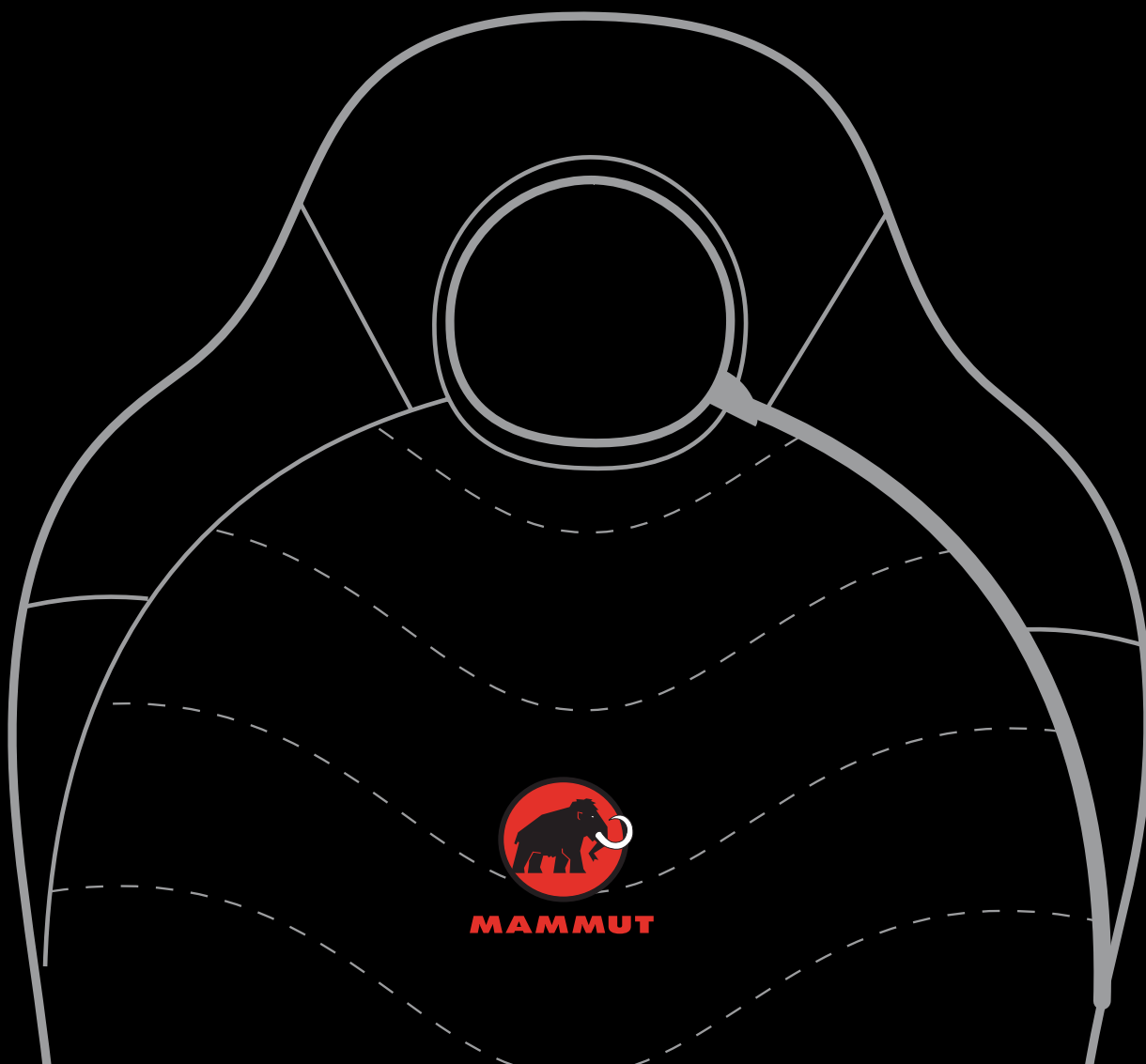


Sleep Well

Part 2 | Down 'Know-How'
All to know about Down



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1. DOWN IN GENERAL

Down grows in the feathers of ducks and geese and serves as insulation.

“ Still“ air can be found trapped mostly around the chest and stomach area, which protects the animals from the cold in winter and from the heat in summer. Water birds are the only animals to have this special insulation process. Still air means that the air, as a result of the tiny down structures, cannot circulate. Thus no temperature adjustment takes place between the body and the environment, the body is insulated.

