Predicted clear day beam and diffuse irradiances (/ W·m^{-2}) on vertical and horizontal surfaces on specified days in northern (N) and southern (S) hemispheres (see notes at foot of table): LATITUDE 50° N/S

Date and times of sunrise/sunset	Orient-ation	Type	Daily mean irradiance (/ W·m^{-2}) and mean hourly irradiance (/ W·m^{-2}) for stated solar time*																		
			Mean	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030
Jan 29 (N) / Jul 3 (S)																					
	Normal to beam		181	—	—	—	—	124	334	516	609	649	649	609	516	334	124	—	—	—	—
Sunrise: 07:32	N (S)	Beam	0	—	—	—	—	0	0	0	0	0	0	0	0	0	0	—	—	—	—
Sunset: 16:28		Diffuse	19	—	—	—	—	16	34	54	66	73	73	66	54	34	16	—	—	—	—
	NE (SE)	Beam	2	—	—	—	—	29	26	0	0	0	0	0	0	0	0	—	—	—	—
		Diffuse	21	—	—	—	—	22	44	62	70	73	72	66	55	36	17	—	—	—	—
	E (E)	Beam	38	—	—	—	—	105	252	298	221	81	0	0	0	0	0	—	—	—	—
		Diffuse	26	—	—	—	—	33	68	95	102	97	85	70	54	34	17	—	—	—	—
	SE (NE)	Beam	106	—	—	—	—	121	330	495	532	480	366	219	73	0	0	—	—	—	—
		Diffuse	36	—	—	—	—	36	80	122	142	143	127	102	72	41	18	—	—	—	—
	S (N)	Beam	148	—	—	—	—	65	215	402	532	598	598	532	402	215	65	—	—	—	—
		Diffuse	41	—	—	—	—	27	63	109	142	161	161	142	109	63	27	—	—	—	—
	SW (NW)	Beam	106	—	—	—	—	0	0	73	219	366	480	532	495	330	121	—	—	—	—
		Diffuse	36	—	—	—	—	18	41	72	102	127	143	142	122	80	36	—	—	—	—
	W (W)	Beam	38	—	—	—	—	0	0	0	0	0	81	221	298	252	105	—	—	—	—
		Diffuse	26	—	—	—	—	17	34	54	70	85	97	102	95	68	33	—	—	—	—
	NW (SW)	Beam	2	—	—	—	—	0	0	0	0	0	0	0	0	26	29	—	—	—	—
		Diffuse	21	—	—	—	—	17	36	55	66	72	73	70	62	44	22	—	—	—	—
	Horiz.	Beam	51	—	—	—	—	4	44	127	198	238	238	198	127	44	4	—	—	—	—
	Horiz.	Diffuse	25	—	—	—	—	21	45	68	83	90	90	83	68	45	21	—	—	—	—
	Horiz.	Global	75	—	—	—	—	25	89	195	281	328	328	281	195	89	25	—	—	—	—
Feb 26 (N) / Aug 3 (S)																					
	Normal to beam		251	—	—	—	100	310	536	658	724	753	753	724	658	536	310	100	—	—	—
Sunrise: 06:44	N (S)	Beam	0	—	—	—	0	0	0	0	0	0	0	0	0	0	0	0	—	—	—
Sunset: 17:16		Diffuse	29	—	—	—	14	33	58	73	84	90	90	84	73	58	33	14	—	—	—
	NE (SE)	Beam	9	—	—	—	49	114	84	0	0	0	0	0	0	0	0	0	—	—	—
		Diffuse	31	—	—	—	21	49	78	89	93	93	90	84	74	58	33	13	—	—	—
	E (E)	Beam	62	—	—	—	96	283	420	395	274	97	0	0	0	0	0	0	—	—	—
		Diffuse	39	—	—	—	29	70	116	133	131	121	106	90	74	57	33	14	—	—	—
	SE (NE)	Beam	133	—	—	—	87	286	510	606	603	522	385	216	47	0	0	0	—	—	—
		Diffuse	50	—	—	—	27	71	129	164	175	169	151	125	96	66	34	13	—	—	—
	S (N)	Beam	176	—	—	—	27	121	301	461	579	641	641	579	461	301	121	27	—	—	—
