

TST #197

Working in Cold Conditions

Prolonged exposure to cold, wet and windy conditions while cutting concrete—even when temperatures are above freezing—can be dangerous. Extreme cold conditions exist when the equivalent wind chill temperature is at or below -18° F (-28° C). Wind chill temperature is a function of the actual temperature and the estimated wind speed. Under windless conditions, air provides an invisible blanket around the skin. As wind speed increases, this layer of heated air is carried away from the body at an accelerated rate, resulting in ambient temperatures well below the air temperature. There is no universally-agreed standard for calculating wind chill, but the following table provides wind chill information based on a recognized formula.

		Temperature (°F)																	
Calm		40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Wind (mph)	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	19	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

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) Effective 11/01/01

When working in cold weather, concrete cutters can take a series of simple precautions to avoid conditions associated with extreme cold weather. Here are some examples.

- Wear several layers of clothing rather than one thick layer.
- Wear gloves and a warm wool hat or a helmet liner under a hard hat. Forty percent of a person's body heat can be lost from an uncovered head. Ears should also be covered.
- Wear synthetic or cotton clothing next to the skin to wick away sweat.
- Wear warm footwear with one or two pairs of thick socks. Footwear should not fit too tightly as it can restrict blood flow.
- Wear a scarf or face mask in cold, windy weather.
- Take frequent short breaks in a warm shelter to allow the body to warm up.
- Avoid exhaustion or fatigue, as energy is needed to keep muscles warm.
- Drink warm fluids and avoid drinks with caffeine or alcohol.
- Eat warm, high-calorie food such as pasta dishes.

Working in Cold Conditions Quiz

The following statements should be answered with "True" or "False." Answers below.

1. Wind chill takes into consideration the actual temperature and the estimated wind speed.
2. A person can lose up to 40% of their body heat from an uncovered head.
3. Footwear and clothing should be as tight as possible to keep the person warmer.
4. Wearing one thick layer of clothing is as effective as wearing several thinner layers.
5. Drinking warm drinks, free of caffeine and alcohol, will help while working in cold conditions.

Employee Name: _____

Signature: _____ **Date:** _____

Answers:

1. True
2. True
3. False
4. False
5. True