	40	duplo	metal	.75	1.20	.57	3.10	85.66	.89	BOM

sol	par ext	isol ext	par int	isol int	vidro	caixilho	Kf	Kf_c	Kint	Kenv	Nic3	%Ni	cls
55	22	20	22	0	duplo	metal	.95	.95	1.42	3.10	85.25	.88	BOM
52	22	20	15	0	duplo	plastico	.95	.95	1.82	2.20	84.80	.88	BOM
57	22	20	11+11	20	simples	metal	.95	.95	.80	4.20	84.78	.88	BOM
44	11+15	20	11+11	20	duplo	plastico	.75	1.20	.80	2.20	83.89	.87	BOM
61	22	20	11+11	40	simples	metal	.95	.95	.57	4.20	82.99	.86	BOM
58	22	20	11+11	20	simples	madeira	.95	.95	.80	3.70	82.80	.86	BOM
48	11+15	20	11+11	40	duplo	plastico	.75	1.20	.57	2.20	82.10	.85	BOM
56	22	20	22	0	duplo	plastico	.95	.95	1.42	2.20	81.69	.85	BOM
62	22	20	11+11	40	simples	madeira	.95	.95	.57	3.70	81.02	.84	BOM
65	22	60	15	0	simples	metal	.35	.35	1.82	4.20	75.86	.79	BOM
66	22	60	15	0	simples	madeira	.35	.35	1.82	3.70	73.88	.77	BOM
69	22	60	22	0	simples	metal	.35	.35	1.42	4.20	72.75	.75	BOM
67	22	60	15	0	duplo	metal	.35	.35	1.82	3.10	71.51	.74	BOM
70	22	60	22	0	simples	madeira	.35	.35	1.42	3.70	70.77	.73	BOM
71	22	60	22	0	duplo	metal	.35	.35	1.42	3.10	68.40	.71	BOM
68	22	60	15	0	duplo	plastico	.35	.35	1.82	2.20	67.94	.70	BOM
73	22	60	11+11	20	simples	metal	.35	.35	.80	4.20	67.93	.70	BOM
77	22	60	11+11	40	simples	metal	.35	.35	.57	4.20	66.14	.69	BOM
74	22	60	11+11	20	simples	madeira	.35	.35	.80	3.70	65.95	.68	BOM
72	22	60	22	0	duplo	plastico	.35	.35	1.42	2.20	64.83	.67	BOM
78	22	60	11+11	40	simples	madeira	.35	.35	.57	3.70	64.16	.67	BOM
59	22	20	11+11	20	duplo	metal	.95	.95	.80	3.10	80.43	.83	MB
63	22	20	11+11	40	duplo	metal	.95	.95	.57	3.10	78.64	.82	MB
60	22	20	11+11	20	duplo	plastico	.95	.95	.80	2.20	76.87	.80	EXC
64	22	20	11+11	40	duplo	plastico	.95	.95	.57	2.20	75.08	.78	EXC
75	22	60	11+11	20	duplo	metal	.35	.35	.80	3.10	63.57	.66	EXC
79	22	60	11+11	40	duplo	metal	.35	.35	.57	3.10	61.79	.64	EXC
76	22	60	11+11	20	duplo	plastico	.35	.35	.80	2.20	60.01	.62	EXC
80	22	60	11+11	40	duplo	plastico	.35	.35	.57	2.20	58.22	.60	EXC

tabela 2.4

habitação T2 piso intermédio
zona climática de inverno I1
com ganhos solares

sol	par ext	isol ext	par int	isol int	vidro	caixilho	Kf	Kf_c	Kint	KenV	Nic1	%i	cls
3	11+11	0	15	0	duplo	metal	1.40	2.10	1.82	3.10	18.66	.64	BOM
1	11+11	0	15	0	simples	metal	1.40	2.10	1.82	4.20	18.38	.63	BOM
2	11+11	0	15	0	simples	madeira	1.40	2.10	1.82	3.70	17.92	.61	BOM
7	11+11	0	22	0	duplo	metal	1.40	2.10	1.42	3.10	17.92	.61	BOM
4	11+11	0	15	0	duplo	plastico	1.40	2.10	1.82	2.20	17.82	.61	BOM
5	11+11	0	22	0	simples	metal	1.40	2.10	1.42	4.20	17.66	.60	BOM
6	11+11	0	22	0	simples	madeira	1.40	2.10	1.42	3.70	17.20	.59	BOM
8	11+11	0	22	0	duplo	plastico	1.40	2.10	1.42	2.20	17.08	.58	BOM
11	11+11	0	11+11	20	duplo	metal	1.40	2.10	.80	3.10	16.79	.57	BOM
19	11+15	0	15	0	duplo	metal	1.20	1.80	1.82	3.10	16.67	.57	BOM
9	11+11	0	11+11	20	simples	metal	1.40	2.10	.80	4.20	16.54	.56	BOM
17	11+15	0	15	0	simples	metal	1.20	1.80	1.82	4.20	16.43	.56	BOM
15	11+11	0	11+11	40	duplo	metal	1.40	2.10	.57	3.10	16.37	.56	BOM
13	11+11	0	11+11	40	simples	metal	1.40	2.10	.57	4.20	16.13	.55	BOM
10	11+11	0	11+11	20	simples	madeira	1.40	2.10	.80	3.70	16.09	.55	BOM
18	11+15	0	15	0	simples	madeira	1.20	1.80	1.82	3.70	15.97	.54	BOM
12	11+11	0	11+11	20	duplo	plastico	1.40	2.10	.80	2.20	15.95	.54	BOM
23	11+15	0	22	0	duplo	metal	1.20	1.80	1.42	3.10	15.94	.54	BOM
20	11+15	0	15	0	duplo	plastico	1.20	1.80	1.82	2.20	15.84	.54	BOM
21	11+15	0	22	0	simples	metal	1.20	1.80	1.42	4.20	15.71	.53	BOM
14	11+11	0	11+11	40	simples	madeira	1.40	2.10	.57	3.70	15.68	.53	BOM
16	11+11	0	11+11	40	duplo	plastico	1.40	2.10	.57	2.20	15.54	.53	BOM
22	11+15	0	22	0	simples	madeira	1.20	1.80	1.42	3.70	15.26	.52	BOM
24	11+15	0	22	0	duplo	plastico	1.20	1.80	1.42	2.20	15.12	.51	BOM
27	11+15	0	11+11	20	duplo	metal	1.20	1.80	.80	3.10	14.82	.50	BOM
25	11+15	0	11+11	20	simples	metal	1.20	1.80	.80	4.20	14.62	.50	BOM
31	11+15	0	11+11	40	duplo	metal	1.20	1.80	.57	3.10	14.41	.49	BOM
29	11+15	0	11+11	40	simples	metal	1.20	1.80	.57	4.20	14.21	.48	BOM
26	11+15	0	11+11	20	simples	madeira	1.20	1.80	.80	3.70	14.17	.48	BOM
28	11+15	0	11+11	20	duplo	plastico	1.20	1.80	.80	2.20	14.00	.48	BOM
30	11+15	0	11+11	40	simples	madeira	1.20	1.80	.57	3.70	13.77	.47	BOM
32	11+15	0	11+11	40	duplo	plastico	1.20	1.80	.57	2.20	13.60	.46	BOM
35	11+15	20	15	0	duplo	metal	.75	1.20	1.82	3.10	12.79	.44	BOM
33	11+15	20	15	0	simples	metal	.75	1.20	1.82	4.20	12.62	.43	BOM
34	11+15	20	15	0	simples	madeira	.75	1.20	1.82	3.70	12.19	.41	BOM
36	11+15	20	15	0	duplo	plastico	.75	1.20	1.82	2.20	11.99	.41	BOM
51	22	20	15	0	duplo	metal	.95	.95	1.82	3.10	11.22	.38	BOM
49	22	20	15	0	simples	metal	.95	.95	1.82	4.20	11.10	.38	BOM
50	22	20	15	0	simples	madeira	.95	.95	1.82	3.70	10.67	.36	BOM
52	22	20	15	0	duplo	plastico	.95	.95	1.82	2.20	10.44	.36	BOM
67	22	60	15	0	duplo	metal	.35	.35	1.82	3.10	7.63	.26	BOM
65	22	60	15	0	simples	metal	.35	.35	1.82	4.20	7.61	.26	BOM
66	22	60	15	0	simples	madeira	.35	.35	1.82	3.70	7.22	.25	BOM
68	22	60	15	0	duplo	plastico	.35	.35	1.82	2.20	6.92	.24	BOM
39	11+15	20	22	0	duplo	metal	.75	1.20	1.42	3.10	12.09	.41	MB
37	11+15	20	22	0	simples	metal	.75	1.20	1.42	4.20	11.94	.41	MB
38	11+15	20	22	0	simples	madeira	.75	1.20	1.42	3.70	11.51	.39	MB
40	11+15	20	22	0	duplo	plastico	.75	1.20	1.42	2.20	11.30	.38	MB
43	11+15	20	11+11	20	duplo	metal	.75	1.20	.80	3.10	11.02	.38	MB
41	11+15	20	11+11	20	simples	metal	.75	1.20	.80	4.20	10.90	.37	MB
47	11+15	20	11+11	40	duplo	metal	.75	1.20	.57	3.10	10.63	.36	MB
45	11+15	20	11+11	40	simples	metal	.75	1.20	.57	4.20	10.52	.36	MB

sol	par ext	isol ext	par int	isol int	vidro	caixilho	Kf	Kf_c	Kint	Kenv	Nic1	%Ni	cls
42	11+15	20	11+11	20	simples	madeira	.75	1.20	.80	3.70	10.48	.36	MB
44	11+15	20	11+11	20	duplo	plastico	.75	1.20	.80	2.20	10.24	.35	MB
46	11+15	20	11+11	40	simples	madeira	.75	1.20	.57	3.70	10.10	.34	MB
48	11+15	20	11+11	40	duplo	plastico	.75	1.20	.57	2.20	9.85	.34	MB
55	22	20	22	0	duplo	metal	.95	.95	1.42	3.10	10.54	.36	EXC
53	22	20	22	0	simples	metal	.95	.95	1.42	4.20	10.43	.36	EXC
54	22	20	22	0	simples	madeira	.95	.95	1.42	3.70	10.01	.34	EXC
56	22	20	22	0	duplo	plastico	.95	.95	1.42	2.20	9.77	.33	EXC
59	22	20	11+11	20	duplo	metal	.95	.95	.80	3.10	9.50	.32	EXC
57	22	20	11+11	20	simples	metal	.95	.95	.80	4.20	9.42	.32	EXC
63	22	20	11+11	40	duplo	metal	.95	.95	.57	3.10	9.12	.31	EXC
61	22	20	11+11	40	simples	metal	.95	.95	.57	4.20	9.05	.31	EXC
58	22	20	11+11	20	simples	madeira	.95	.95	.80	3.70	9.01	.31	EXC
60	22	20	11+11	20	duplo	plastico	.95	.95	.80	2.20	8.74	.30	EXC
62	22	20	11+11	40	simples	madeira	.95	.95	.57	3.70	8.65	.29	EXC
64	22	20	11+11	40	duplo	plastico	.95	.95	.57	2.20	8.37	.28	EXC
69	22	60	22	0	simples	metal	.35	.35	1.42	4.20	7.01	.24	EXC
71	22	60	22	0	duplo	metal	.35	.35	1.42	3.10	7.01	.24	EXC
70	22	60	22	0	simples	madeira	.35	.35	1.42	3.70	6.63	.23	EXC
72	22	60	22	0	duplo	plastico	.35	.35	1.42	2.20	6.31	.21	EXC
73	22	60	11+11	20	simples	metal	.35	.35	.80	4.20	6.09	.21	EXC
75	22	60	11+11	20	duplo	metal	.35	.35	.80	3.10	6.06	.21	EXC
77	22	60	11+11	40	simples	metal	.35	.35	.57	4.20	5.76	.20	EXC
74	22	60	11+11	20	simples	madeira	.35	.35	.80	3.70	5.72	.19	EXC
79	22	60	11+11	40	duplo	metal	.35	.35	.57	3.10	5.72	.19	EXC
78	22	60	11+11	40	simples	madeira	.35	.35	.57	3.70	5.40	.18	EXC
76	22	60	11+11	20	duplo	plastico	.35	.35	.80	2.20	5.39	.18	EXC
80	22	60	11+11	40	duplo	plastico	.35	.35	.57	2.20	5.06	.17	EXC

tabela 2.5

habitação T2 piso intermédio
zona climática de inverno I2
com ganhos solares

sol	par ext	isol ext	par int	isol int	vidro	caixilho	Kf	Kf_c	Kint	Kenv	Nic2	%Ni	cls
1	11+11	0	15	0	simples	metal	1.40	2.10	1.82	4.20	45.71	.85	BOM
3	11+11	0	15	0	duplo	metal	1.40	2.10	1.82	3.10	45.47	.84	BOM
2	11+11	0	15	0	simples	madeira	1.40	2.10	1.82	3.70	44.74	.83	BOM
5	11+11	0	22	0	simples	metal	1.40	2.10	1.42	4.20	44.18	.82	BOM
7	11+11	0	22	0	duplo	metal	1.40	2.10	1.42	3.10	43.92	.81	BOM
4	11+11	0	15	0	duplo	plastico	1.40	2.10	1.82	2.20	43.70	.81	BOM
6	11+11	0	22	0	simples	madeira	1.40	2.10	1.42	3.70	43.20	.80	BOM
8	11+11	0	22	0	duplo	plastico	1.40	2.10	1.42	2.20	42.16	.78	BOM
9	11+11	0	11+11	20	simples	metal	1.40	2.10	.80	4.20	41.80	.77	BOM
17	11+15	0	15	0	simples	metal	1.20	1.80	1.82	4.20	41.55	.77	BOM
11	11+11	0	11+11	20	duplo	metal	1.40	2.10	.80	3.10	41.54	.77	BOM
19	11+15	0	15	0	duplo	metal	1.20	1.80	1.82	3.10	41.29	.76	BOM
13	11+11	0	11+11	40	simples	metal	1.40	2.10	.57	4.20	40.92	.76	BOM
10	11+11	0	11+11	20	simples	madeira	1.40	2.10	.80	3.70	40.82	.76	BOM
15	11+11	0	11+11	40	duplo	metal	1.40	2.10	.57	3.10	40.65	.75	BOM
18	11+15	0	15	0	simples	madeira	1.20	1.80	1.82	3.70	40.58	.75	BOM
21	11+15	0	22	0	simples	metal	1.20	1.80	1.42	4.20	40.02	.74	BOM
14	11+11	0	11+11	40	simples	madeira	1.40	2.10	.57	3.70	39.94	.74	BOM
12	11+11	0	11+11	20	duplo	plastico	1.40	2.10	.80	2.20	39.77	.74	BOM
23	11+15	0	22	0	duplo	metal	1.20	1.80	1.42	3.10	39.75	.74	BOM
20	11+15	0	15	0	duplo	plastico	1.20	1.80	1.82	2.20	39.53	.73	BOM
22	11+15	0	22	0	simples	madeira	1.20	1.80	1.42	3.70	39.05	.72	BOM
16	11+11	0	11+11	40	duplo	plastico	1.40	2.10	.57	2.20	38.89	.72	BOM
24	11+15	0	22	0	duplo	plastico	1.20	1.80	1.42	2.20	37.99	.70	BOM
25	11+15	0	11+11	20	simples	metal	1.20	1.80	.80	4.20	37.66	.70	BOM
27	11+15	0	11+11	20	duplo	metal	1.20	1.80	.80	3.10	37.37	.69	BOM
29	11+15	0	11+11	40	simples	metal	1.20	1.80	.57	4.20	36.78	.68	BOM
26	11+15	0	11+11	20	simples	madeira	1.20	1.80	.80	3.70	36.69	.68	BOM
31	11+15	0	11+11	40	duplo	metal	1.20	1.80	.57	3.10	36.49	.67	BOM
30	11+15	0	11+11	40	simples	madeira	1.20	1.80	.57	3.70	35.81	.66	BOM
28	11+15	0	11+11	20	duplo	plastico	1.20	1.80	.80	2.20	35.62	.66	BOM
32	11+15	0	11+11	40	duplo	plastico	1.20	1.80	.57	2.20	34.74	.64	BOM
33	11+15	20	15	0	simples	metal	.75	1.20	1.82	4.20	33.30	.62	BOM
35	11+15	20	15	0	duplo	metal	.75	1.20	1.82	3.10	32.98	.61	BOM
34	11+15	20	15	0	simples	madeira	.75	1.20	1.82	3.70	32.34	.60	BOM
37	11+15	20	22	0	simples	metal	.75	1.20	1.42	4.20	31.79	.59	BOM
39	11+15	20	22	0	duplo	metal	.75	1.20	1.42	3.10	31.46	.58	BOM
36	11+15	20	15	0	duplo	plastico	.75	1.20	1.82	2.20	31.24	.58	BOM
38	11+15	20	22	0	simples	madeira	.75	1.20	1.42	3.70	30.84	.57	BOM
49	22	20	15	0	simples	metal	.95	.95	1.82	4.20	29.90	.55	BOM
40	11+15	20	22	0	duplo	plastico	.75	1.20	1.42	2.20	29.73	.55	BOM
51	22	20	15	0	duplo	metal	.95	.95	1.82	3.10	29.56	.55	BOM
41	11+15	20	11+11	20	simples	metal	.75	1.20	.80	4.20	29.47	.54	BOM
50	22	20	15	0	simples	madeira	.95	.95	1.82	3.70	28.95	.54	BOM
45	11+15	20	11+11	40	simples	metal	.75	1.20	.57	4.20	28.61	.53	BOM
42	11+15	20	11+11	20	simples	madeira	.75	1.20	.80	3.70	28.52	.53	BOM
53	22	20	22	0	simples	metal	.95	.95	1.42	4.20	28.41	.53	BOM
55	22	20	22	0	duplo	metal	.95	.95	1.42	3.10	28.05	.52	BOM
52	22	20	15	0	duplo	plastico	.95	.95	1.82	2.20	27.83	.51	BOM
46	11+15	20	11+11	40	simples	madeira	.75	1.20	.57	3.70	27.66	.51	BOM
54	22	20	22	0	simples	madeira	.95	.95	1.42	3.70	27.46	.51	BOM
56	22	20	22	0	duplo	plastico	.95	.95	1.42	2.20	26.33	.49	BOM
57	22	20	11+11	20	simples	metal	.95	.95	.80	4.20	26.11	.48	BOM

sol	par ext	isol ext	par int	isol int	vidro	caixilho	Kf	Kf_c	Kint	Kenv	Nic2	%Ni	cls
61	22	20	11+11	40	simples	metal	.95	.95	.57	4.20	25.26	.47	BOM
58	22	20	11+11	20	simples	madeira	.95	.95	.80	3.70	25.17	.47	BOM
62	22	20	11+11	40	simples	madeira	.95	.95	.57	3.70	24.33	.45	BOM
65	22	60	15	0	simples	metal	.35	.35	1.82	4.20	21.92	.41	BOM
67	22	60	15	0	duplo	metal	.35	.35	1.82	3.10	21.48	.40	BOM
66	22	60	15	0	simples	madeira	.35	.35	1.82	3.70	21.00	.39	BOM
69	22	60	22	0	simples	metal	.35	.35	1.42	4.20	20.48	.38	BOM
71	22	60	22	0	duplo	metal	.35	.35	1.42	3.10	20.02	.37	BOM
68	22	60	15	0	duplo	plastico	.35	.35	1.82	2.20	19.81	.37	BOM
70	22	60	22	0	simples	madeira	.35	.35	1.42	3.70	19.57	.36	BOM
72	22	60	22	0	duplo	plastico	.35	.35	1.42	2.20	18.36	.34	BOM
73	22	60	11+11	20	simples	metal	.35	.35	.80	4.20	18.28	.34	BOM
77	22	60	11+11	40	simples	metal	.35	.35	.57	4.20	17.47	.32	BOM
74	22	60	11+11	20	simples	madeira	.35	.35	.80	3.70	17.39	.32	BOM
78	22	60	11+11	40	simples	madeira	.35	.35	.57	3.70	16.59	.31	BOM
43	11+15	20	11+11	20	duplo	metal	.75	1.20	.80	3.10	29.12	.54	MB
47	11+15	20	11+11	40	duplo	metal	.75	1.20	.57	3.10	28.25	.52	MB
44	11+15	20	11+11	20	duplo	plastico	.75	1.20	.80	2.20	27.39	.51	MB
48	11+15	20	11+11	40	duplo	plastico	.75	1.20	.57	2.20	26.53	.49	MB
59	22	20	11+11	20	duplo	metal	.95	.95	.80	3.10	25.72	.48	EXC
63	22	20	11+11	40	duplo	metal	.95	.95	.57	3.10	24.87	.46	EXC
60	22	20	11+11	20	duplo	plastico	.95	.95	.80	2.20	24.02	.44	EXC
64	22	20	11+11	40	duplo	plastico	.95	.95	.57	2.20	23.17	.43	EXC
75	22	60	11+11	20	duplo	metal	.35	.35	.80	3.10	17.79	.33	EXC
79	22	60	11+11	40	duplo	metal	.35	.35	.57	3.10	16.97	.31	EXC
76	22	60	11+11	20	duplo	plastico	.35	.35	.80	2.20	16.16	.30	EXC
80	22	60	11+11	40	duplo	plastico	.35	.35	.57	2.20	15.36	.28	EXC

tabela 2.6

habitação T2 piso intermédio
zona climática de inverno I3
com ganhos solares

sol	par ext	isol ext	par int	isol int	vidro	caixilho	Kf	Kf_c	Kint	KenV	Nic3	%ni	cls
1	11+11	0	15	0	simples	metal	1.40	2.10	1.82	4.20	101.34	1.05	INS
3	11+11	0	15	0	duplo	metal	1.40	2.10	1.82	3.10	99.76	1.03	INS
2	11+11	0	15	0	simples	madeira	1.40	2.10	1.82	3.70	99.36	1.03	INS
5	11+11	0	22	0	simples	metal	1.40	2.10	1.42	4.20	98.23	1.02	INS
7	11+11	0	22	0	duplo	metal	1.40	2.10	1.42	3.10	96.65	1.00	SUF
6	11+11	0	22	0	simples	madeira	1.40	2.10	1.42	3.70	96.25	1.00	SUF
4	11+11	0	15	0	duplo	plastico	1.40	2.10	1.82	2.20	96.20	1.00	SUF
9	11+11	0	11+11	20	simples	metal	1.40	2.10	.80	4.20	93.42	.97	SUF
8	11+11	0	22	0	duplo	plastico	1.40	2.10	1.42	2.20	93.09	.97	SUF
17	11+15	0	15	0	simples	metal	1.20	1.80	1.82	4.20	92.92	.96	SUF
11	11+11	0	11+11	20	duplo	metal	1.40	2.10	.80	3.10	91.83	.95	BOM
13	11+11	0	11+11	40	simples	metal	1.40	2.10	.57	4.20	91.63	.95	BOM
10	11+11	0	11+11	20	simples	madeira	1.40	2.10	.80	3.70	91.44	.95	BOM
19	11+15	0	15	0	duplo	metal	1.20	1.80	1.82	3.10	91.34	.95	BOM
18	11+15	0	15	0	simples	madeira	1.20	1.80	1.82	3.70	90.95	.94	BOM
15	11+11	0	11+11	40	duplo	metal	1.40	2.10	.57	3.10	90.05	.93	BOM
21	11+15	0	22	0	simples	metal	1.20	1.80	1.42	4.20	89.82	.93	BOM
14	11+11	0	11+11	40	simples	madeira	1.40	2.10	.57	3.70	89.66	.93	BOM
12	11+11	0	11+11	20	duplo	plastico	1.40	2.10	.80	2.20	88.28	.92	BOM
23	11+15	0	22	0	duplo	metal	1.20	1.80	1.42	3.10	88.23	.92	BOM
22	11+15	0	22	0	simples	madeira	1.20	1.80	1.42	3.70	87.85	.91	BOM
20	11+15	0	15	0	duplo	plastico	1.20	1.80	1.82	2.20	87.78	.91	BOM
16	11+11	0	11+11	40	duplo	plastico	1.40	2.10	.57	2.20	86.49	.90	BOM
25	11+15	0	11+11	20	simples	metal	1.20	1.80	.80	4.20	85.01	.88	BOM
24	11+15	0	22	0	duplo	plastico	1.20	1.80	1.42	2.20	84.68	.88	BOM
27	11+15	0	11+11	20	duplo	metal	1.20	1.80	.80	3.10	83.42	.87	BOM
29	11+15	0	11+11	40	simples	metal	1.20	1.80	.57	4.20	83.23	.86	BOM
26	11+15	0	11+11	20	simples	madeira	1.20	1.80	.80	3.70	83.04	.86	BOM
31	11+15	0	11+11	40	duplo	metal	1.20	1.80	.57	3.10	81.63	.85	BOM
30	11+15	0	11+11	40	simples	madeira	1.20	1.80	.57	3.70	81.26	.84	BOM
28	11+15	0	11+11	20	duplo	plastico	1.20	1.80	.80	2.20	79.86	.83	BOM
32	11+15	0	11+11	40	duplo	plastico	1.20	1.80	.57	2.20	78.08	.81	BOM
33	11+15	20	15	0	simples	metal	.75	1.20	1.82	4.20	76.13	.79	BOM
35	11+15	20	15	0	duplo	metal	.75	1.20	1.82	3.10	74.52	.77	BOM
34	11+15	20	15	0	simples	madeira	.75	1.20	1.82	3.70	74.16	.77	BOM
37	11+15	20	22	0	simples	metal	.75	1.20	1.42	4.20	73.04	.76	BOM
39	11+15	20	22	0	duplo	metal	.75	1.20	1.42	3.10	71.42	.74	BOM
38	11+15	20	22	0	simples	madeira	.75	1.20	1.42	3.70	71.07	.74	BOM
36	11+15	20	15	0	duplo	plastico	.75	1.20	1.82	2.20	70.97	.74	BOM
49	22	20	15	0	simples	metal	.95	.95	1.82	4.20	69.15	.72	BOM
41	11+15	20	11+11	20	simples	metal	.75	1.20	.80	4.20	68.25	.71	BOM
40	11+15	20	22	0	duplo	plastico	.75	1.20	1.42	2.20	67.88	.70	BOM
51	22	20	15	0	duplo	metal	.95	.95	1.82	3.10	67.53	.70	BOM
50	22	20	15	0	simples	madeira	.95	.95	1.82	3.70	67.19	.70	BOM
43	11+15	20	11+11	20	duplo	metal	.75	1.20	.80	3.10	66.62	.69	BOM
45	11+15	20	11+11	40	simples	metal	.75	1.20	.57	4.20	66.48	.69	BOM
42	11+15	20	11+11	20	simples	madeira	.75	1.20	.80	3.70	66.29	.69	BOM
53	22	20	22	0	simples	metal	.95	.95	1.42	4.20	66.07	.69	BOM
47	11+15	20	11+11	40	duplo	metal	.75	1.20	.57	3.10	64.85	.67	BOM
46	11+15	20	11+11	40	simples	madeira	.75	1.20	.57	3.70	64.52	.67	BOM
55	22	20	22	0	duplo	metal	.95	.95	1.42	3.10	64.44	.67	BOM

sol	par ext	isol ext	par int	isol int	vidro	caixilho	Kf	Kf_c	Kint	Kenv	Nic3	%Ni	cls
54	22	20	22	0	simples	madeira	.95	.95	1.42	3.70	64.11	.66	BOM
52	22	20	15	0	duplo	plastico	.95	.95	1.82	2.20	63.99	.66	BOM
44	11+15	20	11+11	20	duplo	plastico	.75	1.20	.80	2.20	63.08	.65	BOM
48	11+15	20	11+11	40	duplo	plastico	.75	1.20	.57	2.20	61.31	.64	BOM
57	22	20	11+11	20	simples	metal	.95	.95	.80	4.20	61.30	.64	BOM
56	22	20	22	0	duplo	plastico	.95	.95	1.42	2.20	60.90	.63	BOM
61	22	20	11+11	40	simples	metal	.95	.95	.57	4.20	59.54	.62	BOM
58	22	20	11+11	20	simples	madeira	.95	.95	.80	3.70	59.35	.62	BOM
62	22	20	11+11	40	simples	madeira	.95	.95	.57	3.70	57.59	.60	BOM
65	22	60	15	0	simples	metal	.35	.35	1.82	4.20	52.52	.54	BOM
67	22	60	15	0	duplo	metal	.35	.35	1.82	3.10	50.83	.53	BOM
66	22	60	15	0	simples	madeira	.35	.35	1.82	3.70	50.58	.52	BOM
69	22	60	22	0	simples	metal	.35	.35	1.42	4.20	49.48	.51	BOM
71	22	60	22	0	duplo	metal	.35	.35	1.42	3.10	47.77	.50	BOM
70	22	60	22	0	simples	madeira	.35	.35	1.42	3.70	47.55	.49	BOM
68	22	60	15	0	duplo	plastico	.35	.35	1.82	2.20	47.33	.49	BOM
73	22	60	11+11	20	simples	metal	.35	.35	.80	4.20	44.79	.46	BOM
72	22	60	22	0	duplo	plastico	.35	.35	1.42	2.20	44.29	.46	BOM
77	22	60	11+11	40	simples	metal	.35	.35	.57	4.20	43.06	.45	BOM
74	22	60	11+11	20	simples	madeira	.35	.35	.80	3.70	42.88	.44	BOM
78	22	60	11+11	40	simples	madeira	.35	.35	.57	3.70	41.16	.43	BOM
59	22	20	11+11	20	duplo	metal	.95	.95	.80	3.10	59.65	.62	EXC
63	22	20	11+11	40	duplo	metal	.95	.95	.57	3.10	57.88	.60	EXC
60	22	20	11+11	20	duplo	plastico	.95	.95	.80	2.20	56.12	.58	EXC
64	22	20	11+11	40	duplo	plastico	.95	.95	.57	2.20	54.36	.56	EXC
75	22	60	11+11	20	duplo	metal	.35	.35	.80	3.10	43.06	.45	EXC
79	22	60	11+11	40	duplo	metal	.35	.35	.57	3.10	41.32	.43	EXC
76	22	60	11+11	20	duplo	plastico	.35	.35	.80	2.20	39.59	.41	EXC
80	22	60	11+11	40	duplo	plastico	.35	.35	.57	2.20	37.87	.39	EXC

