

FATORES DE UTILIZAÇÃO ATÍPICOS PARA IES/IEE

Obs.: Só aplicável com as fórmulas IES, não com BZC ou Lumens

Fig. 9-34. Coefficients of Utilization, Wall Luminance Coefficients, Ceiling Cavity Luminance Coefficients, Luminaire Spacing Criteria and Maintenance Categories Typical Luminaires


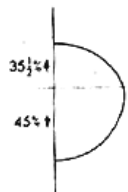

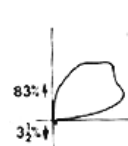

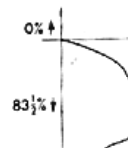

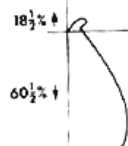

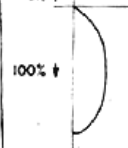
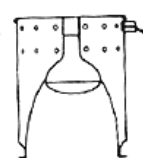
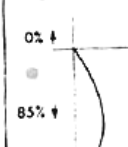

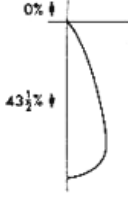

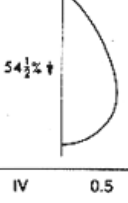
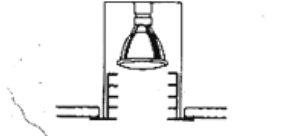
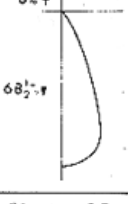
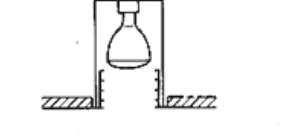
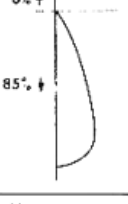
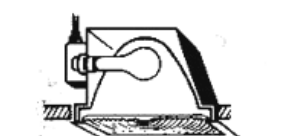
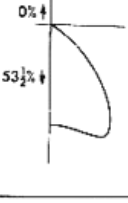
Typical Luminaire	Typical Intensity Distribution and Per Cent Lamp Lumens	PCC →	80		70			50			30			10			0			WDR	PCC →	
			PW →		50	30	10	50	30	10	50	30	10	50	30	10	50	30	10			0
			Maint. Cat.	SC	RCR ↓	Coefficients of Utilization for 20 Per Cent Effective Floor Cavity Reflectance (ρ _{ec} = 20)																
 Pendant diffusing sphere with incandescent lamp		V	1.5	0	.87	.87	.87	.81	.81	.81	.70	.70	.70	.59	.59	.59	.49	.49	.49	.45	.368	1
				1	.71	.66	.62	.65	.61	.58	.55	.52	.49	.46	.44	.42	.38	.36	.34	.30	.279	2
				2	.60	.53	.48	.55	.50	.45	.47	.42	.38	.39	.35	.32	.31	.29	.26	.23	.227	3
				3	.52	.44	.38	.48	.41	.36	.40	.35	.31	.33	.29	.26	.27	.24	.21	.18	.192	4
				4	.45	.37	.32	.42	.35	.29	.35	.30	.25	.29	.25	.21	.23	.20	.17	.14	.166	5
				5	.40	.32	.27	.37	.30	.25	.31	.25	.21	.26	.21	.18	.21	.17	.14	.12	.146	6
				6	.35	.28	.23	.33	.26	.21	.28	.22	.18	.23	.19	.15	.19	.15	.12	.10	.130	7
				7	.32	.25	.19	.29	.23	.18	.25	.20	.16	.21	.16	.13	.17	.13	.11	.09	.117	8
				8	.29	.22	.17	.27	.20	.16	.23	.17	.14	.19	.15	.12	.15	.12	.09	.07	.107	9
				9	.26	.19	.15	.24	.18	.14	.21	.16	.12	.17	.13	.10	.14	.11	.08	.06	.098	10
