



Visit Sports Trader's website for more product knowledge: [www.sportstrader.co.za](http://www.sportstrader.co.za)

# The inside-outs of sleeping bags

**N**ot all sleeping bags are created equal. From the material and construction method used to create the bag to the temperature rating supplied by the manufacturer – performance could differ tremendously from one bag to the next, depending on how it is made.

Understanding what temperature ratings mean, how the construction of the bag affects the performance thereof, the effect of the shape of the bag and how a person's own physiology affects insulation, will better equip you to sell sleeping bags.

## Temperature ratings

In SA there is currently no industry standard on sleeping bag temperature ratings.

European manufacturers adopted legislation for the EN 13537 rating in the early 2000s, which ensures that all manufacturers use sensors on a heated mannequin to determine how cold the bag can get.

- In this test the mannequin wears one layer of thermal underwear and is placed inside the sleeping bag on an insulating mat. The test is conducted in a temperature controlled chamber. This gives the most objective comparison between sleeping bags – irrespective if they are down, synthetic or filled with anything else.
- The test was introduced to standardise how sleeping bags are sold and to get away from very subjective seasonal ratings. Seasonal ratings (rated by summer, spring, cold and very cold) posed a major problem in that there is no main way to identify a season. Winter in Cape Town would mean a very different climate and temperature to winter in Namibia – so which bag should one sell for winter?

The EN 13537 standard recognises that factors like the mat you are sleeping on, your shelter, gender, metabolism, homeostasis management (the ability of the body to keep at a healthy temperature), calorie intake, a person's weight or build, clothing, sleeping bag liner and use of hood, will affect the perceived warmth of a sleeping bag. "The rating standard does not identify one singular temperature as suitable, but gives a range that a typical user can use as a guide for conditions their bag will be most comfortable in," explains Leo Rust of Adventure Inc, distributors of international outdoor brands like Sea to Summit and Mountain Equipment.

## Our cut-out-and-keep series to assist retailers with product knowledge

Words: NELLE DU TOIT. Compiled with the help of John Black of Outland Distributors, Andrew Gold of Performance Brands, Leo Rust of Adventure Inc, Alexi Prodromou of Seagull Industries and websites such as [products.howstuffworks.com](http://products.howstuffworks.com), [downbags.co.uk](http://downbags.co.uk) and [trail-space.com](http://trail-space.com).



Photo courtesy of Messe Friedrichshafen

The EN 13537 standard is not mandatory, but each year more brands are starting to move this way." says Andrew Gold of Performance Brands, distributors of First Ascent and Capetorm.

## What the ratings mean

When brands do not make use of the EN 13537 rating, they rely on their own thorough tests and conservative ratings that serve as a guide to the kind of conditions the bag should be used in.

- The upper limit – the upper limit is the highest temperature at which the average adult man can sleep comfortably for eight hours without excessive sweating. This is tested in normal 'summer' sleeping conditions. The mannequin therefore doesn't have a hood on.
- The lower limit – The lowest limit temperature at which the average adult man could sleep for eight hours without waking up. If the customer is a warm sleeper this rating could decide the coldest tempera-

ture the sleeping bag is suitable for.

- The comfort level – This is the limit at which a woman could sleep comfortably for eight hours (it has been proven that the average woman sleeps colder than her male counterpart). If the customer is a cold sleeper, use this rating to determine the coldest temperature the sleeping bag is suitable for.
- An extreme temperature – this rating is for emergencies only! The test shows the minimum temperature the average woman can endure for six hours without dying in the cold. It is the maximum (lowest) coldest temperature that a customer could use this bag in, without freezing. This won't be a number at which you will feel comfortable at all (you might still get frostbite!) – but you will survive. Some brands do not offer an extreme rating as it refers to the extreme limit (before hypothermia sets in) and one should not use this rating to make a sale.

Some people are more susceptible to cold than others. Physiology plays a big role in how well your own body generates heat and how it will work with the sleeping bag to keep the sleeper warm.

"One must remember that a sleeping bag keeps the warm air that your body has created warm, it cannot make warm air," says Gold.

"If a customer is susceptible to the cold, we would suggest getting a sleeping bag that is at least 5 - 10 degrees warmer than where you plan on travelling," says Alexi Prodromou of Seagull Industries, distributors of OZtrail sleeping bags.

## Bag shape

The shape of the sleeping bag can affect how heat is distributed throughout the sleeping bag.

- A tapered footed sleeping bag (mummy bag) fits snugly around the lower parts of the body. The theory is that the more space there is in a bag, the more the body needs to work to keep the sleeper warm. However, if the space in the bag is too tight, your body may be pressing against the sides and developing cold spots.
- "Tapered foot bags are generally warmer to sleep in because there is less air between you and the sleeping bag to keep warm. One disadvantage is that people can find it too claustrophobic," says Prodromou.
- As a large amount of heat can

To p62

# Sleeping bags

## cont from p61

be lost through the head it makes sense to use a hooded bag for colder climates. "The hood also doubles as a pillow for warmer climates and is a great way to keep your head off of bug infested youth hostel beds," says Gold.

### Insulation

The material used in the lining of the bag has a major impact on how the bag will act in insulating the sleeper from the cold.

**Synthetic insulation** is made of polyfibres. Some synthetics are used to replicate the warming and heating effects of down, with the aim of achieving higher levels of breathability at a lower cost. Although heat is circulated with ease, synthetic insulation does suffer from heat loss at a quicker rate than natural down.