ANEXO 3

tabela 3.1

habitação T2 cobertura
zona climática de inverno I1
sem ganhos solares

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic1	%Ni	cls
1	11+11	0	15	0	simples	metal	0	1.40	2.10	1.82	4.20	.85	40.67	.98	SUF
4	11+11	0	15	0	simples	madeira	0	1.40	2.10	1.82	3.70	.85	40.18	.97	SUF
7	11+11	0	22	0	simples	metal	0	1.40	2.10	1.42	4.20	.85	39.89	.96	SUF
10	11+11	0	22	0	simples	madeira	0	1.40	2.10	1.42	3.70	.85	39.40	.95	BOM
13	11+15	0	15	0	simples	metal	0	1.20	1.80	1.82	4.20	.85	38.56	.93	BOM
16	11+15	0	15	0	simples	madeira	0	1.20	1.80	1.82	3.70	.85	38.07	.92	BOM
19	11+15	0	22	0	simples	metal	0	1.20	1.80	1.42	4.20	.85	37.79	.91	BOM
22	11+15	0	22	0	simples	madeira	0	1.20	1.80	1.42	3.70	.85	37.29	.90	BOM
2	11+11	0	15	0	simples	metal	40	1.40	2.10	1.82	4.20	.53	37.13	.89	BOM
5	11+11	0	15	0	simples	madeira	40	1.40	2.10	1.82	3.70	.53	36.63	.88	BOM
8	11+11	0	22	0	simples	metal	40	1.40	2.10	1.42	4.20	.53	36.35	.87	BOM
11	11+11	0	22	0	simples	madeira	40	1.40	2.10	1.42	3.70	.53	35.85	.86	BOM
14	11+15	0	15	0	simples	metal	40	1.20	1.80	1.82	4.20	.53	35.02	.84	BOM
3	11+11	0	15	0	simples	metal	100	1.40	2.10	1.82	4.20	.30	34.58	.83	BOM
17	11+15	0	15	0	simples	madeira	40	1.20	1.80	1.82	3.70	.53	34.52	.83	BOM
25	11+15	20	15	0	simples	metal	0	.75	1.20	1.82	4.20	.85	34.35	.83	BOM
20	11+15	0	22	0	simples	metal	40	1.20	1.80	1.42	4.20	.53	34.24	.82	BOM
6	11+11	0	15	0	simples	madeira	100	1.40	2.10	1.82	3.70	.30	34.08	.82	BOM
28	11+15	20	15	0	simples	madeira	0	.75	1.20	1.82	3.70	.85	33.85	.81	BOM
9	11+11	0	22	0	simples	metal	100	1.40	2.10	1.42	4.20	.30	33.80	.81	BOM
23	11+15	0	22	0	simples	madeira	40	1.20	1.80	1.42	3.70	.53	33.75	.81	BOM
12	11+11	0	22	0	simples	madeira	100	1.40	2.10	1.42	3.70	.30	33.31	.80	BOM
31	11+15	20	15	0	duplo	metal	0	.75	1.20	1.82	3.10	.85	33.26	.80	BOM
61	22	20	15	0	simples	metal	0	.95	.95	1.82	4.20	.85	32.59	.78	BOM
15	11+15	0	15	0	simples	metal	100	1.20	1.80	1.82	4.20	.30	32.47	.78	BOM
34	11+15	20	15	0	duplo	plastico	0	.75	1.20	1.82	2.20	.85	32.37	.78	BOM
64	22	20	15	0	simples	madeira	0	.95	.95	1.82	3.70	.85	32.10	.77	BOM
18	11+15	0	15	0	simples	madeira	100	1.20	1.80	1.82	3.70	.30	31.98	.77	BOM
21	11+15	0	22	0	simples	metal	100	1.20	1.80	1.42	4.20	.30	31.69	.76	BOM
67	22	20	15	0	duplo	metal	0	.95	.95	1.82	3.10	.85	31.51	.76	BOM
24	11+15	0	22	0	simples	madeira	100	1.20	1.80	1.42	3.70	.30	31.20	.75	BOM
26	11+15	20	15	0	simples	metal	40	.75	1.20	1.82	4.20	.53	30.81	.74	BOM
70	22	20	15	0	duplo	plastico	0	.95	.95	1.82	2.20	.85	30.61	.74	BOM
29	11+15	20	15	0	simples	madeira	40	.75	1.20	1.82	3.70	.53	30.31	.73	BOM
32	11+15	20	15	0	duplo	metal	40	.75	1.20	1.82	3.10	.53	29.72	.71	BOM
62	22	20	15	0	simples	metal	40	.95	.95	1.82	4.20	.53	29.05	.70	BOM
35	11+15	20	15	0	duplo	plastico	40	.75	1.20	1.82	2.20	.53	28.83	.69	BOM
65	22	20	15	0	simples	madeira	40	.95	.95	1.82	3.70	.53	28.55	.69	BOM
97	22	60	15	0	simples	metal	0	.35	.35	1.82	4.20	.85	28.38	.68	BOM
27	11+15	20	15	0	simples	metal	100	.75	1.20	1.82	4.20	.30	28.26	.68	BOM
68	22	20	15	0	duplo	metal	40	.95	.95	1.82	3.10	.53	27.96	.67	BOM
100	22	60	15	0	simples	madeira	0	.35	.35	1.82	3.70	.85	27.89	.67	BOM
30	11+15	20	15	0	simples	madeira	100	.75	1.20	1.82	3.70	.30	27.76	.67	BOM
103	22	60	15	0	duplo	metal	0	.35	.35	1.82	3.10	.85	27.29	.66	BOM
33	11+15	20	15	0	duplo	metal	100	.75	1.20	1.82	3.10	.30	27.17	.65	BOM
71	22	20	15	0	duplo	plastico	40	.95	.95	1.82	2.20	.53	27.07	.65	BOM
63	22	20	15	0	simples	metal	100	.95	.95	1.82	4.20	.30	26.50	.64	BOM
106	22	60	15	0	duplo	plastico	0	.35	.35	1.82	2.20	.85	26.40	.64	BOM
36	11+15	20	15	0	duplo	plastico	100	.75	1.20	1.82	2.20	.30	26.28	.63	BOM
66	22	20	15	0	simples	madeira	100	.95	.95	1.82	3.70	.30	26.01	.63	BOM
69	22	20	15	0	duplo	metal	100	.95	.95	1.82	3.10	.30	25.41	.61	BOM
98	22	60	15	0	simples	metal	40	.35	.35	1.82	4.20	.53	24.84	.60	BOM

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic1	Xni	cls
72	22	20	15	0	duplo	plastico	100	.95	.95	1.82	2.20	.30	24.52	.59	BOM
101	22	60	15	0	simples	madeira	40	.35	.35	1.82	3.70	.53	24.34	.59	BOM
104	22	60	15	0	duplo	metal	40	.35	.35	1.82	3.10	.53	23.75	.57	BOM
107	22	60	15	0	duplo	plastico	40	.35	.35	1.82	2.20	.53	22.86	.55	BOM
99	22	60	15	0	simples	metal	100	.35	.35	1.82	4.20	.30	22.29	.54	BOM
102	22	60	15	0	simples	madeira	100	.35	.35	1.82	3.70	.30	21.79	.52	BOM
105	22	60	15	0	duplo	metal	100	.35	.35	1.82	3.10	.30	21.20	.51	BOM
108	22	60	15	0	duplo	plastico	100	.35	.35	1.82	2.20	.30	20.31	.49	BOM
37	11+15	20	22	0	simples	metal	0	.75	1.20	1.42	4.20	.85	33.57	.81	MB
40	11+15	20	22	0	simples	madeira	0	.75	1.20	1.42	3.70	.85	33.08	.80	MB
43	11+15	20	22	0	duplo	metal	0	.75	1.20	1.42	3.10	.85	32.48	.78	MB
49	11+15	20	11+11	20	simples	metal	0	.75	1.20	.80	4.20	.85	32.37	.78	MB
52	11+15	20	11+11	20	simples	madeira	0	.75	1.20	.80	3.70	.85	31.87	.77	MB
73	22	20	22	0	simples	metal	0	.95	.95	1.42	4.20	.85	31.82	.77	MB
46	11+15	20	22	0	duplo	plastico	0	.75	1.20	1.42	2.20	.85	31.59	.76	MB
76	22	20	22	0	simples	madeira	0	.95	.95	1.42	3.70	.85	31.32	.75	MB
55	11+15	20	11+11	20	duplo	metal	0	.75	1.20	.80	3.10	.85	31.28	.75	MB
79	22	20	22	0	duplo	metal	0	.95	.95	1.42	3.10	.85	30.73	.74	MB
85	22	20	11+11	20	simples	metal	0	.95	.95	.80	4.20	.85	30.61	.74	MB
58	11+15	20	11+11	20	duplo	plastico	0	.75	1.20	.80	2.20	.85	30.39	.73	MB
88	22	20	11+11	20	simples	madeira	0	.95	.95	.80	3.70	.85	30.12	.72	MB
38	11+15	20	22	0	simples	metal	40	.75	1.20	1.42	4.20	.53	30.03	.72	MB
82	22	20	22	0	duplo	plastico	0	.95	.95	1.42	2.20	.85	29.84	.72	MB
41	11+15	20	22	0	simples	madeira	40	.75	1.20	1.42	3.70	.53	29.53	.71	MB
91	22	20	11+11	20	duplo	metal	0	.95	.95	.80	3.10	.85	29.52	.71	MB
44	11+15	20	22	0	duplo	metal	40	.75	1.20	1.42	3.10	.53	28.94	.70	MB
50	11+15	20	11+11	20	simples	metal	40	.75	1.20	.80	4.20	.53	28.82	.69	MB
94	22	20	11+11	20	duplo	plastico	0	.95	.95	.80	2.20	.85	28.63	.69	MB
53	11+15	20	11+11	20	simples	madeira	40	.75	1.20	.80	3.70	.53	28.33	.68	MB
74	22	20	22	0	simples	metal	40	.95	.95	1.42	4.20	.53	28.27	.68	MB
47	11+15	20	22	0	duplo	plastico	40	.75	1.20	1.42	2.20	.53	28.05	.67	MB
77	22	20	22	0	simples	madeira	40	.95	.95	1.42	3.70	.53	27.78	.67	MB
56	11+15	20	11+11	20	duplo	metal	40	.75	1.20	.80	3.10	.53	27.73	.67	MB
109	22	60	22	0	simples	metal	0	.35	.35	1.42	4.20	.85	27.60	.66	MB
39	11+15	20	22	0	simples	metal	100	.75	1.20	1.42	4.20	.30	27.48	.66	MB
80	22	20	22	0	duplo	metal	40	.95	.95	1.42	3.10	.53	27.18	.65	MB
112	22	60	22	0	simples	madeira	0	.35	.35	1.42	3.70	.85	27.11	.65	MB
86	22	20	11+11	20	simples	metal	40	.95	.95	.80	4.20	.53	27.07	.65	MB
42	11+15	20	22	0	simples	madeira	100	.75	1.20	1.42	3.70	.30	26.98	.65	MB
59	11+15	20	11+11	20	duplo	plastico	40	.75	1.20	.80	2.20	.53	26.84	.65	MB
89	22	20	11+11	20	simples	madeira	40	.95	.95	.80	3.70	.53	26.57	.64	MB
115	22	60	22	0	duplo	metal	0	.35	.35	1.42	3.10	.85	26.51	.64	MB
121	22	60	11+11	20	simples	metal	0	.35	.35	.80	4.20	.85	26.40	.64	MB
45	11+15	20	22	0	duplo	metal	100	.75	1.20	1.42	3.10	.30	26.39	.63	MB
83	22	20	22	0	duplo	plastico	40	.95	.95	1.42	2.20	.53	26.29	.63	MB
51	11+15	20	11+11	20	simples	metal	100	.75	1.20	.80	4.20	.30	26.27	.63	MB
92	22	20	11+11	20	duplo	metal	40	.95	.95	.80	3.10	.53	25.98	.63	MB
133	22	60	11+11	40	simples	metal	0	.35	.35	.57	4.20	.85	25.95	.62	MB
124	22	60	11+11	20	simples	madeira	0	.35	.35	.80	3.70	.85	25.90	.62	MB
54	11+15	20	11+11	20	simples	madeira	100	.75	1.20	.80	3.70	.30	25.78	.62	MB
75	22	20	22	0	simples	metal	100	.95	.95	1.42	4.20	.30	25.72	.62	MB
118	22	60	22	0	duplo	plastico	0	.35	.35	1.42	2.20	.85	25.62	.62	MB
48	11+15	20	22	0	duplo	plastico	100	.75	1.20	1.42	2.20	.30	25.50	.61	MB
136	22	60	11+11	40	simples	madeira	0	.35	.35	.57	3.70	.85	25.46	.61	MB
127	22	60	11+11	20	duplo	metal	0	.35	.35	.80	3.10	.85	25.31	.61	MB
78	22	20	22	0	simples	madeira	100	.95	.95	1.42	3.70	.30	25.23	.61	MB
57	11+15	20	11+11	20	duplo	metal	100	.75	1.20	.80	3.10	.30	25.19	.61	MB
95	22	20	11+11	20	duplo	plastico	40	.95	.95	.80	2.20	.53	25.09	.60	MB
60	11+15	20	11+11	20	duplo	plastico	100	.75	1.20	.80	2.20	.30	24.30	.58	MB
139	22	60	11+11	40	duplo	metal	0	.35	.35	.57	3.10	.85	24.86	.60	EXC
81	22	20	22	0	duplo	metal	100	.95	.95	1.42	3.10	.30	24.64	.59	EXC

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic1	%Ni	cls
87	22	20	11+11	20	simples	metal	100	.95	.95	.80	4.20	.30	24.52	.59	EXC
130	22	60	11+11	20	duplo	plastico	0	.35	.35	.80	2.20	.85	24.42	.59	EXC
110	22	60	22	0	simples	metal	40	.35	.35	1.42	4.20	.53	24.06	.58	EXC
90	22	20	11+11	20	simples	madeira	100	.95	.95	.80	3.70	.30	24.02	.58	EXC
142	22	60	11+11	40	duplo	plastico	0	.35	.35	.57	2.20	.85	23.97	.58	EXC
84	22	20	22	0	duplo	plastico	100	.95	.95	1.42	2.20	.30	23.74	.57	EXC
113	22	60	22	0	simples	madeira	40	.35	.35	1.42	3.70	.53	23.56	.57	EXC
93	22	20	11+11	20	duplo	metal	100	.95	.95	.80	3.10	.30	23.43	.56	EXC
116	22	60	22	0	duplo	metal	40	.35	.35	1.42	3.10	.53	22.97	.55	EXC
122	22	60	11+11	20	simples	metal	40	.35	.35	.80	4.20	.53	22.85	.55	EXC
96	22	20	11+11	20	duplo	plastico	100	.95	.95	.80	2.20	.30	22.54	.54	EXC
134	22	60	11+11	40	simples	metal	40	.35	.35	.57	4.20	.53	22.41	.54	EXC
125	22	60	11+11	20	simples	madeira	40	.35	.35	.80	3.70	.53	22.36	.54	EXC
119	22	60	22	0	duplo	plastico	40	.35	.35	1.42	2.20	.53	22.08	.53	EXC
137	22	60	11+11	40	simples	madeira	40	.35	.35	.57	3.70	.53	21.91	.53	EXC
128	22	60	11+11	20	duplo	metal	40	.35	.35	.80	3.10	.53	21.76	.52	EXC
111	22	60	22	0	simples	metal	100	.35	.35	1.42	4.20	.30	21.51	.52	EXC
140	22	60	11+11	40	duplo	metal	40	.35	.35	.57	3.10	.53	21.32	.51	EXC
114	22	60	22	0	simples	madeira	100	.35	.35	1.42	3.70	.30	21.02	.51	EXC
131	22	60	11+11	20	duplo	plastico	40	.35	.35	.80	2.20	.53	20.87	.50	EXC
143	22	60	11+11	40	duplo	plastico	40	.35	.35	.57	2.20	.53	20.43	.49	EXC
117	22	60	22	0	duplo	metal	100	.35	.35	1.42	3.10	.30	20.42	.49	EXC
123	22	60	11+11	20	simples	metal	100	.35	.35	.80	4.20	.30	20.31	.49	EXC
135	22	60	11+11	40	simples	metal	100	.35	.35	.57	4.20	.30	19.86	.48	EXC
126	22	60	11+11	20	simples	madeira	100	.35	.35	.80	3.70	.30	19.81	.48	EXC
120	22	60	22	0	duplo	plastico	100	.35	.35	1.42	2.20	.30	19.53	.47	EXC
138	22	60	11+11	40	simples	madeira	100	.35	.35	.57	3.70	.30	19.36	.47	EXC
129	22	60	11+11	20	duplo	metal	100	.35	.35	.80	3.10	.30	19.22	.46	EXC
141	22	60	11+11	40	duplo	metal	100	.35	.35	.57	3.10	.30	18.77	.45	EXC
132	22	60	11+11	20	duplo	plastico	100	.35	.35	.80	2.20	.30	18.33	.44	EXC
144	22	60	11+11	40	duplo	plastico	100	.35	.35	.57	2.20	.30	17.88	.43	EXC

tabela 3.2

habitação T2 cobertura
zona climática de inverno I2
sem ganhos solares

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic2	XNi	cls
1	11+11	0	15	0	simples	metal	0	1.40	2.10	1.82	4.20	.85	81.34	1.12	INS
4	11+11	0	15	0	simples	madeira	0	1.40	2.10	1.82	3.70	.85	80.35	1.10	INS
7	11+11	0	22	0	simples	metal	0	1.40	2.10	1.42	4.20	.85	79.79	1.09	INS
10	11+11	0	22	0	simples	madeira	0	1.40	2.10	1.42	3.70	.85	78.80	1.08	INS
13	11+15	0	15	0	simples	metal	0	1.20	1.80	1.82	4.20	.85	77.13	1.06	INS
16	11+15	0	15	0	simples	madeira	0	1.20	1.80	1.82	3.70	.85	76.14	1.04	INS
19	11+15	0	22	0	simples	metal	0	1.20	1.80	1.42	4.20	.85	75.57	1.04	INS
22	11+15	0	22	0	simples	madeira	0	1.20	1.80	1.42	3.70	.85	74.58	1.02	INS
2	11+11	0	15	0	simples	metal	40	1.40	2.10	1.82	4.20	.53	74.25	1.02	INS
5	11+11	0	15	0	simples	madeira	40	1.40	2.10	1.82	3.70	.53	73.26	1.00	SUF
8	11+11	0	22	0	simples	metal	40	1.40	2.10	1.42	4.20	.53	72.70	1.00	SUF
11	11+11	0	22	0	simples	madeira	40	1.40	2.10	1.42	3.70	.53	71.71	.98	SUF
14	11+15	0	15	0	simples	metal	40	1.20	1.80	1.82	4.20	.53	70.04	.96	SUF
3	11+11	0	15	0	simples	metal	100	1.40	2.10	1.82	4.20	.30	69.16	.95	BOM
17	11+15	0	15	0	simples	madeira	40	1.20	1.80	1.82	3.70	.53	69.05	.95	BOM
25	11+15	20	15	0	simples	metal	0	.75	1.20	1.82	4.20	.85	68.70	.94	BOM
20	11+15	0	22	0	simples	metal	40	1.20	1.80	1.42	4.20	.53	68.48	.94	BOM
6	11+11	0	15	0	simples	madeira	100	1.40	2.10	1.82	3.70	.30	68.17	.94	BOM
28	11+15	20	15	0	simples	madeira	0	.75	1.20	1.82	3.70	.85	67.71	.93	BOM
9	11+11	0	22	0	simples	metal	100	1.40	2.10	1.42	4.20	.30	67.60	.93	BOM
23	11+15	0	22	0	simples	madeira	40	1.20	1.80	1.42	3.70	.53	67.49	.93	BOM
37	11+15	20	22	0	simples	metal	0	.75	1.20	1.42	4.20	.85	67.14	.92	BOM
12	11+11	0	22	0	simples	madeira	100	1.40	2.10	1.42	3.70	.30	66.61	.91	BOM
31	11+15	20	15	0	duplo	metal	0	.75	1.20	1.82	3.10	.85	66.52	.91	BOM
40	11+15	20	22	0	simples	madeira	0	.75	1.20	1.42	3.70	.85	66.15	.91	BOM
61	22	20	15	0	simples	metal	0	.95	.95	1.82	4.20	.85	65.19	.89	BOM
43	11+15	20	22	0	duplo	metal	0	.75	1.20	1.42	3.10	.85	64.97	.89	BOM
15	11+15	0	15	0	simples	metal	100	1.20	1.80	1.82	4.20	.30	64.94	.89	BOM
34	11+15	20	15	0	duplo	plastico	0	.75	1.20	1.82	2.20	.85	64.74	.89	BOM
49	11+15	20	11+11	20	simples	metal	0	.75	1.20	.80	4.20	.85	64.73	.89	BOM
64	22	20	15	0	simples	madeira	0	.95	.95	1.82	3.70	.85	64.20	.88	BOM
18	11+15	0	15	0	simples	madeira	100	1.20	1.80	1.82	3.70	.30	63.95	.88	BOM
52	11+15	20	11+11	20	simples	madeira	0	.75	1.20	.80	3.70	.85	63.74	.87	BOM
73	22	20	22	0	simples	metal	0	.95	.95	1.42	4.20	.85	63.63	.87	BOM
21	11+15	0	22	0	simples	metal	100	1.20	1.80	1.42	4.20	.30	63.39	.87	BOM
46	11+15	20	22	0	duplo	plastico	0	.75	1.20	1.42	2.20	.85	63.19	.87	BOM
67	22	20	15	0	duplo	metal	0	.95	.95	1.82	3.10	.85	63.01	.86	BOM
76	22	20	22	0	simples	madeira	0	.95	.95	1.42	3.70	.85	62.64	.86	BOM
55	11+15	20	11+11	20	duplo	metal	0	.75	1.20	.80	3.10	.85	62.56	.86	BOM
24	11+15	0	22	0	simples	madeira	100	1.20	1.80	1.42	3.70	.30	62.40	.86	BOM
26	11+15	20	15	0	simples	metal	40	.75	1.20	1.82	4.20	.53	61.61	.85	BOM
79	22	20	22	0	duplo	metal	0	.95	.95	1.42	3.10	.85	61.46	.84	BOM
70	22	20	15	0	duplo	plastico	0	.95	.95	1.82	2.20	.85	61.23	.84	BOM
85	22	20	11+11	20	simples	metal	0	.95	.95	.80	4.20	.85	61.22	.84	BOM
58	11+15	20	11+11	20	duplo	plastico	0	.75	1.20	.80	2.20	.85	60.78	.83	BOM
29	11+15	20	15	0	simples	madeira	40	.75	1.20	1.82	3.70	.53	60.62	.83	BOM
88	22	20	11+11	20	simples	madeira	0	.95	.95	.80	3.70	.85	60.23	.83	BOM
38	11+15	20	22	0	simples	metal	40	.75	1.20	1.42	4.20	.53	60.05	.82	BOM
82	22	20	22	0	duplo	plastico	0	.95	.95	1.42	2.20	.85	59.67	.82	BOM
32	11+15	20	15	0	duplo	metal	40	.75	1.20	1.82	3.10	.53	59.43	.82	BOM
41	11+15	20	22	0	simples	madeira	40	.75	1.20	1.42	3.70	.53	59.07	.81	BOM

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic2	%Ni	cls
62	22	20	15	0	simples	metal	40	.95	.95	1.82	4.20	.53	58.10	.80	BOM
44	11+15	20	22	0	duplo	metal	40	.75	1.20	1.42	3.10	.53	57.88	.79	BOM
35	11+15	20	15	0	duplo	plastico	40	.75	1.20	1.82	2.20	.53	57.65	.79	BOM
50	11+15	20	11+11	20	simples	metal	40	.75	1.20	.80	4.20	.53	57.64	.79	BOM
65	22	20	15	0	simples	madeira	40	.95	.95	1.82	3.70	.53	57.11	.78	BOM
97	22	60	15	0	simples	metal	0	.35	.35	1.82	4.20	.85	56.76	.78	BOM
53	11+15	20	11+11	20	simples	madeira	40	.75	1.20	.80	3.70	.53	56.65	.78	BOM
74	22	20	22	0	simples	metal	40	.95	.95	1.42	4.20	.53	56.54	.78	BOM
27	11+15	20	15	0	simples	metal	100	.75	1.20	1.82	4.20	.30	56.51	.78	BOM
47	11+15	20	22	0	duplo	plastico	40	.75	1.20	1.42	2.20	.53	56.10	.77	BOM
68	22	20	15	0	duplo	metal	40	.95	.95	1.82	3.10	.53	55.92	.77	BOM
100	22	60	15	0	simples	madeira	0	.35	.35	1.82	3.70	.85	55.77	.77	BOM
77	22	20	22	0	simples	madeira	40	.95	.95	1.42	3.70	.53	55.55	.76	BOM
30	11+15	20	15	0	simples	madeira	100	.75	1.20	1.82	3.70	.30	55.53	.76	BOM
109	22	60	22	0	simples	metal	0	.35	.35	1.42	4.20	.85	55.21	.76	BOM
39	11+15	20	22	0	simples	metal	100	.75	1.20	1.42	4.20	.30	54.96	.75	BOM
103	22	60	15	0	duplo	metal	0	.35	.35	1.82	3.10	.85	54.58	.75	BOM
80	22	20	22	0	duplo	metal	40	.95	.95	1.42	3.10	.53	54.37	.75	BOM
33	11+15	20	15	0	duplo	metal	100	.75	1.20	1.82	3.10	.30	54.34	.75	BOM
112	22	60	22	0	simples	madeira	0	.35	.35	1.42	3.70	.85	54.22	.74	BOM
71	22	20	15	0	duplo	plastico	40	.95	.95	1.82	2.20	.53	54.14	.74	BOM
86	22	20	11+11	20	simples	metal	40	.95	.95	.80	4.20	.53	54.13	.74	BOM
42	11+15	20	22	0	simples	madeira	100	.75	1.20	1.42	3.70	.30	53.97	.74	BOM
89	22	20	11+11	20	simples	madeira	40	.95	.95	.80	3.70	.53	53.14	.73	BOM
115	22	60	22	0	duplo	metal	0	.35	.35	1.42	3.10	.85	53.03	.73	BOM
63	22	20	15	0	simples	metal	100	.95	.95	1.82	4.20	.30	53.00	.73	BOM
106	22	60	15	0	duplo	plastico	0	.35	.35	1.82	2.20	.85	52.80	.72	BOM
121	22	60	11+11	20	simples	metal	0	.35	.35	.80	4.20	.85	52.79	.72	BOM
45	11+15	20	22	0	duplo	metal	100	.75	1.20	1.42	3.10	.30	52.78	.72	BOM
83	22	20	22	0	duplo	plastico	40	.95	.95	1.42	2.20	.53	52.59	.72	BOM
36	11+15	20	15	0	duplo	plastico	100	.75	1.20	1.82	2.20	.30	52.56	.72	BOM
51	11+15	20	11+11	20	simples	metal	100	.75	1.20	.80	4.20	.30	52.55	.72	BOM
66	22	20	15	0	simples	madeira	100	.95	.95	1.82	3.70	.30	52.01	.71	BOM
133	22	60	11+11	40	simples	metal	0	.35	.35	.57	4.20	.85	51.90	.71	BOM
124	22	60	11+11	20	simples	madeira	0	.35	.35	.80	3.70	.85	51.81	.71	BOM
54	11+15	20	11+11	20	simples	madeira	100	.75	1.20	.80	3.70	.30	51.56	.71	BOM
75	22	20	22	0	simples	metal	100	.95	.95	1.42	4.20	.30	51.45	.71	BOM
118	22	60	22	0	duplo	plastico	0	.35	.35	1.42	2.20	.85	51.25	.70	BOM
48	11+15	20	22	0	duplo	plastico	100	.75	1.20	1.42	2.20	.30	51.00	.70	BOM
136	22	60	11+11	40	simples	madeira	0	.35	.35	.57	3.70	.85	50.91	.70	BOM
69	22	20	15	0	duplo	metal	100	.95	.95	1.82	3.10	.30	50.83	.70	BOM
78	22	20	22	0	simples	madeira	100	.95	.95	1.42	3.70	.30	50.46	.69	BOM
98	22	60	15	0	simples	metal	40	.35	.35	1.82	4.20	.53	49.67	.68	BOM
81	22	20	22	0	duplo	metal	100	.95	.95	1.42	3.10	.30	49.27	.68	BOM
72	22	20	15	0	duplo	plastico	100	.95	.95	1.82	2.20	.30	49.05	.67	BOM
87	22	20	11+11	20	simples	metal	100	.95	.95	.80	4.20	.30	49.04	.67	BOM
101	22	60	15	0	simples	madeira	40	.35	.35	1.82	3.70	.53	48.68	.67	BOM
110	22	60	22	0	simples	metal	40	.35	.35	1.42	4.20	.53	48.12	.66	BOM
90	22	20	11+11	20	simples	madeira	100	.95	.95	.80	3.70	.30	48.05	.66	BOM
84	22	20	22	0	duplo	plastico	100	.95	.95	1.42	2.20	.30	47.49	.65	BOM
104	22	60	15	0	duplo	metal	40	.35	.35	1.82	3.10	.53	47.49	.65	BOM
113	22	60	22	0	simples	madeira	40	.35	.35	1.42	3.70	.53	47.13	.65	BOM
116	22	60	22	0	duplo	metal	40	.35	.35	1.42	3.10	.53	45.94	.63	BOM
107	22	60	15	0	duplo	plastico	40	.35	.35	1.82	2.20	.53	45.71	.63	BOM
122	22	60	11+11	20	simples	metal	40	.35	.35	.80	4.20	.53	45.71	.63	BOM
134	22	60	11+11	40	simples	metal	40	.35	.35	.57	4.20	.53	44.81	.61	BOM
125	22	60	11+11	20	simples	madeira	40	.35	.35	.80	3.70	.53	44.72	.61	BOM
99	22	60	15	0	simples	metal	100	.35	.35	1.82	4.20	.30	44.58	.61	BOM
119	22	60	22	0	duplo	plastico	40	.35	.35	1.42	2.20	.53	44.16	.61	BOM
137	22	60	11+11	40	simples	madeira	40	.35	.35	.57	3.70	.53	43.82	.60	BOM
102	22	60	15	0	simples	madeira	100	.35	.35	1.82	3.70	.30	43.59	.60	BOM
111	22	60	22	0	simples	metal	100	.35	.35	1.42	4.20	.30	43.02	.59	BOM
105	22	60	15	0	duplo	metal	100	.35	.35	1.82	3.10	.30	42.40	.58	BOM