The trapping of the air succeeds because down is made up of incredibly small formations, just like a snowflake with a lot of tiny branches. A single down has about 150 branchlets, each covered with fine hair and weighing just 1 to 4 milligrams. For our winter sleeping bags we need more than 1 million down feathers! A down feather, as opposed to normal feathers, does not have a keel, but just a tiny core, from which the branchlets protrude in a radial shape.

Just like human hair, down is made of Keratin, a material which, even without trapping air, has very good insulation properties. Furthermore, Keratin conducts warmth very badly, which is the main reason, that down sleeping bags outperform synthetic sleeping bags when it comes to weight and warmth performance.



Microscopic Picture of down

2. QUALITY

2.1. In general

The quality is dependent on many factors. The following things are the main influences on the quality:

- o **Origin** (climate), the best raw materials come from colder areas like: Siberia, East Europe, Canada or the Pyrenees.

- o **Holding** (Indoors or outdoors)

- o **Age of the animal**, the basic rule: the older an animal, the better the raw materials:

- o older animals have larger down and larger down automatically means more filling power.
- o older downs have a longer lifespan, since the down branches grow stronger over the years with knots (the down does not fall apart)
- o **Plucking time** (molting), in springtime the down is at its strongest, and it is much cleaner, because at this time of year it is naturally detaches itself from the skin (dog skin)

- o **Nutrition**, the more balanced the nutrition, the better the quality of the down

- o **Preparation** (plucking, washing, sorting, drying); Transport, storage, filling

2.2 Mixing Ratio

The second important size to determine the down quality is the mixing ratio of the down and feathers. The specifications like, e.g. “ 90/10“ mean: 100 grams of this filling contains at least 90 grams of down. The higher the proportion of down in a filling, the higher the insulation with the same filling weight, since down traps more air than feathers. A 100 per cent down proportion is technically not possible, because it means the down has been selected by hand. A 95/5 value is top.

When plucking the animal, you always get a mixture of down and feathers, which after washing is separated over a blower. Since down is lighter than feathers, they climb higher and further – the separation is based on this principle.

There are of course feathers which have such good aerodynamics, that in spite of their higher weight, they fly with the down and climb just as high. These so called “ Floaters“ prevent the production of pure (100%) down fillings using a machine. Producers often like to attribute a supporting function to the feathers, which really is not necessary. Good downs do not need any feathers for stabilization, since good down is extremely puffy. A larger proportion of feathers makes the filling sensitive to pressure and moisture.

Eiderdown has the reputation of being the best down. It has great properties, but so is the price, due to the time-consuming collection procedure : the down left in an empty nest is collected by hand, piece by piece. (In our winter sleeping bags we have about 1 million down feathers!!). This unbelievably expensive filling material (more than double the price of white goose down) is thus not suitable for commercial products.

2.3. Species: Duck or Goose?

Generally sleeping bags are made from down from either ducks or geese. The quality of duck down available varies from bad quality to good quality (200 cuin bis 650 cuin). The goose qualities, in comparison, range from middle to best quality (450 cuin to 850 cuin). The down from geese and ducks in the middle quality area differentiate themselves not through their quality or insulation, but just through their price! As a consequence of the bad qualities available, duck down has an image problem. There are no tests which show any performance disadvantages between duck and goose down, of the same quality (cuin, mixing ratio). A further reason why the duck down is 30% cheaper than the same quality goose down, is that the food industry demands much more duck than goose. Due to this there is much more duck down on the world market than goose down, which sinks the price.

Fact

Whether duck or goose down, for quality in the area of up to 650 cuin there are no performance influences. Thus Ajungilak uses top duck down for the Laharand Lava Line. For high-end down qualities (over 650cuin) goose down has to be. For the Altitude, Altina, Shield and Sphere Ajungilak exclusively uses goose down.



2.4. White or grey (also called brown) down

White down has exactly the same pressure properties and insulation performance as grey down. It is also just as clean, because the color difference comes from the down's pigment. The only difference, besides the color, is the price.

The price for white down is higher than that of grey, because the demand for white down is a lot higher. The reason for this is human aesthetics; through thin and light fabric you can see the structure of the grey down strikingly well, whereas the white down does not gleam through.

Fact

For our high performance sleeping bags, Ajungilak exclusively uses pure white down, because it clearly has a better look. For the Lahar and Lavaline though, where thicker fabric is used and the down can't shine through, we use the cheaper grey alternative.

2.5. Dead and Live pluck

The best down is found on the breast and stomachs of water birds. The down grows out of the skin of the animal (just like hair) and is supplied with blood from the body. In the molting season (spring) the body prepares for the rejecting of the down (because in summer less insulation is necessary than in winter – thus it is a natural process).