 Concentric ring unit with incandescent silvered-bowl lamp		II	N.A.	0	.83	.83	.83	.72	.72	.72	.50	.50	.50	.30	.30	.30	.12	.12	.12	.03	.018	1
				1	.72	.69	.66	.62	.60	.57	.43	.42	.40	.26	.25	.25	.10	.10	.10	.03	.015	2
				2	.63	.58	.54	.54	.50	.47	.38	.35	.33	.23	.22	.20	.09	.09	.08	.02	.013	3
				3	.55	.49	.45	.47	.43	.39	.33	.30	.28	.20	.19	.17	.08	.07	.07	.02	.012	4
				4	.48	.42	.37	.42	.37	.33	.29	.26	.23	.18	.16	.15	.07	.06	.06	.02	.011	5
				5	.43	.36	.32	.37	.32	.28	.26	.23	.20	.16	.14	.12	.06	.06	.05	.01	.010	6
				6	.38	.32	.27	.33	.28	.24	.23	.20	.17	.14	.12	.11	.06	.05	.04	.01	.009	7
				7	.34	.28	.23	.30	.24	.21	.21	.17	.15	.13	.11	.09	.05	.04	.03	.01	.008	8
				8	.31	.25	.20	.27	.21	.18	.19	.15	.13	.12	.10	.08	.05	.04	.03	.01	.008	9
				9	.28	.22	.18	.24	.19	.16	.17	.14	.11	.10	.09	.07	.04	.03	.03	.01	.007	10
 Porcelain-enameled ventilated standard dome with incandescent lamp		IV	1.3	0	.99	.99	.99	.97	.97	.97	.93	.93	.93	.89	.89	.89	.85	.85	.85	.83	.323	1
				1	.87	.84	.81	.85	.82	.79	.82	.79	.77	.79	.76	.74	.76	.74	.72	.71	.311	2
				2	.76	.70	.65	.74	.68	.65	.71	.67	.63	.69	.65	.62	.66	.63	.60	.59	.288	3
				3	.66	.59	.54	.65	.59	.53	.62	.57	.53	.60	.56	.52	.58	.54	.51	.49	.264	4
				4	.58	.51	.45	.57	.50	.45	.55	.49	.44	.53	.48	.44	.51	.47	.43	.41	.241	5
				5	.52	.44	.39	.51	.44	.38	.49	.43	.38	.47	.42	.37	.46	.41	.37	.35	.221	6
				6	.46	.39	.33	.46	.38	.33	.44	.38	.33	.43	.37	.33	.41	.36	.32	.31	.203	7
				7	.42	.34	.29	.41	.34	.29	.40	.33	.29	.39	.33	.29	.38	.32	.28	.27	.187	8
				8	.38	.31	.26	.37	.31	.26	.36	.30	.26	.35	.30	.25	.34	.29	.25	.24	.173	9
				9	.35	.28	.23	.34	.28	.23	.33	.27	.23	.32	.27	.23	.32	.26	.23	.21	.161	10
 Prismatic square surface drum		V	1.3	0	.89	.89	.89	.85	.85	.85	.77	.77	.77	.70	.70	.70	.63	.63	.63	.60	.264	1
				1	.77	.74	.71	.74	.71	.68	.67	.65	.63	.61	.59	.57	.55	.54	.53	.50	.224	2
				2	.68	.63	.59	.65	.61	.57	.59	.56	.53	.54	.51	.49	.49	.47	.45	.42	.197	3
				3	.61	.55	.50	.58	.53	.48	.53	.49	.45	.49	.45	.42	.44	.42	.39	.37	.176	4
				4	.54	.48	.43	.52	.46	.42	.48	.43	.39	.44	.40	.37	.40	.37	.34	.32	.159	5