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic2	Xni	cls
114	22	60	22	0	simples	madeira	100	.35	.35	1.42	3.70	.30	42.03	.58	BOM
117	22	60	22	0	duplo	metal	100	.35	.35	1.42	3.10	.30	40.84	.56	BOM
108	22	60	15	0	duplo	plastico	100	.35	.35	1.82	2.20	.30	40.62	.56	BOM
123	22	60	11+11	20	simples	metal	100	.35	.35	.80	4.20	.30	40.61	.56	BOM
135	22	60	11+11	40	simples	metal	100	.35	.35	.57	4.20	.30	39.72	.54	BOM
126	22	60	11+11	20	simples	madeira	100	.35	.35	.80	3.70	.30	39.62	.54	BOM
120	22	60	22	0	duplo	plastico	100	.35	.35	1.42	2.20	.30	39.06	.54	BOM
138	22	60	11+11	40	simples	madeira	100	.35	.35	.57	3.70	.30	38.73	.53	BOM
91	22	20	11+11	20	duplo	metal	0	.95	.95	.80	3.10	.85	59.05	.81	MB
94	22	20	11+11	20	duplo	plastico	0	.95	.95	.80	2.20	.85	57.26	.79	MB
56	11+15	20	11+11	20	duplo	metal	40	.75	1.20	.80	3.10	.53	55.47	.76	MB
59	11+15	20	11+11	20	duplo	plastico	40	.75	1.20	.80	2.20	.53	53.69	.74	MB
92	22	20	11+11	20	duplo	metal	40	.95	.95	.80	3.10	.53	51.96	.71	MB
127	22	60	11+11	20	duplo	metal	0	.35	.35	.80	3.10	.85	50.62	.69	MB
57	11+15	20	11+11	20	duplo	metal	100	.75	1.20	.80	3.10	.30	50.37	.69	MB
95	22	20	11+11	20	duplo	plastico	40	.95	.95	.80	2.20	.53	50.17	.69	MB
139	22	60	11+11	40	duplo	metal	0	.35	.35	.57	3.10	.85	49.72	.68	MB
130	22	60	11+11	20	duplo	plastico	0	.35	.35	.80	2.20	.85	48.84	.67	MB
60	11+15	20	11+11	20	duplo	plastico	100	.75	1.20	.80	2.20	.30	48.59	.67	MB
142	22	60	11+11	40	duplo	plastico	0	.35	.35	.57	2.20	.85	47.94	.66	MB
93	22	20	11+11	20	duplo	metal	100	.95	.95	.80	3.10	.30	46.86	.64	MB
96	22	20	11+11	20	duplo	plastico	100	.95	.95	.80	2.20	.30	45.08	.62	MB
128	22	60	11+11	20	duplo	metal	40	.35	.35	.80	3.10	.53	43.53	.60	EXC
140	22	60	11+11	40	duplo	metal	40	.35	.35	.57	3.10	.53	42.63	.58	EXC
131	22	60	11+11	20	duplo	plastico	40	.35	.35	.80	2.20	.53	41.75	.57	EXC
143	22	60	11+11	40	duplo	plastico	40	.35	.35	.57	2.20	.53	40.85	.56	EXC
129	22	60	11+11	20	duplo	metal	100	.35	.35	.80	3.10	.30	38.43	.53	EXC
141	22	60	11+11	40	duplo	metal	100	.35	.35	.57	3.10	.30	37.54	.51	EXC
132	22	60	11+11	20	duplo	plastico	100	.35	.35	.80	2.20	.30	36.65	.50	EXC
144	22	60	11+11	40	duplo	plastico	100	.35	.35	.57	2.20	.30	35.77	.49	EXC

tabela 3.3

habitação T2 cobertura
zona climática de inverno I3
sem ganhos solares

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic3	%Ni	cls
1	11+11	0	15	0	simples	metal	0	1.40	2.10	1.82	4.20	.85	162.68	1.25	INS
4	11+11	0	15	0	simples	madeira	0	1.40	2.10	1.82	3.70	.85	160.70	1.24	INS
7	11+11	0	22	0	simples	metal	0	1.40	2.10	1.42	4.20	.85	159.57	1.23	INS
10	11+11	0	22	0	simples	madeira	0	1.40	2.10	1.42	3.70	.85	157.59	1.22	INS
13	11+15	0	15	0	simples	metal	0	1.20	1.80	1.82	4.20	.85	154.25	1.19	INS
16	11+15	0	15	0	simples	madeira	0	1.20	1.80	1.82	3.70	.85	152.27	1.17	INS
19	11+15	0	22	0	simples	metal	0	1.20	1.80	1.42	4.20	.85	151.14	1.17	INS
22	11+15	0	22	0	simples	madeira	0	1.20	1.80	1.42	3.70	.85	149.16	1.15	INS
2	11+11	0	15	0	simples	metal	40	1.40	2.10	1.82	4.20	.53	148.50	1.15	INS
5	11+11	0	15	0	simples	madeira	40	1.40	2.10	1.82	3.70	.53	146.52	1.13	INS
8	11+11	0	22	0	simples	metal	40	1.40	2.10	1.42	4.20	.53	145.39	1.12	INS
11	11+11	0	22	0	simples	madeira	40	1.40	2.10	1.42	3.70	.53	143.41	1.11	INS
14	11+15	0	15	0	simples	metal	40	1.20	1.80	1.82	4.20	.53	140.07	1.08	INS
3	11+11	0	15	0	simples	metal	100	1.40	2.10	1.82	4.20	.30	138.31	1.07	INS
17	11+15	0	15	0	simples	madeira	40	1.20	1.80	1.82	3.70	.53	138.10	1.07	INS
25	11+15	20	15	0	simples	metal	0	.75	1.20	1.82	4.20	.85	137.40	1.06	INS
20	11+15	0	22	0	simples	metal	40	1.20	1.80	1.42	4.20	.53	136.96	1.06	INS
6	11+11	0	15	0	simples	madeira	100	1.40	2.10	1.82	3.70	.30	136.33	1.05	INS
28	11+15	20	15	0	simples	madeira	0	.75	1.20	1.82	3.70	.85	135.42	1.04	INS
9	11+11	0	22	0	simples	metal	100	1.40	2.10	1.42	4.20	.30	135.20	1.04	INS
23	11+15	0	22	0	simples	madeira	40	1.20	1.80	1.42	3.70	.53	134.99	1.04	INS
37	11+15	20	22	0	simples	metal	0	.75	1.20	1.42	4.20	.85	134.29	1.04	INS
12	11+11	0	22	0	simples	madeira	100	1.40	2.10	1.42	3.70	.30	133.22	1.03	INS
31	11+15	20	15	0	duplo	metal	0	.75	1.20	1.82	3.10	.85	133.04	1.03	INS
40	11+15	20	22	0	simples	madeira	0	.75	1.20	1.42	3.70	.85	132.31	1.02	INS
61	22	20	15	0	simples	metal	0	.95	.95	1.82	4.20	.85	130.38	1.01	INS
43	11+15	20	22	0	duplo	metal	0	.75	1.20	1.42	3.10	.85	129.93	1.00	SUF
15	11+15	0	15	0	simples	metal	100	1.20	1.80	1.82	4.20	.30	129.88	1.00	SUF
34	11+15	20	15	0	duplo	plastico	0	.75	1.20	1.82	2.20	.85	129.48	1.00	SUF
49	11+15	20	11+11	20	simples	metal	0	.75	1.20	.80	4.20	.85	129.47	1.00	SUF
64	22	20	15	0	simples	madeira	0	.95	.95	1.82	3.70	.85	128.40	.99	SUF
18	11+15	0	15	0	simples	madeira	100	1.20	1.80	1.82	3.70	.30	127.90	.99	SUF
52	11+15	20	11+11	20	simples	madeira	0	.75	1.20	.80	3.70	.85	127.49	.98	SUF
73	22	20	22	0	simples	metal	0	.95	.95	1.42	4.20	.85	127.27	.98	SUF
21	11+15	0	22	0	simples	metal	100	1.20	1.80	1.42	4.20	.30	126.77	.98	SUF
46	11+15	20	22	0	duplo	plastico	0	.75	1.20	1.42	2.20	.85	126.37	.97	SUF
67	22	20	15	0	duplo	metal	0	.95	.95	1.82	3.10	.85	126.02	.97	SUF
76	22	20	22	0	simples	madeira	0	.95	.95	1.42	3.70	.85	125.29	.97	SUF
55	11+15	20	11+11	20	duplo	metal	0	.75	1.20	.80	3.10	.85	125.11	.97	SUF
24	11+15	0	22	0	simples	madeira	100	1.20	1.80	1.42	3.70	.30	124.79	.96	SUF
26	11+15	20	15	0	simples	metal	40	.75	1.20	1.82	4.20	.53	123.22	.95	BOM
79	22	20	22	0	duplo	metal	0	.95	.95	1.42	3.10	.85	122.91	.95	BOM
70	22	20	15	0	duplo	plastico	0	.95	.95	1.82	2.20	.85	122.46	.94	BOM
85	22	20	11+11	20	simples	metal	0	.95	.95	.80	4.20	.85	122.44	.94	BOM
58	11+15	20	11+11	20	duplo	plastico	0	.75	1.20	.80	2.20	.85	121.55	.94	BOM
29	11+15	20	15	0	simples	madeira	40	.75	1.20	1.82	3.70	.53	121.24	.94	BOM
88	22	20	11+11	20	simples	madeira	0	.95	.95	.80	3.70	.85	120.47	.93	BOM
38	11+15	20	22	0	simples	metal	40	.75	1.20	1.42	4.20	.53	120.11	.93	BOM
82	22	20	22	0	duplo	plastico	0	.95	.95	1.42	2.20	.85	119.35	.92	BOM
32	11+15	20	15	0	duplo	metal	40	.75	1.20	1.82	3.10	.53	118.87	.92	BOM
41	11+15	20	22	0	simples	madeira	40	.75	1.20	1.42	3.70	.53	118.13	.91	BOM

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic3	XNi	cls
91	22	20	11+11	20	duplo	metal	0	.95	.95	.80	3.10	.85	118.09	.91	BOM
62	22	20	15	0	simples	metal	40	.95	.95	1.82	4.20	.53	116.20	.90	BOM
44	11+15	20	22	0	duplo	metal	40	.75	1.20	1.42	3.10	.53	115.76	.89	BOM
35	11+15	20	15	0	duplo	plastico	40	.75	1.20	1.82	2.20	.53	115.30	.89	BOM
50	11+15	20	11+11	20	simples	metal	40	.75	1.20	.80	4.20	.53	115.29	.89	BOM
94	22	20	11+11	20	duplo	plastico	0	.95	.95	.80	2.20	.85	114.53	.88	BOM
65	22	20	15	0	simples	madeira	40	.95	.95	1.82	3.70	.53	114.22	.88	BOM
97	22	60	15	0	simples	metal	0	.35	.35	1.82	4.20	.85	113.52	.88	BOM
53	11+15	20	11+11	20	simples	madeira	40	.75	1.20	.80	3.70	.53	113.31	.87	BOM
74	22	20	22	0	simples	metal	40	.95	.95	1.42	4.20	.53	113.09	.87	BOM
27	11+15	20	15	0	simples	metal	100	.75	1.20	1.82	4.20	.30	113.03	.87	BOM
47	11+15	20	22	0	duplo	plastico	40	.75	1.20	1.42	2.20	.53	112.19	.87	BOM
68	22	20	15	0	duplo	metal	40	.95	.95	1.82	3.10	.53	111.84	.86	BOM
100	22	60	15	0	simples	madeira	0	.35	.35	1.82	3.70	.85	111.54	.86	BOM
77	22	20	22	0	simples	madeira	40	.95	.95	1.42	3.70	.53	111.11	.86	BOM
30	11+15	20	15	0	simples	madeira	100	.75	1.20	1.82	3.70	.30	111.05	.86	BOM
56	11+15	20	11+11	20	duplo	metal	40	.75	1.20	.80	3.10	.53	110.93	.86	BOM
109	22	60	22	0	simples	metal	0	.35	.35	1.42	4.20	.85	110.41	.85	BOM
39	11+15	20	22	0	simples	metal	100	.75	1.20	1.42	4.20	.30	109.92	.85	BOM
103	22	60	15	0	duplo	metal	0	.35	.35	1.82	3.10	.85	109.17	.84	BOM
80	22	20	22	0	duplo	metal	40	.95	.95	1.42	3.10	.53	108.73	.84	BOM
33	11+15	20	15	0	duplo	metal	100	.75	1.20	1.82	3.10	.30	108.68	.84	BOM
112	22	60	22	0	simples	madeira	0	.35	.35	1.42	3.70	.85	108.43	.84	BOM
71	22	20	15	0	duplo	plastico	40	.95	.95	1.82	2.20	.53	108.28	.84	BOM
86	22	20	11+11	20	simples	metal	40	.95	.95	.80	4.20	.53	108.27	.84	BOM
42	11+15	20	22	0	simples	madeira	100	.75	1.20	1.42	3.70	.30	107.94	.83	BOM
59	11+15	20	11+11	20	duplo	plastico	40	.75	1.20	.80	2.20	.53	107.37	.83	BOM
89	22	20	11+11	20	simples	madeira	40	.95	.95	.80	3.70	.53	106.29	.82	BOM
115	22	60	22	0	duplo	metal	0	.35	.35	1.42	3.10	.85	106.06	.82	BOM
63	22	20	15	0	simples	metal	100	.95	.95	1.82	4.20	.30	106.01	.82	BOM
106	22	60	15	0	duplo	plastico	0	.35	.35	1.82	2.20	.85	105.60	.81	BOM
121	22	60	11+11	20	simples	metal	0	.35	.35	.80	4.20	.85	105.59	.81	BOM
45	11+15	20	22	0	duplo	metal	100	.75	1.20	1.42	3.10	.30	105.56	.81	BOM
83	22	20	22	0	duplo	plastico	40	.95	.95	1.42	2.20	.53	105.17	.81	BOM
36	11+15	20	15	0	duplo	plastico	100	.75	1.20	1.82	2.20	.30	105.11	.81	BOM
51	11+15	20	11+11	20	simples	metal	100	.75	1.20	.80	4.20	.30	105.10	.81	BOM
66	22	20	15	0	simples	madeira	100	.95	.95	1.82	3.70	.30	104.03	.80	BOM
133	22	60	11+11	40	simples	metal	0	.35	.35	.57	4.20	.85	103.80	.80	BOM
124	22	60	11+11	20	simples	madeira	0	.35	.35	.80	3.70	.85	103.61	.80	BOM
54	11+15	20	11+11	20	simples	madeira	100	.75	1.20	.80	3.70	.30	103.12	.80	BOM
75	22	20	22	0	simples	metal	100	.95	.95	1.42	4.20	.30	102.90	.79	BOM
118	22	60	22	0	duplo	plastico	0	.35	.35	1.42	2.20	.85	102.49	.79	BOM
48	11+15	20	22	0	duplo	plastico	100	.75	1.20	1.42	2.20	.30	102.00	.79	BOM
136	22	60	11+11	40	simples	madeira	0	.35	.35	.57	3.70	.85	101.82	.79	BOM
69	22	20	15	0	duplo	metal	100	.95	.95	1.82	3.10	.30	101.65	.78	BOM
127	22	60	11+11	20	duplo	metal	0	.35	.35	.80	3.10	.85	101.24	.78	BOM
78	22	20	22	0	simples	madeira	100	.95	.95	1.42	3.70	.30	100.92	.78	BOM
57	11+15	20	11+11	20	duplo	metal	100	.75	1.20	.80	3.10	.30	100.74	.78	BOM
139	22	60	11+11	40	duplo	metal	0	.35	.35	.57	3.10	.85	99.45	.77	BOM
98	22	60	15	0	simples	metal	40	.35	.35	1.82	4.20	.53	99.34	.77	BOM
81	22	20	22	0	duplo	metal	100	.95	.95	1.42	3.10	.30	98.54	.76	BOM
72	22	20	15	0	duplo	plastico	100	.95	.95	1.82	2.20	.30	98.09	.76	BOM
87	22	20	11+11	20	simples	metal	100	.95	.95	.80	4.20	.30	98.08	.76	BOM
130	22	60	11+11	20	duplo	plastico	0	.35	.35	.80	2.20	.85	97.67	.75	BOM
101	22	60	15	0	simples	madeira	40	.35	.35	1.82	3.70	.53	97.36	.75	BOM
60	11+15	20	11+11	20	duplo	plastico	100	.75	1.20	.80	2.20	.30	97.18	.75	BOM
110	22	60	22	0	simples	metal	40	.35	.35	1.42	4.20	.53	96.23	.74	BOM
90	22	20	11+11	20	simples	madeira	100	.95	.95	.80	3.70	.30	96.10	.74	BOM
142	22	60	11+11	40	duplo	plastico	0	.35	.35	.57	2.20	.85	95.88	.74	BOM
104	22	60	15	0	duplo	metal	40	.35	.35	1.82	3.10	.53	94.99	.73	BOM
84	22	20	22	0	duplo	plastico	100	.95	.95	1.42	2.20	.30	94.98	.73	BOM
113	22	60	22	0	simples	madeira	40	.35	.35	1.42	3.70	.53	94.25	.73	BOM
116	22	60	22	0	duplo	metal	40	.35	.35	1.42	3.10	.53	91.88	.71	BOM

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic3	%Ni	cls
107	22	60	15	0	duplo	plastico	40	.35	.35	1.82	2.20	.53	91.43	.71	BOM
122	22	60	11+11	20	simples	metal	40	.35	.35	.80	4.20	.53	91.41	.71	BOM
134	22	60	11+11	40	simples	metal	40	.35	.35	.57	4.20	.53	89.62	.69	BOM
125	22	60	11+11	20	simples	madeira	40	.35	.35	.80	3.70	.53	89.43	.69	BOM
99	22	60	15	0	simples	metal	100	.35	.35	1.82	4.20	.30	89.15	.69	BOM
119	22	60	22	0	duplo	plastico	40	.35	.35	1.42	2.20	.53	88.32	.68	BOM
137	22	60	11+11	40	simples	madeira	40	.35	.35	.57	3.70	.53	87.64	.68	BOM
102	22	60	15	0	simples	madeira	100	.35	.35	1.82	3.70	.30	87.17	.67	BOM
111	22	60	22	0	simples	metal	100	.35	.35	1.42	4.20	.30	86.04	.66	BOM
105	22	60	15	0	duplo	metal	100	.35	.35	1.82	3.10	.30	84.80	.65	BOM
114	22	60	22	0	simples	madeira	100	.35	.35	1.42	3.70	.30	84.06	.65	BOM
117	22	60	22	0	duplo	metal	100	.35	.35	1.42	3.10	.30	81.69	.63	BOM
108	22	60	15	0	duplo	plastico	100	.35	.35	1.82	2.20	.30	81.24	.63	BOM
123	22	60	11+11	20	simples	metal	100	.35	.35	.80	4.20	.30	81.22	.63	BOM
135	22	60	11+11	40	simples	metal	100	.35	.35	.57	4.20	.30	79.43	.61	BOM
126	22	60	11+11	20	simples	madeira	100	.35	.35	.80	3.70	.30	79.24	.61	BOM
120	22	60	22	0	duplo	plastico	100	.35	.35	1.42	2.20	.30	78.13	.60	BOM
138	22	60	11+11	40	simples	madeira	100	.35	.35	.57	3.70	.30	77.45	.60	BOM
92	22	20	11+11	20	duplo	metal	40	.95	.95	.80	3.10	.53	103.91	.80	MB
95	22	20	11+11	20	duplo	plastico	40	.95	.95	.80	2.20	.53	100.35	.77	MB
93	22	20	11+11	20	duplo	metal	100	.95	.95	.80	3.10	.30	93.72	.72	MB
96	22	20	11+11	20	duplo	plastico	100	.95	.95	.80	2.20	.30	90.16	.70	MB
128	22	60	11+11	20	duplo	metal	40	.35	.35	.80	3.10	.53	87.06	.67	EXC
140	22	60	11+11	40	duplo	metal	40	.35	.35	.57	3.10	.53	85.27	.66	EXC
131	22	60	11+11	20	duplo	plastico	40	.35	.35	.80	2.20	.53	83.49	.64	EXC
143	22	60	11+11	40	duplo	plastico	40	.35	.35	.57	2.20	.53	81.71	.63	EXC
129	22	60	11+11	20	duplo	metal	100	.35	.35	.80	3.10	.30	76.87	.59	EXC
141	22	60	11+11	40	duplo	metal	100	.35	.35	.57	3.10	.30	75.08	.58	EXC
132	22	60	11+11	20	duplo	plastico	100	.35	.35	.80	2.20	.30	73.30	.57	EXC
144	22	60	11+11	40	duplo	plastico	100	.35	.35	.57	2.20	.30	71.52	.55	EXC

tabela 3.4

habitação T2 cobertura
zona climática de inverno II
com ganhos solares

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic1	%wi	cls
1	11+11	0	15	0	simples	metal	0	1.40	2.10	1.82	4.20	.85	27.40	.66	BOM
4	11+11	0	15	0	simples	madeira	0	1.40	2.10	1.82	3.70	.85	26.91	.65	BOM
7	11+11	0	22	0	simples	metal	0	1.40	2.10	1.42	4.20	.85	26.64	.64	BOM
10	11+11	0	22	0	simples	madeira	0	1.40	2.10	1.42	3.70	.85	26.16	.63	BOM
13	11+15	0	15	0	simples	metal	0	1.20	1.80	1.82	4.20	.85	25.35	.61	BOM
16	11+15	0	15	0	simples	madeira	0	1.20	1.80	1.82	3.70	.85	24.87	.60	BOM
19	11+15	0	22	0	simples	metal	0	1.20	1.80	1.42	4.20	.85	24.60	.59	BOM
22	11+15	0	22	0	simples	madeira	0	1.20	1.80	1.42	3.70	.85	24.12	.58	BOM
2	11+11	0	15	0	simples	metal	40	1.40	2.10	1.82	4.20	.53	23.96	.58	BOM
5	11+11	0	15	0	simples	madeira	40	1.40	2.10	1.82	3.70	.53	23.49	.57	BOM
8	11+11	0	22	0	simples	metal	40	1.40	2.10	1.42	4.20	.53	23.21	.56	BOM
11	11+11	0	22	0	simples	madeira	40	1.40	2.10	1.42	3.70	.53	22.74	.55	BOM
14	11+15	0	15	0	simples	metal	40	1.20	1.80	1.82	4.20	.53	21.94	.53	BOM
31	11+15	20	15	0	duplo	metal	0	.75	1.20	1.82	3.10	.85	21.63	.52	BOM
3	11+11	0	15	0	simples	metal	100	1.40	2.10	1.82	4.20	.30	21.52	.52	BOM
17	11+15	0	15	0	simples	madeira	40	1.20	1.80	1.82	3.70	.53	21.47	.52	BOM
25	11+15	20	15	0	simples	metal	0	.75	1.20	1.82	4.20	.85	21.30	.51	BOM
20	11+15	0	22	0	simples	metal	40	1.20	1.80	1.42	4.20	.53	21.20	.51	BOM
6	11+11	0	15	0	simples	madeira	100	1.40	2.10	1.82	3.70	.30	21.05	.51	BOM
28	11+15	20	15	0	simples	madeira	0	.75	1.20	1.82	3.70	.85	20.83	.50	BOM
9	11+11	0	22	0	simples	metal	100	1.40	2.10	1.42	4.20	.30	20.78	.50	BOM
34	11+15	20	15	0	duplo	plastico	0	.75	1.20	1.82	2.20	.85	20.77	.50	BOM
23	11+15	0	22	0	simples	madeira	40	1.20	1.80	1.42	3.70	.53	20.73	.50	BOM
12	11+11	0	22	0	simples	madeira	100	1.40	2.10	1.42	3.70	.30	20.31	.49	BOM
67	22	20	15	0	duplo	metal	0	.95	.95	1.82	3.10	.85	19.94	.48	BOM
61	22	20	15	0	simples	metal	0	.95	.95	1.82	4.20	.85	19.64	.47	BOM
15	11+15	0	15	0	simples	metal	100	1.20	1.80	1.82	4.20	.30	19.52	.47	BOM
64	22	20	15	0	simples	madeira	0	.95	.95	1.82	3.70	.85	19.17	.46	BOM
70	22	20	15	0	duplo	plastico	0	.95	.95	1.82	2.20	.85	19.09	.46	BOM
18	11+15	0	15	0	simples	madeira	100	1.20	1.80	1.82	3.70	.30	19.06	.46	BOM
21	11+15	0	22	0	simples	metal	100	1.20	1.80	1.42	4.20	.30	18.79	.45	BOM
24	11+15	0	22	0	simples	madeira	100	1.20	1.80	1.42	3.70	.30	18.33	.44	BOM
32	11+15	20	15	0	duplo	metal	40	.75	1.20	1.82	3.10	.53	18.23	.44	BOM
26	11+15	20	15	0	simples	metal	40	.75	1.20	1.82	4.20	.53	17.96	.43	BOM
29	11+15	20	15	0	simples	madeira	40	.75	1.20	1.82	3.70	.53	17.50	.42	BOM
35	11+15	20	15	0	duplo	plastico	40	.75	1.20	1.82	2.20	.53	17.39	.42	BOM
68	22	20	15	0	duplo	metal	40	.95	.95	1.82	3.10	.53	16.58	.40	BOM
62	22	20	15	0	simples	metal	40	.95	.95	1.82	4.20	.53	16.34	.39	BOM
103	22	60	15	0	duplo	metal	0	.35	.35	1.82	3.10	.85	15.95	.38	BOM
65	22	20	15	0	simples	madeira	40	.95	.95	1.82	3.70	.53	15.88	.38	BOM
33	11+15	20	15	0	duplo	metal	100	.75	1.20	1.82	3.10	.30	15.84	.38	BOM
71	22	20	15	0	duplo	plastico	40	.95	.95	1.82	2.20	.53	15.75	.38	BOM
97	22	60	15	0	simples	metal	0	.35	.35	1.82	4.20	.85	15.72	.38	BOM
27	11+15	20	15	0	simples	metal	100	.75	1.20	1.82	4.20	.30	15.61	.38	BOM
100	22	60	15	0	simples	madeira	0	.35	.35	1.82	3.70	.85	15.27	.37	BOM
30	11+15	20	15	0	simples	madeira	100	.75	1.20	1.82	3.70	.30	15.16	.36	BOM
106	22	60	15	0	duplo	plastico	0	.35	.35	1.82	2.20	.85	15.12	.36	BOM
36	11+15	20	15	0	duplo	plastico	100	.75	1.20	1.82	2.20	.30	15.01	.36	BOM
69	22	20	15	0	duplo	metal	100	.95	.95	1.82	3.10	.30	14.21	.34	BOM
63	22	20	15	0	simples	metal	100	.95	.95	1.82	4.20	.30	14.02	.34	BOM
66	22	20	15	0	simples	madeira	100	.95	.95	1.82	3.70	.30	13.58	.33	BOM
72	22	20	15	0	duplo	plastico	100	.95	.95	1.82	2.20	.30	13.40	.32	BOM
104	22	60	15	0	duplo	metal	40	.35	.35	1.82	3.10	.53	12.70	.31	BOM

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic1	XNi	cls
98	22	60	15	0	simples	metal	40	.35	.35	1.82	4.20	.53	12.54	.30	BOM
101	22	60	15	0	simples	madeira	40	.35	.35	1.82	3.70	.53	12.10	.29	BOM
107	22	60	15	0	duplo	plastico	40	.35	.35	1.82	2.20	.53	11.90	.29	BOM
105	22	60	15	0	duplo	metal	100	.35	.35	1.82	3.10	.30	10.44	.25	BOM
99	22	60	15	0	simples	metal	100	.35	.35	1.82	4.20	.30	10.34	.25	BOM
102	22	60	15	0	simples	madeira	100	.35	.35	1.82	3.70	.30	9.92	.24	BOM
108	22	60	15	0	duplo	plastico	100	.35	.35	1.82	2.20	.30	9.67	.23	BOM
43	11+15	20	22	0	duplo	metal	0	.75	1.20	1.42	3.10	.85	20.88	.50	MB
37	11+15	20	22	0	simples	metal	0	.75	1.20	1.42	4.20	.85	20.56	.49	MB
40	11+15	20	22	0	simples	madeira	0	.75	1.20	1.42	3.70	.85	20.10	.48	MB
46	11+15	20	22	0	duplo	plastico	0	.75	1.20	1.42	2.20	.85	20.02	.48	MB
55	11+15	20	11+11	20	duplo	metal	0	.75	1.20	.80	3.10	.85	19.72	.47	MB
49	11+15	20	11+11	20	simples	metal	0	.75	1.20	.80	4.20	.85	19.43	.47	MB
52	11+15	20	11+11	20	simples	madeira	0	.75	1.20	.80	3.70	.85	18.96	.46	MB
58	11+15	20	11+11	20	duplo	plastico	0	.75	1.20	.80	2.20	.85	18.87	.45	MB
44	11+15	20	22	0	duplo	metal	40	.75	1.20	1.42	3.10	.53	17.50	.42	MB
38	11+15	20	22	0	simples	metal	40	.75	1.20	1.42	4.20	.53	17.24	.41	MB
41	11+15	20	22	0	simples	madeira	40	.75	1.20	1.42	3.70	.53	16.78	.40	MB
47	11+15	20	22	0	duplo	plastico	40	.75	1.20	1.42	2.20	.53	16.66	.40	MB
56	11+15	20	11+11	20	duplo	metal	40	.75	1.20	.80	3.10	.53	16.37	.39	MB
50	11+15	20	11+11	20	simples	metal	40	.75	1.20	.80	4.20	.53	16.13	.39	MB
53	11+15	20	11+11	20	simples	madeira	40	.75	1.20	.80	3.70	.53	15.67	.38	MB
59	11+15	20	11+11	20	duplo	plastico	40	.75	1.20	.80	2.20	.53	15.53	.37	MB
45	11+15	20	22	0	duplo	metal	100	.75	1.20	1.42	3.10	.30	15.12	.36	MB
39	11+15	20	22	0	simples	metal	100	.75	1.20	1.42	4.20	.30	14.90	.36	MB
42	11+15	20	22	0	simples	madeira	100	.75	1.20	1.42	3.70	.30	14.45	.35	MB
48	11+15	20	22	0	duplo	plastico	100	.75	1.20	1.42	2.20	.30	14.29	.34	MB
57	11+15	20	11+11	20	duplo	metal	100	.75	1.20	.80	3.10	.30	14.00	.34	MB
51	11+15	20	11+11	20	simples	metal	100	.75	1.20	.80	4.20	.30	13.82	.33	MB
54	11+15	20	11+11	20	simples	madeira	100	.75	1.20	.80	3.70	.30	13.37	.32	MB
60	11+15	20	11+11	20	duplo	plastico	100	.75	1.20	.80	2.20	.30	13.19	.32	MB
79	22	20	22	0	duplo	metal	0	.95	.95	1.42	3.10	.85	19.20	.46	EXC
73	22	20	22	0	simples	metal	0	.95	.95	1.42	4.20	.85	18.91	.45	EXC
76	22	20	22	0	simples	madeira	0	.95	.95	1.42	3.70	.85	18.44	.44	EXC
82	22	20	22	0	duplo	plastico	0	.95	.95	1.42	2.20	.85	18.35	.44	EXC
91	22	20	11+11	20	duplo	metal	0	.95	.95	.80	3.10	.85	18.05	.43	EXC
85	22	20	11+11	20	simples	metal	0	.95	.95	.80	4.20	.85	17.78	.43	EXC
88	22	20	11+11	20	simples	madeira	0	.95	.95	.80	3.70	.85	17.32	.42	EXC
94	22	20	11+11	20	duplo	plastico	0	.95	.95	.80	2.20	.85	17.21	.41	EXC
80	22	20	22	0	duplo	metal	40	.95	.95	1.42	3.10	.53	15.85	.38	EXC
74	22	20	22	0	simples	metal	40	.95	.95	1.42	4.20	.53	15.62	.38	EXC
115	22	60	22	0	duplo	metal	0	.35	.35	1.42	3.10	.85	15.23	.37	EXC
77	22	20	22	0	simples	madeira	40	.95	.95	1.42	3.70	.53	15.17	.37	EXC
83	22	20	22	0	duplo	plastico	40	.95	.95	1.42	2.20	.53	15.02	.36	EXC
109	22	60	22	0	simples	metal	0	.35	.35	1.42	4.20	.85	15.01	.36	EXC
92	22	20	11+11	20	duplo	metal	40	.95	.95	.80	3.10	.53	14.73	.35	EXC
112	22	60	22	0	simples	madeira	0	.35	.35	1.42	3.70	.85	14.57	.35	EXC
86	22	20	11+11	20	simples	metal	40	.95	.95	.80	4.20	.53	14.53	.35	EXC
118	22	60	22	0	duplo	plastico	0	.35	.35	1.42	2.20	.85	14.41	.35	EXC
127	22	60	11+11	20	duplo	metal	0	.35	.35	.80	3.10	.85	14.12	.34	EXC
89	22	20	11+11	20	simples	madeira	40	.95	.95	.80	3.70	.53	14.08	.34	EXC
121	22	60	11+11	20	simples	metal	0	.35	.35	.80	4.20	.85	13.93	.34	EXC
95	22	20	11+11	20	duplo	plastico	40	.95	.95	.80	2.20	.53	13.91	.33	EXC
139	22	60	11+11	40	duplo	metal	0	.35	.35	.57	3.10	.85	13.71	.33	EXC
133	22	60	11+11	40	simples	metal	0	.35	.35	.57	4.20	.85	13.53	.33	EXC
81	22	20	22	0	duplo	metal	100	.95	.95	1.42	3.10	.30	13.50	.32	EXC
124	22	60	11+11	20	simples	madeira	0	.35	.35	.80	3.70	.85	13.48	.32	EXC
75	22	20	22	0	simples	metal	100	.95	.95	1.42	4.20	.30	13.32	.32	EXC
130	22	60	11+11	20	duplo	plastico	0	.35	.35	.80	2.20	.85	13.30	.32	EXC
136	22	60	11+11	40	simples	madeira	0	.35	.35	.57	3.70	.85	13.09	.31	EXC
142	22	60	11+11	40	duplo	plastico	0	.35	.35	.57	2.20	.85	12.90	.31	EXC