- The pros of synthetic bags would be that they are good value for money, they require less care when cleaning and storing, they provide circulated heat with freedom of movement and they perform better in wet conditions than natural down.
- The cons would be that they have a poor weight to warmth ratio when compared to down insulation, they are bulkier and heavier, and they lose heat quicker than down fillings.

**Natural down** feathered sleeping bags are lighter and more compact than a similar rated synthetic bag. It also lasts considerably longer (if properly stored) but is a lot more expensive. The general consensus is that when one takes into consideration comfort, longevity and temperature range, down is far superior to synthetic, provided your customer can afford it.

- The pros would be that down is extremely warm for its weight, much lighter than synthetic, and it is extremely compressible. "Contrary to popular belief, down is non-allergenic," says Black.
- The cons would be that down performs badly when exposed to dampness/wetness, it is more expensive than synthetic insulation, more care is required when cleaning and storing, and it lacks breathability.

### Down rating standards

Down sleeping bags are expensive, so issues could naturally arise if manufacturers were looking to save money opting to use "down" which does not adhere to an acceptable standard.

Internationally, there is an accepted standard of down fill, which means that there is a certain rating for the filling used, irrespective of what the material is composed of (goose, duck etc.). The International Down Feather Bureau tests down in their labs.

- "The "fill power" value refers to the fluffiness of the product, which relates to the insulation capabilities of a particular down," says Rust. The higher the fill power the better that type of down will insulate you (1

000g of 750 fill power down will keep you warmer than 1 000g of 650 fill power down). "Generally your expedition sleeping bags will use a 750 or even 850 fill power down, whereas entry level sleeping bags will use 625 fill power down to make them more affordable."

- There are, however, two different ways of measuring fill power. "The US standard is more lenient than the European. What this means is that a US manufacturer can quote a higher fill power value for lower quality down," warns Rust.

### Construction of a bag

**Synthetic:** stitch-through construction is probably the easiest to make in bulk and therefore would be a lot cheaper. It is a construction seen in many of the entry-level synthetic sleeping bags. Some suppliers warn that it is mostly used for summer bags, as stitch-through construction allows for a lot of heat loss.

**Two layer offset:** Two layer sleeping bags are made so that the seams are sewn in the middle with insulation both above and below them. The insulation layer is then split into two layers, which provides coverage over cold spots for additional warmth. This construction is usually used in synthetic bags. It is a bit more expensive to make than stitch-through, but it has the advantage of not having any cold spots.

**Down sleeping bag construction:** Down needs space to loft so that it can create insulation. Construction methods used in sleeping bags that allow space for down to loft and keep them in place, are usually more expensive, but highly effective at reducing cold spots.

### Baffle construction

There are different types of baffle construction to house the insulation in sleeping bags. Box style baffles have an internal baffle wall and are warmer and heavier than sewn-through baffles. Side-wall material is constructed between the sleeping bag and shell lining and creates chambers that allow down feathers to loft, minimizing heat loss.



- The box wall (pictured above) is the simplest of the box style variations, it has vertical side walls to keep the insulation in place.
- A slant box has walls that slant to one side, which creates a more difficult path for heat to escape. It improves the thermal efficiency even more than box wall construction.
- The trapezoidal box wall is a popular design for the high quality sleeping bags of many manufacturers as it provides a good compromise between warmth and weight. The shape of the side walls, outer shell and sleeping bag lining creates a trapezium

shape.

- For a V-tube baffled bag each sidewall is inclined at an angle and joins its neighbour to form a series of "V" baffles. The greatest number of baffles is obtained using the "V" design (twice as many as with box wall construction). According to downbags.co.uk, the more baffles there are, the less chance of the down being displaced – hence the V-tube is better than a box wall with regards to insulating warmth using the same quantity of down.
- Shingle insulation offers exceptional heat retention, optimal loft and superb cushioning properties. It is constructed with air-space around the down, allowing it to loft and create better insulation.
- Thin layers of insulation combining aspects of shingle and blanket construction create a wave construction. The extra insulation in a compressed space is forced into a wave formation.
- The offset double box wall is a set of box baffles that are double layered on top of one another with their walls offset, like bricks, which allows for less heat loss. Brick construction is used in sleeping bags which contain a large amount of insulation material needed in extreme cold conditions.

Differential cut means that the inner lining of a sleeping bag is cut smaller than the outer shell fabric. It allows the insulation to expand outward for better lofting and also reduces the chance of getting cold spots. Mummy bags are typically differentially cut.

Bags with differential fill have more insulation on the top than on the bottom. The insulation on the bottom of the bag is compressed under the body weight, so it is less thermally efficient than the fully lofted insulation on the top. A down bag with differential fill may have 60% of its down on top and 40% on the bottom.

Welded seams fuse the baffle to the sleeping bag shell, instead of stitching through the fabric. Because welded seams lack puncture holes, manufacturers claim welded seams are stronger, more efficient and more waterproof to seal out moisture.

Zip baffle walls (or draft tubes) are tubes of fabric sewn over zip seams to prevent heat loss through the zipper. Experts advise that all sleeping bags rated +5 degrees or lower would need a zipper baffle.

### Tips on storage and display

- Sleeping bags should never be stored in their stuff bags – they should be folded loosely, or stored loose in a mesh bag;
- Customers want to see and touch products, therefore it would be great to have one of each model out on display. This can be done using a ladder style with one placed over the top of another, or hanging down in a cupboard style on coat hangers.
- "Customers are also interested in how small the product is packed up so you would also need the packaged product on display so that they can touch and feel the weight of that," says Prodromou.

