

INSTRUCTIONS

▲ Keep this sheet for your records.

Using the Pocket Sling Psychrometer

No. 89080
Pocket Sling Psychrometer

ACCESSORIES
No. 89081
Replacement Thermometer

No. 88989
Replacement Wicks, Pack of 12

PRODUCT SUPPORT
800-430-5566

If you need more information or some expert advice from an experienced professional, call our Product Support team.

SALES
P 800-647-5368
F 800-543-4203

Our sales department will gladly take your order, update you on pricing, or fax an order form.

ONLINE
www.forestry-suppliers.com



Relative humidity can be measured by an instrument called a hygrometer. The simplest hygrometer - a sling psychrometer - consists of two thermometers mounted together with a handle attached on a chain. One thermometer is ordinary. The other has a cloth wick over its bulb and is called a wet-bulb thermometer.

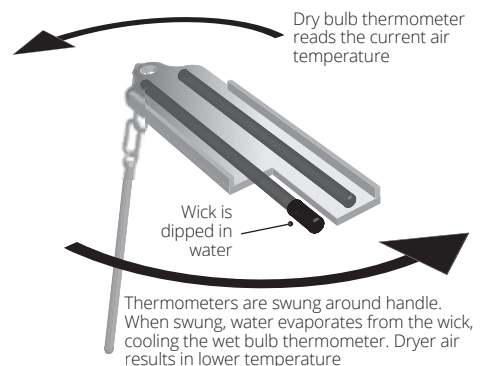
When a reading is to be taken, the wick is first dipped in water and then the instrument is whirled around. During the whirling, the water evaporates from the wick, cooling the wet-bulb thermometer. Then the temperatures of both thermometers are read.

If the surrounding air is dry, more moisture evaporates from the wick, cooling the wet-bulb thermometer more so there is a greater difference between the temperatures of the two thermometers. If the surrounding air is holding as much moisture as possible - if the relative humidity is 100% - there is no difference between the two temperatures.

To use a Sling Psychrometer, first obtain a small cup or wide-mouthed bottle of water, preferably distilled, which has come to ambient equilibrium temperature. Completely immerse the wick of the wet bulb thermometer in the water. Whirl the psychrometer rapidly for 15 or 20 seconds then quickly read the wet bulb thermometer. Keeping this reading in mind, immediately whirl again and take another reading. Repeat this process three or four times, or more, if necessary, until at least two successive readings of the

wet bulb are found to agree very closely, thereby showing that it has reached its lowest temperature. A minute or more is generally required to secure the correct temperature. If the wick begins to dry out it will be necessary to reimmerse it and start the process over again.

With the wet and dry bulb temperatures, psychrometric tables, charts or a slide rule may be used to determine the percent relative humidity, dew point or saturation temperature, absolute humidity (pounds of water per pound of dry air), etc.



Evaporation from the wick will leave behind any salts or residues which are dissolved in the water. These may be removed by washing the wick in water or soap and water. Be sure to rinse well to remove all trace of the soap.

Reference: C.F. Marvin, "Psychrometric Tables for Obtaining the Vapor Pressure, Relative Humidity, and Temperature of the Dew Point from Readings of the Wet- and Dry-Bulb Thermometers," W.B. No. 235, U.S. Department of Commerce, Weather Bureau, 1941.

Using the Relative Humidity Table

The Sling Psychrometer is based on the principle that evaporation consumes heat and, therefore, lowers the temperature. It consists of two thermometers: one with a dry bulb for indicating the atmospheric temperature, and one with a wet bulb, the indication of which varies with the degree of relative humidity. The difference between the dry bulb and the wet bulb indications depends on

the rate of evaporation from the wet bulb, which in turn is dependent upon the degree of relative humidity. When the humidity is 100%, there will be no evaporation from the wet bulb, and the two thermometers will read the same. The following example demonstrates the use of the table: assume a "dry bulb" temperature of 90°F and a "wet bulb" temperature of 80°F. The

difference is 10°F. Locate the figure 90 in the vertical column marked "Air Temperatures" and the figure 10 in the horizontal column marked "Difference, etc." Follow the columns to their intersection, and the figure 65 is reached, indicating that when the "dry bulb" temperature is 90°F and the "wet bulb" temperature is 80°F there is 65% of relative humidity.

Relative Humidity Table																																						
Difference Between The Dry and Wet Thermometers °F																																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36		
Air Temperature	30	89	78	67	56	46	36	26	16	6																											30	
	35	91	81	72	63	54	45	36	27	19	10	2																										35
	40	92	83	75	68	60	52	45	37	29	22	15	7																									40
	45	93	86	78	71	64	57	51	44	38	31	25	18	12	6																							45
	50	93	87	80	74	67	61	55	49	43	38	32	27	21	16	10																						50
	55	94	88	82	76	70	65	59	54	49	43	38	33	28	23	19	14	9	5																			55
	60	94	89	83	78	73	68	63	58	53	48	43	39	34	30	26	21	17	13	9	5	1																60
	65	95	90	85	80	75	70	66	61	56	52	48	44	39	35	31	24	27	20	16	12	9	5	2														65
	70	95	90	86	81	77	72	68	64	59	55	51	48	44	40	36	33	29	25	22	19	15	12	9	6	3											70	
	75	96	91	86	82	78	74	70	66	62	58	54	51	47	44	40	37	34	30	27	24	21	18	15	12	9	7	4	1								75	
	80	96	91	87	83	79	75	72	68	64	61	57	54	50	47	44	41	38	35	32	29	26	23	20	18	15	12	10	7	5	3						80	
	85	96	92	88	84	80	77	73	70	66	63	60	56	53	50	47	44	41	38	36	33	30	28	25	22	20	17	15	13	11	9	6	4	2			85	
	90	96	92	89	85	81	78	74	71	68	65	61	58	55	52	49	47	44	41	39	36	34	31	29	26	24	22	19	17	15	13	11	9	7	5	3	1	90
	95	96	93	89	86	82	79	76	72	69	66	63	60	58	55	52	49	47	44	42	39	37	35	32	30	28	25	23	21	19	17	15	13	11	10	8	6	95
	100	96	93	89	86	83	80	77	73	70	68	65	62	59	56	54	51	49	46	44	41	39	37	35	33	30	28	26	24	22	21	19	16	15	13	12	10	100
	105	97	93	90	87	84	81	78	75	72	69	66	64	61	58	56	53	51	49	46	44	42	40	38	35	33	31	30	28	26	24	22	20	19	17	15	14	105
	110	97	93	90	87	84	81	78	75	73	70	67	65	62	60	57	55	52	50	48	46	44	42	40	38	36	34	32	30	28	26	25	23	21	20	18	17	110
	115	97	94	91	88	85	82	79	76	74	71	69	66	64	61	59	57	54	52	50	48	45	44	42	40	38	36	34	33	31	29	28	26	24	23	21	20	115
	120	97	94	91	88	85	82	80	77	74	72	69	67	65	62	60	58	55	53	51	49	47	45	43	41	40	38	36	34	33	31	29	28	26	25	23	22	120
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36		