There are three methods to extract down:

1. **Mechanic plucking (normal dead pluck):** the dead animals feathers are removed by a machine. With this method, all down and feathers are removed at the same time (all qualities). Due to this mechanical process, the down is slightly damaged as it is removed (breakages). Down that comes from mechanical plucking is good quality.
2. **Hand plucking:** With this method, down is removed by hand from the live animal. If this is done during the molting season, then the process is part of the natural cycle. With the right handling the animal does not feel any pain. On many

farms, down is plucked all year round – even if the animal's body is not naturally rejecting it. Thus live plucking is justifiably unpopular with consumers. This “unclean” is however, very good quality, but out of respect it is not used by Ajungilak.

3. Hand plucking a dead animal: With this time-consuming method the down is extracted from the oldest animals (therefore dead pluck) by hand. Thus this is “very clean” down and quality-wise, the best available down quality, because it comes from old animals and does not get damaged as it is removed (as is the case with machine plucking). Because it is done by hand, only the best down from the stomach and breast is selected (no watering-down of quality).

For reasons of respect and our extremely high standards, Ajungilak uses down exclusively from Eastern European hand-plucked dead animals for the high quality lines and Mechanic plucked down for the entry level line Lahar and Lava.

2.6. Facts about Quality

The best raw materials come from mature, well-kept animals from cold areas like Eastern Europe. The best holds and nutrition is guaranteed to the mother animals, because they are the capital of every breeding farm. The mother animals are not used for meat until they are 4 years old. This is already very old for a breeding animal, because geese and ducks are usually plucked for the first time at the age of 16 weeks and after 50 weeks are usually sold as meat products. Down products of this origin are very inexpensive, but unsuitable for high quality sleeping bags (durability, loft power).

These things alone are not enough to get good quality, because not until a careful preparation of the raw materials (washing and sorting) takes place, does a good filling result. The preparation is as time-consuming as the production of a good wine, because every raw material is different. Too little washing detergent and the filling stinks, too much and it becomes brittle. The down used by Ajungilak is carefully cleaned at one of the world's best down processing plants in Germany using the most modern equipment and the highest standards of technology, and is then dried at about 100°C and sterilized. This process is necessary for the down to give it maximum performance, and make it hygienic and neutral-smelling.

For the top lines Altitude, Altina, Shield and Sphere Ajungilak processes down exclusively from East European mother animals. The down, with its certificate of origin and guarantee of quality, is washed by our strategic alliance partner Kohl AG in Germany with the most modern equipment, it is then sorted and bagged.

3. AJUNGILAK QUALITY ASSURANCE

The qualities of the down vary from supplier to supplier because it is a natural product (like grapes for wine). Added to this is the fact that quality tests are expensive and it is hard to know what really is in your sleeping bag.

Good contacts and mutual trust in a knowledgeable leader in the down branch is thus elementary to be able to deliver constant top quality.

Therefore Ajungilak cooperates in a strategic alliance closely with the German, traditional Peter Kohl AG from Frankfurt.

Our supply partner is a German company with 100 years of experience of collecting, sorting and washing down. Peter Kohl AG has very close long term relationship to down farms, to ensure that they receive the best raw material from the coldest climatic areas

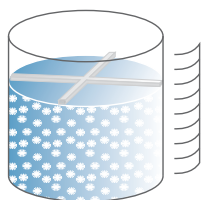
Trust is good, checks are better. With this slogan in mind, every delivery is supplied with the down test certificates of IDFL (International Down and Feather Laboratories, the largest and most serious down testing organization in the world based in Salt Lake and Zurich). For definite confirmation of quality, we at Ajungilak also test in our own direction with IDFL and the German quality institute in Hohenstein.

4. LOFT POWER CUIN

The Loft is the puff/filling power of the down (expansion power after it has been compressed). Thus a loft power of 700 cuin, that one ounce (28 grams) of this down stores, has a volume of 700 cubic inches (i.e. 11.5 liters air). To identify the loft power, the down is loaded down in a glass or Plexiglas cylinder (piercing cylinder) with a weight weighing 100 grams, and then the volume of the filling is measured; the more volume, the better the down quality. Good down has a value of 500cuin, very good reaches 650cuin. Top values lie between 700 and 850cuin.

To be convincing, Ajungilak regularly communicates with the quality assurers IDFL and the laboratory Hohenstein in Germany, to get down test results in accordance with the international standard. (EN 12934).

□ Cuin is the fillingpower of down. This means, the volume that one ounce (28 grams) of that down take in the lorch cylinder



Volume of 28 Gramm Daune:

500 cuin = 8 Liter

600 cuin = 10 Liter

780 cuin = 13 Liter

