

WIND CHILL

In those areas of the country where winter temperatures combine with the wind to make one even colder, the weather forecasts now include something called the wind chill "factor", or more correctly the wind chill equivalent temperature. One can look the WCET up in a table, but for a PPC user that's no fun at all. So I contacted the National Oceanic and Atmospheric Administration for a copy of Environmental Information Summaries C-3, Wind Chill. With this summary I had the equation for the body heat loss due to wind speed. The equations I used are listed below, so those of you with calculators other than the HP-67,97 can also program the wind chill ET.

$$H = (A + B(v)^{\frac{1}{2}} + C_v)(dT)$$

$$WCET = 33 - (H / (A + B(v_4)^{\frac{1}{2}} + C_{v4}))$$

A = 10.45, a constant

B = 10.00, "

C = -1.00, "

v = wind speed (m/s), 1mph = .44704m/s

v4 = 4mph wind speed in m/s

$$dT = (33 - T_{air}), T_{air} \text{ in degrees C.}$$

$$^{\circ}C = (5/9)(F - 32)$$

$$^{\circ}F = ((9/5)c) + 32$$

To use the program, enter the wind speed in mph and then the air temp. in $^{\circ}F$ or $^{\circ}C$.

If the temp. was entered in $^{\circ}F$ press A.

If the temp. was entered in $^{\circ}C$ press fa.

When the program stops the WCET in $^{\circ}F$ will be shown.

The WCET in $^{\circ}C$ is in the Y-register.

001	f	LBL A	31	25	11	033	+	81
		ENT			41		CHS	42
		3			03		3	03
		2			02		3	03
		-			51		+	61
		5			05		ENT	41
		x			71		ENT	41
		9			09	040	9	09
		+			81		x	71
010	g	LBL a	32	25	11		5	05
		CHS			42		+	81
		3			03		3	03
		3			03		2	02
		+			61		+	61
		X-Y		35	52		h	RTN
		.			83			35 22
		4			04		f	LBL 0
		4			04		f	\sqrt{x}
		7			07	050	h	LST x
		0			00		CHS	42
020		4			04		X-Y	35 52
		x			71		1	01
		f	GSB 0	31	22	00	0	00
		x			71		x	71
		1			01		+	61
							1	01
026		.			83	057	1	61
		7			07		0	00
		8			08		.	83
		8			08	060	4	04
030		1			01		5	05
		6			06		+	61
		f	GSB 0	31	22	00	063	h
							RTN	35 22

The constants .44704 and 1.78816 may be replaced with .45 and 1.8 respectively.

Example : The temp. outside is $21^{\circ}F$ and there is a 15mph wind, what will the WCET be?

15 ENTER↑

21 A → $-3.3^{\circ}F$ or $-19.6^{\circ}C$

Have fun and keep warm! Happy Programming

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WIND CHILL FACTOR
USER INSTRUCTIONS

1. Reload card. (ON-RUN).
2. Key in wind speed in M.P.H., press ENTER.
3. Key in the temperature in $^{\circ}\text{F}$ or $^{\circ}\text{C}$.
 - a. If temperature was entered in $^{\circ}\text{F}$, press A.
 - b. If temperature was entered in $^{\circ}\text{C}$, press fA.
4. When the program stops, the wind chill factor in $^{\circ}\text{F}$ will be displayed. Pressing h X \leftrightarrow Y will display the wind chill factor in $^{\circ}\text{C}$.
5. For a new reading, go to step #2.