		Diffuse	55	—	—	—	18	50	100	142	171	187	187	171	142	100	50	18	—	—	—
	SW (NW)	Beam	133	—	—	—	0	0	0	47	216	385	522	603	606	510	286	87	—	—	—
		Diffuse	50	—	—	—	13	34	66	96	125	151	169	175	164	129	71	27	—	—	—
	W (W)	Beam	62	—	—	—	0	0	0	0	0	0	97	274	395	420	283	96	—	—	—
		Diffuse	39	—	—	—	14	33	57	74	90	106	121	131	133	116	70	29	—	—	—
	NW (SW)	Beam	9	—	—	—	0	0	0	0	0	0	0	0	0	84	114	49	—	—	—
		Diffuse	31	—	—	—	13	33	58	74	84	90	93	93	89	78	49	21	—	—	—
	Horiz.	Beam	96	—	—	—	2	38	143	252	337	383	383	337	252	143	38	2	—	—	—
	Horiz.	Diffuse	35	—	—	—	17	42	72	92	103	109	109	103	92	72	42	17	—	—	—
	Horiz.	Global	131	—	—	—	19	80	215	344	440	492	492	440	344	215	80	19	—	—	—
Mar 29 (N) / Sep 3 (S)																					
	Normal to beam		334	—	—	99	318	557	690	769	814	835	835	814	769	690	557	318	99	—	—
Sunrise: 05:44	N (S)	Beam	0	—	—	7	0	0	0	0	0	0	0	0	0	0	0	0	7	—	—
Sunset: 18:16		Diffuse	42	—	—	16	39	66	84	96	105	110	110	105	96	84	66	39	16	—	—
	NE (SE)	Beam	29	—	—	74	209	263	178	21	0	0	0	0	0	0	0	0	0	—	—
		Diffuse	47	—	—	25	60	99	116	119	118	115	111	105	94	80	59	32	13	—	—
	E (E)	Beam	95	—	—	99	315	514	547	467	311	109	0	0	0	0	0	0	0	—	—
		Diffuse	56	—	—	29	76	133	162	166	157	142	126	111	96	79	60	34	14	—	—
	SE (NE)	Beam	149	—	—	65	237	463	595	639	604	502	348	164	0	0	0	0	0	—	—
		Diffuse	64	—	—	23	64	125	169	191	194	183	165	142	116	89	61	32	13	—	—
	S (N)	Beam	170	—	—	0	20	141	294	437	544	601	601	544	437	294	141	19	0	—	—
		Diffuse	67	—	—	15	41	86	128	162	185	196	196	185	162	128	86	41	15	—	—
	SW (NW)	Beam	149	—	—	0	0	0	0	0	164	348	502	604	639	595	463	236	65	—	—
		Diffuse	64	—	—	13	32	61	89	116	142	165	183	194	191	169	125	64	23	—	—
	W (W)	Beam	95	—	—	0	0	0	0	0	0	0	109	311	467	547	514	315	99	—	—
		Diffuse	56	—	—	14	34	60	79	96	111	126	142	157	166	162	133	76	29	—	—
	NW (SW)	Beam	29	—	—	0	0	0	0	0	0	0	0	0	21	178	263	209	74	—	—
		Diffuse	47	—	—	13	32	59	80	94	105	111	115	118	119	116	99	60	25	—	—
	Horiz.	Beam	168	—	—	2	41	162	301	427	520	569	569	520	427	301	162	41	2	—	—
	Horiz.	Diffuse	48	—	—	17	43	75	98	112	120	123	123	120	112	98	75	43	17	—	—
	Horiz.	Global	216	—	—	19	84	237	399	539	640	692	692	640	539	399	237	84	19	—	—

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Table continues

Table 2.33(f) Predicted clear day beam and diffuse irradiances (/ W·m^{-2}) on vertical and horizontal surfaces on specified days in northern (N) and southern (S) hemispheres (see notes at foot of table): latitude 50° N/S — *continued*