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic1	XNi	cls
78	22	20	22	0	simples	madeira	100	.95	.95	1.42	3.70	.30	12.89	.31	EXC
84	22	20	22	0	duplo	plastico	100	.95	.95	1.42	2.20	.30	12.69	.31	EXC
93	22	20	11+11	20	duplo	metal	100	.95	.95	.80	3.10	.30	12.41	.30	EXC
87	22	20	11+11	20	simples	metal	100	.95	.95	.80	4.20	.30	12.26	.29	EXC
116	22	60	22	0	duplo	metal	40	.35	.35	1.42	3.10	.53	12.00	.29	EXC
110	22	60	22	0	simples	metal	40	.35	.35	1.42	4.20	.53	11.86	.29	EXC
90	22	20	11+11	20	simples	madeira	100	.95	.95	.80	3.70	.30	11.83	.28	EXC
96	22	20	11+11	20	duplo	plastico	100	.95	.95	.80	2.20	.30	11.62	.28	EXC
113	22	60	22	0	simples	madeira	40	.35	.35	1.42	3.70	.53	11.43	.27	EXC
119	22	60	22	0	duplo	plastico	40	.35	.35	1.42	2.20	.53	11.21	.27	EXC
128	22	60	11+11	20	duplo	metal	40	.35	.35	.80	3.10	.53	10.93	.26	EXC
122	22	60	11+11	20	simples	metal	40	.35	.35	.80	4.20	.53	10.82	.26	EXC
140	22	60	11+11	40	duplo	metal	40	.35	.35	.57	3.10	.53	10.54	.25	EXC
134	22	60	11+11	40	simples	metal	40	.35	.35	.57	4.20	.53	10.44	.25	EXC
125	22	60	11+11	20	simples	madeira	40	.35	.35	.80	3.70	.53	10.40	.25	EXC
131	22	60	11+11	20	duplo	plastico	40	.35	.35	.80	2.20	.53	10.15	.24	EXC
137	22	60	11+11	40	simples	madeira	40	.35	.35	.57	3.70	.53	10.02	.24	EXC
117	22	60	22	0	duplo	metal	100	.35	.35	1.42	3.10	.30	9.77	.23	EXC
143	22	60	11+11	40	duplo	plastico	40	.35	.35	.57	2.20	.53	9.77	.24	EXC
111	22	60	22	0	simples	metal	100	.35	.35	1.42	4.20	.30	9.68	.23	EXC
114	22	60	22	0	simples	madeira	100	.35	.35	1.42	3.70	.30	9.27	.22	EXC
120	22	60	22	0	duplo	plastico	100	.35	.35	1.42	2.20	.30	9.01	.22	EXC
129	22	60	11+11	20	duplo	metal	100	.35	.35	.80	3.10	.30	8.74	.21	EXC
123	22	60	11+11	20	simples	metal	100	.35	.35	.80	4.20	.30	8.69	.21	EXC
141	22	60	11+11	40	duplo	metal	100	.35	.35	.57	3.10	.30	8.37	.20	EXC
135	22	60	11+11	40	simples	metal	100	.35	.35	.57	4.20	.30	8.33	.20	EXC
126	22	60	11+11	20	simples	madeira	100	.35	.35	.80	3.70	.30	8.29	.20	EXC
132	22	60	11+11	20	duplo	plastico	100	.35	.35	.80	2.20	.30	8.00	.19	EXC
138	22	60	11+11	40	simples	madeira	100	.35	.35	.57	3.70	.30	7.93	.19	EXC
144	22	60	11+11	40	duplo	plastico	100	.35	.35	.57	2.20	.30	7.64	.18	EXC

tabela 3.5

habitação T2 cobertura
zona climática de inverno I2
com ganhos solares

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic2	%Ni	cls
1	11+11	0	15	0	simples	metal	0	1.40	2.10	1.82	4.20	.85	64.44	.88	BOM
4	11+11	0	15	0	simples	madeira	0	1.40	2.10	1.82	3.70	.85	63.45	.87	BOM
7	11+11	0	22	0	simples	metal	0	1.40	2.10	1.42	4.20	.85	62.89	.86	BOM
10	11+11	0	22	0	simples	madeira	0	1.40	2.10	1.42	3.70	.85	61.90	.85	BOM
13	11+15	0	15	0	simples	metal	0	1.20	1.80	1.82	4.20	.85	60.24	.83	BOM
16	11+15	0	15	0	simples	madeira	0	1.20	1.80	1.82	3.70	.85	59.25	.81	BOM
19	11+15	0	22	0	simples	metal	0	1.20	1.80	1.42	4.20	.85	58.69	.81	BOM
22	11+15	0	22	0	simples	madeira	0	1.20	1.80	1.42	3.70	.85	57.70	.79	BOM
2	11+11	0	15	0	simples	metal	40	1.40	2.10	1.82	4.20	.53	57.37	.79	BOM
5	11+11	0	15	0	simples	madeira	40	1.40	2.10	1.82	3.70	.53	56.39	.77	BOM
8	11+11	0	22	0	simples	metal	40	1.40	2.10	1.42	4.20	.53	55.83	.77	BOM
11	11+11	0	22	0	simples	madeira	40	1.40	2.10	1.42	3.70	.53	54.84	.75	BOM
14	11+15	0	15	0	simples	metal	40	1.20	1.80	1.82	4.20	.53	53.18	.73	BOM
3	11+11	0	15	0	simples	metal	100	1.40	2.10	1.82	4.20	.30	52.30	.72	BOM
17	11+15	0	15	0	simples	madeira	40	1.20	1.80	1.82	3.70	.53	52.20	.72	BOM
25	11+15	20	15	0	simples	metal	0	.75	1.20	1.82	4.20	.85	51.85	.71	BOM
20	11+15	0	22	0	simples	metal	40	1.20	1.80	1.42	4.20	.53	51.64	.71	BOM
31	11+15	20	15	0	duplo	metal	0	.75	1.20	1.82	3.10	.85	51.63	.71	BOM
6	11+11	0	15	0	simples	madeira	100	1.40	2.10	1.82	3.70	.30	51.32	.70	BOM
28	11+15	20	15	0	simples	madeira	0	.75	1.20	1.82	3.70	.85	50.87	.70	BOM
9	11+11	0	22	0	simples	metal	100	1.40	2.10	1.42	4.20	.30	50.76	.70	BOM
23	11+15	0	22	0	simples	madeira	40	1.20	1.80	1.42	3.70	.53	50.65	.69	BOM
37	11+15	20	22	0	simples	metal	0	.75	1.20	1.42	4.20	.85	50.31	.69	BOM
43	11+15	20	22	0	duplo	metal	0	.75	1.20	1.42	3.10	.85	50.08	.69	BOM
34	11+15	20	15	0	duplo	plastico	0	.75	1.20	1.82	2.20	.85	49.85	.68	BOM
12	11+11	0	22	0	simples	madeira	100	1.40	2.10	1.42	3.70	.30	49.78	.68	BOM
40	11+15	20	22	0	simples	madeira	0	.75	1.20	1.42	3.70	.85	49.33	.68	BOM
61	22	20	15	0	simples	metal	0	.95	.95	1.82	4.20	.85	48.37	.66	BOM
46	11+15	20	22	0	duplo	plastico	0	.75	1.20	1.42	2.20	.85	48.30	.66	BOM
67	22	20	15	0	duplo	metal	0	.95	.95	1.82	3.10	.85	48.13	.66	BOM
15	11+15	0	15	0	simples	metal	100	1.20	1.80	1.82	4.20	.30	48.12	.66	BOM
49	11+15	20	11+11	20	simples	metal	0	.75	1.20	.80	4.20	.85	47.92	.66	BOM
64	22	20	15	0	simples	madeira	0	.95	.95	1.82	3.70	.85	47.39	.65	BOM
18	11+15	0	15	0	simples	madeira	100	1.20	1.80	1.82	3.70	.30	47.14	.65	BOM
52	11+15	20	11+11	20	simples	madeira	0	.75	1.20	.80	3.70	.85	46.94	.64	BOM
73	22	20	22	0	simples	metal	0	.95	.95	1.42	4.20	.85	46.83	.64	BOM
21	11+15	0	22	0	simples	metal	100	1.20	1.80	1.42	4.20	.30	46.58	.64	BOM
79	22	20	22	0	duplo	metal	0	.95	.95	1.42	3.10	.85	46.58	.64	BOM
70	22	20	15	0	duplo	plastico	0	.95	.95	1.82	2.20	.85	46.36	.64	BOM
76	22	20	22	0	simples	madeira	0	.95	.95	1.42	3.70	.85	45.85	.63	BOM
24	11+15	0	22	0	simples	madeira	100	1.20	1.80	1.42	3.70	.30	45.60	.63	BOM
26	11+15	20	15	0	simples	metal	40	.75	1.20	1.82	4.20	.53	44.82	.61	BOM
82	22	20	22	0	duplo	plastico	0	.95	.95	1.42	2.20	.85	44.82	.61	BOM
32	11+15	20	15	0	duplo	metal	40	.75	1.20	1.82	3.10	.53	44.58	.61	BOM
85	22	20	11+11	20	simples	metal	0	.95	.95	.80	4.20	.85	44.44	.61	BOM
29	11+15	20	15	0	simples	madeira	40	.75	1.20	1.82	3.70	.53	43.85	.60	BOM
88	22	20	11+11	20	simples	madeira	0	.95	.95	.80	3.70	.85	43.46	.60	BOM
38	11+15	20	22	0	simples	metal	40	.75	1.20	1.42	4.20	.53	43.29	.59	BOM
44	11+15	20	22	0	duplo	metal	40	.75	1.20	1.42	3.10	.53	43.03	.59	BOM
35	11+15	20	15	0	duplo	plastico	40	.75	1.20	1.82	2.20	.53	42.81	.59	BOM
41	11+15	20	22	0	simples	madeira	40	.75	1.20	1.42	3.70	.53	42.31	.58	BOM
62	22	20	15	0	simples	metal	40	.95	.95	1.82	4.20	.53	41.36	.57	BOM
47	11+15	20	22	0	duplo	plastico	40	.75	1.20	1.42	2.20	.53	41.27	.57	BOM

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic2	XNi	cls
68	22	20	15	0	duplo	metal	40	.95	.95	1.82	3.10	.53	41.09	.56	BOM
50	11+15	20	11+11	20	simples	metal	40	.75	1.20	.80	4.20	.53	40.91	.56	BOM
65	22	20	15	0	simples	madeira	40	.95	.95	1.82	3.70	.53	40.39	.55	BOM
97	22	60	15	0	simples	metal	0	.35	.35	1.82	4.20	.85	40.04	.55	BOM
53	11+15	20	11+11	20	simples	madeira	40	.75	1.20	.80	3.70	.53	39.94	.55	BOM
74	22	20	22	0	simples	metal	40	.95	.95	1.42	4.20	.53	39.83	.55	BOM
27	11+15	20	15	0	simples	metal	100	.75	1.20	1.82	4.20	.30	39.80	.55	BOM
103	22	60	15	0	duplo	metal	0	.35	.35	1.82	3.10	.53	39.56	.54	BOM
80	22	20	22	0	duplo	metal	40	.95	.95	1.42	3.10	.53	39.53	.54	BOM
33	11+15	20	15	0	duplo	metal	100	.75	1.20	1.82	3.10	.30	39.33	.54	BOM
71	22	20	15	0	duplo	plastico	40	.95	.95	1.82	2.20	.53	39.07	.54	BOM
100	22	60	15	0	simples	madeira	0	.35	.35	1.82	3.70	.85	38.86	.53	BOM
77	22	20	22	0	simples	madeira	40	.95	.95	1.42	3.70	.53	38.83	.53	BOM
30	11+15	20	15	0	simples	madeira	100	.75	1.20	1.82	3.70	.30	38.52	.53	BOM
109	22	60	22	0	simples	metal	0	.35	.35	1.42	4.20	.85	38.27	.53	BOM
39	11+15	20	22	0	simples	metal	100	.75	1.20	1.42	4.20	.30	38.23	.52	BOM
115	22	60	22	0	duplo	metal	0	.35	.35	1.42	3.10	.85	38.01	.52	BOM
106	22	60	15	0	duplo	plastico	0	.35	.35	1.82	2.20	.85	37.99	.52	BOM
45	11+15	20	22	0	duplo	metal	100	.75	1.20	1.42	3.10	.30	37.80	.52	BOM
83	22	20	22	0	duplo	plastico	40	.95	.95	1.42	2.20	.53	37.77	.52	BOM
36	11+15	20	15	0	duplo	plastico	100	.75	1.20	1.82	2.20	.30	37.55	.52	BOM
112	22	60	22	0	simples	madeira	0	.35	.35	1.42	3.70	.85	37.46	.51	BOM
86	22	20	11+11	20	simples	metal	40	.95	.95	.80	4.20	.53	37.30	.51	BOM
42	11+15	20	22	0	simples	madeira	100	.75	1.20	1.42	3.70	.30	36.50	.50	BOM
89	22	20	11+11	20	simples	madeira	40	.95	.95	.80	3.70	.53	36.48	.50	BOM
118	22	60	22	0	duplo	plastico	0	.35	.35	1.42	2.20	.85	36.36	.50	BOM
63	22	20	15	0	simples	metal	100	.95	.95	1.82	4.20	.30	36.24	.50	BOM
48	11+15	20	22	0	duplo	plastico	100	.75	1.20	1.42	2.20	.30	36.15	.50	BOM
121	22	60	11+11	20	simples	metal	0	.35	.35	.80	4.20	.85	36.06	.49	BOM
69	22	20	15	0	duplo	metal	100	.95	.95	1.82	3.10	.30	35.91	.49	BOM
51	11+15	20	11+11	20	simples	metal	100	.75	1.20	.80	4.20	.30	35.39	.49	BOM
66	22	20	15	0	simples	madeira	100	.95	.95	1.82	3.70	.30	35.28	.48	BOM
133	22	60	11+11	40	simples	metal	0	.35	.35	.57	4.20	.85	35.19	.48	BOM
124	22	60	11+11	20	simples	madeira	0	.35	.35	.80	3.70	.85	34.95	.48	BOM
54	11+15	20	11+11	20	simples	madeira	100	.75	1.20	.80	3.70	.30	34.84	.48	BOM
75	22	20	22	0	simples	metal	100	.95	.95	1.42	4.20	.30	34.53	.47	BOM
81	22	20	22	0	duplo	metal	100	.95	.95	1.42	3.10	.30	34.32	.47	BOM
136	22	60	11+11	40	simples	madeira	0	.35	.35	.57	3.70	.85	34.31	.47	BOM
72	22	20	15	0	duplo	plastico	100	.95	.95	1.82	2.20	.30	33.88	.46	BOM
78	22	20	22	0	simples	madeira	100	.95	.95	1.42	3.70	.30	33.11	.45	BOM
98	22	60	15	0	simples	metal	40	.35	.35	1.82	4.20	.53	32.79	.45	BOM
84	22	20	22	0	duplo	plastico	100	.95	.95	1.42	2.20	.30	32.79	.45	BOM
104	22	60	15	0	duplo	metal	40	.35	.35	1.82	3.10	.53	32.50	.45	BOM
87	22	20	11+11	20	simples	metal	100	.95	.95	.80	4.20	.30	32.15	.44	BOM
101	22	60	15	0	simples	madeira	40	.35	.35	1.82	3.70	.53	31.60	.43	BOM
110	22	60	22	0	simples	metal	40	.35	.35	1.42	4.20	.53	31.54	.43	BOM
90	22	20	11+11	20	simples	madeira	100	.95	.95	.80	3.70	.30	31.27	.43	BOM
116	22	60	22	0	duplo	metal	40	.35	.35	1.42	3.10	.53	31.05	.43	BOM
107	22	60	15	0	duplo	plastico	40	.35	.35	1.82	2.20	.53	30.65	.42	BOM
113	22	60	22	0	simples	madeira	40	.35	.35	1.42	3.70	.53	29.54	.41	BOM
119	22	60	22	0	duplo	plastico	40	.35	.35	1.42	2.20	.53	29.28	.40	BOM
122	22	60	11+11	20	simples	metal	40	.35	.35	.80	4.20	.53	28.42	.39	BOM
134	22	60	11+11	40	simples	metal	40	.35	.35	.57	4.20	.53	28.33	.39	BOM
125	22	60	11+11	20	simples	madeira	40	.35	.35	.80	3.70	.53	28.19	.39	BOM
99	22	60	15	0	simples	metal	100	.35	.35	1.82	4.20	.30	27.83	.38	BOM
105	22	60	15	0	duplo	metal	100	.35	.35	1.82	3.10	.30	27.47	.38	BOM
137	22	60	11+11	40	simples	madeira	40	.35	.35	.57	3.70	.53	27.25	.37	BOM
102	22	60	15	0	simples	madeira	100	.35	.35	1.82	3.70	.30	26.71	.37	BOM
111	22	60	22	0	simples	metal	100	.35	.35	1.42	4.20	.30	26.33	.36	BOM
117	22	60	22	0	duplo	metal	100	.35	.35	1.42	3.10	.30	26.11	.36	BOM
108	22	60	15	0	duplo	plastico	100	.35	.35	1.82	2.20	.30	25.77	.35	BOM
114	22	60	22	0	simples	madeira	100	.35	.35	1.42	3.70	.30	24.62	.34	BOM
120	22	60	22	0	duplo	plastico	100	.35	.35	1.42	2.20	.30			

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic2	%Ni	cls
123	22	60	11+11	20	simples	metal	100	.35	.35	.80	4.20	.30	24.43	.34	BOM
135	22	60	11+11	40	simples	metal	100	.35	.35	.57	4.20	.30	23.58	.32	BOM
126	22	60	11+11	20	simples	madeira	100	.35	.35	.80	3.70	.30	23.49	.32	BOM
138	22	60	11+11	40	simples	madeira	100	.35	.35	.57	3.70	.30	22.66	.31	BOM
55	11+15	20	11+11	20	duplo	metal	0	.75	1.20	.80	3.10	.85	47.68	.65	MB
58	11+15	20	11+11	20	duplo	plastico	0	.75	1.20	.80	2.20	.85	45.91	.63	MB
56	11+15	20	11+11	20	duplo	metal	40	.75	1.20	.80	3.10	.53	40.64	.56	MB
59	11+15	20	11+11	20	duplo	plastico	40	.75	1.20	.80	2.20	.53	38.88	.53	MB
57	11+15	20	11+11	20	duplo	metal	100	.75	1.20	.80	3.10	.30	35.62	.49	MB
60	11+15	20	11+11	20	duplo	plastico	100	.75	1.20	.80	2.20	.30	33.87	.46	MB
91	22	20	11+11	20	duplo	metal	0	.95	.95	.80	3.10	.85	44.19	.61	EXC
94	22	20	11+11	20	duplo	plastico	0	.95	.95	.80	2.20	.85	42.42	.58	EXC
92	22	20	11+11	20	duplo	metal	40	.95	.95	.80	3.10	.53	37.18	.51	EXC
127	22	60	11+11	20	duplo	metal	0	.35	.35	.80	3.10	.85	35.86	.49	EXC
95	22	20	11+11	20	duplo	plastico	40	.95	.95	.80	2.20	.53	35.42	.49	EXC
139	22	60	11+11	40	duplo	metal	0	.35	.35	.57	3.10	.85	34.98	.48	EXC
130	22	60	11+11	20	duplo	plastico	0	.35	.35	.80	2.20	.85	34.11	.47	EXC
142	22	60	11+11	40	duplo	plastico	0	.35	.35	.57	2.20	.85	33.23	.46	EXC
93	22	20	11+11	20	duplo	metal	100	.95	.95	.80	3.10	.30	32.17	.44	EXC
96	22	20	11+11	20	duplo	plastico	100	.95	.95	.80	2.20	.30	30.43	.42	EXC
128	22	60	11+11	20	duplo	metal	40	.35	.35	.80	3.10	.53	28.92	.40	EXC
140	22	60	11+11	40	duplo	metal	40	.35	.35	.57	3.10	.53	28.06	.38	EXC
131	22	60	11+11	20	duplo	plastico	40	.35	.35	.80	2.20	.53	27.20	.37	EXC
143	22	60	11+11	40	duplo	plastico	40	.35	.35	.57	2.20	.53	26.34	.36	EXC
129	22	60	11+11	20	duplo	metal	100	.35	.35	.80	3.10	.30	24.02	.33	EXC
141	22	60	11+11	40	duplo	metal	100	.35	.35	.57	3.10	.30	23.17	.32	EXC
132	22	60	11+11	20	duplo	plastico	100	.35	.35	.80	2.20	.30	22.33	.31	EXC
144	22	60	11+11	40	duplo	plastico	100	.35	.35	.57	2.20	.30	21.48	.29	EXC

tabela 3.6

habitação T2 cobertura
zona climática de inverno I3
com ganhos solares

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic3	%Ni	cls
1	11+11	0	15	0	simples	metal	0	1.40	2.10	1.82	4.20	.85	138.98	1.07	INS
4	11+11	0	15	0	simples	madeira	0	1.40	2.10	1.82	3.70	.85	137.00	1.06	INS
7	11+11	0	22	0	simples	metal	0	1.40	2.10	1.42	4.20	.85	135.87	1.05	INS
10	11+11	0	22	0	simples	madeira	0	1.40	2.10	1.42	3.70	.85	133.89	1.03	INS
13	11+15	0	15	0	simples	metal	0	1.20	1.80	1.82	4.20	.85	130.55	1.01	INS
16	11+15	0	15	0	simples	madeira	0	1.20	1.80	1.82	3.70	.85	128.57	.99	SUF
19	11+15	0	22	0	simples	metal	0	1.20	1.80	1.42	4.20	.85	127.44	.98	SUF
22	11+15	0	22	0	simples	madeira	0	1.20	1.80	1.42	3.70	.85	125.46	.97	SUF
2	11+11	0	15	0	simples	metal	40	1.40	2.10	1.82	4.20	.53	124.80	.96	SUF
5	11+11	0	15	0	simples	madeira	40	1.40	2.10	1.82	3.70	.53	122.82	.95	BOM
8	11+11	0	22	0	simples	metal	40	1.40	2.10	1.42	4.20	.53	121.69	.94	BOM
11	11+11	0	22	0	simples	madeira	40	1.40	2.10	1.42	3.70	.53	119.71	.92	BOM
14	11+15	0	15	0	simples	metal	40	1.20	1.80	1.82	4.20	.53	116.38	.90	BOM
3	11+11	0	15	0	simples	metal	100	1.40	2.10	1.82	4.20	.30	114.61	.88	BOM
17	11+15	0	15	0	simples	madeira	40	1.20	1.80	1.82	3.70	.53	114.40	.88	BOM
25	11+15	20	15	0	simples	metal	0	.75	1.20	1.82	4.20	.85	113.70	.88	BOM
20	11+15	0	22	0	simples	metal	40	1.20	1.80	1.42	4.20	.53	113.27	.87	BOM
6	11+11	0	15	0	simples	madeira	100	1.40	2.10	1.82	3.70	.30	112.64	.87	BOM
31	11+15	20	15	0	duplo	metal	0	.75	1.20	1.82	3.10	.85	112.13	.86	BOM
28	11+15	20	15	0	simples	madeira	0	.75	1.20	1.82	3.70	.85	111.73	.86	BOM
9	11+11	0	22	0	simples	metal	100	1.40	2.10	1.42	4.20	.30	111.51	.86	BOM
23	11+15	0	22	0	simples	madeira	40	1.20	1.80	1.42	3.70	.53	111.29	.86	BOM
37	11+15	20	22	0	simples	metal	0	.75	1.20	1.42	4.20	.85	110.59	.85	BOM
12	11+11	0	22	0	simples	madeira	100	1.40	2.10	1.42	3.70	.30	109.53	.84	BOM
43	11+15	20	22	0	duplo	metal	0	.75	1.20	1.42	3.10	.85	109.02	.84	BOM
40	11+15	20	22	0	simples	madeira	0	.75	1.20	1.42	3.70	.85	108.62	.84	BOM
34	11+15	20	15	0	duplo	plastico	0	.75	1.20	1.82	2.20	.85	108.57	.84	BOM
61	22	20	15	0	simples	metal	0	.95	.95	1.82	4.20	.85	106.69	.82	BOM
15	11+15	0	15	0	simples	metal	100	1.20	1.80	1.82	4.20	.30	106.19	.82	BOM
49	11+15	20	11+11	20	simples	metal	0	.75	1.20	.80	4.20	.85	105.78	.82	BOM
46	11+15	20	22	0	duplo	plastico	0	.75	1.20	1.42	2.20	.85	105.46	.81	BOM
67	22	20	15	0	duplo	metal	0	.95	.95	1.82	3.10	.85	105.11	.81	BOM
64	22	20	15	0	simples	madeira	0	.95	.95	1.82	3.70	.85	104.71	.81	BOM
18	11+15	0	15	0	simples	madeira	100	1.20	1.80	1.82	3.70	.30	104.22	.80	BOM
55	11+15	20	11+11	20	duplo	metal	0	.75	1.20	.80	3.10	.85	104.20	.80	BOM
52	11+15	20	11+11	20	simples	madeira	0	.75	1.20	.80	3.70	.85	103.80	.80	BOM
73	22	20	22	0	simples	metal	0	.95	.95	1.42	4.20	.85	103.58	.80	BOM
21	11+15	0	22	0	simples	metal	100	1.20	1.80	1.42	4.20	.30	103.09	.80	BOM
79	22	20	22	0	duplo	metal	0	.95	.95	1.42	3.10	.85	102.00	.79	BOM
76	22	20	22	0	simples	madeira	0	.95	.95	1.42	3.70	.85	101.60	.78	BOM
70	22	20	15	0	duplo	plastico	0	.95	.95	1.82	2.20	.85	101.55	.78	BOM
24	11+15	0	22	0	simples	madeira	100	1.20	1.80	1.42	3.70	.30	101.11	.78	BOM
58	11+15	20	11+11	20	duplo	plastico	0	.75	1.20	.80	2.20	.85	100.64	.78	BOM
26	11+15	20	15	0	simples	metal	40	.75	1.20	1.82	4.20	.53	99.54	.77	BOM
85	22	20	11+11	20	simples	metal	0	.95	.95	.80	4.20	.85	98.76	.76	BOM
82	22	20	22	0	duplo	plastico	0	.95	.95	1.42	2.20	.85	98.44	.76	BOM
32	11+15	20	15	0	duplo	metal	40	.75	1.20	1.82	3.10	.53	97.96	.76	BOM
29	11+15	20	15	0	simples	madeira	40	.75	1.20	1.82	3.70	.53	97.56	.75	BOM
91	22	20	11+11	20	duplo	metal	0	.95	.95	.80	3.10	.85	97.18	.75	BOM
88	22	20	11+11	20	simples	madeira	0	.95	.95	.80	3.70	.85	96.79	.75	BOM
38	11+15	20	22	0	simples	metal	40	.75	1.20	1.42	4.20	.53	96.43	.74	BOM

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic3	%Ni	cls
44	11+15	20	22	0	duplo	metal	40	.75	1.20	1.42	3.10	.53	94.85	.73	BOM
41	11+15	20	22	0	simples	madeira	40	.75	1.20	1.42	3.70	.53	94.46	.73	BOM
35	11+15	20	15	0	duplo	plastico	40	.75	1.20	1.82	2.20	.53	94.40	.73	BOM
94	22	20	11+11	20	duplo	plastico	0	.95	.95	.80	2.20	.85	93.63	.72	BOM
62	22	20	15	0	simples	metal	40	.95	.95	1.82	4.20	.53	92.53	.71	BOM
50	11+15	20	11+11	20	simples	metal	40	.75	1.20	.80	4.20	.53	91.62	.71	BOM
47	11+15	20	22	0	duplo	plastico	40	.75	1.20	1.42	2.20	.53	91.29	.70	BOM
68	22	20	15	0	duplo	metal	40	.95	.95	1.82	3.10	.53	90.94	.70	BOM
65	22	20	15	0	simples	madeira	40	.95	.95	1.82	3.70	.53	90.56	.70	BOM
56	11+15	20	11+11	20	duplo	metal	40	.75	1.20	.80	3.10	.53	90.04	.69	BOM
97	22	60	15	0	simples	metal	0	.35	.35	1.82	4.20	.85	89.86	.69	BOM
53	11+15	20	11+11	20	simples	madeira	40	.75	1.20	.80	3.70	.53	89.65	.69	BOM
74	22	20	22	0	simples	metal	40	.95	.95	1.42	4.20	.53	89.43	.69	BOM
27	11+15	20	15	0	simples	metal	100	.75	1.20	1.82	4.20	.30	89.37	.69	BOM
103	22	60	15	0	duplo	metal	0	.35	.35	1.82	3.10	.85	88.27	.68	BOM
100	22	60	15	0	simples	madeira	0	.35	.35	1.82	3.70	.85	87.89	.68	BOM
80	22	20	22	0	duplo	metal	40	.95	.95	1.42	3.10	.53	87.84	.68	BOM
33	11+15	20	15	0	duplo	metal	100	.75	1.20	1.82	3.10	.30	87.78	.68	BOM
77	22	20	22	0	simples	madeira	40	.95	.95	1.42	3.70	.53	87.45	.67	BOM
30	11+15	20	15	0	simples	madeira	100	.75	1.20	1.82	3.70	.30	87.40	.67	BOM
71	22	20	15	0	duplo	plastico	40	.95	.95	1.82	2.20	.53	87.39	.67	BOM
109	22	60	22	0	simples	metal	0	.35	.35	1.42	4.20	.85	86.76	.67	BOM
59	11+15	20	11+11	20	duplo	plastico	40	.75	1.20	.80	2.20	.53	86.48	.67	BOM
39	11+15	20	22	0	simples	metal	100	.75	1.20	1.42	4.20	.30	86.27	.67	BOM
115	22	60	22	0	duplo	metal	0	.35	.35	1.42	3.10	.85	85.17	.66	BOM
112	22	60	22	0	simples	madeira	0	.35	.35	1.42	3.70	.85	84.79	.65	BOM
106	22	60	15	0	duplo	plastico	0	.35	.35	1.82	2.20	.85	84.72	.65	BOM
45	11+15	20	22	0	duplo	metal	100	.75	1.20	1.42	3.10	.30	84.68	.65	BOM
86	22	20	11+11	20	simples	metal	40	.95	.95	.80	4.20	.53	84.62	.65	BOM
42	11+15	20	22	0	simples	madeira	100	.75	1.20	1.42	3.70	.30	84.30	.65	BOM
83	22	20	22	0	duplo	plastico	40	.95	.95	1.42	2.20	.53	84.28	.65	BOM
36	11+15	20	15	0	duplo	plastico	100	.75	1.20	1.82	2.20	.30	84.22	.65	BOM
89	22	20	11+11	20	simples	madeira	40	.95	.95	.80	3.70	.53	82.65	.64	BOM
63	22	20	15	0	simples	metal	100	.95	.95	1.82	4.20	.30	82.37	.64	BOM
121	22	60	11+11	20	simples	metal	0	.35	.35	.80	4.20	.85	81.95	.63	BOM
118	22	60	22	0	duplo	plastico	0	.35	.35	1.42	2.20	.85	81.61	.63	BOM
51	11+15	20	11+11	20	simples	metal	100	.75	1.20	.80	4.20	.30	81.46	.63	BOM
48	11+15	20	22	0	duplo	plastico	100	.75	1.20	1.42	2.20	.30	81.12	.63	BOM
69	22	20	15	0	duplo	metal	100	.95	.95	1.82	3.10	.30	80.77	.62	BOM
66	22	20	15	0	simples	madeira	100	.95	.95	1.82	3.70	.30	80.40	.62	BOM
127	22	60	11+11	20	duplo	metal	0	.35	.35	.80	3.10	.85	80.36	.62	BOM
133	22	60	11+11	40	simples	metal	0	.35	.35	.57	4.20	.85	80.17	.62	BOM
124	22	60	11+11	20	simples	madeira	0	.35	.35	.80	3.70	.85	79.98	.62	BOM
57	11+15	20	11+11	20	duplo	metal	100	.75	1.20	.80	3.10	.30	79.86	.62	BOM
54	11+15	20	11+11	20	simples	madeira	100	.75	1.20	.80	3.70	.30	79.49	.61	BOM
75	22	20	22	0	simples	metal	100	.95	.95	1.42	4.20	.30	79.27	.61	BOM
139	22	60	11+11	40	duplo	metal	0	.35	.35	.57	3.10	.85	78.57	.61	BOM
136	22	60	11+11	40	simples	madeira	0	.35	.35	.57	3.70	.85	78.20	.60	BOM
81	22	20	22	0	duplo	metal	100	.95	.95	1.42	3.10	.30	77.67	.60	BOM
78	22	20	22	0	simples	madeira	100	.95	.95	1.42	3.70	.30	77.30	.60	BOM
72	22	20	15	0	duplo	plastico	100	.95	.95	1.82	2.20	.30	77.22	.60	BOM
130	22	60	11+11	20	duplo	plastico	0	.35	.35	.80	2.20	.85	76.80	.59	BOM
60	11+15	20	11+11	20	duplo	plastico	100	.75	1.20	.80	2.20	.30	76.31	.59	BOM
98	22	60	15	0	simples	metal	40	.35	.35	1.82	4.20	.53	75.74	.58	BOM
142	22	60	11+11	40	duplo	plastico	0	.35	.35	.57	2.20	.85	75.02	.58	BOM
87	22	20	11+11	20	simples	metal	100	.95	.95	.80	4.20	.30	74.48	.57	BOM
104	22	60	15	0	duplo	metal	40	.35	.35	1.82	3.10	.53	74.13	.57	BOM
84	22	20	22	0	duplo	plastico	100	.95	.95	1.42	2.20	.30	74.12	.57	BOM
101	22	60	15	0	simples	madeira	40	.35	.35	1.82	3.70	.53	73.77	.57	BOM
110	22	60	22	0	simples	metal	40	.35	.35	1.42	4.20	.53	72.64	.56	BOM
90	22	20	11+11	20	simples	madeira	100	.95	.95	.80	3.70	.30	72.51	.56	BOM
116	22	60	22	0	duplo	metal	40	.35	.35	1.42	3.10	.53	71.03	.55	BOM
113	22	60	22	0	simples	madeira	40	.35	.35	1.42	3.70	.53	70.68	.55	BOM

sol	par ext	isol ext	par int	isol int	vidro	caixilho	isol cob	Kf	Kf_c	Kint	Kenv	Kcob	Nic3	%Ni	cls
107	22	60	15	0	duplo	plastico	40	.35	.35	1.82	2.20	.53	70.58	.54	BOM
122	22	60	11+11	20	simples	metal	40	.35	.35	.80	4.20	.53	67.86	.52	BOM
119	22	60	22	0	duplo	plastico	40	.35	.35	1.42	2.20	.53	67.48	.52	BOM
134	22	60	11+11	40	simples	metal	40	.35	.35	.57	4.20	.53	66.09	.51	BOM
125	22	60	11+11	20	simples	madeira	40	.35	.35	.80	3.70	.53	65.90	.51	BOM
99	22	60	15	0	simples	metal	100	.35	.35	1.82	4.20	.30	65.62	.51	BOM
137	22	60	11+11	40	simples	madeira	40	.35	.35	.57	3.70	.53	64.13	.49	BOM
105	22	60	15	0	duplo	metal	100	.35	.35	1.82	3.10	.30	63.99	.49	BOM
102	22	60	15	0	simples	madeira	100	.35	.35	1.82	3.70	.30	63.66	.49	BOM
111	22	60	22	0	simples	metal	100	.35	.35	1.42	4.20	.30	62.54	.48	BOM
117	22	60	22	0	duplo	metal	100	.35	.35	1.42	3.10	.30	60.90	.47	BOM
114	22	60	22	0	simples	madeira	100	.35	.35	1.42	3.70	.30	60.59	.47	BOM
108	22	60	15	0	duplo	plastico	100	.35	.35	1.82	2.20	.30	60.45	.47	BOM
123	22	60	11+11	20	simples	metal	100	.35	.35	.80	4.20	.30	57.79	.45	BOM
120	22	60	22	0	duplo	plastico	100	.35	.35	1.42	2.20	.30	57.37	.44	BOM
135	22	60	11+11	40	simples	metal	100	.35	.35	.57	4.20	.30	56.03	.43	BOM
126	22	60	11+11	20	simples	madeira	100	.35	.35	.80	3.70	.30	55.84	.43	BOM
138	22	60	11+11	40	simples	madeira	100	.35	.35	.57	3.70	.30	54.08	.42	BOM
92	22	20	11+11	20	duplo	metal	40	.95	.95	.80	3.10	.53	83.03	.64	EXC
95	22	20	11+11	20	duplo	plastico	40	.95	.95	.80	2.20	.53	79.47	.61	EXC
93	22	20	11+11	20	duplo	metal	100	.95	.95	.80	3.10	.30	72.86	.56	EXC
96	22	20	11+11	20	duplo	plastico	100	.95	.95	.80	2.20	.30	69.32	.53	EXC
128	22	60	11+11	20	duplo	metal	40	.35	.35	.80	3.10	.53	66.23	.51	EXC
140	22	60	11+11	40	duplo	metal	40	.35	.35	.57	3.10	.53	64.45	.50	EXC
131	22	60	11+11	20	duplo	plastico	40	.35	.35	.80	2.20	.53	62.69	.48	EXC
143	22	60	11+11	40	duplo	plastico	40	.35	.35	.57	2.20	.53	60.92	.47	EXC
129	22	60	11+11	20	duplo	metal	100	.35	.35	.80	3.10	.30	56.12	.43	EXC
141	22	60	11+11	40	duplo	metal	100	.35	.35	.57	3.10	.30	54.36	.42	EXC
132	22	60	11+11	20	duplo	plastico	100	.35	.35	.80	2.20	.30	52.60	.41	EXC
144	22	60	11+11	40	duplo	plastico	100	.35	.35	.57	2.20	.30	50.84	.39	EXC

