

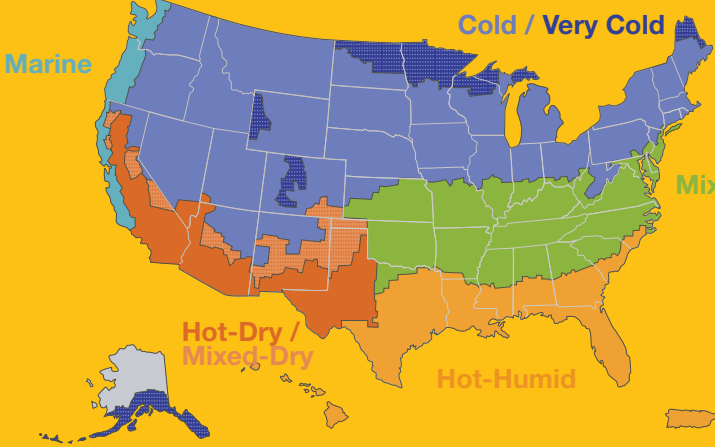
THIS COLD IS LIKE A BAD JOKE!

Cold temperatures and increased wind speed (wind chill) cause heat to leave the body more quickly, putting workers at risk.

THE HUMAN BODY IS VERY SENSITIVE TO TEMPERATURE

The human skin contains 5 times as many receptors for cold than for warm temperatures.

FIVE TO ONE



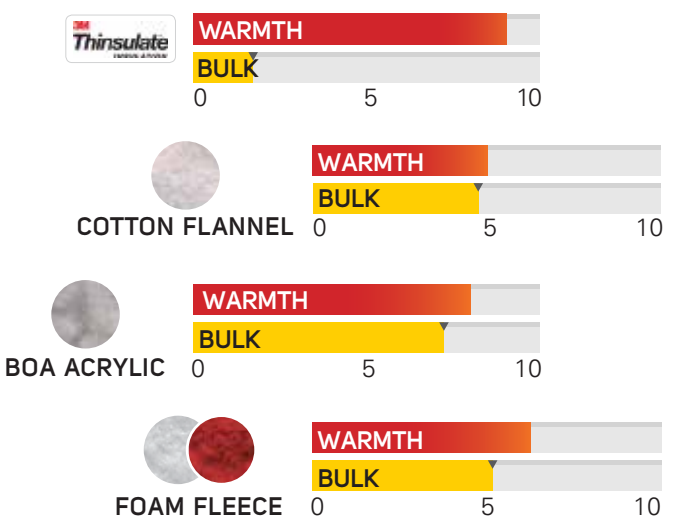
NORTH AMERICA AND CANADIAN TEMPERATURE ZONES

CLO & MET VALUES

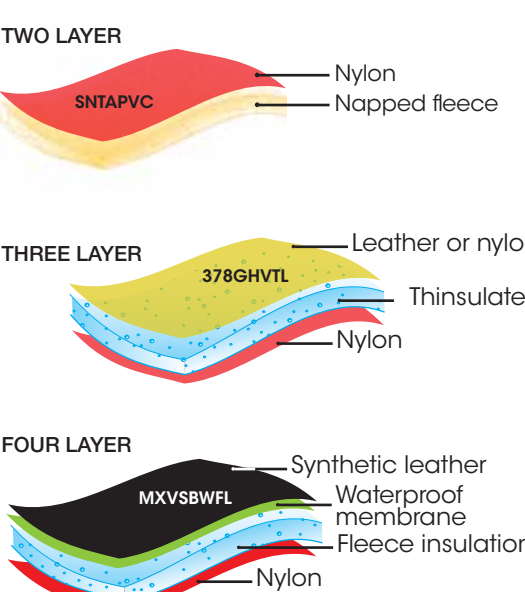
- The colder the environment, the more "Clo" or clothing insulation will be required for comfort at the same level of activity (or MET).
- The higher the metabolic rate (MET) of a person, the less "Clo" or clothing insulation will be required for thermal comfort at the same level of environmental temperature.

CLO = 0.0 - NUDE PERSON
CLO = 1.0 - BUSINESS SUIT

PROS & CONS WINTER LININGS



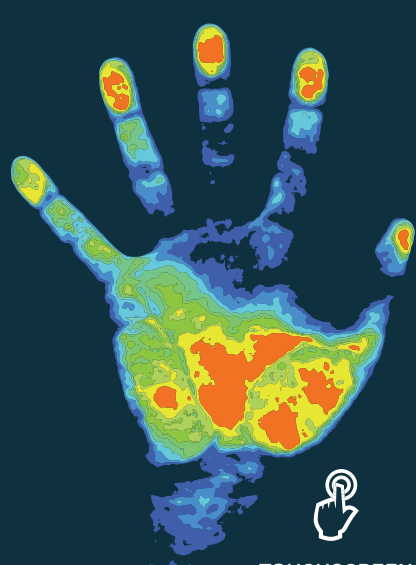
CHOOSE A MULTI-LAYER GLOVE FOR TEMPERATURES 20°F OR -5°C



MAJOR CONSIDERATIONS

WHY DO HANDS GET COLD SO EASILY?