Date and times of sunrise/sunset	Orient-ation	Type	Daily mean irradiance (/ W·m^{-2}) and mean hourly irradiance (/ W·m^{-2}) for stated solar time*																		
			Mean	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030
Apr 28 (N) / Oct 3 (S)																					
	Normal to beam		399	—	82	267	522	671	763	821	856	872	872	856	821	763	671	522	267	82	—
Sunrise: 04:50	N (S)	Beam	9	—	30	68	32	0	0	0	0	0	0	0	0	0	0	32	68	30	—
Sunset: 9:10		Diffuse	55	—	17	40	71	91	103	113	120	123	123	120	113	103	91	71	40	17	—
	NE (SE)	Beam	55	—	75	229	377	364	256	92	0	0	0	0	0	0	0	0	0	0	—
		Diffuse	61	—	25	60	108	133	140	139	135	130	125	118	108	94	77	55	29	12	—
	E (E)	Beam	120	—	76	257	502	601	587	484	318	110	0	0	0	0	0	0	0	0	—
		Diffuse	70	—	25	64	126	167	182	179	167	152	138	124	109	94	77	56	29	12	—
	SE (NE)	Beam	145	—	33	134	332	485	574	593	545	435	279	95	0	0	0	0	0	0	—
		Diffuse	73	—	17	47	102	150	180	193	192	181	166	148	125	101	79	55	29	12	—
	S (N)	Beam	135	—	0	0	0	86	225	355	452	505	505	452	355	224	84	0	0	0	—
		Diffuse	73	—	12	31	66	104	137	164	181	188	188	181	164	136	103	66	31	12	—
	SW (NW)	Beam	145	—	0	0	0	0	0	0	95	279	435	545	593	574	485	332	134	33	—
		Diffuse	73	—	12	29	55	79	101	125	148	166	181	192	193	180	150	102	47	17	—
	W (W)	Beam	120	—	0	0	0	0	0	0	0	0	110	318	484	587	601	502	257	76	—
		Diffuse	70	—	12	29	56	77	94	109	124	138	152	167	179	182	167	126	64	25	—
	NW (SW)	Beam	56	—	0	0	0	0	0	0	0	0	0	0	92	257	365	377	229	75	—
		Diffuse	61	—	12	29	55	77	94	108	118	125	130	135	139	140	133	108	60	25	—
	Horiz.	Beam	234	—	1	28	140	286	433	560	654	702	702	654	560	433	286	140	28	1	—
	Horiz.	Diffuse	57	—	15	37	70	95	111	121	126	127	127	126	121	111	95	70	37	15	—
	Horiz.	Global	291	—	16	65	210	381	544	681	780	829	829	780	681	544	381	210	65	16	—
May 29 (N) / Nov 3 (S)																					
	Normal to beam		442	—	174	432	608	720	794	842	871	884	884	871	842	794	720	608	432	174	—
Sunrise: 04:07	N (S)	Beam	26	—	87	143	88	0	0	0	0	0	0	0	0	0	0	88	143	87	—
Sunse: 19:53		Diffuse	66	—	32	67	91	106	116	123	128	130	130	128	123	116	106	91	67	32	—
	NE (SE)	Beam	77	—	168	382	458	419	304	142	0	0	0	0	0	0	0	0	0	0	—
		Diffuse	71	—	45	97	134	151	153	149	143	138	132	125	116	103	87	68	47	21	—
	E (E)	Beam	133	—	150	398	560	618	586	476	310	107	0	0	0	0	0	0	0	0	—
		Diffuse	78	—	42	99	149	180	188	181	168	156	143	130	117	103	86	67	45	20	—
	SE (NE)	Beam	132	—	45	181	334	456	524	532	478	369	217	40	0	0	0	0	0	0	—
		Diffuse	78	—	28	71	117	156	180	188	184	175	163	148	129	109	88	67	45	21	—
