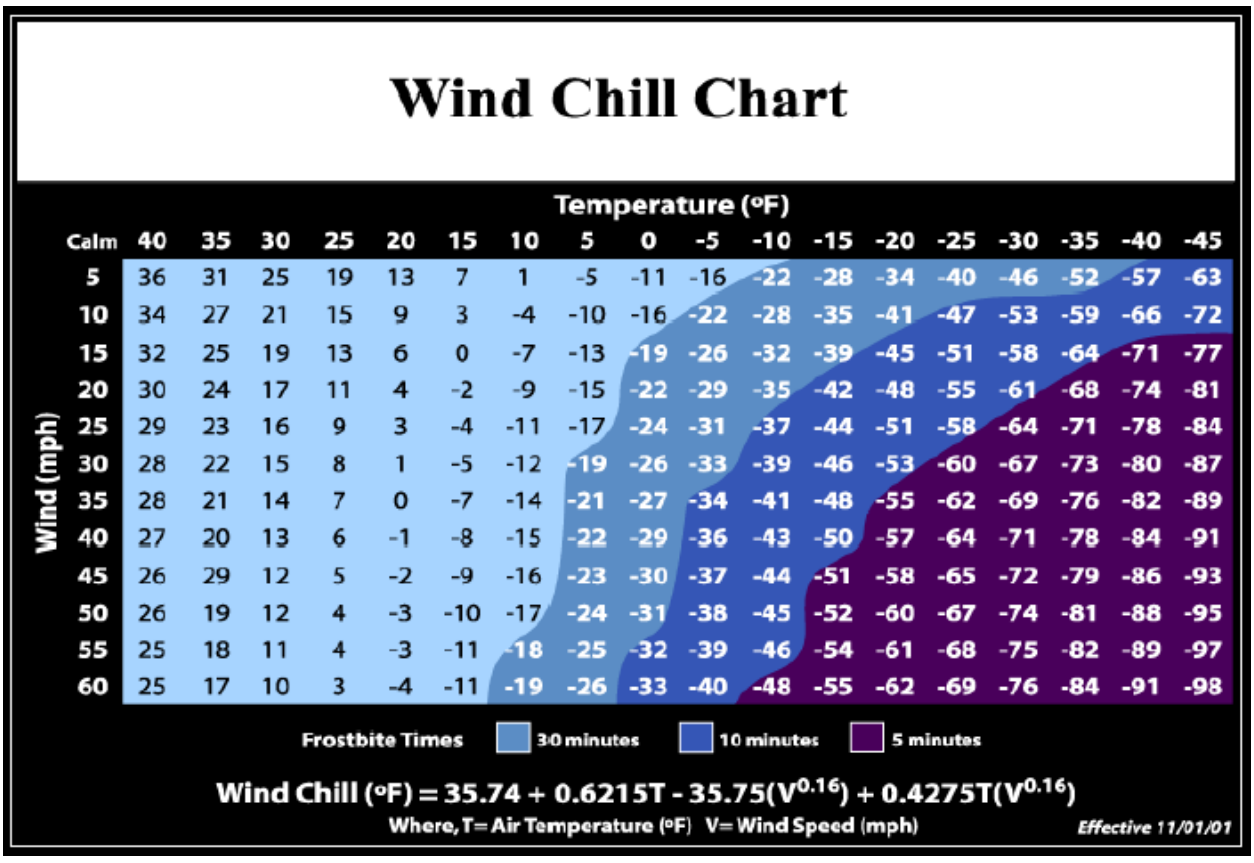
Wind Chill Information

What is wind chill temperature? – According to the National Weather Service, "The wind chill temperature is how cold people and animals feel when outside. Wind chill is based on the rate of heat loss from exposed skin caused by wind and cold. As the wind increases, it draws heat from the body, driving down skin temperature and eventually the internal body temperature. Therefore, the wind makes it FEEL much colder. If the temperature is 0 degrees Fahrenheit and the wind is blowing at 15 mph, the wind chill is -19 degrees Fahrenheit. At this wind chill temperature, exposed skin can freeze in 30 minutes."



Wind Chill Chart

Temperature (°F)

Wind (mph)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
	5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
	10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
	15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
	20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
	25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
	30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
	35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
	40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
	45	26	29	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
	50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
	55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
	60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes | 10 minutes | 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

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What are the effects of wind chill temperature on a person? – Depending on the temperature and the amount of time a person is exposed, determines what the effects are. The two most common effects are; frostbite and hypothermia.

What is frostbite? – Frostbite, according to Ohio State University Medical Center, is "an injury to the body caused by freezing. Most often, frostbite affects the nose, ears, cheeks, chin, fingers, or toes, and can permanently damage the body, even leading to amputation in severe cases. The risk of frostbite is increased in persons with reduced blood circulation, those with constriction of blood flow because of gloves or boots that are too tight, and in persons not dressed for extremely cold temperatures. Exposed hands and feet are the most vulnerable." O.S.U. states that symptoms of frostbite may include;

- redness or pain in a skin area
- a white or grayish-yellow skin area
- skin that feels unusually firm or waxy
- numbness

In most cases, the victim is unaware of frostbite because the frozen tissues are numb. The symptoms of frostbite may resemble other medical conditions or problems. Always consult your physician for a diagnosis.

What is hypothermia? – The Ohio State University Medical Center defines hypothermia as "an abnormally low body temperature brought on by staying in cold temperatures for a long period of time. This lowered body temperature affects the brain, thus affecting a person's ability to think clearly or move well. Severe hypothermia can also cause an irregular heartbeat leading to heart failure and death.

While hypothermia occurs most often in very cold temperatures, even cool temperatures (above 40° F) can be dangerous to a person who has become chilled from rain, sweat, or being in cold water for an extended period of time." While each individual experiences each symptom differently, O.S.U. lists the symptoms as;

- confusion
- sleepiness
- fumbling hands
- shivering and exhaustion
- slow, slurred speech, or shallow breathing
- weak pulse and/or low blood pressure
- drowsiness
- a change in behavior or appearance during cold weather
- stiffness in the arms and legs
- poor control over body movements or slow reactions
- in infants, bright red, cold skin and/or very low energy

To determine if the person is suffering from hypothermia, take his/her temperature with a thermometer. If the person's temperature is below 96° F, call for emergency help immediately, according to the National Institutes of Health (NIH).

Additional Information

- National Weather Service – Wind Chill Questions and Definitions
- Ohio Committee for Serve Weather Awareness-Wind Chill Index
- Ready America- Winter Storms and Extreme Cold
- National Weather Service- Wind Chill Calculator
- Weather Channel- Frostbite and Hypothermia