

Sleeping Warm

Sleeping Systems and more!



Course Overview

- Importance of Dead Air
- Types of Heat Loss
 - Radiation, Conduction, Evaporation, Convection, Respiration**
- Parts of a Good Sleeping System
 - Sleeping Pads, Sleeping Bags**
- Important Parts of Sleeping Bags
 - Shell, Liner, Fill, Shape, and Features**
- Sleeping Warm Tips

What is Dead Air Space?

*Dead Air Space is Still Air within a container
(tent, sleeping bag, coat).*

Why is Dead Air Space Important?

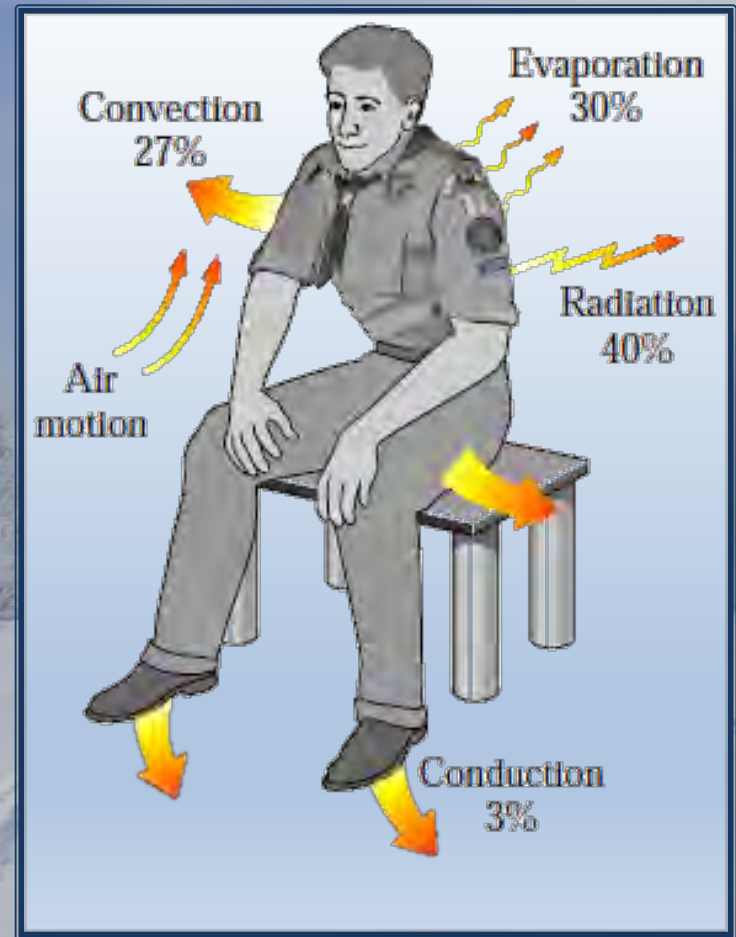
*When heated, dead airspace stays in its location,
providing a warmth cloud that is essential to warm
sleeping.*



The Types of Heat Loss

- Heat Radiation*
- Conduction *
- Evaporation
- Convection *
- Respiration

* We control this with a good sleep system.



Heat (Thermal) Radiation

- **Definition:**
The emission of energy as heat.
- **Relationship to us:**
Humans lose heat from their body all the time.
The most heat leaves from our feet, hands, or head.
- **Solution:**
Cover feet, hands, and head while sleeping

Conduction and Convection

- **Conduction:**
The loss of heat to a cooler surface
- **Cause:**
Contact with cold objects (The Ground)
- **Solution:**
Use a ground pad and insulate yourself from cold objects
- **Convection:**
The loss of heat to moving air
- **Cause:**
Air Movement Around Body
- **Solution:**
Create **Dead Air Space**

Evaporative Cooling

- **Evaporative Cooling:**

The loss of heat due to the evaporation of liquid.

Sweat picks up body heat and evaporates, taking heat with it.

- **Solution:**

Restrain from heavy exercise before bed.