	S (N)	Beam	103	—	0	0	0	26	156	276	367	415	415	367	276	156	26	0	0	0	—
		Diffuse	75	—	20	48	78	110	139	161	173	179	179	173	161	139	110	78	48	20	—
	SW (NW)	Beam	132	—	0	0	0	0	0	0	40	217	369	478	532	524	456	334	181	45	—
		Diffuse	78	—	21	45	67	88	109	129	148	163	175	184	188	180	156	117	71	28	—
	W (W)	Beam	133	—	0	0	0	0	0	0	0	0	107	310	476	586	618	560	398	150	—
		Diffuse	78	—	20	45	67	86	103	117	130	143	156	168	181	188	180	149	99	42	—
	NW (SW)	Beam	77	—	0	0	0	0	0	0	0	0	0	0	142	304	419	458	382	168	—
		Diffuse	71	—	21	47	68	87	103	116	125	132	138	143	149	153	151	134	97	45	—
	Horiz.	Beam	278	—	11	88	219	368	513	637	727	773	773	727	637	513	368	219	88	11	—
	Horiz.	Diffuse	64	—	26	57	84	104	117	124	126	127	127	126	124	117	104	84	57	26	—
	Horiz.	Global	341	—	37	145	303	472	630	761	853	900	900	853	761	630	472	303	145	37	—
Jun 21 (N) / Dec 21 (S)																					
	Normal to beam		451	68	206	461	622	727	797	843	870	883	883	870	843	797	727	622	461	206	68
Sunrise: 03:56	N (S)	Beam	31	42	108	160	102	0	0	0	0	0	0	0	0	0	0	102	160	108	42
Sunset: 20:04		Diffuse	68	15	38	73	96	109	118	124	130	131	131	130	124	118	109	96	73	38	15
	NE (SE)	Beam	83	67	200	410	472	429	313	153	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	73	20	52	104	139	154	155	149	145	139	133	126	116	105	89	71	50	25	10
	E (E)	Beam	135	54	175	419	566	616	580	471	305	106	0	0	0	0	0	0	0	0	0
		Diffuse	79	18	48	106	153	180	188	180	169	156	144	131	117	104	88	70	48	23	9
	SE (NE)	Beam	127	9	47	183	328	443	507	513	458	350	201	26	0	0	0	0	0	0	0
		Diffuse	78	11	32	75	120	156	178	184	182	173	162	148	129	110	89	69	48	24	9
	S (N)	Beam	94	0	0	0	0	10	137	255	343	390	390	343	255	137	10	0	0	0	0
		Diffuse	76	9	23	51	80	110	138	158	172	176	176	172	158	138	110	80	51	23	9
	SW (NW)	Beam	127	0	0	0	0	0	0	0	26	201	350	458	513	507	443	328	183	47	9
		Diffuse	78	9	24	48	69	89	110	129	148	162	173	182	184	178	156	120	75	32	11
	W (W)	Beam	135	0	0	0	0	0	0	0	0	0	106	305	471	580	616	566	419	175	54
		Diffuse	79	9	23	48	70	88	104	117	131	144	156	169	180	188	180	153	106	48	18
	NW (SW)	Beam	83	0	0	0	0	0	0	0	0	0	0	0	153	313	429	472	410	200	67
		Diffuse	73	10	25	50	71	89	105	116	126	133	139	145	149	155	154	139	104	52	20
	Horiz.	Beam	287	0	16	105	237	386	529	651	739	785	785	739	651	529	386	237	105	16	0
	Horiz.	Diffuse	65	12	30	61	87	105	117	123	126	127	127	126	123	117	105	87	61	30	12
	Horiz.	Global	352	12	46	166	324	491	646	774	865	912	912	865	774	646	491	324	166	46	12