				5	.49	.42	.38	.47	.41	.37	.43	.38	.35	.40	.36	.33	.37	.33	.31	.29	.145	6
				6	.44	.38	.33	.43	.37	.32	.39	.34	.31	.36	.32	.29	.34	.30	.27	.26	.133	7
				7	.40	.34	.30	.39	.33	.29	.36	.31	.27	.33	.29	.26	.31	.27	.25	.23	.124	8
				8	.37	.31	.27	.36	.30	.26	.33	.28	.25	.31	.27	.24	.29	.25	.22	.21	.115	9
				9	.34	.28	.24	.33	.27	.24	.31	.26	.22	.29	.24	.21	.27	.23	.20	.19	.108	10
 R-40 flood without shielding		IV	0.8	0	1.19	1.19	1.19	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	1.00	.241	1
				1	1.08	1.05	1.03	1.06	1.03	1.01	1.02	1.00	.98	.98	.97	.95	.95	.93	.92	.90	.238	2
				2	.99	.94	.89	.97	.92	.88	.93	.90	.86	.90	.87	.84	.88	.85	.83	.81	.227	3
				3	.90	.84	.79	.88	.83	.78	.86	.81	.77	.83	.79	.76	.81	.77	.74	.73	.215	4
				4	.82	.75	.70	.81	.75	.70	.79	.73	.69	.77	.72	.68	.75	.71	.67	.66	.202	5
				5	.76	.68	.63	.75	.68	.63	.73	.67	.62	.71	.66	.62	.69	.65	.61	.59	.191	6
				6	.70	.62	.57	.69	.62	.57	.67	.61	.57	.66	.60	.56	.64	.60	.56	.54	.180	7
				7	.65	.57	.52	.64	.57	.52	.62	.56	.52	.61	.56	.52	.60	.55	.51	.50	.169	8
				8	.60	.53	.48	.59	.53	.48	.58	.52	.48	.57	.52	.47	.56	.51	.47	.46	.160	9
				9	.56	.49	.44	.55	.49	.44	.54	.48	.44	.53	.48	.44	.52	.47	.44	.42	.152	10
 R-40 flood with specular anodized reflector skirt; 45° cutoff		IV	0.7	0	1.01	1.01	1.01	.99	.99	.99	.94	.94	.94	.90	.90	.90	.87	.87	.87	.85	.115	1
				1	.95	.93	.91	.93	.91	.89	.89	.88	.87	.86	.85	.84	.83	.82	.82	.80	.115	2
				2	.89	.86	.83	.87	.84	.82	.85	.82	.80	.82	.80	.79	.80	.78	.77	.76	.113	3
				3	.83	.80	.77	.82	.79	.76	.80	.77	.75	.78	.76	.74	.76	.74	.72	.71	.110	4
				4	.79	.74	.71	.78	.74	.71	.76	.73	.70	.74	.71	.69	.73	.70	.68	.67	.107	5
				5	.74	.70	.67	.74	.69	.66	.72	.68	.66	.71	.68	.65	.69	.67	.65	.63	.104	6
				6	.70	.66	.62	.70	.65	.62	.68	.65	.62	.67	.64	.61	.66	.63	.61	.60	.100	7
				7	.67	.62	.59	.66	.62	.59	.65	.61	.58	.64	.61	.58	.63	.60	.58	.57	.097	8
				8	.63	.59	.56	.63	.58	.55	.62	.58	.55	.61	.58	.55	.60	.57	.55	.54	.094	9
				9	.60	.56	.53	.60	.56	.53	.59	.55	.52	.58	.55	.52	.58	.54	.52	.51	.091	10

