

# SKI LAST DEGREE REQUIRED CLOTHING AND EQUIPMENT LIST



Conditions in Antarctica change drastically throughout our season and vary depending on your location. Temperatures can reach as low as -40°F (-40°C) and as high as 23°F (-5°C) and can feel colder due to the prevailing headwind and altitude.

To be prepared for all conditions, it is important to have a selection of items you can mix and match. Skiing while towing a sled generates heat and it is important to regulate your body temperature by selecting appropriate layers each day based on the conditions.

Some days you will need more insulation than others, but in general a windproof outer layer and complete face protection are always necessary. On a typical day, most people will wear a thin and thick pair of leggings and a thin base layer top and a mid-layer top, and their windproof jacket and windproof pants. Some guides suggest wearing your sledging harness underneath your windproof jacket as it can make it easier to get into pockets and to vent. During breaks you will put on the down parka. It is crucial to prevent sweating, as your sweat will freeze and render your high tech clothing useless. The layering system described below will keep you safe and comfortable in all conditions – it is also the same system utilized by our Antarctic field staff.

Face, hands, feet, and thighs are especially vulnerable to cold injury. Pay particular attention when gloves, mitts and face/head coverings.

This list is broken up into two sections with photos and descriptions of the more technical items up front and the complete clothing and equipment checklist with required quantities at the back. The suggested items are examples of products that meet the recommended criteria. Use them to compare specifications with your existing equipment or to find equivalent products from manufacturers available where you live. It is essential that you have suitable equipment for this challenging expedition. If in doubt, please contact us for further advice.

## Base Layers



### Materials

Merino Wool or Polyester, NO COTTON

### Examples

Patagonia, Icebreaker, Brynje, Aclima



### Description

Your first layer consists of a long-sleeved top and bottom. We recommend merino wool, merino-polyester mix, or wool net. If you cannot wear wool, polyester is an alternate option. Do not bring cotton as it traps moisture and can cause you to chill more rapidly. **Make sure these items are loose fitting and not too tight.**

Bring undergarments, sports bras, and/or camisoles in a similar wicking material. It will not be practicable to change underwear as often as you would at home so it is a good idea to test fabric options before your expedition. Try different options for a few days and pick the most comfortable.

### Optional Bottom: Silk Leggings or Shorts

Silk leggings or shorts are an alternative option for your bottom base layer as they may reduce the likelihood of having chilblains and cold injury to the thighs.



## Mid Layers



### Materials

Merino Wool or Fleece

### Examples

Patagonia R1-R2, Rab Power Stretch, Mountain Equipment Eclipse Pant

### Description

Your second layer consists of a long-sleeved heavyweight (expedition weight) base layer top and bottom or lightweight stretch fleece top and bottom. Power Stretch fleece tights are the perfect mid layer. They should not be so tight that they produce chafing or constriction, if they do, they are too small. Tops with hoods are great as they seal the neck to keep you warmer. Chest pockets are useful for keeping batteries warm and they don't interfere with the sledging harness.



Your next item is a midweight fleece jacket . It should be a full-zip jacket but a hood is not essential. Multiple pockets are useful. This can be worn instead of your mid layer hoodie on colder days and as a cosy dry layer inside the tent in the evening.



### Alternate Bottom: Hiking/Trekking Pants

Also known as guide pants, a pair of lightweight pants with some stretch can be layered over your base layers when at Union Glacier Camp. But these are not essential for the Ski Last Degree expedition itself.

## Windproof Layers



### Materials

Windproof Shell with optional Fur Ruff

### Examples

Mountain Equipment Polar Expedition Jacket and Salopette, Bergans Antarctic Expedition Jacket and Antarctic Expedition Salopette

### Description

Next you will need a windproof jacket and pants. We recommend windproof softshells as they tend to be more breathable and more comfortable than waterproof hardshells. However, if you already own windproof hardshells (Gore-tex), or are bringing them for Vinson, these will also be suitable. Wind protection is the most important factor for this layer.