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Table continues

Table 2.33(f) Predicted clear day beam and diffuse irradiances (/ W·m^{-2}) on vertical and horizontal surfaces on specified days in northern (N) and southern (S) hemispheres (see notes at foot of table): latitude 50° N/S — *continued*

Date and times of sunrise/sunset	Orient-ation	Type	Daily mean irradiance (/ W·m^{-2}) and mean hourly irradiance (/ W·m^{-2}) for stated solar time*																		
			Mean	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030
Jul 4(N) / Jan 28 (S)																					
	Normal to beam		448	63	191	451	617	724	794	841	869	882	882	869	841	794	724	617	451	191	63
Sunrise: 03:59	N (S)	Beam	29	38	99	154	97	0	0	0	0	0	0	0	0	0	0	97	154	99	38
Sunset: 20:01		Diffuse	67	14	35	70	95	109	117	124	129	131	131	129	124	117	109	95	70	35	14
	NE (SE)	Beam	81	62	185	400	467	425	310	149	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	72	19	48	100	138	154	154	149	144	139	132	125	116	104	89	71	48	23	9
	E (E)	Beam	134	50	163	412	564	616	580	472	306	106	0	0	0	0	0	0	0	0	0
		Diffuse	79	16	44	102	153	181	188	180	168	156	143	131	117	103	88	69	47	21	8
	SE (NE)	Beam	129	9	45	182	330	446	511	518	464	356	205	31	0	0	0	0	0	0	0
		Diffuse	78	11	29	73	119	157	178	186	182	174	162	148	129	109	90	69	47	22	9
	S (N)	Beam	97	0	0	0	0	15	143	260	350	397	397	350	260	143	15	0	0	0	0
		Diffuse	75	8	21	49	80	111	138	159	172	177	177	172	159	138	111	80	49	21	8
	SW (NW)	Beam	129	0	0	0	0	0	0	0	31	205	356	464	518	511	446	330	182	45	9
		Diffuse	78	9	22	47	69	90	109	129	148	162	174	182	186	178	157	119	73	29	11
	W (W)	Beam	134	0	0	0	0	0	0	0	0	0	106	306	472	580	616	564	412	163	50
		Diffuse	79	8	21	47	69	88	103	117	131	143	156	168	180	188	181	153	102	44	16
	NW (SW)	Beam	81	0	0	0	0	0	0	0	0	0	0	0	149	310	425	467	400	185	62
		Diffuse	72	9	23	48	71	89	104	116	125	132	139	144	149	154	154	138	100	48	19
	Horiz.	Beam	284	0	14	99	231	380	523	646	734	780	780	734	646	523	380	231	99	14	0
	Horiz.	Diffuse	64	11	28	59	86	105	117	123	126	126	126	126	123	117	105	86	59	28	11
	Horiz.	Global	348	11	42	158	317	485	640	769	860	906	906	860	769	640	485	317	158	42	11
Aug 4 (N) / Feb 25 (S)																					
	Normal to beam		412	—	116	339	555	686	769	822	854	869	869	854	822	769	686	555	339	116	—
Sunrise: 04:33	N (S)	Beam	14	—	49	97	52	0	0	0	0	0	0	0	0	0	0	52	97	49	—
Sunset: 19:27		Diffuse	59	—	22	51	79	97	108	116	122	125	125	122	116	108	97	79	51	22	—
	NE (SE)	Beam	63	—	109	296	409	385	273	111	0	0	0	0	0	0	0	0	0	0	—
		Diffuse	64	—	31	75	118	140	145	142	137	132	126	120	110	98	81	60	36	15	—
