

Statistics for GBR_Birmingham.035340_IWEC
 Location -- BIRMINGHAM - GBR
 {N 52° 27'} {W 1° 43'} {GMT +0.0 Hours}
 Elevation -- 99m above sea level
 Standard Pressure at Elevation -- 100141Pa
 Data Source -- IWEC Data

WMO Station 035340

- Using Design Conditions from "Climate Design Data 2009 ASHRAE Handbook"

- If the design condition source is ASHRAE, the design conditions are carefully generated
- from a period of record (typically 30 years) to be representative of that location and
- be suitable for use in heating/cooling load calculations. If the source is not ASHRAE,
- please consult the referenced source for the reasoning behind the data.

Design Stat	ColdestMonth	DB996	DB990	DP996	HR_DP996	DB_DP996	DP990	HR_DP990	DB_DP990	WS004c	DB_WS004c				
WS010c	DB_WS010c	WS_DB996	WD_DB996												
Units	{}	{°C}	{°C}	{°C}	{}	{°C}	{°C}	{m/s}	{°C}	{m/s}	{deg}				
Heating	1	-5.2	-3.4	-7.5	2	-3	-5.9	2.3	-1.4	12.4	8.4	11.2	8.1	1.8	70

Design Stat	HottestMonth	DBR	DB004	WB_DB004	DB010	WB_DB010	DB020	WB_DB020	WB004	DB_WB004	WB010	DB_WB010							
WB020	DB_WB020	WS_DB004	WD_DB004	DP004	HR_DP004	DB_DP004	DP010	HR_DP010	DB_DP010	DP020	HR_DP020								
DB_DP020	EN004	DB_EN004	EN010	DB_EN010	EN020	DB_EN020	#Hrs 8-4 & DB-12.8/20.6												
Units	{}	{°C}	{°C}	{°C}	{°C}	{°C}	{°C}	{°C}	{°C}	{°C}	{m/s}	{deg}	{°C}	{}	{°C}				
{°C}	{}	{°C}	{°C}	{}	{°C}	{kJ/kg}	{°C}	{kJ/kg}	{°C}	{}									
Cooling	7	9.5	26.7	17.9	24.5	17	22.8	16.4	18.9	24.4	18	22.9	17.2	21.4	3.8	110	17	12.3	20.6
	16.1	11.6	19.7	15.3	11	18.8	54.1	24.6	51.1	22.8	48.5	21.3	1152						

Design Stat	WS010	WS025	WS050	WBmax	DBmin_mean	DBmax_mean	DBmin_stddev	DBmax_stddev	DBmin05years	DBmax05years	DBmin10years					
DBmax10years	DBmin20years	DBmax20years	DBmin50years	DBmax50years												
Units	{m/s}	{m/s}	{m/s}	{°C}	{°C}	{°C}	{°C}	{°C}	{°C}	{°C}	{°C}					
Extremes	10	8.9	8	23.8	-8.7	29.7	3.2	2.5	-11.1	31.5	-13	32.9	-14.8	34.3	-17.1	36

- Monthly Statistics for Dry Bulb temperatures °C

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maximum	11.9	12.7	17.7	17.4	23.1	24.7	28.0	30.4	20.3	17.6	15.1	12.9
Day:Hour	31:19	28:12	15:14	12:15	24:15	22:16	29:13	19:14	18:14	19:14	13:12	5:13
Minimum	-6.6	-7.4	-4.3	-2.1	-1.6	5.5	9.0	5.4	2.3	-4.6	-3.3	-2.8
Day:Hour	3:05	1:06	26:06	23:03	4:05	19:04	22:05	4:03	30:04	31:07	22:04	28:08
Daily Avg	4.6	3.7	6.4	7.4	11.0	14.2	17.2	16.3	13.1	9.9	6.9	5.0