Fig. 9-34. Continued

Typical Luminaire	Typical Intensity Distribution and Per Cent Lamp Lumens		pcc →		80			70			50			30			10			0			WDR	pcc →											
	Maint. Cat.	SC	RCR ↓	Coefficients of Utilization for 20 Per Cent Effective Floor Cavity Reflectance (p _{fc} = 20)																		RCR ↓													
				p _w →	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	50	30				10	50	30	10	0						
 <p>EAR-38 lamp above 51 mm (2") diameter aperture (increase efficiency to 54 1/2% for 76 mm (3") diameter aperture)*</p>	IV	0.7		0	.52	.52	.52	.51	.51	.51	.48	.48	.48	.46	.46	.46	.45	.45	.45	.44	.44	.44	.43	.43	.43	.42	.41	.41	.41	.40	.39	.055	1		
				1	.49	.48	.47	.48	.47	.46	.46	.45	.45	.44	.44	.43	.43	.42	.41	.41	.41	.40	.39	.38	.37	.37	.36	.36	.35	.34	.34	.34	.33	.054	2
				2	.46	.44	.43	.45	.44	.43	.44	.43	.42	.43	.42	.41	.41	.41	.40	.39	.38	.40	.39	.38	.37	.37	.36	.36	.35	.34	.34	.34	.33	.053	3
				3	.43	.41	.40	.43	.41	.40	.42	.40	.39	.41	.39	.38	.40	.39	.38	.37	.36	.38	.37	.36	.35	.35	.34	.34	.33	.32	.32	.32	.31	.052	4
				4	.41	.39	.37	.41	.39	.37	.40	.38	.37	.39	.37	.36	.38	.37	.36	.35	.34	.36	.35	.34	.34	.33	.33	.32	.31	.30	.30	.29	.29	.048	5
				5	.39	.37	.35	.39	.37	.35	.38	.36	.35	.37	.36	.34	.36	.35	.34	.33	.32	.34	.33	.32	.31	.31	.30	.29	.28	.28	.28	.27	.26	.049	6
				6	.37	.35	.33	.37	.35	.33	.36	.34	.33	.35	.34	.33	.35	.34	.33	.32	.31	.33	.32	.31	.30	.30	.29	.28	.27	.26	.26	.25	.24	.048	7
				7	.35	.33	.31	.35	.33	.31	.34	.33	.31	.34	.32	.31	.33	.32	.31	.30	.29	.31	.30	.29	.28	.28	.27	.26	.25	.24	.24	.23	.22	.048	8
				8	.34	.31	.30	.33	.31	.30	.33	.31	.30	.33	.31	.30	.32	.31	.29	.28	.27	.29	.28	.27	.26	.26	.25	.24	.23	.22	.22	.21	.20	.048	9
				9	.32	.30	.28	.32	.30	.28	.31	.30	.28	.31	.29	.28	.31	.29	.28	.27	.26	.28	.27	.26	.25	.25	.24	.23	.22	.21	.21	.20	.19	.048	10
				10	.31	.28	.27	.31	.28	.27	.30	.28	.27	.30	.28	.27	.30	.28	.27	.26	.25	.27	.26	.25	.24	.24	.23	.22	.21	.20	.20	.19	.18	.043	10
 <p>Medium distribution unit with lens plate and inside frost lamp</p>	V	1.0		0	.65	.65	.65	.63	.63	.63	.60	.60	.60	.58	.58	.58	.55	.55	.55	.54	.54	.54	.52	.52	.52	.51	.50	.49	.49	.48	.133	1			
				1	.59	.57	.56	.58	.56	.55	.56	.54	.53	.53	.52	.52	.52	.51	.50	.49	.48	.46	.45	.44	.43	.43	.42	.41	.40	.39	.38	.37	.054	2	
				2	.54	.51	.49	.53	.50	.48	.51	.49	.47	.49	.47	.46	.45	.43	.41	.40	.39	.41	.39	.37	.36	.36	.35	.34	.33	.32	.31	.30	.29	.054	3