	E (E)	Beam	124	—	105	321	526	605	583	478	312	108	0	0	0	0	0	0	0	0	—
		Diffuse	72	—	30	78	135	172	184	179	166	152	139	125	112	97	81	61	36	14	—
	SE (NE)	Beam	139	—	40	158	335	472	551	565	514	405	252	72	0	0	0	0	0	0	—
		Diffuse	74	—	21	57	108	152	180	190	187	177	163	146	126	105	82	60	35	15	—
	S (N)	Beam	122	—	0	0	0	61	196	321	415	465	465	415	321	196	61	0	0	0	—
		Diffuse	73	—	14	38	71	106	137	161	176	182	182	176	161	137	106	71	38	14	—
	SW (NW)	Beam	139	—	0	0	0	0	0	0	72	252	405	514	565	551	472	335	158	40	—
		Diffuse	74	—	15	35	60	82	105	126	146	163	177	187	190	180	152	108	57	21	—
	W (W)	Beam	124	—	0	0	0	0	0	0	0	0	108	312	478	583	605	526	321	105	—
		Diffuse	72	—	14	36	61	81	97	112	125	139	152	166	179	184	172	135	78	30	—
	NW (SW)	Beam	63	—	0	0	0	0	0	0	0	0	0	0	111	273	385	409	296	109	—
		Diffuse	64	—	15	36	60	81	98	110	120	126	132	137	142	145	140	118	75	31	—
	Horiz.	Beam	249	—	4	50	170	317	462	587	678	726	726	678	587	462	317	170	50	4	—
	Horiz.	Diffuse	59	—	19	45	75	98	113	121	125	126	126	125	121	113	98	75	45	19	—
	Horiz.	Global	309	—	23	95	245	415	575	708	803	852	852	803	708	575	415	245	95	23	—
Sep 4 (N) / Mar 28 (S)																					
	Normal to beam		352	—	—	147	398	595	710	780	821	839	839	821	780	710	595	398	147	—	—
Sunrise: 05:26	N (S)	Beam	1	—	—	20	0	0	0	0	0	0	0	0	0	0	0	0	20	—	—
Sunset: 18:34		Diffuse	46	—	—	22	49	73	90	101	109	113	113	109	101	90	74	49	22	—	—
	NE (SE)	Beam	37	—	—	117	272	297	203	45	0	0	0	0	0	0	0	0	0	—	—
		Diffuse	51	—	—	35	76	110	124	124	122	119	114	108	98	84	65	40	17	—	—
	E (E)	Beam	103	—	—	145	392	545	559	471	312	109	0	0	0	0	0	0	0	—	—
		Diffuse	60	—	—	40	93	145	169	169	159	144	129	114	99	84	65	41	18	—	—
	SE (NE)	Beam	147	—	—	89	282	475	587	622	582	477	323	141	0	0	0	0	0	—	—
		Diffuse	67	—	—	30	77	134	173	190	191	180	163	143	118	93	67	40	17	—	—
	S (N)	Beam	157	—	—	0	8	126	271	408	511	565	565	511	408	271	125	8	0	—	—
		Diffuse	68	—	—	20	50	92	131	161	182	191	191	182	161	131	92	50	20	—	—
	SW (NW)	Beam	147	—	—	0	0	0	0	0	141	323	477	582	622	587	474	282	89	—	—
		Diffuse	67	—	—	17	40	67	93	118	143	163	180	191	190	173	134	77	30	—	—
	W (W)	Beam	103	—	—	0	0	0	0	0	0	0	109	312	471	559	546	392	145	—	—
		Diffuse	60	—	—	18	41	65	84	99	114	129	144	159	169	169	145	93	40	—	—
	NW (SW)	Beam	37	—	—	0	0	0	0	0	0	0	0	0	45	203	297	272	117	—	—
		Diffuse	51	—	—	17	40	65	84	98	108	114	119	122	124	124	110	76	35	—	—
	Horiz.	Beam	189	—	—	7	71	202	343	469	562	611	611	562	469	343	202	71	7	—	—
	Horiz.	Diffuse	51	—	—	23	52	82	102	114	121	123	123	121	114	102	82	52	23	—	—
	Horiz.	Global	239	—	—	30	123	284	445	583	683	734	734	683	583	445	284	123	30	—	—