- Maximum Dry Bulb temperature of 30.4°C on Aug 19

- Minimum Dry Bulb temperature of -7.4°C on Feb 1

- Average Hourly Statistics for Dry Bulb temperatures °C

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0:01- 1:00	3.8	2.7	4.7	5.3	8.1	11.7	14.1	13.4	11.3	8.6	6.1	4.5
1:01- 2:00	3.5	2.4	4.4	4.9	7.9	11.3	14.0	13.0	11.1	8.4	5.9	4.4
2:01- 3:00	3.4	2.2	3.9	4.8	7.8	11.1	13.7	12.9	10.8	8.2	5.9	4.1

3:01- 4:00	3.3	2.3	3.7	4.6	7.8	10.7	13.5	12.7	10.5	7.9	5.9	4.1	
4:01- 5:00	3.1	2.1	3.8	4.8	7.6	10.8	13.4	12.4	10.6	7.7	5.8	4.2	
5:01- 6:00	3.2	2.0	3.7	5.0	8.2	11.6	14.2	12.9	10.7	7.8	5.9	4.1	
6:01- 7:00	3.4	2.0	3.8	5.8	9.0	12.4	15.3	13.8	11.3	7.9	5.8	4.1	
7:01- 8:00	3.7	2.4	4.9	6.7	10.0	13.4	16.3	15.0	12.4	8.7	5.9	3.8	
8:01- 9:00	4.0	2.9	6.1	7.6	10.9	14.3	17.3	16.3	13.4	9.7	6.4	4.1	
9:01-10:00		4.5	3.9	7.4	8.5	12.0	15.3	18.3	17.6	14.4	10.7	7.2	4.8
10:01-11:00		5.3	4.7	8.1	9.5	12.8	15.8	19.1	18.5	15.4	11.7	7.9	5.7
11:01-12:00		5.7	5.4	8.6	10.1	13.6	16.6	19.8	19.1	15.9	12.5	8.2	6.4
12:01-13:00		5.9	5.8	9.0	10.6	14.3	17.1	20.7	20.1	16.2	12.7	8.5	6.7
13:01-14:00		6.1	5.9	9.4	10.5	14.9	17.5	21.0	20.5	15.9	12.9	8.5	6.9
14:01-15:00		6.1	5.9	9.4	10.2	14.9	17.7	21.0	20.6	15.9	12.7	8.3	6.6
15:01-16:00		5.9	5.6	9.2	10.0	14.8	17.7	20.9	20.3	15.7	12.3	8.1	6.0
16:01-17:00		5.5	5.1	8.8	9.8	14.4	17.2	20.4	19.6	15.3	11.4	7.6	5.4
17:01-18:00		5.2	4.6	8.0	9.0	13.7	16.6	19.7	19.2	14.4	10.3	7.5	5.4
18:01-19:00		5.2	4.2	7.1	8.3	12.7	15.9	18.9	17.8	13.5	9.8	7.4	5.0
19:01-20:00		5.0	4.0	6.4	7.4	11.5	15.0	18.0	16.5	13.0	9.4	7.0	4.8
20:01-21:00		5.0	3.8	6.3	6.9	10.5	13.9	16.8	15.5	12.6	9.2	6.7	4.7
21:01-22:00		5.0	3.4	5.9	6.5	9.8	13.2	15.9	14.8	12.0	9.0	6.5	4.8
22:01-23:00		4.5	3.2	5.5	6.2	9.1	12.6	15.2	14.4	11.7	8.9	6.4	4.6
23:01-24:00		4.3	2.9	5.0	5.9	8.5	12.1	14.5	13.7	11.4	8.7	6.2	4.5
Max Hour		15	14	15	13	14	16	14	15	13	14	13	14
Min Hour		5	7	6	4	5	4	5	5	4	5	7	8

- Monthly Statistics for Extreme temperatures °C

#Days	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max >= 32												
Max <= 0												
Min <= 0	8	13	8	3	1					3	2	9
Min <=-18												