				3	.49	.46	.43	.48	.45	.43	.47	.44	.42	.45	.43	.41	.44	.42	.41	.40	.39	.41	.39	.37	.36	.36	.35	.34	.33	.32	.31	.30	.29	.054	4
				4	.45	.41	.38	.44	.41	.38	.43	.40	.38	.42	.39	.37	.41	.39	.37	.36	.35	.37	.35	.33	.32	.32	.31	.30	.29	.28	.27	.26	.25	.054	5
				5	.41	.37	.35	.41	.37	.34	.40	.36	.34	.39	.36	.34	.38	.35	.33	.32	.31	.33	.32	.31	.30	.30	.29	.28	.27	.26	.25	.24	.23	.054	6
				6	.38	.34	.31	.38	.34	.31	.37	.33	.31	.36	.33	.31	.35	.33	.31	.30	.29	.31	.30	.28	.27	.27	.26	.25	.24	.23	.22	.21	.20	.054	7
				7	.35	.31	.29	.35	.31	.29	.34	.31	.28	.33	.30	.28	.33	.30	.28	.27	.26	.28	.27	.26	.25	.25	.24	.23	.22	.21	.20	.19	.18	.054	8
				8	.33	.29	.26	.32	.29	.26	.32	.28	.26	.31	.28	.26	.31	.28	.26	.25	.24	.26	.25	.24	.23	.23	.22	.21	.20	.19	.18	.17	.16	.054	9
				9	.31	.27	.24	.30	.27	.24	.30	.26	.24	.29	.26	.24	.29	.26	.24	.23	.22	.24	.23	.22	.21	.21	.20	.19	.18	.17	.16	.15	.14	.054	10
				10	.29	.25	.22	.28	.25	.22	.28	.25	.22	.27	.24	.22	.27	.24	.22	.21	.20	.22	.21	.20	.19	.19	.18	.17	.16	.15	.14	.13	.12	.082	10
 <p>Recessed baffled downlight, 140 mm (5 1/2") diameter aperture—150-PAR/FL lamp</p>	IV	0.5		0	.82	.82	.82	.80	.80	.80	.76	.76	.76	.73	.73	.73	.70	.70	.70	.69	.69	.69	.68	.68	.68	.67	.67	.67	.66	.65	.051	1			
				1	.78	.77	.75	.76	.75	.74	.74	.73	.72	.71	.70	.71	.70	.68	.68	.67	.67	.66	.66	.65	.65	.64	.63	.63	.62	.61	.61	.60	.59	.048	2
				2	.74	.72	.71	.73	.71	.70	.71	.70	.68	.69	.68	.67	.67	.66	.65	.64	.63	.65	.64	.63	.62	.62	.61	.60	.59	.58	.57	.56	.55	.048	3
				3	.71	.69	.67	.71	.68	.67	.69	.67	.66	.67	.66	.65	.66	.65	.64	.63	.62	.64	.63	.62	.61	.61	.60	.59	.58	.57	.56	.55	.54	.048	4
				4	.69	.66	.64	.68	.66	.64	.67	.65	.63	.66	.64	.63	.64	.63	.62	.61	.60	.62	.61	.60	.59	.58	.57	.56	.55	.54	.53	.52	.51	.048	5
				5	.67	.64	.62	.66	.63	.62	.65	.63	.61	.64	.62	.61	.63	.61	.60	.59	.58	.60	.59	.57	.56	.56	.55	.54	.53	.52	.51	.50	.49	.048	6
				6	.64	.62	.60	.64	.61	.60	.63	.61	.59	.62	.60	.59	.61	.59	.57	.56	.55	.57	.56	.55	.54	.54	.53	.52	.51	.50	.49	.48	.47	.048	7
				7	.63	.60	.58	.62	.60	.58	.61	.59	.57	.61	.59	.57	.60	.58	.56	.55	.54	.56	.55	.54	.53	.53	.52	.51	.50	.49	.48	.47	.46	.048	8
				8	.61	.58	.56	.60	.58	.56	.60	.58	.56	.59	.57	.56	.59	.57	.55	.54	.53	.55	.54	.53	.52	.52	.51	.50	.49	.48	.47	.46	.45	.048	9
