

How warm are Blizzard Products?

This is by far the most frequently asked question we receive, and not always the easiest one to answer. To keep things simple we start by giving a summarised answer, and then give a fuller analysis and explanation below.

Short Answer

In a three-layer Reflexcell™ product covering the full body, wearing light single-layer clothing, and sitting or lying on a light insulating mat:

at **7°C** you will be comfortably warm

at **2°C** you will just be warm enough if you curl up

At **-12°C** you should be able to survive for at least six hours, although you may become hypothermic

Obviously in colder external temperatures, up to minus 20 deg C wearing suitable additional layers allows you to attain a temperature suitable for survival.

Long answer

Obviously warmth depends on a large number of other factors in addition to the quality of the insulation and the outside temperature. These include wind speed, humidity, amount of shelter, your fitness and state of health and state of mind. So by providing shelter from the wind and rain, by wearing as much clothing as possible, and by using increased amounts of insulation between the user and the ground, the products may be used at lower temperatures down to minus 20 deg C.

British Standard 13573 classifies the performance of sleeping bags according to strict rules, and although it is not designed to be applied to other types of equipment, such as blankets or jackets, it still provides a useful way of rating these other products.

The standard defines three temperatures:

- **comfort temperature** - The lower limit of the comfort range down to which a sleeping bag user with a relaxed posture such as lying on the back is globally in thermal equilibrium and just not feeling cold (related to standard woman and in standard condition of use)
- **limit temperature** – The lower limit at which a sleeping bag user with a rolled-up body posture is globally in thermal equilibrium and just not feeling cold (related to standard man and in standard conditions of use)
- **extreme temperature** - The lower extreme temperature where the risk of health damage by hypothermia occurs. This temperature is calculated for a standard woman in situation of high cold stress which can be maintained only for a limited duration of 6 hours. The sleeping bag user is rolled up in the sleeping bag so as to minimize thermal loss through the sleeping bag, with mean skin temperature of 29 °C and shivering.

Tests conducted at Leeds University and at Blizzard show that the thermal resistance of standard, three-layer Reflexcell™ to be around 8 Togs (a Tog is a unit of thermal resistance used in the textile industry, 1 Tog corresponding to 0.1 m²K/W). This translates to “Comfort”, “Limit” and “Extreme” temperatures of 7°C, 2°C and -12°C as shown above.

In cold conditions we recommend wearing as much clothing as possible inside the bag or blanket, and in extreme conditions we recommend the use of two bags, one inside the other this will allow the bag to be used in temperatures as low as minus 20 deg C.

Another, more traditional way do rate the performance of sleeping bags is to suggest the number of seasons for which they are suitable. The table below is a guideline to this system.

| Season | Season Rating | Night Temperature | Required Thermal Insulation (Togs) |
|----------------------|---------------|-------------------|------------------------------------|
| Summer | 1 | 15 to 18 | 3 to 5 |
| Spring/ Autumn | 2-3 | 10 to 0 | 5 to 8 |
| Winter | 4 | 3 to -10 | 7 to 10 |
| Mountain | 5 | -5 to -20 | 9 to 12 |
| Polar/ High Mountain | 6 | -15 to -40 | 11 to 16+ |

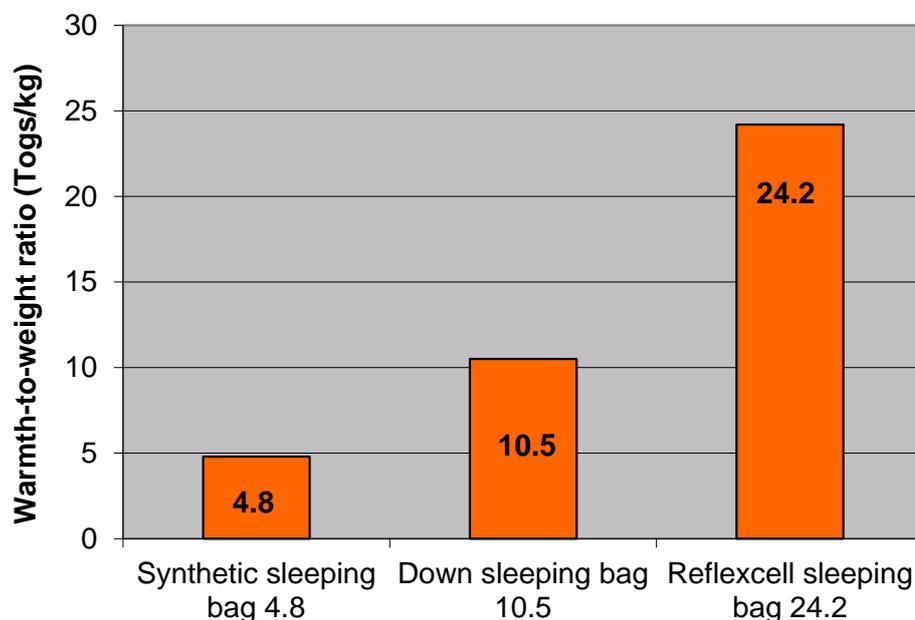
According to this system, Blizzard products with a thermal resistance of 8 Togs would have to a “Three Season” rating, although it should be borne in mind that this is not a standardised rating system, and is for guidance only.

Comparison with other products

Other products likely to be used to provide emergency insulation include single layer “Space Blankets”, other single layer semi-reflective products such as the “Heat Sheet”, Single layer polythene “Bivvy Bags”, and bubble wrap. As can be seen from the table below, none of these comes close to the performance of Blizzard’s Reflexcell™ products.

| Product | Tog Rating |
|----------------------|------------|
| Reflexcell™ Products | 8.0 |
| Space Blanket | 1.6 |
| Heatsheet | 1.0 |
| Polythene bivvy bag | 2.0 |
| Mediwrap | 1.5 |
| Bubblewrap | 2.5 |

Although many conventional sleeping bags are as warm as, or warmer than, Blizzard products,



Reflexcell™'s incredible lightness means that it will always perform far better than them on a weight-for-weight basis. Blizzard products also work when wet do not absorb water and are therefore an essential survival aid.