Respiration (Breathing)

- **Respiration (Breathing)**

Causes us to lose heat from breathing out warm air and inhaling cool air

- **Solution:**

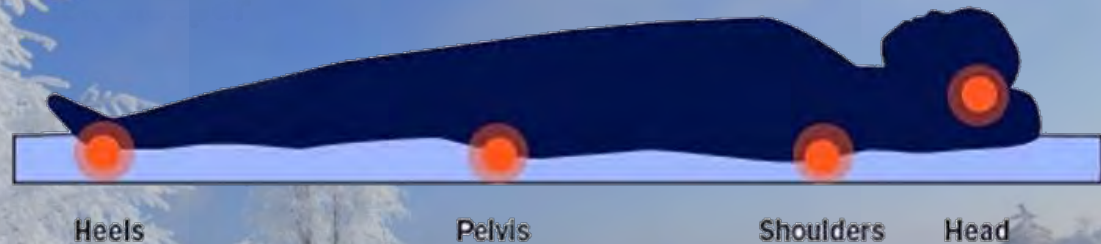
Avoid heavy exercise before bed to slow breathing rate

Parts of a Good Sleeping System

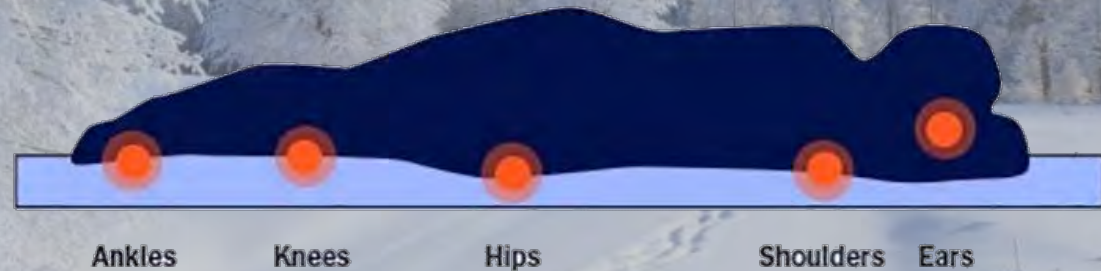
- The Sleeping Pad
- The Sleeping Bag
- Important Parts of a Sleeping Bag
- Loft, Fillings, and Insulation
- Design and Workmanship
- Sleeping Bag Care
- Winterizing your Summer Bag