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Table continues

Table 2.33(f) Predicted clear day beam and diffuse irradiances (/ W·m^{-2}) on vertical and horizontal surfaces on specified days in northern (N) and southern (S) hemispheres (see notes at foot of table): latitude 50° N/S — *continued*

Date and times of sunrise/sunset	Orient-ation	Type	Daily mean irradiance (/ W·m^{-2}) and mean hourly irradiance (/ W·m^{-2}) for stated solar time*																		
			Mean	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030
Oct 4 (N) / Apr 28 (S)																					
	Normal to beam		279	—	—	—	162	417	598	698	755	780	780	755	698	598	417	162	—	—	—
Sunrise: 06:21	N (S)	Beam	0	—	—	—	0	0	0	0	0	0	0	0	0	0	0	0	—	—	—
Sunset: 17:39		Diffuse	33	—	—	—	20	45	67	81	92	96	96	92	81	67	45	20	—	—	—
	NE (SE)	Beam	14	—	—	—	91	171	117	0	0	0	0	0	0	0	0	0	—	—	—
		Diffuse	36	—	—	—	32	67	91	99	102	100	97	91	81	66	43	19	—	—	—
	E (E)	Beam	74	—	—	—	159	384	473	424	288	102	0	0	0	0	0	0	—	—	—
		Diffuse	45	—	—	—	42	94	133	145	141	128	113	98	82	65	43	19	—	—	—
	SE (NE)	Beam	140	—	—	—	133	372	552	623	607	517	373	199	24	0	0	0	—	—	—
		Diffuse	55	—	—	—	38	93	145	174	183	175	156	132	103	74	44	19	—	—	—
	S (N)	Beam	177	—	—	—	30	142	307	457	570	629	629	570	457	307	142	30	—	—	—
		Diffuse	59	—	—	—	25	64	111	150	178	191	191	178	150	111	64	25	—	—	—
	SW (NW)	Beam	140	—	—	—	0	0	0	24	199	373	517	607	623	552	372	133	—	—	—
		Diffuse	55	—	—	—	19	44	74	103	132	156	175	183	174	145	93	38	—	—	—
	W (W)	Beam	74	—	—	—	0	0	0	0	0	0	102	288	424	473	384	159	—	—	—
		Diffuse	45	—	—	—	19	43	65	82	98	113	128	141	145	133	94	42	—	—	—
	NW (SW)	Beam	14	—	—	—	0	0	0	0	0	0	0	0	0	117	171	91	—	—	—
		Diffuse	36	—	—	—	19	43	66	81	91	97	100	102	99	91	67	32	—	—	—
	Horiz.	Beam	121	—	—	—	9	78	198	314	403	450	450	403	314	198	78	9	—	—	—
	Horiz.	Diffuse	40	—	—	—	25	55	82	99	110	114	114	110	99	82	55	25	—	—	—
	Horiz.	Global	160	—	—	—	34	133	280	413	513	564	564	513	413	280	133	34	—	—	—
Nov 4 (N) / May 29 (S)																					
	Normal to beam		201	—	—	—	—	165	403	561	644	680	680	644	561	403	165	—	—	—	—
Sunrise: 07:17	N (S)	Beam	0	—	—	—	—	0	0	0	0	0	0	0	0	0	0	—	—	—	—
Sunset: 16:43		Diffuse	22	—	—	—	—	19	41	59	72	78	78	72	59	41	19	—	—	—	—
	NE (SE)	Beam	3	—	—	—	—	47	41	0	0	0	0	0	0	0	0	—	—	—	—
		Diffuse	23	—	—	—	—	26	53	70	77	80	78	72	60	42	19	—	—	—	—
	E (E)	Beam	44	—	—	—	—	145	308	329	238	85	0	0	0	0	0	—	—	—	—
		Diffuse	30	—	—	—	—	40	82	106	111	105	92	77	60	41	19	—	—	—	—
	SE (NE)	Beam	115	—	—	—	—	158	395	533	557	495	374	220	67	0	0	—	—	—	—
		Diffuse	40	—	—	—	—	42	94	135	153	152	136	110	79	48	20	—	—	—	—
	S (N)	Beam	158	—	—	—	—	79	250	425	549	614	614	549	425	250	79	—	—	—	—