ANEXO 4

tabela 4.1

vivienda

zona climática de inverno II
sem ganhos solares

sol	par ext	isol ext	isol cob	isol pav	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic1	%ni	cls
1	11+11	0	20	0	simples	metal	1.40	2.10	1.15	1.55	4.20	66.84	1.11	INS
2	11+11	0	20	0	simples	madeira	1.40	2.10	1.15	1.55	3.70	65.88	1.09	INS
3	11+11	0	20	0	duplo	metal	1.40	2.10	1.15	1.55	3.10	64.73	1.07	INS
4	11+11	0	20	0	duplo	plastico	1.40	2.10	1.15	1.55	2.20	63.00	1.04	INS
37	11+15	0	20	0	simples	metal	1.20	1.80	1.15	1.55	4.20	63.41	1.05	INS
38	11+15	0	20	0	simples	madeira	1.20	1.80	1.15	1.55	3.70	62.45	1.03	INS
39	11+15	0	20	0	duplo	metal	1.20	1.80	1.15	1.55	3.10	61.30	1.02	INS
5	11+11	0	20	40	simples	metal	1.40	2.10	1.15	.60	4.20	58.84	.97	SUF
6	11+11	0	20	40	simples	madeira	1.40	2.10	1.15	.60	3.70	57.88	.96	SUF
13	11+11	0	60	0	simples	metal	1.40	2.10	.55	1.55	4.20	60.10	1.00	SUF
14	11+11	0	60	0	simples	madeira	1.40	2.10	.55	1.55	3.70	59.14	.98	SUF
15	11+11	0	60	0	duplo	metal	1.40	2.10	.55	1.55	3.10	57.99	.96	SUF
25	11+11	0	100	0	simples	metal	1.40	2.10	.35	1.55	4.20	57.86	.96	SUF
40	11+15	0	20	0	duplo	plastico	1.20	1.80	1.15	1.55	2.20	59.57	.99	SUF
7	11+11	0	20	40	duplo	metal	1.40	2.10	1.15	.60	3.10	56.73	.94	BOM
8	11+11	0	20	40	duplo	plastico	1.40	2.10	1.15	.60	2.20	55.00	.91	BOM
9	11+11	0	20	100	simples	metal	1.40	2.10	1.15	.30	4.20	56.31	.93	BOM
10	11+11	0	20	100	simples	madeira	1.40	2.10	1.15	.30	3.70	55.35	.92	BOM
11	11+11	0	20	100	duplo	metal	1.40	2.10	1.15	.30	3.10	54.20	.90	BOM
12	11+11	0	20	100	duplo	plastico	1.40	2.10	1.15	.30	2.20	52.47	.87	BOM
16	11+11	0	60	0	duplo	plastico	1.40	2.10	.55	1.55	2.20	56.26	.93	BOM
17	11+11	0	60	40	simples	metal	1.40	2.10	.55	.60	4.20	52.10	.86	BOM
18	11+11	0	60	40	simples	madeira	1.40	2.10	.55	.60	3.70	51.14	.85	BOM
19	11+11	0	60	40	duplo	metal	1.40	2.10	.55	.60	3.10	49.99	.83	BOM
20	11+11	0	60	40	duplo	plastico	1.40	2.10	.55	.60	2.20	48.26	.80	BOM
21	11+11	0	60	100	simples	metal	1.40	2.10	.55	.30	4.20	49.57	.82	BOM
22	11+11	0	60	100	simples	madeira	1.40	2.10	.55	.30	3.70	48.61	.81	BOM
23	11+11	0	60	100	duplo	metal	1.40	2.10	.55	.30	3.10	47.46	.79	BOM
24	11+11	0	60	100	duplo	plastico	1.40	2.10	.55	.30	2.20	45.73	.76	BOM
26	11+11	0	100	0	simples	madeira	1.40	2.10	.35	1.55	3.70	56.90	.94	BOM
27	11+11	0	100	0	duplo	metal	1.40	2.10	.35	1.55	3.10	55.74	.92	BOM
28	11+11	0	100	0	duplo	plastico	1.40	2.10	.35	1.55	2.20	54.02	.89	BOM
29	11+11	0	100	40	simples	metal	1.40	2.10	.35	.60	4.20	49.85	.83	BOM
30	11+11	0	100	40	simples	madeira	1.40	2.10	.35	.60	3.70	48.89	.81	BOM
31	11+11	0	100	40	duplo	metal	1.40	2.10	.35	.60	3.10	47.74	.79	BOM
32	11+11	0	100	40	duplo	plastico	1.40	2.10	.35	.60	2.20	46.01	.76	BOM
33	11+11	0	100	100	simples	metal	1.40	2.10	.35	.30	4.20	47.33	.78	BOM
34	11+11	0	100	100	simples	madeira	1.40	2.10	.35	.30	3.70	46.37	.77	BOM
35	11+11	0	100	100	duplo	metal	1.40	2.10	.35	.30	3.10	45.21	.75	BOM
36	11+11	0	100	100	duplo	plastico	1.40	2.10	.35	.30	2.20	43.49	.72	BOM
41	11+15	0	20	40	simples	metal	1.20	1.80	1.15	.60	4.20	55.41	.92	BOM
42	11+15	0	20	40	simples	madeira	1.20	1.80	1.15	.60	3.70	54.45	.90	BOM
43	11+15	0	20	40	duplo	metal	1.20	1.80	1.15	.60	3.10	53.30	.88	BOM
44	11+15	0	20	40	duplo	plastico	1.20	1.80	1.15	.60	2.20	51.57	.85	BOM
45	11+15	0	20	100	simples	metal	1.20	1.80	1.15	.30	4.20	52.88	.88	BOM
46	11+15	0	20	100	simples	madeira	1.20	1.80	1.15	.30	3.70	51.92	.86	BOM
47	11+15	0	20	100	duplo	metal	1.20	1.80	1.15	.30	3.10	50.77	.84	BOM
48	11+15	0	20	100	duplo	plastico	1.20	1.80	1.15	.30	2.20	49.04	.81	BOM
49	11+15	0	60	0	simples	metal	1.20	1.80	.55	1.55	4.20	56.67	.94	BOM
50	11+15	0	60	0	simples	madeira	1.20	1.80	.55	1.55	3.70	55.71	.92	BOM
51	11+15	0	60	0	duplo	metal	1.20	1.80	.55	1.55	3.10	54.56	.90	BOM

sol	par	isol	isol	isol	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic1	XNi	cls
ext	ext	ext	cob	pav										
52	11+15	0	60	0	duplo	plastico	1.20	1.80	.55	1.55	2.20	52.83	.88	BOM
53	11+15	0	60	40	simples	metal	1.20	1.80	.55	.60	4.20	48.67	.81	BOM
54	11+15	0	60	40	simples	madeira	1.20	1.80	.55	.60	3.70	47.71	.79	BOM
55	11+15	0	60	40	duplo	metal	1.20	1.80	.55	.60	3.10	46.56	.77	BOM
56	11+15	0	60	40	duplo	plastico	1.20	1.80	.55	.60	2.20	44.83	.74	BOM
57	11+15	0	60	100	simples	metal	1.20	1.80	.55	.30	4.20	46.14	.76	BOM
58	11+15	0	60	100	simples	madeira	1.20	1.80	.55	.30	3.70	45.18	.75	BOM
59	11+15	0	60	100	duplo	metal	1.20	1.80	.55	.30	3.10	44.03	.73	BOM
60	11+15	0	60	100	duplo	plastico	1.20	1.80	.55	.30	2.20	42.30	.70	BOM
61	11+15	0	100	0	simples	metal	1.20	1.80	.35	1.55	4.20	54.43	.90	BOM
62	11+15	0	100	0	simples	madeira	1.20	1.80	.35	1.55	3.70	53.47	.89	BOM
63	11+15	0	100	0	duplo	metal	1.20	1.80	.35	1.55	3.10	52.32	.87	BOM
64	11+15	0	100	0	duplo	plastico	1.20	1.80	.35	1.55	2.20	50.59	.84	BOM
65	11+15	0	100	40	simples	metal	1.20	1.80	.35	.60	4.20	46.43	.77	BOM
66	11+15	0	100	40	simples	madeira	1.20	1.80	.35	.60	3.70	45.47	.75	BOM
67	11+15	0	100	40	duplo	metal	1.20	1.80	.35	.60	3.10	44.31	.73	BOM
68	11+15	0	100	40	duplo	plastico	1.20	1.80	.35	.60	2.20	42.59	.71	BOM
69	11+15	0	100	100	simples	metal	1.20	1.80	.35	.30	4.20	43.90	.73	BOM
70	11+15	0	100	100	simples	madeira	1.20	1.80	.35	.30	3.70	42.94	.71	BOM
71	11+15	0	100	100	duplo	metal	1.20	1.80	.35	.30	3.10	41.79	.69	BOM
72	11+15	0	100	100	duplo	plastico	1.20	1.80	.35	.30	2.20	40.06	.66	BOM
73	11+15	20	20	0	simples	metal	.75	1.20	1.15	1.55	4.20	56.56	.94	BOM
74	11+15	20	20	0	simples	madeira	.75	1.20	1.15	1.55	3.70	55.60	.92	BOM
75	11+15	20	20	0	duplo	metal	.75	1.20	1.15	1.55	3.10	54.45	.90	BOM
76	11+15	20	20	0	duplo	plastico	.75	1.20	1.15	1.55	2.20	52.72	.87	BOM
77	11+15	20	20	40	simples	metal	.75	1.20	1.15	.60	4.20	48.56	.80	BOM
78	11+15	20	20	40	simples	madeira	.75	1.20	1.15	.60	3.70	47.60	.79	BOM
79	11+15	20	20	40	duplo	metal	.75	1.20	1.15	.60	3.10	46.44	.77	BOM
80	11+15	20	20	40	duplo	plastico	.75	1.20	1.15	.60	2.20	44.72	.74	BOM
81	11+15	20	20	100	simples	metal	.75	1.20	1.15	.30	4.20	46.03	.76	BOM
82	11+15	20	20	100	simples	madeira	.75	1.20	1.15	.30	3.70	45.07	.75	BOM
83	11+15	20	20	100	duplo	metal	.75	1.20	1.15	.30	3.10	43.92	.73	BOM
84	11+15	20	20	100	duplo	plastico	.75	1.20	1.15	.30	2.20	42.19	.70	BOM
85	11+15	20	60	0	simples	metal	.75	1.20	.55	1.55	4.20	49.82	.83	BOM
86	11+15	20	60	0	simples	madeira	.75	1.20	.55	1.55	3.70	48.86	.81	BOM
87	11+15	20	60	0	duplo	metal	.75	1.20	.55	1.55	3.10	47.71	.79	BOM
88	11+15	20	60	0	duplo	plastico	.75	1.20	.55	1.55	2.20	45.98	.76	BOM
89	11+15	20	60	40	simples	metal	.75	1.20	.55	.60	4.20	41.82	.69	BOM
90	11+15	20	60	40	simples	madeira	.75	1.20	.55	.60	3.70	40.86	.68	BOM
97	11+15	20	100	0	simples	metal	.75	1.20	.35	1.55	4.20	47.57	.79	BOM
98	11+15	20	100	0	simples	madeira	.75	1.20	.35	1.55	3.70	46.61	.77	BOM
99	11+15	20	100	0	duplo	metal	.75	1.20	.35	1.55	3.10	45.46	.75	BOM
100	11+15	20	100	0	duplo	plastico	.75	1.20	.35	1.55	2.20	43.73	.72	BOM
109	22	20	20	0	simples	metal	.95	.95	1.15	1.55	4.20	53.70	.89	BOM
110	22	20	20	0	simples	madeira	.95	.95	1.15	1.55	3.70	52.74	.87	BOM
111	22	20	20	0	duplo	metal	.95	.95	1.15	1.55	3.10	51.59	.85	BOM
112	22	20	20	0	duplo	plastico	.95	.95	1.15	1.55	2.20	49.86	.83	BOM
113	22	20	20	40	simples	metal	.95	.95	1.15	.60	4.20	45.70	.76	BOM
114	22	20	20	40	simples	madeira	.95	.95	1.15	.60	3.70	44.74	.74	BOM
115	22	20	20	40	duplo	metal	.95	.95	1.15	.60	3.10	43.59	.72	BOM
116	22	20	20	40	duplo	plastico	.95	.95	1.15	.60	2.20	41.86	.69	BOM
117	22	20	20	100	simples	metal	.95	.95	1.15	.30	4.20	43.17	.72	BOM
118	22	20	20	100	simples	madeira	.95	.95	1.15	.30	3.70	42.21	.70	BOM
119	22	20	20	100	duplo	metal	.95	.95	1.15	.30	3.10	41.06	.68	BOM
120	22	20	20	100	duplo	plastico	.95	.95	1.15	.30	2.20	39.33	.65	BOM
121	22	20	60	0	simples	metal	.95	.95	.55	1.55	4.20	46.96	.78	BOM
122	22	20	60	0	simples	madeira	.95	.95	.55	1.55	3.70	46.00	.76	BOM
123	22	20	60	0	duplo	metal	.95	.95	.55	1.55	3.10	44.85	.74	BOM
124	22	20	60	0	duplo	plastico	.95	.95	.55	1.55	2.20	43.12	.71	BOM
133	22	20	100	0	simples	metal	.95	.95	.35	1.55	4.20	44.72	.74	BOM
134	22	20	100	0	simples	madeira	.95	.95	.35	1.55	3.70	43.76	.72	BOM
135	22	20	100	0	duplo	metal	.95	.95	.35	1.55	3.10	42.61	.71	BOM
136	22	20	100	0	duplo	plastico	.95	.95	.35	1.55	2.20	40.88	.68	BOM

sol	par ext	isol ext	isol cob	isol pav	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic1	%Ni	cls
145	22	60	20	0	simples	metal	.35	.35	1.15	1.55	4.20	46.85	.78	BOM
146	22	60	20	0	simples	madeira	.35	.35	1.15	1.55	3.70	45.89	.76	BOM
147	22	60	20	0	duplo	metal	.35	.35	1.15	1.55	3.10	44.74	.74	BOM
148	22	60	20	0	duplo	plastico	.35	.35	1.15	1.55	2.20	43.01	.71	BOM
149	22	60	20	40	simples	metal	.35	.35	1.15	.60	4.20	38.85	.64	BOM
150	22	60	20	40	simples	madeira	.35	.35	1.15	.60	3.70	37.89	.63	BOM
151	22	60	20	40	duplo	metal	.35	.35	1.15	.60	3.10	36.73	.61	BOM
152	22	60	20	40	duplo	plastico	.35	.35	1.15	.60	2.20	35.01	.58	BOM
153	22	60	20	100	simples	metal	.35	.35	1.15	.30	4.20	36.32	.60	BOM
154	22	60	20	100	simples	madeira	.35	.35	1.15	.30	3.70	35.36	.59	BOM
155	22	60	20	100	duplo	metal	.35	.35	1.15	.30	3.10	34.21	.57	BOM
156	22	60	20	100	duplo	plastico	.35	.35	1.15	.30	2.20	32.48	.54	BOM
157	22	60	60	0	simples	metal	.35	.35	.55	1.55	4.20	40.11	.66	BOM
158	22	60	60	0	simples	madeira	.35	.35	.55	1.55	3.70	39.15	.65	BOM
159	22	60	60	0	duplo	metal	.35	.35	.55	1.55	3.10	38.00	.63	BOM
160	22	60	60	0	duplo	plastico	.35	.35	.55	1.55	2.20	36.27	.60	BOM
169	22	60	100	0	simples	metal	.35	.35	.35	1.55	4.20	37.86	.63	BOM
170	22	60	100	0	simples	madeira	.35	.35	.35	1.55	3.70	36.90	.61	BOM
171	22	60	100	0	duplo	metal	.35	.35	.35	1.55	3.10	35.75	.59	BOM
172	22	60	100	0	duplo	plastico	.35	.35	.35	1.55	2.20	34.02	.56	BOM
91	11+15	20	60	40	duplo	metal	.75	1.20	.55	.60	3.10	39.71	.66	MB
92	11+15	20	60	40	duplo	plastico	.75	1.20	.55	.60	2.20	37.98	.63	MB
93	11+15	20	60	100	simples	metal	.75	1.20	.55	.30	4.20	39.29	.65	MB
94	11+15	20	60	100	simples	madeira	.75	1.20	.55	.30	3.70	38.33	.63	MB
95	11+15	20	60	100	duplo	metal	.75	1.20	.55	.30	3.10	37.18	.62	MB
96	11+15	20	60	100	duplo	plastico	.75	1.20	.55	.30	2.20	35.45	.59	MB
101	11+15	20	100	40	simples	metal	.75	1.20	.35	.60	4.20	39.57	.66	MB
102	11+15	20	100	40	simples	madeira	.75	1.20	.35	.60	3.70	38.61	.64	MB
103	11+15	20	100	40	duplo	metal	.75	1.20	.35	.60	3.10	37.46	.62	MB
104	11+15	20	100	40	duplo	plastico	.75	1.20	.35	.60	2.20	35.73	.59	MB
105	11+15	20	100	100	simples	metal	.75	1.20	.35	.30	4.20	37.04	.61	MB
106	11+15	20	100	100	simples	madeira	.75	1.20	.35	.30	3.70	36.08	.60	MB
107	11+15	20	100	100	duplo	metal	.75	1.20	.35	.30	3.10	34.93	.58	MB
108	11+15	20	100	100	duplo	plastico	.75	1.20	.35	.30	2.20	33.20	.55	MB
125	22	20	60	40	simples	metal	.95	.95	.55	.60	4.20	38.96	.65	MB
126	22	20	60	40	simples	madeira	.95	.95	.55	.60	3.70	38.00	.63	MB
127	22	20	60	40	duplo	metal	.95	.95	.55	.60	3.10	36.85	.61	MB
128	22	20	60	40	duplo	plastico	.95	.95	.55	.60	2.20	35.12	.58	MB
129	22	20	60	100	simples	metal	.95	.95	.55	.30	4.20	36.43	.60	MB
130	22	20	60	100	simples	madeira	.95	.95	.55	.30	3.70	35.47	.59	MB
131	22	20	60	100	duplo	metal	.95	.95	.55	.30	3.10	34.32	.57	MB
132	22	20	60	100	duplo	plastico	.95	.95	.55	.30	2.20	32.59	.54	MB
137	22	20	100	40	simples	metal	.95	.95	.35	.60	4.20	36.72	.61	MB
138	22	20	100	40	simples	madeira	.95	.95	.35	.60	3.70	35.76	.59	MB
139	22	20	100	40	duplo	metal	.95	.95	.35	.60	3.10	34.60	.57	MB
140	22	20	100	40	duplo	plastico	.95	.95	.35	.60	2.20	32.88	.54	MB
141	22	20	100	100	simples	metal	.95	.95	.35	.30	4.20	34.19	.57	MB
142	22	20	100	100	simples	madeira	.95	.95	.35	.30	3.70	33.23	.55	MB
143	22	20	100	100	duplo	metal	.95	.95	.35	.30	3.10	32.08	.53	MB
144	22	20	100	100	duplo	plastico	.95	.95	.35	.30	2.20	30.35	.50	MB
161	22	60	60	40	simples	metal	.35	.35	.55	.60	4.20	32.11	.53	MB
162	22	60	60	40	simples	madeira	.35	.35	.55	.60	3.70	31.15	.52	MB
163	22	60	60	40	duplo	metal	.35	.35	.55	.60	3.10	30.00	.50	MB
164	22	60	60	40	duplo	plastico	.35	.35	.55	.60	2.20	28.27	.47	MB
165	22	60	60	100	simples	metal	.35	.35	.55	.30	4.20	29.58	.49	MB
166	22	60	60	100	simples	madeira	.35	.35	.55	.30	3.70	28.62	.47	MB
167	22	60	60	100	duplo	metal	.35	.35	.55	.30	3.10	27.47	.46	MB
168	22	60	60	100	duplo	plastico	.35	.35	.55	.30	2.20	25.74	.43	MB
173	22	60	100	40	simples	metal	.35	.35	.35	.60	4.20	29.86	.49	MB
174	22	60	100	40	simples	madeira	.35	.35	.35	.60	3.70	28.90	.48	MB
175	22	60	100	40	duplo	metal	.35	.35	.35	.60	3.10	27.75	.46	MB
176	22	60	100	40	duplo	plastico	.35	.35	.35	.60	2.20	26.02	.43	MB

sol	par ext	isol ext	isol cob	isol pav	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic1	%Ni	cls
177	22	60	100	100	simples	metal	.35	.35	.35	.30	4.20	27.33	.45	MB
178	22	60	100	100	simples	madeira	.35	.35	.35	.30	3.70	26.37	.44	MB
179	22	60	100	100	duplo	metal	.35	.35	.35	.30	3.10	25.22	.42	MB
180	22	60	100	100	duplo	plastico	.35	.35	.35	.30	2.20	23.49	.39	EXC

tabela 4.2

vivenda

zona climática de inverno I2

sem ganhos solares

sol	par ext	isol ext	isol cob	isol pav	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic2	Xwi	cls
1	11+11	0	20	0	simples	metal	1.40	2.10	1.15	1.55	4.20	133.68	1.29	INS
2	11+11	0	20	0	simples	madeira	1.40	2.10	1.15	1.55	3.70	131.76	1.27	INS
3	11+11	0	20	0	duplo	metal	1.40	2.10	1.15	1.55	3.10	129.46	1.25	INS
37	11+15	0	20	0	simples	metal	1.20	1.80	1.15	1.55	4.20	126.83	1.22	INS
4	11+11	0	20	0	duplo	plastico	1.40	2.10	1.15	1.55	2.20	126.00	1.22	INS
38	11+15	0	20	0	simples	madeira	1.20	1.80	1.15	1.55	3.70	124.91	1.21	INS
39	11+15	0	20	0	duplo	metal	1.20	1.80	1.15	1.55	3.10	122.60	1.18	INS
13	11+11	0	60	0	simples	metal	1.40	2.10	.55	1.55	4.20	120.20	1.16	INS
40	11+15	0	20	0	duplo	plastico	1.20	1.80	1.15	1.55	2.20	119.15	1.15	INS
14	11+11	0	60	0	simples	madeira	1.40	2.10	.55	1.55	3.70	118.28	1.14	INS
5	11+11	0	20	40	simples	metal	1.40	2.10	1.15	.60	4.20	117.68	1.14	INS
15	11+11	0	60	0	duplo	metal	1.40	2.10	.55	1.55	3.10	115.98	1.12	INS
6	11+11	0	20	40	simples	madeira	1.40	2.10	1.15	.60	3.70	115.76	1.12	INS
25	11+11	0	100	0	simples	metal	1.40	2.10	.35	1.55	4.20	115.71	1.12	INS
26	11+11	0	100	0	simples	madeira	1.40	2.10	.35	1.55	3.70	113.79	1.10	INS
7	11+11	0	20	40	duplo	metal	1.40	2.10	1.15	.60	3.10	113.45	1.10	INS
49	11+15	0	60	0	simples	metal	1.20	1.80	.55	1.55	4.20	113.35	1.09	INS
73	11+15	20	20	0	simples	metal	.75	1.20	1.15	1.55	4.20	113.12	1.09	INS
9	11+11	0	20	100	simples	metal	1.40	2.10	1.15	.30	4.20	112.62	1.09	INS
16	11+11	0	60	0	duplo	plastico	1.40	2.10	.55	1.55	2.20	112.52	1.09	INS
27	11+11	0	100	0	duplo	metal	1.40	2.10	.35	1.55	3.10	111.49	1.08	INS
50	11+15	0	60	0	simples	madeira	1.20	1.80	.55	1.55	3.70	111.43	1.08	INS
74	11+15	20	20	0	simples	madeira	.75	1.20	1.15	1.55	3.70	111.20	1.07	INS
41	11+15	0	20	40	simples	metal	1.20	1.80	1.15	.60	4.20	110.82	1.07	INS
10	11+11	0	20	100	simples	madeira	1.40	2.10	1.15	.30	3.70	110.70	1.07	INS
8	11+11	0	20	40	duplo	plastico	1.40	2.10	1.15	.60	2.20	110.00	1.06	INS
51	11+15	0	60	0	duplo	metal	1.20	1.80	.55	1.55	3.10	109.13	1.05	INS
42	11+15	0	20	40	simples	madeira	1.20	1.80	1.15	.60	3.70	108.90	1.05	INS
75	11+15	20	20	0	duplo	metal	.75	1.20	1.15	1.55	3.10	108.90	1.05	INS
61	11+15	0	100	0	simples	metal	1.20	1.80	.35	1.55	4.20	108.86	1.05	INS
11	11+11	0	20	100	duplo	metal	1.40	2.10	1.15	.30	3.10	108.40	1.05	INS
28	11+11	0	100	0	duplo	plastico	1.40	2.10	.35	1.55	2.20	108.03	1.04	INS
109	22	20	20	0	simples	metal	.95	.95	1.15	1.55	4.20	107.41	1.04	INS
62	11+15	0	100	0	simples	madeira	1.20	1.80	.35	1.55	3.70	106.94	1.03	INS
43	11+15	0	20	40	duplo	metal	1.20	1.80	1.15	.60	3.10	106.60	1.03	INS
45	11+15	0	20	100	simples	metal	1.20	1.80	1.15	.30	4.20	105.77	1.02	INS
52	11+15	0	60	0	duplo	plastico	1.20	1.80	.55	1.55	2.20	105.67	1.02	INS
76	11+15	20	20	0	duplo	plastico	.75	1.20	1.15	1.55	2.20	105.44	1.02	INS
110	22	20	20	0	simples	madeira	.95	.95	1.15	1.55	3.70	105.49	1.02	INS
12	11+11	0	20	100	duplo	plastico	1.40	2.10	1.15	.30	2.20	104.94	1.01	INS
63	11+15	0	100	0	duplo	metal	1.20	1.80	.35	1.55	3.10	104.63	1.01	INS
17	11+11	0	60	40	simples	metal	1.40	2.10	.55	.60	4.20	104.20	1.01	INS
46	11+15	0	20	100	simples	madeira	1.20	1.80	1.15	.30	3.70	103.85	1.00	INS
44	11+15	0	20	40	duplo	plastico	1.20	1.80	1.15	.60	2.20	103.14	1.00	INS
111	22	20	20	0	duplo	metal	.95	.95	1.15	1.55	3.10	103.18	1.00	INS
47	11+15	0	20	100	duplo	metal	1.20	1.80	1.15	.30	3.10	101.54	.98	INS
64	11+15	0	100	0	duplo	plastico	1.20	1.80	.35	1.55	2.20	101.18	.98	INS
112	22	20	20	0	duplo	plastico	.95	.95	1.15	1.55	2.20	99.73	.96	INS
85	11+15	20	60	0	simples	metal	.75	1.20	.55	1.55	4.20	99.64	.96	INS
48	11+15	0	20	100	duplo	plastico	1.20	1.80	1.15	.30	2.20	98.09	.95	INS
86	11+15	20	60	0	simples	madeira	.75	1.20	.55	1.55	3.70	97.72	.94	INS
77	11+15	20	20	40	simples	metal	.75	1.20	1.15	.60	4.20	97.11	.94	INS
87	11+15	20	60	0	duplo	metal	.75	1.20	.55	1.55	3.10	95.42	.92	INS