Pressure / Compression Points

Back sleeper



Side sleeper



Stomach sleeper



The Sleeping Pad

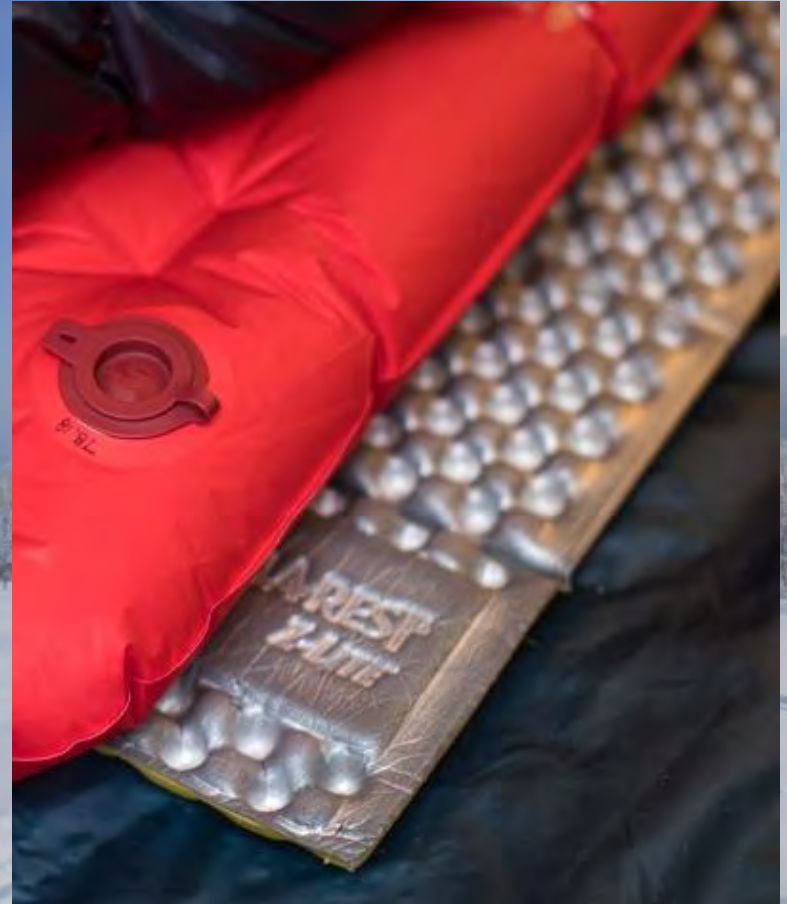
- **What is it?**

**A Layer of Insulation
between you and your
tent**

- **How does it work?**

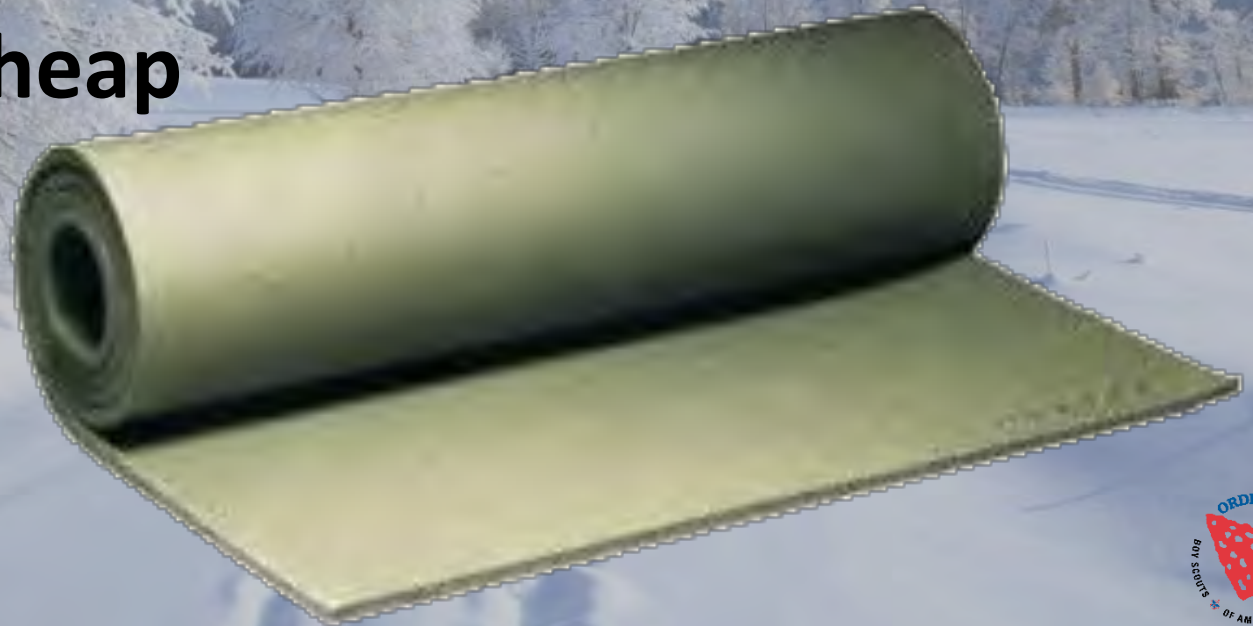
**Prevents the Conduction
of heat between you
and the ground**