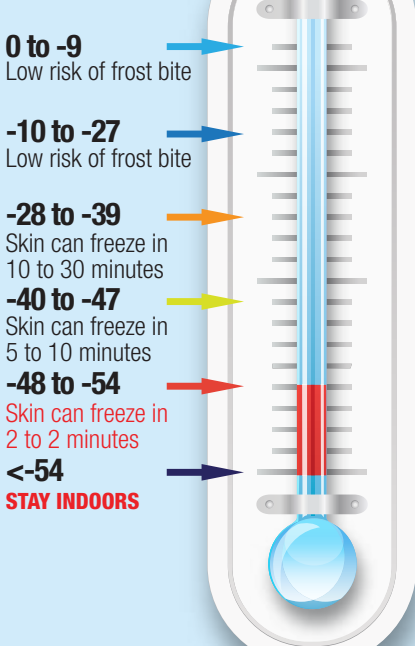
At very low temperatures, your feet and hands feel cold before other parts of your body. This is because the body responds to cold temperatures by reducing blood flow so that the body's core temperature remains within the optimum range.



- TOUCHSCREEN COMPATIBLE
- DEXTERITY
- BREATHABILITY
- WATERPROOF
- WINTER LINED
- WIND RESISTANT

WINDCHART AND FROSTBITE TIMES

Importance of choosing a glove with a windproof membrane



Wind Speed	Temperature (°C)									
	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
	Temperatures with Wind Chill (°C)									
10 km/h	-3	-9	-15	-21	-27	-33	-39	-45	-51	-57
20 km/h	-5	-12	-18	-24	-30	-37	-43	-49	-56	-62
30 km/h	-6	-13	-20	-26	-33	-39	-45	-52	-59	-65
40 km/h	-7	-14	-21	-27	-34	-41	-48	-54	-61	-68
50 km/h	-8	-15	-22	-29	-35	-42	-49	-56	-63	-69
60 km/h	-9	-16	-23	-30	-36	-43	-50	-57	-64	-71

DRY GLOVES ARE WARMER GLOVES

The temperature of your hands has a direct influence on your overall well-being. Depending on the ambient temperature, your hands typically feel comfortable at a hand-skin temperature between 22° C and 32° C; they feel uncomfortable at temperatures above and below this range.

BREATHABLE MOISTURE WILL NOT ACCUMULATE INSIDE

Active outdoor works causes an increase in heat production in the body. Even in sub-zero temperatures we perspire. When the sweat evaporates off our hands it takes heat away from our body to cool down.

Breathable gloves allow the sweat to escape the glove, preventing moisture from accumulating.



WATERPROOF MOISTURE DOES NOT PENETRATE FROM OUTSIDE

Heat loss is far higher when the insulation inside the glove is wet or damp.

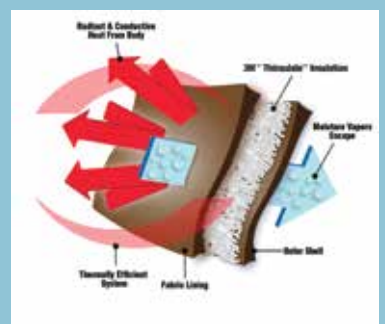
Waterproof gloves protect the insulation, preventing water from penetrating from the outside - keeping your hands dry and warm much longer.

HOW DOES 3M™ THINSULATE™ INSULATION FUNCTION?

- Fibrous Structure Traps Air**
- Low Thermal Conductivity gas
 - Air is a good insulator = impedes conductive heat loss
 - The thicker (bulkier) an insulation, the more air entrained (many insulations ONLY depend on this mechanism)
 - 3M™ Thinsulate™ Insulation for hand wear is between 97% and 99.5% air

Fibrous Structure Helps Block Radiant Heat Loss

- A major heat loss mechanism; fibers impede radiant heat loss
- The smaller the fiber diameters used, the more "opaque" an insulation
- 3M™ Thinsulate™ Insulation for apparel employs microfibers (< 10µm) and/or fine fibers (< 15µm) coupled with larger fibers
- Analogous to radiation from fireplace from fireplace - where the chain-mail screen blocks a large amount of the radiation
- Like fibers block radiation heat loss from the body



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