sol	par	isol	isol	isol	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic2	XNi	cls
ext	ext	ext	cob	pav										
78	11+15	20	20	40	simples	madeira	.75	1.20	1.15	.60	3.70	95.19	.92	INS
97	11+15	20	100	0	simples	metal	.75	1.20	.35	1.55	4.20	95.15	.92	INS
121	22	20	60	0	simples	metal	.95	.95	.55	1.55	4.20	93.93	.91	INS
145	22	60	20	0	simples	metal	.35	.35	1.15	1.55	4.20	93.70	.90	INS
98	11+15	20	100	0	simples	madeira	.75	1.20	.35	1.55	3.70	93.23	.90	INS
79	11+15	20	20	40	duplo	metal	.75	1.20	1.15	.60	3.10	92.89	.90	INS
81	11+15	20	20	100	simples	metal	.75	1.20	1.15	.30	4.20	92.06	.89	INS
122	22	20	60	0	simples	madeira	.95	.95	.55	1.55	3.70	92.01	.89	INS
88	11+15	20	60	0	duplo	plastico	.75	1.20	.55	1.55	2.20	91.96	.89	INS
146	22	60	20	0	simples	madeira	.35	.35	1.15	1.55	3.70	91.78	.89	INS
113	22	20	20	40	simples	metal	.95	.95	1.15	.60	4.20	91.40	.88	INS
99	11+15	20	100	0	duplo	metal	.75	1.20	.35	1.55	3.10	90.92	.88	INS
82	11+15	20	20	100	simples	madeira	.75	1.20	1.15	.30	3.70	90.14	.87	INS
123	22	20	60	0	duplo	metal	.95	.95	.55	1.55	3.10	89.70	.87	INS
80	11+15	20	20	40	duplo	plastico	.75	1.20	1.15	.60	2.20	89.43	.86	INS
114	22	20	20	40	simples	madeira	.95	.95	1.15	.60	3.70	89.48	.86	INS
133	22	20	100	0	simples	metal	.95	.95	.35	1.55	4.20	89.44	.86	INS
147	22	60	20	0	duplo	metal	.35	.35	1.15	1.55	3.10	89.47	.86	INS
83	11+15	20	20	100	duplo	metal	.75	1.20	1.15	.30	3.10	87.84	.85	INS
134	22	20	100	0	simples	madeira	.95	.95	.35	1.55	3.70	87.52	.85	INS
100	11+15	20	100	0	duplo	plastico	.75	1.20	.35	1.55	2.20	87.47	.84	INS
115	22	20	20	40	duplo	metal	.95	.95	1.15	.60	3.10	87.18	.84	INS
117	22	20	20	100	simples	metal	.95	.95	1.15	.30	4.20	86.35	.83	INS
124	22	20	60	0	duplo	plastico	.95	.95	.55	1.55	2.20	86.25	.83	INS
148	22	60	20	0	duplo	plastico	.35	.35	1.15	1.55	2.20	86.02	.83	INS
135	22	20	100	0	duplo	metal	.95	.95	.35	1.55	3.10	85.21	.82	INS
118	22	20	20	100	simples	madeira	.95	.95	1.15	.30	3.70	84.43	.82	INS
84	11+15	20	20	100	duplo	plastico	.75	1.20	1.15	.30	2.20	84.38	.81	INS
116	22	20	20	40	duplo	plastico	.95	.95	1.15	.60	2.20	83.72	.81	INS
119	22	20	20	100	duplo	metal	.95	.95	1.15	.30	3.10	82.12	.79	INS
136	22	20	100	0	duplo	plastico	.95	.95	.35	1.55	2.20	81.76	.79	INS
157	22	60	60	0	simples	metal	.35	.35	.55	1.55	4.20	80.22	.77	INS
120	22	20	20	100	duplo	plastico	.95	.95	1.15	.30	2.20	78.67	.76	INS
158	22	60	60	0	simples	madeira	.35	.35	.55	1.55	3.70	78.30	.76	INS
149	22	60	20	40	simples	metal	.35	.35	1.15	.60	4.20	77.69	.75	INS
159	22	60	60	0	duplo	metal	.35	.35	.55	1.55	3.10	76.00	.73	INS
150	22	60	20	40	simples	madeira	.35	.35	1.15	.60	3.70	75.77	.73	INS
169	22	60	100	0	simples	metal	.35	.35	.35	1.55	4.20	75.73	.73	INS
170	22	60	100	0	simples	madeira	.35	.35	.35	1.55	3.70	73.81	.71	INS
151	22	60	20	40	duplo	metal	.35	.35	1.15	.60	3.10	73.47	.71	INS
153	22	60	20	100	simples	metal	.35	.35	1.15	.30	4.20	72.64	.70	INS
160	22	60	60	0	duplo	plastico	.35	.35	.55	1.55	2.20	72.54	.70	INS
171	22	60	100	0	duplo	metal	.35	.35	.35	1.55	3.10	71.50	.69	INS
154	22	60	20	100	simples	madeira	.35	.35	1.15	.30	3.70	70.72	.68	INS
152	22	60	20	40	duplo	plastico	.35	.35	1.15	.60	2.20	70.01	.68	INS
155	22	60	20	100	duplo	metal	.35	.35	1.15	.30	3.10	68.41	.66	INS
172	22	60	100	0	duplo	plastico	.35	.35	.35	1.55	2.20	68.05	.66	INS
156	22	60	20	100	duplo	plastico	.35	.35	1.15	.30	2.20	64.96	.63	INS
18	11+11	0	60	40	simples	madeira	1.40	2.10	.55	.60	3.70	102.28	.99	SUF
19	11+11	0	60	40	duplo	metal	1.40	2.10	.55	.60	3.10	99.97	.97	SUF
29	11+11	0	100	40	simples	metal	1.40	2.10	.35	.60	4.20	99.71	.96	SUF
21	11+11	0	60	100	simples	metal	1.40	2.10	.55	.30	4.20	99.14	.96	SUF
30	11+11	0	100	40	simples	madeira	1.40	2.10	.35	.60	3.70	97.79	.94	SUF
53	11+15	0	60	40	simples	metal	1.20	1.80	.55	.60	4.20	97.34	.94	SUF
22	11+11	0	60	100	simples	madeira	1.40	2.10	.55	.30	3.70	97.22	.94	SUF
20	11+11	0	60	40	duplo	plastico	1.40	2.10	.55	.60	2.20	96.52	.93	SUF
31	11+11	0	100	40	duplo	metal	1.40	2.10	.35	.60	3.10	95.48	.92	SUF
54	11+15	0	60	40	simples	madeira	1.20	1.80	.55	.60	3.70	95.42	.92	SUF
23	11+11	0	60	100	duplo	metal	1.40	2.10	.55	.30	3.10	94.92	.92	SUF
33	11+11	0	100	100	simples	metal	1.40	2.10	.35	.30	4.20	94.65	.91	SUF
55	11+15	0	60	40	duplo	metal	1.20	1.80	.55	.60	3.10	93.12	.90	SUF
65	11+15	0	100	40	simples	metal	1.20	1.80	.35	.60	4.20	92.85	.90	SUF

sol	par	isol	isol	isol	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic2	XNi	cls
ext	ext	ext	cob	pav										
34	11+11	0	100	100	simples	madeira	1.40	2.10	.35	.30	3.70	92.73	.90	SUF
57	11+15	0	60	100	simples	metal	1.20	1.80	.55	.30	4.20	92.29	.89	SUF
32	11+11	0	100	40	duplo	plastico	1.40	2.10	.35	.60	2.20	92.03	.89	SUF
24	11+11	0	60	100	duplo	plastico	1.40	2.10	.55	.30	2.20	91.46	.88	SUF
66	11+15	0	100	40	simples	madeira	1.20	1.80	.35	.60	3.70	90.93	.88	SUF
35	11+11	0	100	100	duplo	metal	1.40	2.10	.35	.30	3.10	90.43	.87	SUF
58	11+15	0	60	100	simples	madeira	1.20	1.80	.55	.30	3.70	90.37	.87	SUF
56	11+15	0	60	40	duplo	plastico	1.20	1.80	.55	.60	2.20	89.66	.87	BOM
67	11+15	0	100	40	duplo	metal	1.20	1.80	.35	.60	3.10	88.63	.86	BOM
59	11+15	0	60	100	duplo	metal	1.20	1.80	.55	.30	3.10	88.07	.85	BOM
69	11+15	0	100	100	simples	metal	1.20	1.80	.35	.30	4.20	87.80	.85	BOM
36	11+11	0	100	100	duplo	plastico	1.40	2.10	.35	.30	2.20	86.97	.84	BOM
70	11+15	0	100	100	simples	madeira	1.20	1.80	.35	.30	3.70	85.88	.83	BOM
68	11+15	0	100	40	duplo	plastico	1.20	1.80	.35	.60	2.20	85.17	.82	BOM
60	11+15	0	60	100	duplo	plastico	1.20	1.80	.55	.30	2.20	84.61	.82	BOM
89	11+15	20	60	40	simples	metal	.75	1.20	.55	.60	4.20	83.64	.81	BOM
71	11+15	0	100	100	duplo	metal	1.20	1.80	.35	.30	3.10	83.57	.81	BOM
90	11+15	20	60	40	simples	madeira	.75	1.20	.55	.60	3.70	81.72	.79	BOM
72	11+15	0	100	100	duplo	plastico	1.20	1.80	.35	.30	2.20	80.12	.77	BOM
91	11+15	20	60	40	duplo	metal	.75	1.20	.55	.60	3.10	79.41	.77	BOM
101	11+15	20	100	40	simples	metal	.75	1.20	.35	.60	4.20	79.14	.76	BOM
93	11+15	20	60	100	simples	metal	.75	1.20	.55	.30	4.20	78.58	.76	BOM
125	22	20	60	40	simples	metal	.95	.95	.55	.60	4.20	77.92	.75	BOM
102	11+15	20	100	40	simples	madeira	.75	1.20	.35	.60	3.70	77.22	.75	BOM
94	11+15	20	60	100	simples	madeira	.75	1.20	.55	.30	3.70	76.66	.74	BOM
126	22	20	60	40	simples	madeira	.95	.95	.55	.60	3.70	76.00	.73	BOM
92	11+15	20	60	40	duplo	plastico	.75	1.20	.55	.60	2.20	75.96	.73	BOM
103	11+15	20	100	40	duplo	metal	.75	1.20	.35	.60	3.10	74.92	.72	BOM
95	11+15	20	60	100	duplo	metal	.75	1.20	.55	.30	3.10	74.36	.72	BOM
105	11+15	20	100	100	simples	metal	.75	1.20	.35	.30	4.20	74.09	.72	BOM
127	22	20	60	40	duplo	metal	.95	.95	.55	.60	3.10	73.70	.71	BOM
137	22	20	100	40	simples	metal	.95	.95	.35	.60	4.20	73.43	.71	BOM
129	22	20	60	100	simples	metal	.95	.95	.55	.30	4.20	72.87	.70	BOM
106	11+15	20	100	100	simples	madeira	.75	1.20	.35	.30	3.70	72.17	.70	BOM
138	22	20	100	40	simples	madeira	.95	.95	.35	.60	3.70	71.51	.69	BOM
104	11+15	20	100	40	duplo	plastico	.75	1.20	.35	.60	2.20	71.46	.69	BOM
96	11+15	20	60	100	duplo	plastico	.75	1.20	.55	.30	2.20	70.90	.68	BOM
130	22	20	60	100	simples	madeira	.95	.95	.55	.30	3.70	70.95	.69	BOM
128	22	20	60	40	duplo	plastico	.95	.95	.55	.60	2.20	70.24	.68	BOM
107	11+15	20	100	100	duplo	metal	.75	1.20	.35	.30	3.10	69.86	.67	BOM
139	22	20	100	40	duplo	metal	.95	.95	.35	.60	3.10	69.21	.67	BOM
131	22	20	60	100	duplo	metal	.95	.95	.55	.30	3.10	68.64	.66	BOM
141	22	20	100	100	simples	metal	.95	.95	.35	.30	4.20	68.38	.66	BOM
108	11+15	20	100	100	duplo	plastico	.75	1.20	.35	.30	2.20	66.41	.64	BOM
142	22	20	100	100	simples	madeira	.95	.95	.35	.30	3.70	66.46	.64	BOM
140	22	20	100	40	duplo	plastico	.95	.95	.35	.60	2.20	65.75	.63	BOM
132	22	20	60	100	duplo	plastico	.95	.95	.55	.30	2.20	65.19	.63	BOM
161	22	60	60	40	simples	metal	.35	.35	.55	.60	4.20	64.21	.62	BOM
143	22	20	100	100	duplo	metal	.95	.95	.35	.30	3.10	64.15	.62	BOM
162	22	60	60	40	simples	madeira	.35	.35	.55	.60	3.70	62.29	.60	BOM
144	22	20	100	100	duplo	plastico	.95	.95	.35	.30	2.20	60.70	.59	BOM
173	22	60	100	40	simples	metal	.35	.35	.35	.60	4.20	59.72	.58	BOM
165	22	60	60	100	simples	metal	.35	.35	.55	.30	4.20	59.16	.57	BOM
174	22	60	100	40	simples	madeira	.35	.35	.35	.60	3.70	57.80	.56	BOM
166	22	60	60	100	simples	madeira	.35	.35	.55	.30	3.70	57.24	.55	BOM
177	22	60	100	100	simples	metal	.35	.35	.35	.30	4.20	54.67	.53	BOM
178	22	60	100	100	simples	madeira	.35	.35	.35	.30	3.70	52.75	.51	BOM
163	22	60	60	40	duplo	metal	.35	.35	.55	.60	3.10	59.99	.58	MB
164	22	60	60	40	duplo	plastico	.35	.35	.55	.60	2.20	56.53	.55	MB
175	22	60	100	40	duplo	metal	.35	.35	.35	.60	3.10	55.50	.54	MB
167	22	60	60	100	duplo	metal	.35	.35	.55	.30	3.10	54.94	.53	MB

sol	par ext	isol ext	isol cob	isol pav	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic2	%Ni	cl
176	22	60	100	40	duplo	plastico	.35	.35	.35	.60	2.20	52.04	.50	M
168	22	60	60	100	duplo	plastico	.35	.35	.55	.30	2.20	51.48	.50	M
179	22	60	100	100	duplo	metal	.35	.35	.35	.30	3.10	50.44	.49	M
180	22	60	100	100	duplo	plastico	.35	.35	.35	.30	2.20	46.99	.45	M

tabela 4.3

vivenda
zona climática de inverno I3
sem ganhos solares

sol	par ext	isol ext	isol cob	isol pav	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic3	%ni	cls
1	11+11	0	20	0	simples	metal	1.40	2.10	1.15	1.55	4.20	267.36	1.46	INS
2	11+11	0	20	0	simples	madeira	1.40	2.10	1.15	1.55	3.70	263.52	1.44	INS
3	11+11	0	20	0	duplo	metal	1.40	2.10	1.15	1.55	3.10	258.92	1.41	INS
37	11+15	0	20	0	simples	metal	1.20	1.80	1.15	1.55	4.20	253.66	1.38	INS
4	11+11	0	20	0	duplo	plastico	1.40	2.10	1.15	1.55	2.20	252.00	1.38	INS
38	11+15	0	20	0	simples	madeira	1.20	1.80	1.15	1.55	3.70	249.82	1.36	INS
39	11+15	0	20	0	duplo	metal	1.20	1.80	1.15	1.55	3.10	245.21	1.34	INS
13	11+11	0	60	0	simples	metal	1.40	2.10	.55	1.55	4.20	240.41	1.31	INS
40	11+15	0	20	0	duplo	plastico	1.20	1.80	1.15	1.55	2.20	238.30	1.30	INS
14	11+11	0	60	0	simples	madeira	1.40	2.10	.55	1.55	3.70	236.57	1.29	INS
5	11+11	0	20	40	simples	metal	1.40	2.10	1.15	.60	4.20	235.35	1.28	INS
15	11+11	0	60	0	duplo	metal	1.40	2.10	.55	1.55	3.10	231.96	1.27	INS
6	11+11	0	20	40	simples	madeira	1.40	2.10	1.15	.60	3.70	231.51	1.26	INS
25	11+11	0	100	0	simples	metal	1.40	2.10	.35	1.55	4.20	231.42	1.26	INS
26	11+11	0	100	0	simples	madeira	1.40	2.10	.35	1.55	3.70	227.58	1.24	INS
7	11+11	0	20	40	duplo	metal	1.40	2.10	1.15	.60	3.10	226.91	1.24	INS
49	11+15	0	60	0	simples	metal	1.20	1.80	.55	1.55	4.20	226.70	1.24	INS
73	11+15	20	20	0	simples	metal	.75	1.20	1.15	1.55	4.20	226.24	1.23	INS
9	11+11	0	20	100	simples	metal	1.40	2.10	1.15	.30	4.20	225.24	1.23	INS
16	11+11	0	60	0	duplo	plastico	1.40	2.10	.55	1.55	2.20	225.05	1.23	INS
27	11+11	0	100	0	duplo	metal	1.40	2.10	.35	1.55	3.10	222.97	1.22	INS
50	11+15	0	60	0	simples	madeira	1.20	1.80	.55	1.55	3.70	222.86	1.22	INS
74	11+15	20	20	0	simples	madeira	.75	1.20	1.15	1.55	3.70	222.40	1.21	INS
41	11+15	0	20	40	simples	metal	1.20	1.80	1.15	.60	4.20	221.64	1.21	INS
10	11+11	0	20	100	simples	madeira	1.40	2.10	1.15	.30	3.70	221.40	1.21	INS
8	11+11	0	20	40	duplo	plastico	1.40	2.10	1.15	.60	2.20	219.99	1.20	INS
51	11+15	0	60	0	duplo	metal	1.20	1.80	.55	1.55	3.10	218.25	1.19	INS
42	11+15	0	20	40	simples	madeira	1.20	1.80	1.15	.60	3.70	217.80	1.19	INS
61	11+15	0	100	0	simples	metal	1.20	1.80	.35	1.55	4.20	217.71	1.19	INS
75	11+15	20	20	0	duplo	metal	.75	1.20	1.15	1.55	3.10	217.79	1.19	INS
11	11+11	0	20	100	duplo	metal	1.40	2.10	1.15	.30	3.10	216.80	1.18	INS
28	11+11	0	100	0	duplo	plastico	1.40	2.10	.35	1.55	2.20	216.06	1.18	INS
109	22	20	20	0	simples	metal	.95	.95	1.15	1.55	4.20	214.81	1.17	INS
62	11+15	0	100	0	simples	madeira	1.20	1.80	.35	1.55	3.70	213.87	1.17	INS
43	11+15	0	20	40	duplo	metal	1.20	1.80	1.15	.60	3.10	213.20	1.16	INS
45	11+15	0	20	100	simples	metal	1.20	1.80	1.15	.30	4.20	211.54	1.15	INS
52	11+15	0	60	0	duplo	plastico	1.20	1.80	.55	1.55	2.20	211.34	1.15	INS
110	22	20	20	0	simples	madeira	.95	.95	1.15	1.55	3.70	210.97	1.15	INS
76	11+15	20	20	0	duplo	plastico	.75	1.20	1.15	1.55	2.20	210.88	1.15	INS
12	11+11	0	20	100	duplo	plastico	1.40	2.10	1.15	.30	2.20	209.88	1.15	INS
63	11+15	0	100	0	duplo	metal	1.20	1.80	.35	1.55	3.10	209.27	1.14	INS
17	11+11	0	60	40	simples	metal	1.40	2.10	.55	.60	4.20	208.40	1.14	INS
46	11+15	0	20	100	simples	madeira	1.20	1.80	1.15	.30	3.70	207.70	1.13	INS
111	22	20	20	0	duplo	metal	.95	.95	1.15	1.55	3.10	206.37	1.13	INS
44	11+15	0	20	40	duplo	plastico	1.20	1.80	1.15	.60	2.20	206.28	1.13	INS
18	11+11	0	60	40	simples	madeira	1.40	2.10	.55	.60	3.70	204.56	1.12	INS
47	11+15	0	20	100	duplo	metal	1.20	1.80	1.15	.30	3.10	203.09	1.11	INS
64	11+15	0	100	0	duplo	plastico	1.20	1.80	.35	1.55	2.20	202.35	1.10	INS
19	11+11	0	60	40	duplo	metal	1.40	2.10	.55	.60	3.10	199.95	1.09	INS
29	11+11	0	100	40	simples	metal	1.40	2.10	.35	.60	4.20	199.41	1.09	INS
112	22	20	20	0	duplo	plastico	.95	.95	1.15	1.55	2.20	199.45	1.09	INS
85	11+15	20	60	0	simples	metal	.75	1.20	.55	1.55	4.20	199.28	1.09	INS
21	11+11	0	60	100	simples	metal	1.40	2.10	.55	.30	4.20	198.29	1.08	INS

sol	par	isol	isol	isol	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic3	%Ni	cls
ext	ext	ext	cob	pav										
48	11+15	0	20	100	duplo	plastico	1.20	1.80	1.15	.30	2.20	196.18	1.07	INS
30	11+11	0	100	40	simples	madeira	1.40	2.10	.35	.60	3.70	195.57	1.07	INS
86	11+15	20	60	0	simples	madeira	.75	1.20	.55	1.55	3.70	195.44	1.07	INS
53	11+15	0	60	40	simples	metal	1.20	1.80	.55	.60	4.20	194.69	1.06	INS
22	11+11	0	60	100	simples	madeira	1.40	2.10	.55	.30	3.70	194.45	1.06	INS
77	11+15	20	20	40	simples	metal	.75	1.20	1.15	.60	4.20	194.23	1.06	INS
20	11+11	0	60	40	duplo	plastico	1.40	2.10	.55	.60	2.20	193.04	1.05	INS
31	11+11	0	100	40	duplo	metal	1.40	2.10	.35	.60	3.10	190.96	1.04	INS
54	11+15	0	60	40	simples	madeira	1.20	1.80	.55	.60	3.70	190.85	1.04	INS
87	11+15	20	60	0	duplo	metal	.75	1.20	.55	1.55	3.10	190.83	1.04	INS
78	11+15	20	20	40	simples	madeira	.75	1.20	1.15	.60	3.70	190.39	1.04	INS
97	11+15	20	100	0	simples	metal	.75	1.20	.35	1.55	4.20	190.30	1.04	INS
23	11+11	0	60	100	duplo	metal	1.40	2.10	.55	.30	3.10	189.84	1.04	INS
33	11+11	0	100	100	simples	metal	1.40	2.10	.35	.30	4.20	189.30	1.03	INS
121	22	20	60	0	simples	metal	.95	.95	.55	1.55	4.20	187.86	1.03	INS
145	22	60	20	0	simples	metal	.35	.35	1.15	1.55	4.20	187.40	1.02	INS
98	11+15	20	100	0	simples	madeira	.75	1.20	.35	1.55	3.70	186.46	1.02	INS
55	11+15	0	60	40	duplo	metal	1.20	1.80	.55	.60	3.10	186.24	1.02	INS
65	11+15	0	100	40	simples	metal	1.20	1.80	.35	.60	4.20	185.70	1.01	INS
79	11+15	20	20	40	duplo	metal	.75	1.20	1.15	.60	3.10	185.78	1.01	INS
34	11+11	0	100	100	simples	madeira	1.40	2.10	.35	.30	3.70	185.46	1.01	INS
57	11+15	0	60	100	simples	metal	1.20	1.80	.55	.30	4.20	184.58	1.01	INS
81	11+15	20	20	100	simples	metal	.75	1.20	1.15	.30	4.20	184.12	1.00	INS
122	22	20	60	0	simples	madeira	.95	.95	.55	1.55	3.70	184.02	1.00	INS
88	11+15	20	60	0	duplo	plastico	.75	1.20	.55	1.55	2.20	183.92	1.00	INS
146	22	60	20	0	simples	madeira	.35	.35	1.15	1.55	3.70	183.56	1.00	INS
113	22	20	20	40	simples	metal	.95	.95	1.15	.60	4.20	182.80	1.00	INS
99	11+15	20	100	0	duplo	metal	.75	1.20	.35	1.55	3.10	181.85	.99	INS
82	11+15	20	20	100	simples	madeira	.75	1.20	1.15	.30	3.70	180.28	.98	INS
123	22	20	60	0	duplo	metal	.95	.95	.55	1.55	3.10	179.41	.98	INS
114	22	20	20	40	simples	madeira	.95	.95	1.15	.60	3.70	178.96	.98	INS
147	22	60	20	0	duplo	metal	.35	.35	1.15	1.55	3.10	178.95	.98	INS
80	11+15	20	20	40	duplo	plastico	.75	1.20	1.15	.60	2.20	178.87	.98	INS
133	22	20	100	0	simples	metal	.95	.95	.35	1.55	4.20	178.87	.98	INS
83	11+15	20	20	100	duplo	metal	.75	1.20	1.15	.30	3.10	175.67	.96	INS
134	22	20	100	0	simples	madeira	.95	.95	.35	1.55	3.70	175.03	.96	INS
100	11+15	20	100	0	duplo	plastico	.75	1.20	.35	1.55	2.20	174.94	.95	INS
115	22	20	20	40	duplo	metal	.95	.95	1.15	.60	3.10	174.36	.95	INS
117	22	20	20	100	simples	metal	.95	.95	1.15	.30	4.20	172.69	.94	INS
124	22	20	60	0	duplo	plastico	.95	.95	.55	1.55	2.20	172.50	.94	INS
148	22	60	20	0	duplo	plastico	.35	.35	1.15	1.55	2.20	172.04	.94	INS
135	22	20	100	0	duplo	metal	.95	.95	.35	1.55	3.10	170.42	.93	INS
118	22	20	20	100	simples	madeira	.95	.95	1.15	.30	3.70	168.85	.92	INS
84	11+15	20	20	100	duplo	plastico	.75	1.20	1.15	.30	2.20	168.76	.92	INS
116	22	20	20	40	duplo	plastico	.95	.95	1.15	.60	2.20	167.44	.91	INS
119	22	20	20	100	duplo	metal	.95	.95	1.15	.30	3.10	164.25	.90	INS
136	22	20	100	0	duplo	plastico	.95	.95	.35	1.55	2.20	163.51	.89	INS
157	22	60	60	0	simples	metal	.35	.35	.55	1.55	4.20	160.44	.88	INS
120	22	20	20	100	duplo	plastico	.95	.95	1.15	.30	2.20	157.33	.86	INS
158	22	60	60	0	simples	madeira	.35	.35	.55	1.55	3.70	156.60	.85	INS
149	22	60	20	40	simples	metal	.35	.35	1.15	.60	4.20	155.39	.85	INS
159	22	60	60	0	duplo	metal	.35	.35	.55	1.55	3.10	151.99	.83	INS
150	22	60	20	40	simples	madeira	.35	.35	1.15	.60	3.70	151.55	.83	INS
169	22	60	100	0	simples	metal	.35	.35	.35	1.55	4.20	151.45	.83	INS
170	22	60	100	0	simples	madeira	.35	.35	.35	1.55	3.70	147.61	.81	INS
151	22	60	20	40	duplo	metal	.35	.35	1.15	.60	3.10	146.94	.80	INS
153	22	60	20	100	simples	metal	.35	.35	1.15	.30	4.20	145.28	.79	INS
160	22	60	60	0	duplo	plastico	.35	.35	.55	1.55	2.20	145.08	.79	INS
171	22	60	100	0	duplo	metal	.35	.35	.35	1.55	3.10	143.01	.78	INS
154	22	60	20	100	simples	madeira	.35	.35	1.15	.30	3.70	141.44	.77	INS
152	22	60	20	40	duplo	plastico	.35	.35	1.15	.60	2.20	140.03	.76	INS
155	22	60	20	100	duplo	metal	.35	.35	1.15	.30	3.10	136.83	.75	INS
172	22	60	100	0	duplo	plastico	.35	.35	.35	1.55	2.20	136.09	.74	INS

sol	par	isol	isol	isol	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic3	XNi	cls
ext	ext	ext	cob	pav										
156	22	60	20	100	duplo	plastico	.35	.35	1.15	.30	2.20	129.92	.71	INS
32	11+11	0	100	40	duplo	plastico	1.40	2.10	.35	.60	2.20	184.05	1.00	SUF
24	11+11	0	60	100	duplo	plastico	1.40	2.10	.55	.30	2.20	182.93	1.00	SUF
66	11+15	0	100	40	simples	madeira	1.20	1.80	.35	.60	3.70	181.86	.99	SUF
35	11+11	0	100	100	duplo	metal	1.40	2.10	.35	.30	3.10	180.85	.99	SUF
58	11+15	0	60	100	simples	madeira	1.20	1.80	.55	.30	3.70	180.74	.99	SUF
56	11+15	0	60	40	duplo	plastico	1.20	1.80	.55	.60	2.20	179.33	.98	SUF
67	11+15	0	100	40	duplo	metal	1.20	1.80	.35	.60	3.10	177.25	.97	SUF
59	11+15	0	60	100	duplo	metal	1.20	1.80	.55	.30	3.10	176.13	.96	SUF
69	11+15	0	100	100	simples	metal	1.20	1.80	.35	.30	4.20	175.59	.96	SUF
36	11+11	0	100	100	duplo	plastico	1.40	2.10	.35	.30	2.20	173.94	.95	SUF
70	11+15	0	100	100	simples	madeira	1.20	1.80	.35	.30	3.70	171.75	.94	SUF
68	11+15	0	100	40	duplo	plastico	1.20	1.80	.35	.60	2.20	170.34	.93	SUF
60	11+15	0	60	100	duplo	plastico	1.20	1.80	.55	.30	2.20	169.22	.92	SUF
89	11+15	20	60	40	simples	metal	.75	1.20	.55	.60	4.20	167.27	.91	SUF
71	11+15	0	100	100	duplo	metal	1.20	1.80	.35	.30	3.10	167.15	.91	SUF
90	11+15	20	60	40	simples	madeira	.75	1.20	.55	.60	3.70	163.43	.89	SUF
72	11+15	0	100	100	duplo	plastico	1.20	1.80	.35	.30	2.20	160.23	.87	SUF
91	11+15	20	60	40	duplo	metal	.75	1.20	.55	.60	3.10	158.82	.87	BOM
101	11+15	20	100	40	simples	metal	.75	1.20	.35	.60	4.20	158.28	.86	BOM
93	11+15	20	60	100	simples	metal	.75	1.20	.55	.30	4.20	157.16	.86	BOM
125	22	20	60	40	simples	metal	.95	.95	.55	.60	4.20	155.85	.85	BOM
102	11+15	20	100	40	simples	madeira	.75	1.20	.35	.60	3.70	154.44	.84	BOM
94	11+15	20	60	100	simples	madeira	.75	1.20	.55	.30	3.70	153.32	.84	BOM
126	22	20	60	40	simples	madeira	.95	.95	.55	.60	3.70	152.01	.83	BOM
92	11+15	20	60	40	duplo	plastico	.75	1.20	.55	.60	2.20	151.91	.83	BOM
103	11+15	20	100	40	duplo	metal	.75	1.20	.35	.60	3.10	149.84	.82	BOM
95	11+15	20	60	100	duplo	metal	.75	1.20	.55	.30	3.10	148.71	.81	BOM
105	11+15	20	100	100	simples	metal	.75	1.20	.35	.30	4.20	148.18	.81	BOM
127	22	20	60	40	duplo	metal	.95	.95	.55	.60	3.10	147.40	.80	BOM
137	22	20	100	40	simples	metal	.95	.95	.35	.60	4.20	146.86	.80	BOM
129	22	20	60	100	simples	metal	.95	.95	.55	.30	4.20	145.74	.80	BOM
106	11+15	20	100	100	simples	madeira	.75	1.20	.35	.30	3.70	144.34	.79	BOM
138	22	20	100	40	simples	madeira	.95	.95	.35	.60	3.70	143.02	.78	BOM
104	11+15	20	100	40	duplo	plastico	.75	1.20	.35	.60	2.20	142.92	.78	BOM
130	22	20	60	100	simples	madeira	.95	.95	.55	.30	3.70	141.90	.77	BOM
96	11+15	20	60	100	duplo	plastico	.75	1.20	.55	.30	2.20	141.80	.77	BOM
128	22	20	60	40	duplo	plastico	.95	.95	.55	.60	2.20	140.49	.77	BOM
107	11+15	20	100	100	duplo	metal	.75	1.20	.35	.30	3.10	139.73	.76	BOM
139	22	20	100	40	duplo	metal	.95	.95	.35	.60	3.10	138.41	.76	BOM
131	22	20	60	100	duplo	metal	.95	.95	.55	.30	3.10	137.29	.75	BOM
141	22	20	100	100	simples	metal	.95	.95	.35	.30	4.20	136.75	.75	BOM
142	22	20	100	100	simples	madeira	.95	.95	.35	.30	3.70	132.91	.73	BOM
108	11+15	20	100	100	duplo	plastico	.75	1.20	.35	.30	2.20	132.82	.72	BOM
140	22	20	100	40	duplo	plastico	.95	.95	.35	.60	2.20	131.50	.72	BOM
132	22	20	60	100	duplo	plastico	.95	.95	.55	.30	2.20	130.38	.71	BOM
161	22	60	60	40	simples	metal	.35	.35	.55	.60	4.20	128.43	.70	BOM
143	22	20	100	100	duplo	metal	.95	.95	.35	.30	3.10	128.30	.70	BOM
162	22	60	60	40	simples	madeira	.35	.35	.55	.60	3.70	124.59	.68	BOM
144	22	20	100	100	duplo	plastico	.95	.95	.35	.30	2.20	121.39	.66	BOM
173	22	60	100	40	simples	metal	.35	.35	.35	.60	4.20	119.44	.65	BOM
165	22	60	60	100	simples	metal	.35	.35	.55	.30	4.20	118.32	.65	BOM
174	22	60	100	40	simples	madeira	.35	.35	.35	.60	3.70	115.60	.63	BOM
166	22	60	60	100	simples	madeira	.35	.35	.55	.30	3.70	114.48	.62	BOM
177	22	60	100	100	simples	metal	.35	.35	.35	.30	4.20	109.33	.60	BOM
178	22	60	100	100	simples	madeira	.35	.35	.35	.30	3.70	105.49	.58	BOM
163	22	60	60	40	duplo	metal	.35	.35	.55	.60	3.10	119.98	.65	MB
164	22	60	60	40	duplo	plastico	.35	.35	.55	.60	2.20	113.07	.62	MB
175	22	60	100	40	duplo	metal	.35	.35	.35	.60	3.10	111.00	.61	MB
167	22	60	60	100	duplo	metal	.35	.35	.55	.30	3.10	109.87	.60	MB