**Provides a heat-able
surface**



Sleeping Pads

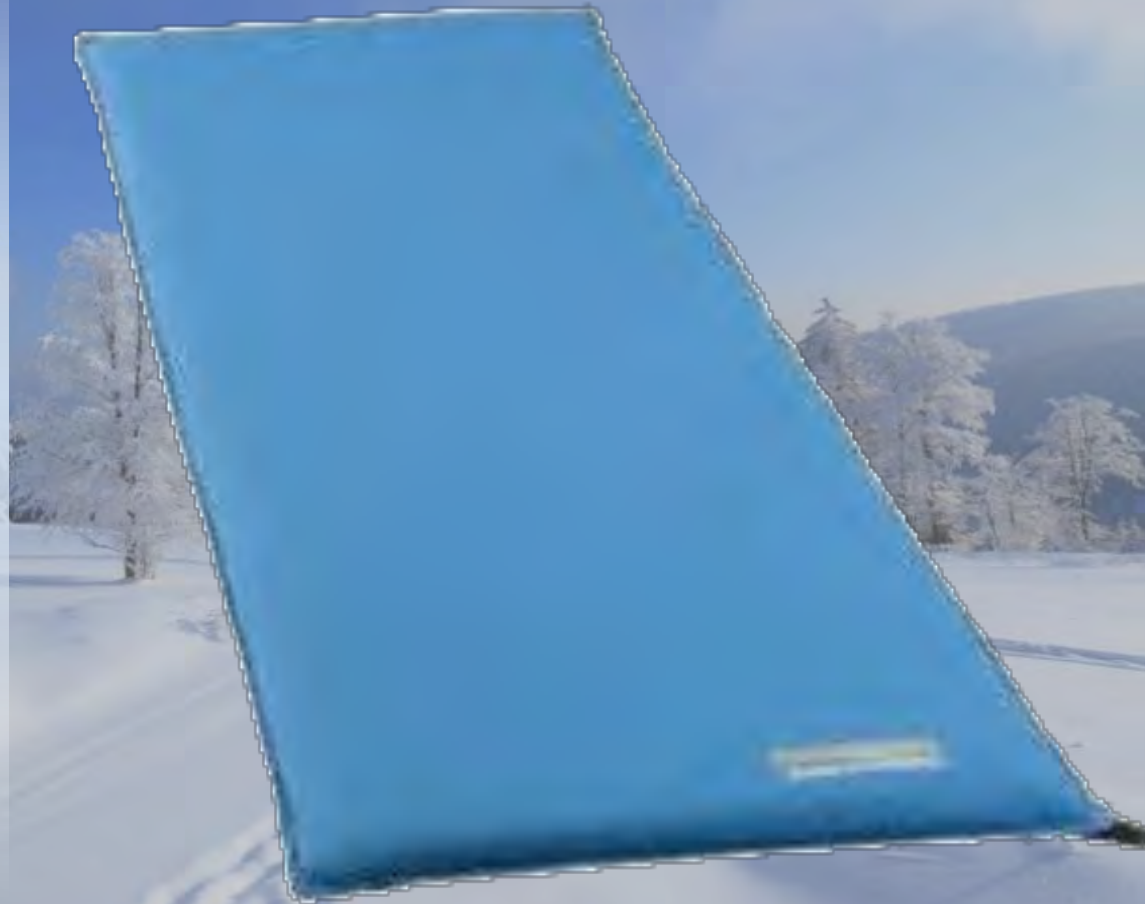
- **Closed Foam Pads**
 - Does not Absorb Water
 - Doesn't allow for underside convection, conduction, or radiation
 - Light & Cheap



Sleeping Pads

- **Therm-a-Rest**

- **Waterproof**
- **Prevents underside conduction, convection and radiation**



Bad Pads/Insulation (by Themselves)

- **Cots**

Allows for convection from your underside

Heavy

Expensive

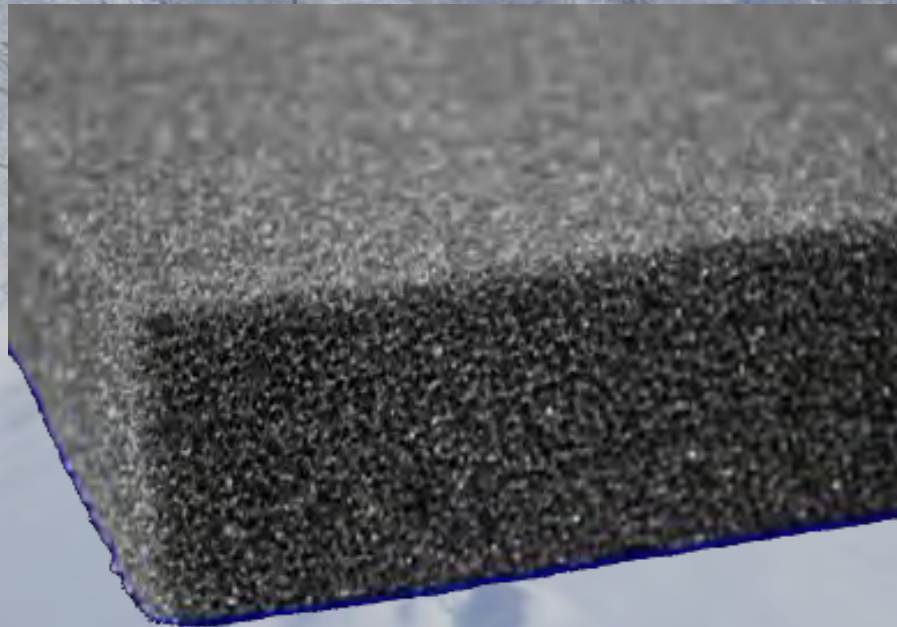


Bad Pads/Insulation (by Themselves)

- Open Cell Pads

Allows Water In

Allows Air through Holes



Bad Pads/Insulation (Worst of all)

Air Mattresses

To much air to
heat up inside



Bad Sleeping Bags

- **Sleep-over bags.**
Just don't
- **Cotton hunter bags**
Very bulky, poor insulation
Worse when damp or wet.
- **Summer camp bags**
Insufficient insulation.
Often too much space.