- Monthly Statistics for Dew Point temperatures °C

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maximum	10.5	9.0	9.2	10.1	14.0	17.2	18.6	16.9	15.3	14.7	13.7	10.2
Day:Hour	31:19	27:15	21:15	12:03	24:20	8:05	11:16	20:12	7:14	19:02	12:14	23:12
Minimum	-8.9	-9.0	-7.0	-6.6	-9.9	-0.8	6.3	3.7	-2.7	-5.1	-3.9	-3.5
Day:Hour	2:05	1:06	25:15	22:15	15:17	19:11	16:17	5:19	27:15	31:07	22:05	26:08
Daily Avg	1.5	1.1	1.5	2.9	5.7	9.0	12.3	10.9	9.4	7.3	4.4	3.3

- Maximum Dew Point temperature of 18.6°C on Jul 11

- Minimum Dew Point temperature of -9.9°C on May 15

- Monthly Statistics for Relative Humidity %

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maximum		100	100	99	99	99	100	99	100	100	100	100
Day:Hour		5:19	2:22	15:07	26:06	29:06	1:06	2:04	21:01	4:02	3:01	8:04
Minimum		43	49	30	30	18	22	33	25	33	43	52
Day:Hour		11:14	18:14	25:15	22:15	15:17	19:14	29:14	4:18	27:15	6:12	18:13

Daily Avg 80 83 72 74 72 73 75 73 80 85 85 89

- Average Hourly Relative Humidity %

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
0:01- 1:00	83	88	80	83	85	83	87	87	89	91	89	91	
1:01- 2:00	83	88	81	84	86	85	88	89	90	91	89	91	
2:01- 3:00	83	89	81	85	86	86	90	89	91	92	89	91	
3:01- 4:00	82	89	81	86	86	86	91	90	92	92	89	91	
4:01- 5:00	82	90	82	86	86	87	91	91	93	93	89	92	
5:01- 6:00	83	89	84	85	84	85	89	90	92	93	89	93	
6:01- 7:00	83	90	84	83	81	80	85	87	90	92	89	92	
7:01- 8:00	82	88	81	79	77	75	81	81	86	90	88	93	
8:01- 9:00	82	87	76	76	72	71	76	75	80	87	87	92	
9:01-10:00		81	83	69	71	68	67	71	68	74	83	85	90
10:01-11:00		78	80	65	67	65	65	67	64	68	78	81	87
11:01-12:00		77	75	63	63	62	63	64	61	65	74	80	85
12:01-13:00		77	72	61	61	60	62	61	55	63	72	78	84
13:01-14:00		75	71	59	62	55	59	59	53	65	71	77	82
14:01-15:00		76	72	59	63	55	59	58	52	65	72	78	83
15:01-16:00		77	74	59	64	56	58	58	54	68	74	80	87
16:01-17:00		78	76	60	62	56	60	60	57	68	78	82	89
17:01-18:00		79	79	63	65	60	62	63	59	72	83	83	89
18:01-19:00		81	81	67	68	64	65	66	66	77	86	83	90
19:01-20:00		81	83	71	72	70	69	71	71	80	88	85	90
20:01-21:00		82	84	72	74	75	75	75	76	82	87	85	92
21:01-22:00		81	86	74	77	78	78	79	80	85	89	86	90
22:01-23:00		81	87	77	78	81	80	82	82	87	90	87	90
23:01-24:00		82	87	79	80	84	81	86	85	89	90	88	91
Max Hour		7	7	6	4	5	5	4	5	5	6	6	8
Min Hour		14	14	15	13	14	16	16	15	13	14	14	14

- Monthly Indicators for Precipitation/Moisture (kPa)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	0.7	0.7	0.7	0.8	0.9	1.2	1.4	1.2	1.2	1.1	0.9	0.8

- Monthly Statistics for Wind Chill/Heat Index temperatures °C **

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Minimum WC		-14	-10	-11	-11	-4	-2		6	1	-2	-11	-8
Day:Hour	2:01	21:03	1:10	19:09	15:05	6:01		31:06	27:16	29:10	24:04	31:24	
Average WC		-2	0	1	1	3	5		8	6	4	1	1
Avg Del WC		7	4	4	5	4	3		1	2	3	5	4
# Hours WC		686	512	587	507	257	42		6	56	190	523	605