sol	par ext	isol ext	isol cob	isol pav	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic3	%Ni	cl
176	22	60	100	40	duplo	plastico	.35	.35	.35	.60	2.20	104.08	.57	M
168	22	60	60	100	duplo	plastico	.35	.35	.55	.30	2.20	102.96	.56	M
179	22	60	100	100	duplo	metal	.35	.35	.35	.30	3.10	100.89	.55	M
180	22	60	100	100	duplo	plastico	.35	.35	.35	.30	2.20	93.97	.51	M

tabela 4.4

vivenda

zona climática de inverno II
com ganhos solares

sol	par	isol	isol	isol	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic1	%Ni	cls
ext	ext	ext	cob	pav										
1	11+11	0	20	0	simples	metal	1.40	2.10	1.15	1.55	4.20	48.00	.80	BOM
3	11+11	0	20	0	duplo	metal	1.40	2.10	1.15	1.55	3.10	48.04	.80	BOM
2	11+11	0	20	0	simples	madeira	1.40	2.10	1.15	1.55	3.70	47.05	.78	BOM
4	11+11	0	20	0	duplo	plastico	1.40	2.10	1.15	1.55	2.20	46.33	.77	BOM
37	11+15	0	20	0	simples	metal	1.20	1.80	1.15	1.55	4.20	44.62	.74	BOM
39	11+15	0	20	0	duplo	metal	1.20	1.80	1.15	1.55	3.10	44.65	.74	BOM
38	11+15	0	20	0	simples	madeira	1.20	1.80	1.15	1.55	3.70	43.68	.72	BOM
40	11+15	0	20	0	duplo	plastico	1.20	1.80	1.15	1.55	2.20	42.94	.71	BOM
13	11+11	0	60	0	simples	metal	1.40	2.10	.55	1.55	4.20	41.38	.69	BOM
15	11+11	0	60	0	duplo	metal	1.40	2.10	.55	1.55	3.10	41.38	.69	BOM
14	11+11	0	60	0	simples	madeira	1.40	2.10	.55	1.55	3.70	40.44	.67	BOM
5	11+11	0	20	40	simples	metal	1.40	2.10	1.15	.60	4.20	40.14	.66	BOM
7	11+11	0	20	40	duplo	metal	1.40	2.10	1.15	.60	3.10	40.13	.66	BOM
16	11+11	0	60	0	duplo	plastico	1.40	2.10	.55	1.55	2.20	39.68	.66	BOM
6	11+11	0	20	40	simples	madeira	1.40	2.10	1.15	.60	3.70	39.20	.65	BOM
25	11+11	0	100	0	simples	metal	1.40	2.10	.35	1.55	4.20	39.18	.65	BOM
27	11+11	0	100	0	duplo	metal	1.40	2.10	.35	1.55	3.10	39.17	.65	BOM
8	11+11	0	20	40	duplo	plastico	1.40	2.10	1.15	.60	2.20	38.44	.64	BOM
26	11+11	0	100	0	simples	madeira	1.40	2.10	.35	1.55	3.70	38.25	.63	BOM
49	11+15	0	60	0	simples	metal	1.20	1.80	.55	1.55	4.20	38.03	.63	BOM
51	11+15	0	60	0	duplo	metal	1.20	1.80	.55	1.55	3.10	38.01	.63	BOM
73	11+15	20	20	0	simples	metal	.75	1.20	1.15	1.55	4.20	37.92	.63	BOM
75	11+15	20	20	0	duplo	metal	.75	1.20	1.15	1.55	3.10	37.90	.63	BOM
9	11+11	0	20	100	simples	metal	1.40	2.10	1.15	.30	4.20	37.68	.62	BOM
11	11+11	0	20	100	duplo	metal	1.40	2.10	1.15	.30	3.10	37.65	.62	BOM
28	11+11	0	100	0	duplo	plastico	1.40	2.10	.35	1.55	2.20	37.47	.62	BOM
50	11+15	0	60	0	simples	madeira	1.20	1.80	.55	1.55	3.70	37.10	.61	BOM
74	11+15	20	20	0	simples	madeira	.75	1.20	1.15	1.55	3.70	36.99	.61	BOM
41	11+15	0	20	40	simples	metal	1.20	1.80	1.15	.60	4.20	36.80	.61	BOM
10	11+11	0	20	100	simples	madeira	1.40	2.10	1.15	.30	3.70	36.75	.61	BOM
43	11+15	0	20	40	duplo	metal	1.20	1.80	1.15	.60	3.10	36.77	.61	BOM
52	11+15	0	60	0	duplo	plastico	1.20	1.80	.55	1.55	2.20	36.32	.60	BOM
76	11+15	20	20	0	duplo	plastico	.75	1.20	1.15	1.55	2.20	36.20	.60	BOM
12	11+11	0	20	100	duplo	plastico	1.40	2.10	1.15	.30	2.20	35.96	.60	BOM
42	11+15	0	20	40	simples	madeira	1.20	1.80	1.15	.60	3.70	35.87	.59	BOM
61	11+15	0	100	0	simples	metal	1.20	1.80	.35	1.55	4.20	35.85	.59	BOM
63	11+15	0	100	0	duplo	metal	1.20	1.80	.35	1.55	3.10	35.81	.59	BOM
109	22	20	20	0	simples	metal	.95	.95	1.15	1.55	4.20	35.15	.58	BOM
111	22	20	20	0	duplo	metal	.95	.95	1.15	1.55	3.10	35.10	.58	BOM
44	11+15	0	20	40	duplo	plastico	1.20	1.80	1.15	.60	2.20	35.08	.58	BOM
62	11+15	0	100	0	simples	madeira	1.20	1.80	.35	1.55	3.70	34.92	.58	BOM
45	11+15	0	20	100	simples	metal	1.20	1.80	1.15	.30	4.20	34.36	.57	BOM
47	11+15	0	20	100	duplo	metal	1.20	1.80	1.15	.30	3.10	34.30	.57	BOM
110	22	20	20	0	simples	madeira	.95	.95	1.15	1.55	3.70	34.22	.57	BOM
64	11+15	0	100	0	duplo	plastico	1.20	1.80	.35	1.55	2.20	34.12	.57	BOM
17	11+11	0	60	40	simples	metal	1.40	2.10	.55	.60	4.20	33.60	.56	BOM
19	11+11	0	60	40	duplo	metal	1.40	2.10	.55	.60	3.10	33.54	.56	BOM
46	11+15	0	20	100	simples	madeira	1.20	1.80	1.15	.30	3.70	33.43	.55	BOM
112	22	20	20	0	duplo	plastico	.95	.95	1.15	1.55	2.20	33.42	.55	BOM
18	11+11	0	60	40	simples	madeira	1.40	2.10	.55	.60	3.70	32.68	.54	BOM
48	11+15	0	20	100	duplo	plastico	1.20	1.80	1.15	.30	2.20	32.62	.54	BOM
20	11+11	0	60	40	duplo	plastico	1.40	2.10	.55	.60	2.20	31.86	.53	BOM
29	11+11	0	100	40	simples	metal	1.40	2.10	.35	.60	4.20	31.45	.52	BOM

sol	par	isol	isol	isol	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic1	XNi	cls
ext	ext	ext	cob	pav										
85	11+15	20	60	0	simples	metal	.75	1.20	.55	1.55	4.20	31.41	.52	BOM
31	11+11	0	100	40	duplo	metal	1.40	2.10	.35	.60	3.10	31.36	.52	BOM
87	11+15	20	60	0	duplo	metal	.75	1.20	.55	1.55	3.10	31.33	.52	BOM
21	11+11	0	60	100	simples	metal	1.40	2.10	.55	.30	4.20	31.18	.52	BOM
23	11+11	0	60	100	duplo	metal	1.40	2.10	.55	.30	3.10	31.09	.52	BOM
30	11+11	0	100	40	simples	madeira	1.40	2.10	.35	.60	3.70	30.53	.51	BOM
86	11+15	20	60	0	simples	madeira	.75	1.20	.55	1.55	3.70	30.50	.51	BOM
53	11+15	0	60	40	simples	metal	1.20	1.80	.55	.60	4.20	30.32	.50	BOM
22	11+11	0	60	100	simples	madeira	1.40	2.10	.55	.30	3.70	30.26	.50	BOM
55	11+15	0	60	40	duplo	metal	1.20	1.80	.55	.60	3.10	30.22	.50	BOM
77	11+15	20	20	40	simples	metal	.75	1.20	1.15	.60	4.20	30.21	.50	BOM
79	11+15	20	20	40	duplo	metal	.75	1.20	1.15	.60	3.10	30.11	.50	BOM
32	11+11	0	100	40	duplo	plastico	1.40	2.10	.35	.60	2.20	29.69	.49	BOM
88	11+15	20	60	0	duplo	plastico	.75	1.20	.55	1.55	2.20	29.66	.49	BOM
24	11+11	0	60	100	duplo	plastico	1.40	2.10	.55	.30	2.20	29.42	.49	BOM
54	11+15	0	60	40	simples	madeira	1.20	1.80	.55	.60	3.70	29.40	.49	BOM
78	11+15	20	20	40	simples	madeira	.75	1.20	1.15	.60	3.70	29.30	.49	BOM
97	11+15	20	100	0	simples	metal	.75	1.20	.35	1.55	4.20	29.27	.48	BOM
99	11+15	20	100	0	duplo	metal	.75	1.20	.35	1.55	3.10	29.16	.48	BOM
33	11+11	0	100	100	simples	metal	1.40	2.10	.35	.30	4.20	29.04	.48	BOM
35	11+11	0	100	100	duplo	metal	1.40	2.10	.35	.30	3.10	28.92	.48	BOM
121	22	20	60	0	simples	metal	.95	.95	.55	1.55	4.20	28.70	.48	BOM
56	11+15	0	60	40	duplo	plastico	1.20	1.80	.55	.60	2.20	28.56	.47	BOM
123	22	20	60	0	duplo	metal	.95	.95	.55	1.55	3.10	28.57	.47	BOM
145	22	60	20	0	simples	metal	.35	.35	1.15	1.55	4.20	28.59	.47	BOM
80	11+15	20	20	40	duplo	plastico	.75	1.20	1.15	.60	2.20	28.44	.47	BOM
147	22	60	20	0	duplo	metal	.35	.35	1.15	1.55	3.10	28.46	.47	BOM
98	11+15	20	100	0	simples	madeira	.75	1.20	.35	1.55	3.70	28.36	.47	BOM
34	11+11	0	100	100	simples	madeira	1.40	2.10	.35	.30	3.70	28.13	.47	BOM
65	11+15	0	100	40	simples	metal	1.20	1.80	.35	.60	4.20	28.19	.47	BOM
67	11+15	0	100	40	duplo	metal	1.20	1.80	.35	.60	3.10	28.06	.46	BOM
57	11+15	0	60	100	simples	metal	1.20	1.80	.55	.30	4.20	27.92	.46	BOM
81	11+15	20	20	100	simples	metal	.75	1.20	1.15	.30	4.20	27.81	.46	BOM
59	11+15	0	60	100	duplo	metal	1.20	1.80	.55	.30	3.10	27.79	.46	BOM
122	22	20	60	0	simples	madeira	.95	.95	.55	1.55	3.70	27.79	.46	BOM
83	11+15	20	20	100	duplo	metal	.75	1.20	1.15	.30	3.10	27.68	.46	BOM
146	22	60	20	0	simples	madeira	.35	.35	1.15	1.55	3.70	27.68	.46	BOM
100	11+15	20	100	0	duplo	plastico	.75	1.20	.35	1.55	2.20	27.50	.46	BOM
113	22	20	20	40	simples	metal	.95	.95	1.15	.60	4.20	27.50	.46	BOM
115	22	20	20	40	duplo	metal	.95	.95	1.15	.60	3.10	27.36	.45	BOM
36	11+11	0	100	100	duplo	plastico	1.40	2.10	.35	.30	2.20	27.27	.45	BOM
66	11+15	0	100	40	simples	madeira	1.20	1.80	.35	.60	3.70	27.28	.45	BOM
58	11+15	0	60	100	simples	madeira	1.20	1.80	.55	.30	3.70	27.02	.45	BOM
82	11+15	20	20	100	simples	madeira	.75	1.20	1.15	.30	3.70	26.91	.45	BOM
124	22	20	60	0	duplo	plastico	.95	.95	.55	1.55	2.20	26.92	.45	BOM
148	22	60	20	0	duplo	plastico	.35	.35	1.15	1.55	2.20	26.81	.44	BOM
114	22	20	20	40	simples	madeira	.95	.95	1.15	.60	3.70	26.60	.44	BOM
133	22	20	100	0	simples	metal	.95	.95	.35	1.55	4.20	26.58	.44	BOM
68	11+15	0	100	40	duplo	plastico	1.20	1.80	.35	.60	2.20	26.41	.44	BOM
135	22	20	100	0	duplo	metal	.95	.95	.35	1.55	3.10	26.43	.44	BOM
60	11+15	0	60	100	duplo	plastico	1.20	1.80	.55	.30	2.20	26.14	.43	BOM
84	11+15	20	20	100	duplo	plastico	.75	1.20	1.15	.30	2.20	26.03	.43	BOM
69	11+15	0	100	100	simples	metal	1.20	1.80	.35	.30	4.20	25.81	.43	BOM
116	22	20	20	40	duplo	plastico	.95	.95	1.15	.60	2.20	25.72	.43	BOM
71	11+15	0	100	100	duplo	metal	1.20	1.80	.35	.30	3.10	25.65	.42	BOM
134	22	20	100	0	simples	madeira	.95	.95	.35	1.55	3.70	25.68	.43	BOM
117	22	20	20	100	simples	metal	.95	.95	1.15	.30	4.20	25.13	.42	BOM
70	11+15	0	100	100	simples	madeira	1.20	1.80	.35	.30	3.70	24.91	.41	BOM
119	22	20	20	100	duplo	metal	.95	.95	1.15	.30	3.10	24.96	.41	BOM
136	22	20	100	0	duplo	plastico	.95	.95	.35	1.55	2.20	24.79	.41	BOM
118	22	20	20	100	simples	madeira	.95	.95	1.15	.30	3.70	24.24	.40	BOM
72	11+15	0	100	100	duplo	plastico	1.20	1.80	.35	.30	2.20	24.02	.40	BOM
120	22	20	20	100	duplo	plastico	.95	.95	1.15	.30	2.20	23.33	.39	BOM

sol	par ext	isol ext	isol cob	isol pav	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic1	Xni	cls
157	22	60	60	0	simples	metal	.35	.35	.55	1.55	4.20	22.30	.37	BOM
159	22	60	60	0	duplo	metal	.35	.35	.55	1.55	3.10	22.09	.37	BOM
158	22	60	60	0	simples	madeira	.35	.35	.55	1.55	3.70	21.42	.35	BOM
149	22	60	20	40	simples	metal	.35	.35	1.15	.60	4.20	21.15	.35	BOM
151	22	60	20	40	duplo	metal	.35	.35	1.15	.60	3.10	20.91	.35	BOM
160	22	60	60	0	duplo	plastico	.35	.35	.55	1.55	2.20	20.48	.34	BOM
150	22	60	20	40	simples	madeira	.35	.35	1.15	.60	3.70	20.28	.34	BOM
169	22	60	100	0	simples	metal	.35	.35	.35	1.55	4.20	20.26	.34	BOM
171	22	60	100	0	duplo	metal	.35	.35	.35	1.55	3.10	20.01	.33	BOM
170	22	60	100	0	simples	madeira	.35	.35	.35	1.55	3.70	19.40	.32	BOM
152	22	60	20	40	duplo	plastico	.35	.35	1.15	.60	2.20	19.33	.32	BOM
153	22	60	20	100	simples	metal	.35	.35	1.15	.30	4.20	18.87	.31	BOM
155	22	60	20	100	duplo	metal	.35	.35	1.15	.30	3.10	18.60	.31	BOM
172	22	60	100	0	duplo	plastico	.35	.35	.35	1.55	2.20	18.43	.31	BOM
154	22	60	20	100	simples	madeira	.35	.35	1.15	.30	3.70	18.02	.30	BOM
156	22	60	20	100	duplo	plastico	.35	.35	1.15	.30	2.20	17.04	.28	BOM
89	11+15	20	60	40	simples	metal	.75	1.20	.55	.60	4.20	23.87	.40	MB
91	11+15	20	60	40	duplo	metal	.75	1.20	.55	.60	3.10	23.68	.39	MB
90	11+15	20	60	40	simples	madeira	.75	1.20	.55	.60	3.70	22.99	.38	MB
92	11+15	20	60	40	duplo	plastico	.75	1.20	.55	.60	2.20	22.07	.37	MB
101	11+15	20	100	40	simples	metal	.75	1.20	.35	.60	4.20	21.55	.36	MB
93	11+15	20	60	100	simples	metal	.75	1.20	.55	.30	4.20	21.55	.36	MB
103	11+15	20	100	40	duplo	metal	.75	1.20	.35	.60	3.10	21.58	.36	MB
95	11+15	20	60	100	duplo	metal	.75	1.20	.55	.30	3.10	21.32	.35	MB
102	11+15	20	100	40	simples	madeira	.75	1.20	.35	.60	3.70	20.93	.35	MB
94	11+15	20	60	100	simples	madeira	.75	1.20	.55	.30	3.70	20.68	.34	MB
104	11+15	20	100	40	duplo	plastico	.75	1.20	.35	.60	2.20	19.99	.33	MB
96	11+15	20	60	100	duplo	plastico	.75	1.20	.55	.30	2.20	19.73	.33	MB
105	11+15	20	100	100	simples	metal	.75	1.20	.35	.30	4.20	19.52	.32	MB
107	11+15	20	100	100	duplo	metal	.75	1.20	.35	.30	3.10	19.26	.32	MB
106	11+15	20	100	100	simples	madeira	.75	1.20	.35	.30	3.70	18.66	.31	MB
108	11+15	20	100	100	duplo	plastico	.75	1.20	.35	.30	2.20	17.69	.29	MB
125	22	20	60	40	simples	metal	.95	.95	.55	.60	4.20	21.25	.35	EXC
127	22	20	60	40	duplo	metal	.95	.95	.55	.60	3.10	21.02	.35	EXC
126	22	20	60	40	simples	madeira	.95	.95	.55	.60	3.70	20.38	.34	EXC
128	22	20	60	40	duplo	plastico	.95	.95	.55	.60	2.20	19.43	.32	EXC
137	22	20	100	40	simples	metal	.95	.95	.35	.60	4.20	19.23	.32	EXC
129	22	20	60	100	simples	metal	.95	.95	.55	.30	4.20	18.98	.31	EXC
139	22	20	100	40	duplo	metal	.95	.95	.35	.60	3.10	18.96	.31	EXC
131	22	20	60	100	duplo	metal	.95	.95	.55	.30	3.10	18.70	.31	EXC
138	22	20	100	40	simples	madeira	.95	.95	.35	.60	3.70	18.37	.30	EXC
130	22	20	60	100	simples	madeira	.95	.95	.55	.30	3.70	18.12	.30	EXC
140	22	20	100	40	duplo	plastico	.95	.95	.35	.60	2.20	17.39	.29	EXC
132	22	20	60	100	duplo	plastico	.95	.95	.55	.30	2.20	17.14	.28	EXC
141	22	20	100	100	simples	metal	.95	.95	.35	.30	4.20	16.99	.28	EXC
143	22	20	100	100	duplo	metal	.95	.95	.35	.30	3.10	16.68	.28	EXC
142	22	20	100	100	simples	madeira	.95	.95	.35	.30	3.70	16.16	.27	EXC
144	22	20	100	100	duplo	plastico	.95	.95	.35	.30	2.20	15.15	.25	EXC
161	22	60	60	40	simples	metal	.35	.35	.55	.60	4.20	15.19	.25	EXC
163	22	60	60	40	duplo	metal	.35	.35	.55	.60	3.10	14.84	.25	EXC
162	22	60	60	40	simples	madeira	.35	.35	.55	.60	3.70	14.38	.24	EXC
164	22	60	60	40	duplo	plastico	.35	.35	.55	.60	2.20	13.35	.22	EXC
173	22	60	100	40	simples	metal	.35	.35	.35	.60	4.20	13.30	.22	EXC
165	22	60	60	100	simples	metal	.35	.35	.55	.30	4.20	13.07	.22	EXC
175	22	60	100	40	duplo	metal	.35	.35	.35	.60	3.10	12.91	.21	EXC
167	22	60	60	100	duplo	metal	.35	.35	.55	.30	3.10	12.67	.21	EXC
174	22	60	100	40	simples	madeira	.35	.35	.35	.60	3.70	12.51	.21	EXC
166	22	60	60	100	simples	madeira	.35	.35	.55	.30	3.70	12.28	.20	EXC
176	22	60	100	40	duplo	plastico	.35	.35	.35	.60	2.20	11.46	.19	EXC
168	22	60	60	100	duplo	plastico	.35	.35	.55	.30	2.20	11.23	.19	EXC
177	22	60	100	100	simples	metal	.35	.35	.35	.30	4.20	11.24	.19	EXC

sol	par ext	isol ext	isol cob	isol pav	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic1	%Ni	cls
179	22	60	100	100	duplo	metal	.35	.35	.35	.30	3.10	10.81	.18	EXC
178	22	60	100	100	simples	madeira	.35	.35	.35	.30	3.70	10.48	.17	EXC
180	22	60	100	100	duplo	plastico	.35	.35	.35	.30	2.20	9.42	.16	EXC

tabela 4.5

vivenda
zona climática de inverno I2
com ganhos solares

sol	par ext	isol ext	isol cob	isol pav	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic2	%wi	cls
1	11+11	0	20	0	simples	metal	1.40	2.10	1.15	1.55	4.20	109.90	1.06	INS
3	11+11	0	20	0	duplo	metal	1.40	2.10	1.15	1.55	3.10	108.47	1.05	INS
2	11+11	0	20	0	simples	madeira	1.40	2.10	1.15	1.55	3.70	107.98	1.04	INS
4	11+11	0	20	0	duplo	plastico	1.40	2.10	1.15	1.55	2.20	105.01	1.01	INS
37	11+15	0	20	0	simples	metal	1.20	1.80	1.15	1.55	4.20	103.05	1.00	INS
39	11+15	0	20	0	duplo	metal	1.20	1.80	1.15	1.55	3.10	101.61	.98	INS
38	11+15	0	20	0	simples	madeira	1.20	1.80	1.15	1.55	3.70	101.13	.98	INS
40	11+15	0	20	0	duplo	plastico	1.20	1.80	1.15	1.55	2.20	98.16	.95	INS
13	11+11	0	60	0	simples	metal	1.40	2.10	.55	1.55	4.20	96.44	.93	INS
15	11+11	0	60	0	duplo	metal	1.40	2.10	.55	1.55	3.10	95.00	.92	INS
14	11+11	0	60	0	simples	madeira	1.40	2.10	.55	1.55	3.70	94.52	.91	INS
5	11+11	0	20	40	simples	metal	1.40	2.10	1.15	.60	4.20	93.92	.91	INS
7	11+11	0	20	40	duplo	metal	1.40	2.10	1.15	.60	3.10	92.47	.89	INS
6	11+11	0	20	40	simples	madeira	1.40	2.10	1.15	.60	3.70	92.00	.89	INS
25	11+11	0	100	0	simples	metal	1.40	2.10	.35	1.55	4.20	91.95	.89	INS
16	11+11	0	60	0	duplo	plastico	1.40	2.10	.55	1.55	2.20	91.54	.88	INS
27	11+11	0	100	0	duplo	metal	1.40	2.10	.35	1.55	3.10	90.51	.87	INS
26	11+11	0	100	0	simples	madeira	1.40	2.10	.35	1.55	3.70	90.04	.87	INS
49	11+15	0	60	0	simples	metal	1.20	1.80	.55	1.55	4.20	89.60	.87	INS
73	11+15	20	20	0	simples	metal	.75	1.20	1.15	1.55	4.20	89.37	.86	INS
8	11+11	0	20	40	duplo	plastico	1.40	2.10	1.15	.60	2.20	89.02	.86	INS
9	11+11	0	20	100	simples	metal	1.40	2.10	1.15	.30	4.20	88.87	.86	INS
51	11+15	0	60	0	duplo	metal	1.20	1.80	.55	1.55	3.10	88.15	.85	INS
75	11+15	20	20	0	duplo	metal	.75	1.20	1.15	1.55	3.10	87.92	.85	INS
50	11+15	0	60	0	simples	madeira	1.20	1.80	.55	1.55	3.70	87.68	.85	INS
11	11+11	0	20	100	duplo	metal	1.40	2.10	1.15	.30	3.10	87.42	.84	INS
74	11+15	20	20	0	simples	madeira	.75	1.20	1.15	1.55	3.70	87.45	.84	INS
28	11+11	0	100	0	duplo	plastico	1.40	2.10	.35	1.55	2.20	87.06	.84	INS
41	11+15	0	20	40	simples	metal	1.20	1.80	1.15	.60	4.20	87.08	.84	INS
10	11+11	0	20	100	simples	madeira	1.40	2.10	1.15	.30	3.70	86.96	.84	INS
43	11+15	0	20	40	duplo	metal	1.20	1.80	1.15	.60	3.10	85.63	.83	INS
42	11+15	0	20	40	simples	madeira	1.20	1.80	1.15	.60	3.70	85.16	.82	INS
61	11+15	0	100	0	simples	metal	1.20	1.80	.35	1.55	4.20	85.12	.82	INS
52	11+15	0	60	0	duplo	plastico	1.20	1.80	.55	1.55	2.20	84.70	.82	INS
76	11+15	20	20	0	duplo	plastico	.75	1.20	1.15	1.55	2.20	84.47	.82	INS
12	11+11	0	20	100	duplo	plastico	1.40	2.10	1.15	.30	2.20	83.97	.81	INS
63	11+15	0	100	0	duplo	metal	1.20	1.80	.35	1.55	3.10	83.67	.81	INS
109	22	20	20	0	simples	metal	.95	.95	1.15	1.55	4.20	83.67	.81	INS
62	11+15	0	100	0	simples	madeira	1.20	1.80	.35	1.55	3.70	83.21	.80	INS
111	22	20	20	0	duplo	metal	.95	.95	1.15	1.55	3.10	82.22	.79	INS
44	11+15	0	20	40	duplo	plastico	1.20	1.80	1.15	.60	2.20	82.18	.79	INS
45	11+15	0	20	100	simples	metal	1.20	1.80	1.15	.30	4.20	82.04	.79	INS
110	22	20	20	0	simples	madeira	.95	.95	1.15	1.55	3.70	81.76	.79	INS
47	11+15	0	20	100	duplo	metal	1.20	1.80	1.15	.30	3.10	80.58	.78	INS
64	11+15	0	100	0	duplo	plastico	1.20	1.80	.35	1.55	2.20	80.22	.77	INS
46	11+15	0	20	100	simples	madeira	1.20	1.80	1.15	.30	3.70	80.13	.77	INS
112	22	20	20	0	duplo	plastico	.95	.95	1.15	1.55	2.20	78.77	.76	INS
48	11+15	0	20	100	duplo	plastico	1.20	1.80	1.15	.30	2.20	77.14	.74	INS
85	11+15	20	60	0	simples	metal	.75	1.20	.55	1.55	4.20	75.94	.73	INS
87	11+15	20	60	0	duplo	metal	.75	1.20	.55	1.55	3.10	74.47	.72	INS
86	11+15	20	60	0	simples	madeira	.75	1.20	.55	1.55	3.70	74.04	.71	INS
77	11+15	20	20	40	simples	metal	.75	1.20	1.15	.60	4.20	73.43	.71	INS
79	11+15	20	20	40	duplo	metal	.75	1.20	1.15	.60	3.10	71.96	.69	INS