Sleeping Bags Features

- Shape & Rating
- Gender
- Shell & Lining
- Filler & Loft
- Hood & Collars
- Zipper & Draft Tubes
- Breathability
- Pockets
- Storage.



Sleeping Bag Fit Shapes

Mummy



Recommended

Tapered



No Hood

Rectangular



Big & Bulky

Big Bag
+ Little Scout
Bad Times

Sleeping Bags

- **Rating:**

- Should be rated at lower temperature than expected
- For Example: if projected lows are -15, bag should be rated at -30

Women's Sleeping Bags



- **Women sleep colder** than men, so their bags have more insulation for similar rating.
- **Insulation heavier** at foot and torso where heat is lost.
- **Design is often wider** in the hips and narrower in the shoulders. Less air to heat.

What is Loft?

The Ability of a Sleeping Bag
and its Material
to compress and bounce back



Fillings

- **Down:**
- **Light and Compressible.**
- **Durable—lasting well over 10 years.**
- **Fantastic weight-to-warmth ratio.**
- **More expensive and by product of food industry.**
- **Loses ability to insulate entirely when wet**
- **300 – 800 cubic inches of loft per ounce.**
- **550 (good) & 700 (great) are popular fills.**

Fillings

- **Synthetic:**
- Insulates when wet and dries quicker
- Non-allergenic
- Doesn't compress as well as down
- Poorer weight-to-warmth
- Less expensive
- New and better fibers constantly developed.
- Can be machine washed.

Synthetic Fillings

- **PolarGuard 3D:**
The “premier” filling used on all high end bags.
- **DryLoft:**
Gore-Tex version for sleeping bags. Breathable and windproof.
- **LiteLoft:**
Soft feel. Popular alternative to down.

Synthetic Fillings

- **Quallofil:**
Heavier than PolarGuard, but good insulation.
Can loose loft over time.
- **Thermolite:**
Popular but very little loft. You will be cold in summer. Avoid
- **Hollofil, Microloft:**
Low insulation, heavy and bulky. Avoid them.

Fillings

- **Polycotton:**
- Soft and comfortable
- Heavy and does not compress.
- Very poor insulation when wet or damp.
- **Cotton kills!**

Qualities	Cotton	Down	Wool	Polar Guard	Hilo Fill	Fiber Fill	Thin Sulate
Weight Per Insulative Value	High	Low	High	Medium	Medium	High	Very Low
Thickness Per Insulative Value	Very Thick	Thick	Thin	Medium	Medium	Medium To Thick	Thin
Wet Warmth	Very Poor	Poor	Good	Good	Good	Good	Good
Length Of Dry Time	Long	Very Long	Very Short	Short	Short	Moderate	Very Short
Compress Ability	Low	Great	Low	Medium	Medium	Medium	Low
Breathing Ability	Fair	Fair	Medium	Medium	Medium	Medium	Good
Durability	Poor	Poor	Good	Moderate	Moderate	Moderate	Good
Care Required	Machine Wash	Dry Clean	Machine Wash	Machine Wash	Machine Wash	Machine Wash	Machine Wash
Cost	Low	Very High	High	Medium	Medium	Fairly Low	Medium
Overall Winter Camping Value	Nearly Worthless	Poor If Wet	Great	Good	Good	Fair	Great

Outer Shell

- Should be Fine Weave or Rip-Stop Nylon
- Should be cut different for both sleeping bag pieces
- There are many different materials for different uses.

Outer Shell Materials

- **Nylon, Polyester, Taffeta:**
- **Common materials for mummy sleeping bags.**
- **Least durable of the synthetic materials.**
- **Low cost and extremely breathable fabrics.**
- **Use in late spring, summer and early fall camping.**
- **The sleeping bags need to be water-proofed for damper conditions.**

Outer Shell Materials

- **Ripstop:**
 - Nylon or polyester that has heavier threads woven into the material.
 - Stronger
 - Resistant to tears
 - Resistant to moisture
 - Breathable
 - Ripstop is great for three-season camping where conditions won't be too damp.

Outer Shell Materials

- **DryClime, Microfiber, Gossamer Micro:**
- Very tightly woven materials
 - Strong and Moisture-resistant.
- Softer than Ripstop as they lack the heavier threads sewn into the material.
- Great choice for three-season camping or even four-season camping, provided you're not camping in snow caves and your winter camping has ideal conditions.