Your jacket should be long enough to keep your lower back warm, but it does not need to cover your thighs. It must have a generous hood but a fur ruff is optional. If you purchase a jacket without a ruff, you can buy and sew one to the inside edge of the hood or sew in a zipper attachment so the ruff can be easily removed. Wolverine is optimum but wolf, coyote, husky, or fox fur ruffs will also work. These are available from [Apocalypse Design](#), [Brenig](#), and [Wintergreen Northern Wear](#).

Your pants should have easy pull zippers for venting and full side zips. A drop seat pant design is vital for using the toilet if the pants have suspenders/braces or a salopette (bibs) design. The thighs are an area which is vulnerable to cold injury so avoid a tight fit and allow plenty of room for insulating layers underneath.

**Special Note:** Clothing that combines 'pile and pertex' insulation and windproofing in one garment is often marketed as being ideal for polar expeditions. However, the combination of the windproof outer layer and built-in insulation can be too hot at times and does not allow the user to regulate layers in varying conditions. It is therefore not recommended for Ski Last Degree expeditions.

## Insulation Layers

You will need several insulated options to provide protection against the coldest and windiest Antarctic conditions. These items should all be sized to fit over your windproof layers.

### Down Parka with Hood



#### Examples

Mountain Equipment Annapurna Jacket, Rab Neutrino Pro Jacket

#### Description

Your parka does not need to be the warmest model available but should be expedition quality, rated -15°F (-26°C) and have a generous hood. Check to make sure the zippers are easy to use as they can get very stiff in cold temperatures.

### Down Vest



#### Examples

Patagonia Down Sweater Vest, Rab Microlight Down Vest

#### Description

Your vest should be sized to fit over your windproof jacket.

### Insulated Pants, Skirts, or Shorts



#### Examples

Klattermusen, Bergans, Salewa, Skhoop, Mountain Equipment Compressor ¾ pant, Dynafit Primloft skirt

#### Description

Your choice of ¾ length insulated pants, skirt or shorts are essential for both men and women to protect against "polar thigh" injury. Make sure that they come down to your knees. The advantage the down skirts have is that they are quick and easy to put on with only one zip.

## Head

The face is especially vulnerable to cold injury on a Ski Last Degree expedition due to frequent headwinds. Complete face protection is essential. This means skiing in goggles, not sunglasses. The objective is to have your face and head completely protected from the elements while also being able to breathe freely and allow the moisture from your breath to escape (so that goggles do not fog).

You will need several options to cover your head, neck, and face, including your nose, depending on the temperature, wind conditions, and sun exposure. It is important to try different combinations at home to ensure that there are no gaps - often a crescent shape between the edge of goggle and a face mask or balaclava is hard to cover. Bring a variety of facemasks and head gear.



**Item 1:**  
Hat or Beanie that Covers Ears

**Materials:**  
Wool or Fleece

**Description:**  
Your beanie can be worn on its own around camp or added on top of your Buff or balaclava for extra warmth while skiing.



**Item 2:**  
Buff  
**Materials:**  
Polyester Microfiber, Fleece, or Merino Wool

**Description:**  
The thinnest option is to wear a Buff as a balaclava with goggles on top. Combined with your jacket hood and a fur ruff, this may be enough coverage on some days.



**Item 3:**  
Balaclava  
**Materials:**  
Power Stretch Fleece or Windstopper

**Description:**  
On colder days you will need to replace your Buff with a balaclava.



**Item 4:**  
Face Mask  
**Materials:**  
Neoprene or Windproof Fleece

**Description:**  
While most face masks have both nose and mouth openings, face masks that completely cover the nose are best. If conditions are bad enough to require wearing a facemask, you need to have the nose completely covered and protected. If you purchase a face mask with a nose opening, it is best to modify it at home and sew over the nose opening. The brand Airhole [usa.airholefacemasks.com](http://usa.airholefacemasks.com) has some good offerings.