Maximum HI
Day:Hour

Average HI
Avg Del HI
Hours HI

- **WindChill/HeatIndex Temps -- statistics...only those different from Air Temps

- Monthly Wind Direction % {N=0 or 360,E=90,S=180,W=270}

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
North	6	29	7	14	13	13	9	16	22	12	25	6
NorthEast	1	6	11	19	32	27	9	3	10	8	7	2
East	1	4	2	4	8	7	5	1	1	13	7	2
SouthEast	3	12	6	5	5	2	8	8	5	13	6	8
South	22	14	29	15	15	8	16	21	7	23	8	24
SouthWest	31	17	14	22	12	14	23	19	14	14	13	30
West	18	9	22	12	6	15	22	14	20	11	16	18
NorthWest	18	9	9	8	8	14	9	18	21	5	17	10

- Monthly Statistics for Wind Speed m/s

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Maximum	16.4	9.3	8.7	10.8	9.8	9.3	8.7	9.3	10.8	12.9	12.9	9.3	
Day:Hour		17:16	10:11	2:05	19:09	9:17	14:20	4:14	29:17	27:13	7:12	16:11	22:19
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Day:Hour		3:04	3:03	7:08	12:20	3:23	1:14	2:01	3:05	4:01	2:20	5:23	1:01
Daily Avg	5.2	3.1	3.8	4.7	4.6	3.6	3.4	3.3	3.3	3.6	3.9	3.5	

- Maximum Wind Speed of 16.4 m/s on Jan 17

- Minimum Wind Speed of 0.0 m/s on Jan 3

- Monthly Statistics for Solar Radiation (Direct Normal, Diffuse, Global Horizontal) Wh/m²

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Direct Avg		630	1013	1670	2165	2641	2931	2875	2400	1761	1198	657	616
Direct Max		2491	4442	5671	7050	6598	7349	8219	6667	5278	4097	2417	1855
Day	30	19	25	27	6	6	5	19	23	2	5	6	
Diffuse Avg		511	971	1599	2441	2966	3184	3229	2751	2017	1222	682	417
Global Avg		661	1324	2400	3720	4719	5274	5202	4277	2945	1691	874	550

- Maximum Direct Normal Solar of 8219 Wh/m² on Jul 5

- Average Hourly Statistics for Direct Normal Solar Radiation Wh/m²

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
0:01- 1:00	0	0	0	0	0	0	0	0	0	0	0	0	
1:01- 2:00	0	0	0	0	0	0	0	0	0	0	0	0	
2:01- 3:00	0	0	0	0	0	0	0	0	0	0	0	0	
3:01- 4:00	0	0	0	0	0	0	0	0	0	0	0	0	
4:01- 5:00	0	0	0	0	0	0	0	0	0	0	0	0	
5:01- 6:00	0	0	0	0	8	17	26	1	0	0	0	0	
6:01- 7:00	0	0	0	42	55	84	103	42	8	0	0	0	
7:01- 8:00	0	0	54	104	132	147	129	121	60	22	0	0	
8:01- 9:00	1	39	110	178	205	228	184	192	120	91	44	0	
9:01-10:00		40	109	173	233	233	272	250	240	191	178	121	27
10:01-11:00		119	137	198	213	251	271	252	274	249	189	148	126
11:01-12:00		146	146	210	214	248	286	335	284	251	182	133	147
12:01-13:00		121	180	210	276	292	327	303	311	241	149	107	135

13:01-14:00	101	166	232	256	308	330	330	258	204	159	51	127
14:01-15:00	82	134	235	242	292	326	239	221	185	142	46	54
15:01-16:00	18	84	168	191	277	274	278	199	157	77	7	0
16:01-17:00	0	17	75	140	197	204	222	156	92	9	0	0
17:01-18:00	0	0	5	73	118	123	154	87	4	0	0	0
18:01-19:00	0	0	0	2	25	42	69	14	0	0	0	0
19:01-20:00	0	0	0	0	0	0	1	0	0	0	0	0
20:01-21:00	0	0	0	0	0	0	0	0	0	0	0	0
21:01-22:00	0	0	0	0	0	0	0	0	0	0	0	0
22:01-23:00	0	0	0	0	0	0	0	0	0	0	0	0
23:01-24:00	0	0	0	0	0	0	0	0	0	0	0	0
Max Hour*	12	13	15	13	14	14	12	13	12	11*	11*	12
Min Hour	1	1	1	1	1	1	1	1	1	1	1	1