sol	par ext	isol ext	isol cob	isol pav	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic2	%Ni	cls
78	11+15	20	20	40	simples	madeira	.75	1.20	1.15	.60	3.70	71.52	.69	INS
97	11+15	20	100	0	simples	metal	.75	1.20	.35	1.55	4.20	71.48	.69	INS
88	11+15	20	60	0	duplo	plastico	.75	1.20	.55	1.55	2.20	71.03	.69	INS
121	22	20	60	0	simples	metal	.95	.95	.55	1.55	4.20	70.27	.68	INS
99	11+15	20	100	0	duplo	metal	.75	1.20	.35	1.55	3.10	70.00	.68	INS
145	22	60	20	0	simples	metal	.35	.35	1.15	1.55	4.20	70.04	.68	INS
98	11+15	20	100	0	simples	madeira	.75	1.20	.35	1.55	3.70	69.57	.67	INS
123	22	20	60	0	duplo	metal	.95	.95	.55	1.55	3.10	68.79	.66	INS
80	11+15	20	20	40	duplo	plastico	.75	1.20	1.15	.60	2.20	68.52	.66	INS
147	22	60	20	0	duplo	metal	.35	.35	1.15	1.55	3.10	68.56	.66	INS
81	11+15	20	20	100	simples	metal	.75	1.20	1.15	.30	4.20	68.42	.66	INS
122	22	20	60	0	simples	madeira	.95	.95	.55	1.55	3.70	68.37	.66	INS
146	22	60	20	0	simples	madeira	.35	.35	1.15	1.55	3.70	68.14	.66	INS
113	22	20	20	40	simples	metal	.95	.95	1.15	.60	4.20	67.76	.65	INS
83	11+15	20	20	100	duplo	metal	.75	1.20	1.15	.30	3.10	66.93	.65	INS
82	11+15	20	20	100	simples	madeira	.75	1.20	1.15	.30	3.70	66.51	.64	INS
100	11+15	20	100	0	duplo	plastico	.75	1.20	.35	1.55	2.20	66.56	.64	INS
115	22	20	20	40	duplo	metal	.95	.95	1.15	.60	3.10	66.27	.64	INS
114	22	20	20	40	simples	madeira	.95	.95	1.15	.60	3.70	65.86	.64	INS
133	22	20	100	0	simples	metal	.95	.95	.35	1.55	4.20	65.82	.64	INS
124	22	20	60	0	duplo	plastico	.95	.95	.55	1.55	2.20	65.35	.63	INS
148	22	60	20	0	duplo	plastico	.35	.35	1.15	1.55	2.20	65.12	.63	INS
135	22	20	100	0	duplo	metal	.95	.95	.35	1.55	3.10	64.32	.62	INS
134	22	20	100	0	simples	madeira	.95	.95	.35	1.55	3.70	63.92	.62	INS
84	11+15	20	20	100	duplo	plastico	.75	1.20	1.15	.30	2.20	63.49	.61	INS
116	22	20	20	40	duplo	plastico	.95	.95	1.15	.60	2.20	62.84	.61	INS
117	22	20	20	100	simples	metal	.95	.95	1.15	.30	4.20	62.76	.61	INS
119	22	20	20	100	duplo	metal	.95	.95	1.15	.30	3.10	61.25	.59	INS
118	22	20	20	100	simples	madeira	.95	.95	1.15	.30	3.70	60.86	.59	INS
136	22	20	100	0	duplo	plastico	.95	.95	.35	1.55	2.20	60.89	.59	INS
120	22	20	20	100	duplo	plastico	.95	.95	1.15	.30	2.20	57.83	.56	INS
157	22	60	60	0	simples	metal	.35	.35	.55	1.55	4.20	56.72	.55	INS
159	22	60	60	0	duplo	metal	.35	.35	.55	1.55	3.10	55.19	.53	INS
158	22	60	60	0	simples	madeira	.35	.35	.55	1.55	3.70	54.83	.53	INS
149	22	60	20	40	simples	metal	.35	.35	1.15	.60	4.20	54.23	.52	INS
151	22	60	20	40	duplo	metal	.35	.35	1.15	.60	3.10	52.69	.51	INS
150	22	60	20	40	simples	madeira	.35	.35	1.15	.60	3.70	52.35	.51	INS
169	22	60	100	0	simples	metal	.35	.35	.35	1.55	4.20	52.31	.51	INS
160	22	60	60	0	duplo	plastico	.35	.35	.55	1.55	2.20	51.78	.50	INS
171	22	60	100	0	duplo	metal	.35	.35	.35	1.55	3.10	50.75	.49	INS
170	22	60	100	0	simples	madeira	.35	.35	.35	1.55	3.70	50.43	.49	INS
152	22	60	20	40	duplo	plastico	.35	.35	1.15	.60	2.20	49.29	.48	INS
153	22	60	20	100	simples	metal	.35	.35	1.15	.30	4.20	49.29	.48	INS
155	22	60	20	100	duplo	metal	.35	.35	1.15	.30	3.10	47.72	.46	INS
154	22	60	20	100	simples	madeira	.35	.35	1.15	.30	3.70	47.42	.46	INS
172	22	60	100	0	duplo	plastico	.35	.35	.35	1.55	2.20	47.36	.46	INS
156	22	60	20	100	duplo	plastico	.35	.35	1.15	.30	2.20	44.33	.43	INS
17	11+11	0	60	40	simples	metal	1.40	2.10	.55	.60	4.20	80.48	.78	BOM
19	11+11	0	60	40	duplo	metal	1.40	2.10	.55	.60	3.10	79.02	.76	BOM
18	11+11	0	60	40	simples	madeira	1.40	2.10	.55	.60	3.70	78.57	.76	BOM
29	11+11	0	100	40	simples	metal	1.40	2.10	.35	.60	4.20	76.01	.73	BOM
20	11+11	0	60	40	duplo	plastico	1.40	2.10	.55	.60	2.20	75.57	.73	BOM
21	11+11	0	60	100	simples	metal	1.40	2.10	.55	.30	4.20	75.45	.73	BOM
31	11+11	0	100	40	duplo	metal	1.40	2.10	.35	.60	3.10	74.54	.72	BOM
30	11+11	0	100	40	simples	madeira	1.40	2.10	.35	.60	3.70	74.10	.72	BOM
23	11+11	0	60	100	duplo	metal	1.40	2.10	.55	.30	3.10	73.98	.71	BOM
53	11+15	0	60	40	simples	metal	1.20	1.80	.55	.60	4.20	73.66	.71	BOM
22	11+11	0	60	100	simples	madeira	1.40	2.10	.55	.30	3.70	73.54	.71	BOM
55	11+15	0	60	40	duplo	metal	1.20	1.80	.55	.60	3.10	72.19	.70	BOM
54	11+15	0	60	40	simples	madeira	1.20	1.80	.55	.60	3.70	71.75	.69	BOM
32	11+11	0	100	40	duplo	plastico	1.40	2.10	.35	.60	2.20	71.10	.69	BOM
33	11+11	0	100	100	simples	metal	1.40	2.10	.35	.30	4.20	70.99	.69	BOM

sol	par	isol	isol	isol	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic2	XNi	cls
ext	ext	ext	cob	pav										
24	11+11	0	60	100	duplo	plastico	1.40	2.10	.55	.30	2.20	70.54	.68	BOM
35	11+11	0	100	100	duplo	metal	1.40	2.10	.35	.30	3.10	69.51	.67	BOM
65	11+15	0	100	40	simples	metal	1.20	1.80	.35	.60	4.20	69.20	.67	BOM
34	11+11	0	100	100	simples	madeira	1.40	2.10	.35	.30	3.70	69.08	.67	BOM
56	11+15	0	60	40	duplo	plastico	1.20	1.80	.55	.60	2.20	68.75	.66	BOM
57	11+15	0	60	100	simples	metal	1.20	1.80	.55	.30	4.20	68.64	.66	BOM
67	11+15	0	100	40	duplo	metal	1.20	1.80	.35	.60	3.10	67.71	.65	BOM
66	11+15	0	100	40	simples	madeira	1.20	1.80	.35	.60	3.70	67.30	.65	BOM
59	11+15	0	60	100	duplo	metal	1.20	1.80	.55	.30	3.10	67.16	.65	BOM
58	11+15	0	60	100	simples	madeira	1.20	1.80	.55	.30	3.70	66.74	.64	BOM
36	11+11	0	100	100	duplo	plastico	1.40	2.10	.35	.30	2.20	66.07	.64	BOM
68	11+15	0	100	40	duplo	plastico	1.20	1.80	.35	.60	2.20	64.28	.62	BOM
69	11+15	0	100	100	simples	metal	1.20	1.80	.35	.30	4.20	64.19	.62	BOM
60	11+15	0	60	100	duplo	plastico	1.20	1.80	.55	.30	2.20	63.72	.62	BOM
71	11+15	0	100	100	duplo	metal	1.20	1.80	.35	.30	3.10	62.69	.61	BOM
70	11+15	0	100	100	simples	madeira	1.20	1.80	.35	.30	3.70	62.30	.60	BOM
89	11+15	20	60	40	simples	metal	.75	1.20	.55	.60	4.20	60.08	.58	BOM
72	11+15	0	100	100	duplo	plastico	1.20	1.80	.35	.30	2.20	59.26	.57	BOM
90	11+15	20	60	40	simples	madeira	.75	1.20	.55	.60	3.70	58.19	.56	BOM
101	11+15	20	100	40	simples	metal	.75	1.20	.35	.60	4.20	55.66	.54	BOM
93	11+15	20	60	100	simples	metal	.75	1.20	.55	.30	4.20	55.11	.53	BOM
125	22	20	60	40	simples	metal	.95	.95	.55	.60	4.20	54.46	.53	BOM
102	11+15	20	100	40	simples	madeira	.75	1.20	.35	.60	3.70	53.77	.52	BOM
94	11+15	20	60	100	simples	madeira	.75	1.20	.55	.30	3.70	53.22	.51	BOM
126	22	20	60	40	simples	madeira	.95	.95	.55	.60	3.70	52.58	.51	BOM
105	11+15	20	100	100	simples	metal	.75	1.20	.35	.30	4.20	50.70	.49	BOM
137	22	20	100	40	simples	metal	.95	.95	.35	.60	4.20	50.06	.48	BOM
129	22	20	60	100	simples	metal	.95	.95	.55	.30	4.20	49.51	.48	BOM
106	11+15	20	100	100	simples	madeira	.75	1.20	.35	.30	3.70	48.83	.47	BOM
138	22	20	100	40	simples	madeira	.95	.95	.35	.60	3.70	48.19	.47	BOM
130	22	20	60	100	simples	madeira	.95	.95	.55	.30	3.70	47.64	.46	BOM
141	22	20	100	100	simples	metal	.95	.95	.35	.30	4.20	45.14	.44	BOM
142	22	20	100	100	simples	madeira	.95	.95	.35	.30	3.70	43.29	.42	BOM
161	22	60	60	40	simples	metal	.35	.35	.55	.60	4.20	41.13	.40	BOM
162	22	60	60	40	simples	madeira	.35	.35	.55	.60	3.70	39.29	.38	BOM
173	22	60	100	40	simples	metal	.35	.35	.35	.60	4.20	36.83	.36	BOM
165	22	60	60	100	simples	metal	.35	.35	.55	.30	4.20	36.30	.35	BOM
174	22	60	100	40	simples	madeira	.35	.35	.35	.60	3.70	35.01	.34	BOM
166	22	60	60	100	simples	madeira	.35	.35	.55	.30	3.70	34.48	.33	BOM
177	22	60	100	100	simples	metal	.35	.35	.35	.30	4.20	32.07	.31	BOM
178	22	60	100	100	simples	madeira	.35	.35	.35	.30	3.70	30.28	.29	BOM
91	11+15	20	60	40	duplo	metal	.75	1.20	.55	.60	3.10	58.57	.57	MB
92	11+15	20	60	40	duplo	plastico	.75	1.20	.55	.60	2.20	55.15	.53	MB
103	11+15	20	100	40	duplo	metal	.75	1.20	.35	.60	3.10	54.12	.52	MB
95	11+15	20	60	100	duplo	metal	.75	1.20	.55	.30	3.10	53.57	.52	MB
127	22	20	60	40	duplo	metal	.95	.95	.55	.60	3.10	52.92	.51	MB
104	11+15	20	100	40	duplo	plastico	.75	1.20	.35	.60	2.20	50.71	.49	MB
96	11+15	20	60	100	duplo	plastico	.75	1.20	.55	.30	2.20	50.16	.48	MB
128	22	20	60	40	duplo	plastico	.95	.95	.55	.60	2.20	49.51	.48	MB
107	11+15	20	100	100	duplo	metal	.75	1.20	.35	.30	3.10	49.14	.47	MB
139	22	20	100	40	duplo	metal	.95	.95	.35	.60	3.10	48.50	.47	MB
131	22	20	60	100	duplo	metal	.95	.95	.55	.30	3.10	47.94	.46	MB
108	11+15	20	100	100	duplo	plastico	.75	1.20	.35	.30	2.20	45.75	.44	MB
140	22	20	100	40	duplo	plastico	.95	.95	.35	.60	2.20	45.11	.44	MB
132	22	20	60	100	duplo	plastico	.95	.95	.55	.30	2.20	44.56	.43	EXC
143	22	20	100	100	duplo	metal	.95	.95	.35	.30	3.10	43.55	.42	EXC
144	22	20	100	100	duplo	plastico	.95	.95	.35	.30	2.20	40.19	.39	EXC
163	22	60	60	40	duplo	metal	.35	.35	.55	.60	3.10	39.50	.38	EXC
164	22	60	60	40	duplo	plastico	.35	.35	.55	.60	2.20	36.17	.35	EXC
175	22	60	60	100	duplo	metal	.35	.35	.35	.60	3.10	35.17	.34	EXC
167	22	60	60	100	duplo	metal	.35	.35	.55	.30	3.10	34.64	.33	EXC

sol	par ext	isol ext	isol cob	isol pav	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic2	%Ni	cls
176	22	60	100	40	duplo	plastico	.35	.35	.35	.60	2.20	31.88	.31	EXC
168	22	60	60	100	duplo	plastico	.35	.35	.55	.30	2.20	31.35	.30	EXC
179	22	60	100	100	duplo	metal	.35	.35	.35	.30	3.10	30.37	.29	EXC
180	22	60	100	100	duplo	plastico	.35	.35	.35	.30	2.20	27.13	.26	EXC

tabela 4.6

vivenda

zona climática de inverno I3

com ganhos solares

sol	par	isol	isol	isol	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic3	%Ni	cls
ext	ext	ext	cob	pav										
1	11+11	0	20	0	simples	metal	1.40	2.10	1.15	1.55	4.20	234.05	1.28	INS
2	11+11	0	20	0	simples	madeira	1.40	2.10	1.15	1.55	3.70	230.21	1.26	INS
3	11+11	0	20	0	duplo	metal	1.40	2.10	1.15	1.55	3.10	229.52	1.25	INS
4	11+11	0	20	0	duplo	plastico	1.40	2.10	1.15	1.55	2.20	222.61	1.21	INS
37	11+15	0	20	0	simples	metal	1.20	1.80	1.15	1.55	4.20	220.34	1.20	INS
38	11+15	0	20	0	simples	madeira	1.20	1.80	1.15	1.55	3.70	216.50	1.18	INS
39	11+15	0	20	0	duplo	metal	1.20	1.80	1.15	1.55	3.10	215.81	1.18	INS
40	11+15	0	20	0	duplo	plastico	1.20	1.80	1.15	1.55	2.20	208.90	1.14	INS
13	11+11	0	60	0	simples	metal	1.40	2.10	.55	1.55	4.20	207.09	1.13	INS
14	11+11	0	60	0	simples	madeira	1.40	2.10	.55	1.55	3.70	203.25	1.11	INS
15	11+11	0	60	0	duplo	metal	1.40	2.10	.55	1.55	3.10	202.56	1.11	INS
5	11+11	0	20	40	simples	metal	1.40	2.10	1.15	.60	4.20	202.04	1.10	INS
6	11+11	0	20	40	simples	madeira	1.40	2.10	1.15	.60	3.70	198.20	1.08	INS
25	11+11	0	100	0	simples	metal	1.40	2.10	.35	1.55	4.20	198.11	1.08	INS
7	11+11	0	20	40	duplo	metal	1.40	2.10	1.15	.60	3.10	197.51	1.08	INS
16	11+11	0	60	0	duplo	plastico	1.40	2.10	.55	1.55	2.20	195.65	1.07	INS
26	11+11	0	100	0	simples	madeira	1.40	2.10	.35	1.55	3.70	194.27	1.06	INS
27	11+11	0	100	0	duplo	metal	1.40	2.10	.35	1.55	3.10	193.58	1.06	INS
49	11+15	0	60	0	simples	metal	1.20	1.80	.55	1.55	4.20	193.38	1.06	INS
73	11+15	20	20	0	simples	metal	.75	1.20	1.15	1.55	4.20	192.92	1.05	INS
9	11+11	0	20	100	simples	metal	1.40	2.10	1.15	.30	4.20	191.93	1.05	INS
8	11+11	0	20	40	duplo	plastico	1.40	2.10	1.15	.60	2.20	190.60	1.04	INS
50	11+15	0	60	0	simples	madeira	1.20	1.80	.55	1.55	3.70	189.54	1.03	INS
74	11+15	20	20	0	simples	madeira	.75	1.20	1.15	1.55	3.70	189.08	1.03	INS
51	11+15	0	60	0	duplo	metal	1.20	1.80	.55	1.55	3.10	188.85	1.03	INS
41	11+15	0	20	40	simples	metal	1.20	1.80	1.15	.60	4.20	188.33	1.03	INS
75	11+15	20	20	0	duplo	metal	.75	1.20	1.15	1.55	3.10	188.39	1.03	INS
10	11+11	0	20	100	simples	madeira	1.40	2.10	1.15	.30	3.70	188.09	1.03	INS
11	11+11	0	20	100	duplo	metal	1.40	2.10	1.15	.30	3.10	187.40	1.02	INS
28	11+11	0	100	0	duplo	plastico	1.40	2.10	.35	1.55	2.20	186.66	1.02	INS
42	11+15	0	20	40	simples	madeira	1.20	1.80	1.15	.60	3.70	184.49	1.01	INS
61	11+15	0	100	0	simples	metal	1.20	1.80	.35	1.55	4.20	184.40	1.01	INS
43	11+15	0	20	40	duplo	metal	1.20	1.80	1.15	.60	3.10	183.80	1.00	INS
52	11+15	0	60	0	duplo	plastico	1.20	1.80	.55	1.55	2.20	181.94	.99	INS
109	22	20	20	0	simples	metal	.95	.95	1.15	1.55	4.20	181.50	.99	INS
76	11+15	20	20	0	duplo	plastico	.75	1.20	1.15	1.55	2.20	181.48	.99	INS
62	11+15	0	100	0	simples	madeira	1.20	1.80	.35	1.55	3.70	180.56	.99	INS
12	11+11	0	20	100	duplo	plastico	1.40	2.10	1.15	.30	2.20	180.49	.98	INS
63	11+15	0	100	0	duplo	metal	1.20	1.80	.35	1.55	3.10	179.87	.98	INS
45	11+15	0	20	100	simples	metal	1.20	1.80	1.15	.30	4.20	178.22	.97	INS
110	22	20	20	0	simples	madeira	.95	.95	1.15	1.55	3.70	177.66	.97	INS
111	22	20	20	0	duplo	metal	.95	.95	1.15	1.55	3.10	176.97	.97	INS
44	11+15	0	20	40	duplo	plastico	1.20	1.80	1.15	.60	2.20	176.89	.97	INS
46	11+15	0	20	100	simples	madeira	1.20	1.80	1.15	.30	3.70	174.39	.95	INS
47	11+15	0	20	100	duplo	metal	1.20	1.80	1.15	.30	3.10	173.69	.95	INS
64	11+15	0	100	0	duplo	plastico	1.20	1.80	.35	1.55	2.20	172.96	.94	INS
112	22	20	20	0	duplo	plastico	.95	.95	1.15	1.55	2.20	170.06	.93	INS
48	11+15	0	20	100	duplo	plastico	1.20	1.80	1.15	.30	2.20	166.78	.91	INS
85	11+15	20	60	0	simples	metal	.75	1.20	.55	1.55	4.20	165.98	.91	INS
86	11+15	20	60	0	simples	madeira	.75	1.20	.55	1.55	3.70	162.14	.88	INS
87	11+15	20	60	0	duplo	metal	.75	1.20	.55	1.55	3.10	161.44	.88	INS
77	11+15	20	20	40	simples	metal	.75	1.20	1.15	.60	4.20	160.92	.88	INS
78	11+15	20	20	40	simples	madeira	.75	1.20	1.15	.60	3.70	157.09	.86	INS

sol	par	isol	isol	isol	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic3	%wi	cls
ext	ext	ext	cob	pav										
97	11+15	20	100	0	simples	metal	.75	1.20	.35	1.55	4.20	157.00	.86	INS
79	11+15	20	20	40	duplo	metal	.75	1.20	1.15	.60	3.10	156.39	.85	INS
88	11+15	20	60	0	duplo	plastico	.75	1.20	.55	1.55	2.20	154.53	.84	INS
121	22	20	60	0	simples	metal	.95	.95	.55	1.55	4.20	154.56	.84	INS
145	22	60	20	0	simples	metal	.35	.35	1.15	1.55	4.20	154.10	.84	INS
98	11+15	20	100	0	simples	madeira	.75	1.20	.35	1.55	3.70	153.16	.84	INS
99	11+15	20	100	0	duplo	metal	.75	1.20	.35	1.55	3.10	152.46	.83	INS
81	11+15	20	20	100	simples	metal	.75	1.20	1.15	.30	4.20	150.82	.82	INS
122	22	20	60	0	simples	madeira	.95	.95	.55	1.55	3.70	150.72	.82	INS
146	22	60	20	0	simples	madeira	.35	.35	1.15	1.55	3.70	150.26	.82	INS
123	22	20	60	0	duplo	metal	.95	.95	.55	1.55	3.10	150.02	.82	INS
113	22	20	20	40	simples	metal	.95	.95	1.15	.60	4.20	149.51	.82	INS
147	22	60	20	0	duplo	metal	.35	.35	1.15	1.55	3.10	149.56	.82	INS
80	11+15	20	20	40	duplo	plastico	.75	1.20	1.15	.60	2.20	149.48	.82	INS
82	11+15	20	20	100	simples	madeira	.75	1.20	1.15	.30	3.70	146.99	.80	INS
83	11+15	20	20	100	duplo	metal	.75	1.20	1.15	.30	3.10	146.28	.80	INS
114	22	20	20	40	simples	madeira	.95	.95	1.15	.60	3.70	145.67	.79	INS
100	11+15	20	100	0	duplo	plastico	.75	1.20	.35	1.55	2.20	145.55	.79	INS
133	22	20	100	0	simples	metal	.95	.95	.35	1.55	4.20	145.58	.79	INS
115	22	20	20	40	duplo	metal	.95	.95	1.15	.60	3.10	144.97	.79	INS
124	22	20	60	0	duplo	plastico	.95	.95	.55	1.55	2.20	143.11	.78	INS
148	22	60	20	0	duplo	plastico	.35	.35	1.15	1.55	2.20	142.65	.78	INS
134	22	20	100	0	simples	madeira	.95	.95	.35	1.55	3.70	141.75	.77	INS
135	22	20	100	0	duplo	metal	.95	.95	.35	1.55	3.10	141.04	.77	INS
117	22	20	20	100	simples	metal	.95	.95	1.15	.30	4.20	139.41	.76	INS
84	11+15	20	20	100	duplo	plastico	.75	1.20	1.15	.30	2.20	139.38	.76	INS
116	22	20	20	40	duplo	plastico	.95	.95	1.15	.60	2.20	138.06	.75	INS
118	22	20	20	100	simples	madeira	.95	.95	1.15	.30	3.70	135.58	.74	INS
119	22	20	20	100	duplo	metal	.95	.95	1.15	.30	3.10	134.87	.74	INS
136	22	20	100	0	duplo	plastico	.95	.95	.35	1.55	2.20	134.13	.73	INS
120	22	20	20	100	duplo	plastico	.95	.95	1.15	.30	2.20	127.96	.70	INS
157	22	60	60	0	simples	metal	.35	.35	.55	1.55	4.20	127.18	.69	INS
158	22	60	60	0	simples	madeira	.35	.35	.55	1.55	3.70	123.35	.67	INS
159	22	60	60	0	duplo	metal	.35	.35	.55	1.55	3.10	122.63	.67	INS
149	22	60	20	40	simples	metal	.35	.35	1.15	.60	4.20	122.14	.67	INS
150	22	60	20	40	simples	madeira	.35	.35	1.15	.60	3.70	118.32	.65	INS
169	22	60	100	0	simples	metal	.35	.35	.35	1.55	4.20	118.22	.65	INS
151	22	60	20	40	duplo	metal	.35	.35	1.15	.60	3.10	117.58	.64	INS
160	22	60	60	0	duplo	plastico	.35	.35	.55	1.55	2.20	115.73	.63	INS
170	22	60	100	0	simples	madeira	.35	.35	.35	1.55	3.70	114.40	.62	INS
171	22	60	100	0	duplo	metal	.35	.35	.35	1.55	3.10	113.66	.62	INS
153	22	60	20	100	simples	metal	.35	.35	1.15	.30	4.20	112.07	.61	INS
152	22	60	20	40	duplo	plastico	.35	.35	1.15	.60	2.20	110.69	.60	INS
154	22	60	20	100	simples	madeira	.35	.35	1.15	.30	3.70	108.25	.59	INS
155	22	60	20	100	duplo	metal	.35	.35	1.15	.30	3.10	107.50	.59	INS
172	22	60	100	0	duplo	plastico	.35	.35	.35	1.55	2.20	106.77	.58	INS
156	22	60	20	100	duplo	plastico	.35	.35	1.15	.30	2.20	100.61	.55	INS
17	11+11	0	60	40	simples	metal	1.40	2.10	.55	.60	4.20	175.09	.96	SUF
18	11+11	0	60	40	simples	madeira	1.40	2.10	.55	.60	3.70	171.25	.93	SUF
19	11+11	0	60	40	duplo	metal	1.40	2.10	.55	.60	3.10	170.55	.93	SUF
29	11+11	0	100	40	simples	metal	1.40	2.10	.35	.60	4.20	166.11	.91	SUF
21	11+11	0	60	100	simples	metal	1.40	2.10	.55	.30	4.20	164.98	.90	SUF
20	11+11	0	60	40	duplo	plastico	1.40	2.10	.55	.60	2.20	163.64	.89	SUF
30	11+11	0	100	40	simples	madeira	1.40	2.10	.35	.60	3.70	162.27	.89	SUF
31	11+11	0	100	40	duplo	metal	1.40	2.10	.35	.60	3.10	161.57	.88	SUF
53	11+15	0	60	40	simples	metal	1.20	1.80	.55	.60	4.20	161.38	.88	SUF
22	11+11	0	60	100	simples	madeira	1.40	2.10	.55	.30	3.70	161.14	.88	SUF
23	11+11	0	60	100	duplo	metal	1.40	2.10	.55	.30	3.10	160.45	.88	SUF
54	11+15	0	60	40	simples	madeira	1.20	1.80	.55	.60	3.70	157.55	.86	BOM
55	11+15	0	60	40	duplo	metal	1.20	1.80	.55	.60	3.10	156.85	.86	BOM
33	11+11	0	100	100	simples	metal	1.40	2.10	.35	.30	4.20	156.00	.85	BOM

sol	par ext	isol ext	isol cob	isol pav	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic3	XNi	cls
32	11+11	0	100	40	duplo	plastico	1.40	2.10	.35	.60	2.20	154.66	.84	BOM
24	11+11	0	60	100	duplo	plastico	1.40	2.10	.55	.30	2.20	153.54	.84	BOM
65	11+15	0	100	40	simples	metal	1.20	1.80	.35	.60	4.20	152.41	.83	BOM
34	11+11	0	100	100	simples	madeira	1.40	2.10	.35	.30	3.70	152.17	.83	BOM
35	11+11	0	100	100	duplo	metal	1.40	2.10	.35	.30	3.10	151.46	.83	BOM
57	11+15	0	60	100	simples	metal	1.20	1.80	.55	.30	4.20	151.28	.83	BOM
56	11+15	0	60	40	duplo	plastico	1.20	1.80	.55	.60	2.20	149.94	.82	BOM
66	11+15	0	100	40	simples	madeira	1.20	1.80	.35	.60	3.70	148.57	.81	BOM
67	11+15	0	100	40	duplo	metal	1.20	1.80	.35	.60	3.10	147.87	.81	BOM
58	11+15	0	60	100	simples	madeira	1.20	1.80	.55	.30	3.70	147.45	.80	BOM
59	11+15	0	60	100	duplo	metal	1.20	1.80	.55	.30	3.10	146.74	.80	BOM
36	11+11	0	100	100	duplo	plastico	1.40	2.10	.35	.30	2.20	144.56	.79	BOM
69	11+15	0	100	100	simples	metal	1.20	1.80	.35	.30	4.20	142.31	.78	BOM
68	11+15	0	100	40	duplo	plastico	1.20	1.80	.35	.60	2.20	140.96	.77	BOM
60	11+15	0	60	100	duplo	plastico	1.20	1.80	.55	.30	2.20	139.84	.76	BOM
70	11+15	0	100	100	simples	madeira	1.20	1.80	.35	.30	3.70	138.47	.76	BOM
71	11+15	0	100	100	duplo	metal	1.20	1.80	.35	.30	3.10	137.76	.75	BOM
89	11+15	20	60	40	simples	metal	.75	1.20	.55	.60	4.20	134.00	.73	BOM
72	11+15	0	100	100	duplo	plastico	1.20	1.80	.35	.30	2.20	130.86	.71	BOM
90	11+15	20	60	40	simples	madeira	.75	1.20	.55	.60	3.70	130.17	.71	BOM
91	11+15	20	60	40	duplo	metal	.75	1.20	.55	.60	3.10	129.45	.71	BOM
101	11+15	20	100	40	simples	metal	.75	1.20	.35	.60	4.20	125.03	.68	BOM
93	11+15	20	60	100	simples	metal	.75	1.20	.55	.30	4.20	123.91	.68	BOM
125	22	20	60	40	simples	metal	.95	.95	.55	.60	4.20	122.60	.67	BOM
92	11+15	20	60	40	duplo	plastico	.75	1.20	.55	.60	2.20	122.55	.67	BOM
102	11+15	20	100	40	simples	madeira	.75	1.20	.35	.60	3.70	121.21	.66	BOM
103	11+15	20	100	40	duplo	metal	.75	1.20	.35	.60	3.10	120.48	.66	BOM
94	11+15	20	60	100	simples	madeira	.75	1.20	.55	.30	3.70	120.09	.66	BOM
95	11+15	20	60	100	duplo	metal	.75	1.20	.55	.30	3.10	119.35	.65	BOM
126	22	20	60	40	simples	madeira	.95	.95	.55	.60	3.70	118.77	.65	BOM
105	11+15	20	100	100	simples	metal	.75	1.20	.35	.30	4.20	114.96	.63	BOM
137	22	20	100	40	simples	metal	.95	.95	.35	.60	4.20	113.65	.62	BOM
104	11+15	20	100	40	duplo	plastico	.75	1.20	.35	.60	2.20	113.58	.62	BOM
129	22	20	60	100	simples	metal	.95	.95	.55	.30	4.20	112.53	.61	BOM
96	11+15	20	60	100	duplo	plastico	.75	1.20	.55	.30	2.20	112.46	.61	BOM
106	11+15	20	100	100	simples	madeira	.75	1.20	.35	.30	3.70	111.14	.61	BOM
107	11+15	20	100	100	duplo	metal	.75	1.20	.35	.30	3.10	110.39	.60	BOM
138	22	20	100	40	simples	madeira	.95	.95	.35	.60	3.70	109.83	.60	BOM
130	22	20	60	100	simples	madeira	.95	.95	.55	.30	3.70	108.71	.59	BOM
108	11+15	20	100	100	duplo	plastico	.75	1.20	.35	.30	2.20	103.50	.56	BOM
141	22	20	100	100	simples	metal	.95	.95	.35	.30	4.20	103.59	.57	BOM
142	22	20	100	100	simples	madeira	.95	.95	.35	.30	3.70	99.78	.54	BOM
161	22	60	60	40	simples	metal	.35	.35	.55	.60	4.20	95.33	.52	BOM
162	22	60	60	40	simples	madeira	.35	.35	.55	.60	3.70	91.53	.50	BOM
173	22	60	100	40	simples	metal	.35	.35	.35	.60	4.20	86.44	.47	BOM
165	22	60	60	100	simples	metal	.35	.35	.55	.30	4.20	85.33	.47	BOM
174	22	60	100	40	simples	madeira	.35	.35	.35	.60	3.70	82.65	.45	BOM
166	22	60	60	100	simples	madeira	.35	.35	.55	.30	3.70	81.54	.44	BOM
177	22	60	100	100	simples	metal	.35	.35	.35	.30	4.20	76.48	.42	BOM
178	22	60	100	100	simples	madeira	.35	.35	.35	.30	3.70	72.72	.40	BOM
127	22	20	60	40	duplo	metal	.95	.95	.55	.60	3.10	118.04	.64	MB
128	22	20	60	40	duplo	plastico	.95	.95	.55	.60	2.20	111.15	.61	MB
139	22	20	100	40	duplo	metal	.95	.95	.35	.60	3.10	109.08	.60	MB
131	22	20	60	100	duplo	metal	.95	.95	.55	.30	3.10	107.96	.59	MB
140	22	20	100	40	duplo	plastico	.95	.95	.35	.60	2.20	102.19	.56	MB
132	22	20	60	100	duplo	plastico	.95	.95	.55	.30	2.20	101.07	.55	MB
143	22	20	100	100	duplo	metal	.95	.95	.35	.30	3.10	99.01	.54	MB
144	22	20	100	100	duplo	plastico	.95	.95	.35	.30	2.20	92.13	.50	MB
163	22	60	60	40	duplo	metal	.35	.35	.55	.60	3.10	90.73	.50	MB
164	22	60	60	40	duplo	plastico	.35	.35	.55	.60	2.20	83.87	.46	EXC
175	22	60	100	40	duplo	metal	.35	.35	.35	.60	3.10	81.81	.45	EXC

sol	par ext	isol ext	isol cob	isol pav	vidro	caixilho	Kf	Kf_c	Kcob	Kpav	Kenv	Nic3	%Ni	cls
167	22	60	60	100	duplo	metal	.35	.35	.55	.30	3.10	80.70	.44	EXC
176	22	60	100	40	duplo	plastico	.35	.35	.35	.60	2.20	74.98	.41	EXC
168	22	60	60	100	duplo	plastico	.35	.35	.55	.30	2.20	73.87	.40	EXC
179	22	60	100	100	duplo	metal	.35	.35	.35	.30	3.10	71.83	.39	EXC
180	22	60	100	100	duplo	plastico	.35	.35	.35	.30	2.20	65.04	.35	EXC



FACULDADE DE ENGENHARIA
UNIVERSIDADE DO PORTO

BIBLIOTECA



0000084084