				9	.59	.56	.55	.59	.56	.55	.58	.56	.54	.58	.56	.54	.57	.55	.54	.53	.52	.54	.53	.52	.51	.51	.50	.49	.48	.47	.46	.45	.44	.048	10
				10	.58	.55	.53	.57	.55	.53	.57	.55	.53	.56	.54	.53	.56	.54	.53	.52	.51	.53	.52	.51	.50	.50	.49	.48	.47	.46	.45	.44	.43	.041	10
 <p>Recessed baffled downlight, 140 mm (5 1/2") diameter aperture—75ER30 lamp</p>	IV	0.5		0	1.01	1.01	1.01	.99	.99	.99	.95	.95	.95	.91	.91	.91	.87	.87	.87	.86	.86	.86	.85	.85	.85	.84	.84	.84	.83	.82	.085	1			
				1	.96	.94	.93	.94	.93	.91	.91	.89	.88	.88	.87	.86	.85	.84	.83	.81	.82	.81	.80	.79	.78	.78	.77	.76	.75	.74	.73	.72	.71	.084	2
				2	.91	.88	.86	.90	.87	.85	.87	.85	.83	.84	.83	.81	.80	.79	.78	.77	.76	.77	.75	.73	.72	.72	.71	.70	.69	.68	.67	.66	.65	.084	3
				3	.87	.83	.81	.86	.83	.80	.83	.81	.79	.81	.79	.78	.80	.78	.77	.76	.74	.77	.75	.73	.72	.72	.71	.70	.69	.68	.67	.66	.65	.084	4
				4	.83	.79	.76	.82	.79	.76	.80	.77	.75	.79	.76	.74	.77	.75	.73	.72	.71	.73	.72	.71	.70	.70	.69	.68	.67	.66	.65	.64	.63	.084	5
				5	.79	.76	.73	.79	.75	.72	.77	.74	.72	.76	.73	.71	.75	.72	.71	.70	.69	.71	.70	.68	.67	.67	.66	.65	.64	.63	.62	.61	.60	.084	6
				6	.76	.72	.70	.76	.72	.69	.74	.71	.69	.73	.71	.68	.72	.70	.68	.67	.66	.68	.67	.66	.65	.65	.64	.63	.62	.61	.60	.59	.58	.084	7
				7	.73	.69	.67	.73	.69	.67	.72	.69	.66	.71	.68	.66	.70	.68	.66	.65	.64	.66	.65	.64	.63	.63	.62	.61	.60	.59	.58	.57	.56	.084	8
				8	.71	.67	.64	.70	.67	.64	.69	.66	.64	.69	.66	.64	.68	.65	.63	.62	.61	.63	.62	.61	.60	.60	.59	.58	.57	.56	.55	.54	.53	.084	9
				9	.68	.64	.62	.68	.64	.62	.67	.64	.62	.66	.63	.61	.66	.63	.61	.60	.59	.61	.60	.59	.58	.58	.57	.56	.55	.54	.53	.52	.51	.084	10
				10	.66	.62	.60	.66	.62	.60	.65	.62	.59	.64	.61	.59	.64	.61	.59	.58	.57	.59	.58	.57	.56	.56	.55	.54	.53	.52	.51	.50	.49	.084	10
 <p>Wide distribution unit with lens plate and inside frost lamp</p>	V	1.4		0	.63	.63	.63	.62	.62	.62	.59	.59	.59	.57	.57	.57	.54	.54	.54	.53	.53	.53	.52	.52	.52	.51	.51	.51	.50	.49	.153	1			
				1	.57	.55	.54	.56	.54	.53	.54	.52	.51	.52	.51	.50	.50	.49	.48	.47	.45	.44	.43	.42	.41	.41	.40	.39	.38	.37	.36	.35	.150	2	
				2	.46	.42	.40	.45	.42	.39	.44	.41	.39	.42	.40	.38	.41	.39	.37	.36	.35	.37	.35	.33	.32	.32	.31	.30	.29	.28	.27	.26	.25	.142	3
				3	.42	.38	.35	.41	.37	.34	.40	.36	.34	.39	.36	.33	.37	.35	.33	.32	.31	.33	.32	.31	.30	.30	.29	.28	.27	.26	.25	.24	.23	.133	4