Outer Shell Materials

- **DryLoft:**
- **Properties**
 - Water-resistant abilities
 - Very breathable.
 - Comfortable.
 - Will not trap any moisture inside.
- **Excellent for:**
 - Four-season camping.
 - Backcountry camping.
 - Canoe camping.

Waterproofing?

- **Water Resistant Coatings:**
- **Will help resist getting the bag filler wet from minor moisture contact.**
- **Is still breathable, so it will not trap moisture in the bag.**
- **Will not help if the bag is rained upon.**

Waterproofing?

- **Waterproof Shells and Bivy Sacks:**
 - They have little breathability.
 - They trap perspiration inside the bag, you sleep colder.
 - The perspiration can freeze inside the bag when you get out and then melt when you get back into the bag.
 - Gor-tex is often used as mummy bag shells.

Inside Lining

- **Nylon, polyester, taffeta:**

These materials are soft on the skin and breathable. Taffeta is the highest quality.

- **Silk:**

Found in the more expensive sleeping bags, soft and breathable, tears easy and hard to repair

- **Polycotton:**

Comfortable to the skin but takes longer to dry. Recommended for summer or indoor use.



Zipper

- **Material of Preference:**
 - Plastic conducts heat slower
 - Metal can rust and jam
- **Should run top to bottom**
- **Should have two sliders**
 - Top and Bottom Ventilation
- **Needs draft tubes to keep in warmth.**

Draft Tubes and Hoods

- **Draft Tubes**
- Flaps block air from entering through zipper
- Extends beyond the zipper
- **Hoods and Collars**
- Fully insulated
- Closable around face
- Collar around the face opening keeps heat in.



General Workmanship

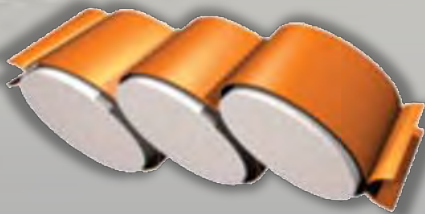
- Look for 8-10 Stitches per inch.
Look for Double Stitching at Seams.



- **Quilted:** Bargain bag design.
Compresses loft, creates cold lines



- **Offset Quilted:** Good heat retention but added weight and Bulk



- **Shingle:** Efficient but only for synthetic fill not down.

What do I do if I only have a Summer Bag?

Rent a Winter Bag

Winterize your Summer Bag



Renting a Bag

- REI, Sports Basement, Last Minute Gear
- Call to find current offerings and prices.
- Try the bag out at the store. Ensure you will be comfortable.
- Some also sell rental bags at discount.

Winterizing Your Summer Bag!

- **Commercial or homemade liner.**
 - Silk is warm and very comfortable
 - Flannel or Fleece is comfortable but can create hot spots and collect moisture.
- **Put your mummy bag inside a rectangular bag.**
- **Use a wool or fleece blanket as described on the next page --->**

Winterizing Your Summer Bag!

- **Materials: sleeping bag & 2 or more blankets**
- **Open your bag up all the way**
- **Lay blanket so it covers ½ of the bag lengthwise**
- **Lay second blanket so it covers entire sleeping bag**
- **Lay extra blankets in the same manner**
- **Lay down where blankets overlap**
- **Fold blankets over you alternating sides**
- **Zip up your sleeping bag**

The Scout Burrito



Proper Sleeping Bag Care

- Unpack 1 hour before using and shake out to open loft.
- Keep Dry (especially down)
- Air out at home
- DO NOT store compressed.

Use large stuff sack.

Compressing causing loss of loft



Proper Sleeping Bag Care

- **Do not dry-clean.**

Destructive solvents, skin irritation and allergic reactions.

- **No top-loading agitator machines.**

Can damage bag. Commercial front loaders are ok.

- **Be gentle.**

Use warm / cold setting and small amount of gentle soap such as Woolite. Dry at low or medium heat.

- **Don't overwash.**

Spot clean soiled areas. Only wash after months of use. Once a year for monthly campers.

Sleeping Warm Tips!

- Don't sleep in the bottom of the bag.
- Eat some high energy food before sleeping.
- Go to the bathroom before sleeping.
- Don't dry wet clothes in your bag.
- Put tomorrow's clothes in or under your bag.
- Fluff up your bag to increase loft.
- Keep all of your sleeping gear dry.
- Do not bring your shoes into your bag (duh)
- Nalgeen bottle with near boiling water in sock.



ANY
QUESTIONS
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