		Diffuse	45	—	—	—	—	30	74	119	152	170	170	152	119	74	30	—	—	—	—
	SW (NW)	Beam	115	—	—	—	—	0	0	67	220	374	495	557	533	395	158	—	—	—	—
		Diffuse	40	—	—	—	—	20	48	79	110	136	152	153	135	94	42	—	—	—	—
	W (W)	Beam	44	—	—	—	—	0	0	0	0	0	85	238	329	308	145	—	—	—	—
		Diffuse	30	—	—	—	—	19	41	60	77	92	105	111	106	82	40	—	—	—	—
	NW (SW)	Beam	3	—	—	—	—	0	0	0	0	0	0	0	0	41	47	—	—	—	—
		Diffuse	23	—	—	—	—	19	42	60	72	78	80	77	70	53	26	—	—	—	—
	Horiz.	Beam	63	—	—	—	—	9	70	161	237	279	279	237	161	70	9	—	—	—	—
	Horiz.	Diffuse	28	—	—	—	—	25	53	75	89	96	96	89	75	53	25	—	—	—	—
	Horiz.	Global	90	—	—	—	—	34	123	236	326	375	375	326	236	123	34	—	—	—	—
Dec 4 (N) / Jun 3 (S)																					
	Normal to beam		145	—	—	—	—	71	205	421	533	581	581	533	421	205	71	—	—	—	—
Sunrise: 07:57	N (S)	Beam	0	—	—	—	—	0	0	0	0	0	0	0	0	0	0	—	—	—	—
Sunset: 16:03		Diffuse	15	—	—	—	—	10	23	42	56	62	62	56	42	23	10	—	—	—	—
	NE (SE)	Beam	0	—	—	—	—	11	9	0	0	0	0	0	0	0	0	—	—	—	—
		Diffuse	16	—	—	—	—	12	29	48	59	62	61	56	43	24	10	—	—	—	—
	E (E)	Beam	27	—	—	—	—	57	151	237	189	70	0	0	0	0	0	—	—	—	—
		Diffuse	20	—	—	—	—	19	44	74	86	82	72	60	43	23	10	—	—	—	—
	SE (NE)	Beam	89	—	—	—	—	70	204	408	472	439	339	205	72	0	0	—	—	—	—
		Diffuse	28	—	—	—	—	22	53	98	122	123	110	87	58	27	11	—	—	—	—
	S (N)	Beam	126	—	—	—	—	42	138	339	479	550	550	479	339	138	42	—	—	—	—
		Diffuse	33	—	—	—	—	16	42	87	123	140	140	123	87	42	16	—	—	—	—
	SW (NW)	Beam	89	—	—	—	—	0	0	72	205	339	439	472	408	204	70	—	—	—	—
		Diffuse	28	—	—	—	—	11	27	58	87	110	123	122	98	53	22	—	—	—	—
	W (W)	Beam	27	—	—	—	—	0	0	0	0	0	70	189	237	151	57	—	—	—	—
		Diffuse	20	—	—	—	—	10	23	43	60	72	82	86	74	44	19	—	—	—	—
	NW (SW)	Beam	0	—	—	—	—	0	0	0	0	0	0	0	0	9	11	—	—	—	—
		Diffuse	16	—	—	—	—	10	24	43	56	61	62	59	48	29	12	—	—	—	—
	Horiz.	Beam	34	—	—	—	—	0	15	77	138	174	174	138	77	15	0	—	—	—	—
	Horiz.	Diffuse	20	—	—	—	—	13	30	55	71	78	78	71	55	30	13	—	—	—	—
	Horiz.	Global	53	—	—	—	—	13	45	132	209	252	252	209	132	45	13	—	—	—	—

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Notes:

(1) Hourly values in the first and last columns are calculated for a time halfway between sunrise and end of sunrise hour and halfway between beginning of sunset hour and sunset, respectively.

(2) Orientations for southern hemisphere shown in parentheses.

(3) Computed using a Linke turbidity factor of 3.5.

(4) Ground reflected component included in the slope diffuse irradiance values; ground albedo: 0.20.

(5) Altitude: 0 m.

(6) Values corrected to mean solar distance (MSD) in the northern hemisphere, see CIBSE Guide J: *Weather, solar and illuminance data*. Apply MSD ratio adjustment for southern hemisphere.