- Monthly Calculated "undisturbed" Ground Temperatures** °C

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0.5 m	6.2	4.1	3.6	4.0	6.9	10.0	13.0	15.1	15.7	14.7	12.3	9.2
2.0 m	8.1	6.1	5.2	5.2	6.6	8.8	11.1	13.1	14.1	13.9	12.6	10.5
4.0 m	9.3	7.8	6.9	6.6	7.1	8.4	9.9	11.4	12.5	12.7	12.1	10.9

- **These ground temperatures should NOT BE USED in the GroundTemperatures object to compute building floor losses.

- The temperatures for 0.5 m depth can be used for GroundTemperatures:Surface.
- The temperatures for 4.0 m depth can be used for GroundTemperatures:Deep.
- Calculations use a standard soil diffusivity of 2.3225760E-03 {m**2/day}

- Monthly Heating/Cooling Degree Days/Hours

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
HDD base 10C	168	176	115	82	13	0	0	0	2	38	105	157
HDD base 18C	416	400	360	317	216	113	33	67	146	252	333	403
CDD base 10C	0	0	3	6	45	127	222	194	96	34	12	1
CDD base 18C	0	0	0	0	0	0	8	13	0	0	0	0
CDH base 20C	0	0	0	0	18	74	330	396	0	0	0	0
CDH base 23C	0	0	0	0	0	6	59	149	0	0	0	0
CDH base 27C	0	0	0	0	0	0	2	31	0	0	0	0

- 741 annual cooling degree-days (10°C baseline)

- 856 annual heating degree-days (10°C baseline)

- 21 annual cooling degree-days (18°C baseline)

- 3055 annual heating degree-days (18°C baseline)

- Climate type "Cfb" (Köppen classification)**

- Marine west coastal (warm summer, mild winter, rain all year, lat. 35-60°N)

- **Note that the Köppen classification shown here is derived algorithmically from the source weather data.

- It may not be indicative of the long term climate for this location.

- Climate type "5C" (ASHRAE Standards 90.1-2004 and 90.2-2004 Climate Zone)**

- Cool - Marine, Probable Köppen classification=Cfb, Marine (Cool Summer)

- **Note that the ASHRAE classification shown here is derived algorithmically from the source weather data.

- It may not be indicative of the long term climate for this location.

- Typical/Extreme Period Determination

- Summer is Jun:Aug

Extreme Summer Week (nearest maximum temperature for summer)

Extreme Hot Week Period selected: Aug 17:Aug 23, Maximum Temp= 30.40°C, Deviation=|11.572|°C

Typical Summer Week (nearest average temperature for summer)

Typical Week Period selected: Aug 3:Aug 9, Average Temp= 15.91°C, Deviation=| 0.365|°C

- Winter is Dec:Feb

Extreme Winter Week (nearest minimum temperature for winter)

Extreme Cold Week Period selected: Feb 17:Feb 23, Minimum Temp= -7.40°C, Deviation=| 8.690|°C

Typical Winter Week (nearest average temperature for winter)

Typical Week Period selected: Jan 27:Feb 2, Average Temp= 4.46°C, Deviation=| 0.048|°C

- Autumn is Sep:Nov

Typical Autumn Week (nearest average temperature for autumn)

Typical Week Period selected: Sep 29:Oct 5, Average Temp= 9.97°C, Deviation=| 0.255|°C

- Spring is Mar:May

Typical Spring Week (nearest average temperature for spring)

Typical Week Period selected: Mar 29:Apr 4, Average Temp= 8.29°C, Deviation=| 0.345|°C

Temperature and RH in Birmingham