## Eyes

Quality eyewear is essential to prevent snow blindness. **Sunglasses or goggles must be worn at all times outside.**

### Sunglasses and Hard Case



#### Materials

Non-metal frames with 100% UV protection

#### Examples

Julbo, Smith, Oakley

#### Description

Your sunglasses should have dark colored lenses and full side coverage. Look for sunglasses with side-flaps (mountaineering or glacier glasses) or sport sunglasses with big lenses, wide sides, and a contoured shape that prevents light from entering at the sides. Non wraparound sunglasses provide little or no protection from peripherally focused UV radiation.

Avoid metal frames as they can freeze to your skin and bring a hard case to protect your sunglasses in your luggage.

### Goggles



#### Materials

100% UV Protection

#### Examples

Julbo, Oakley, Smith, Abom

#### Description

Quality goggles are vital while skiing to protect your eyes and face against wind and cold injury. You will need at least two pairs of goggles that you are comfortable wearing for long periods. Make sure each pair of goggles has a different lens tint or bring two identical goggle frames that use the same interchangeable lenses. Dark orange or rose colored lenses are recommended as they work in all light conditions. Goggles also need to have excellent venting as lens fogging is a common problem. Julbo makes several examples with lenses that pop away from the frame for venting. If you wear prescription glasses, check to make sure your goggles fit over them comfortably and won't fog up inside the goggles.

On at least one pair of goggles sew a piece of windproof fleece or neoprene underneath the nose to form a mask of material, covering your nose but not your mouth, that will provide additional protection in bad weather.



## Hands

You will need a selection of gloves and mitts to protect your hands while performing a range of tasks from setting up tents and taking photos which require dexterity, to skiing and standing still which require insulation.

We recommend you bring gloves with wrist loops attached as many people take a glove or mitten off and lose it in the strong wind. Look for gloves that come with wrist loops or bring some elastic shock cord and your guide will show you how to make your own.

### Thin Liner Gloves



#### Materials

Polyester or Merino Wool

#### Examples

Seirus, Outdoor Research, Icebreaker

#### Description

Liner gloves can be layered under other gloves or mittens for additional warmth. They also protect you if you need to take off an outer glove or mitten in cold temperatures. Having two pairs allows you to switch out liners as they become damp. Note that merino gloves are less durable than polyester ones.

### Thinsulate Fleece Gloves



#### Materials

Fleece and Thinsulate or Wool

#### Examples

Thinsulate, Rossignol, Ortovox, Norrona

#### Description

These are the main gloves that you will ski in. You have the option of wearing them with or without the liner gloves. We recommend gloves that use a mix of fleece and Thinsulate for insulation.

#### Alternative Option: Wool Mittens

Your other option is to use wool mitts, usually called Dachstein Mitts.

### Midweight Insulated Gloves



#### Materials

Waterproof Breathable or Leather with Built-in Insulation

#### Examples

Black Diamond Pursuit Gloves, Hestra Fält Guide Gloves

#### Description

It's useful to have a pair of midweight insulated alpine or work gloves that can be worn when setting up camp. Hestra Fält Guide Gloves have proven to be versatile and useful on ski expeditions. The removable liner means they can be dried as needed.

## Thick Insulated Mittens



### Materials

Synthetic or Down Insulation

### Examples

Mountain Equipment Redline Mitt, Mountain Equipment Citadel Mitt, Black Diamond Super Light Mitts, Marmot Expedition Mitts

### Description

You will need one pair of mittens with a high level of insulation. Fully waterproof mountaineering mittens are not necessary as they tend to be stiffer and more bulky than what is needed for an Antarctic ski expedition. We recommend synthetic (Primaloft) insulated mittens.

## Feet

### Thin Liner Socks



### Materials

Wool, Polyester, or Silk—NO COTTON

### Examples

Smartwool, Bridgedale, Thorlo, Darn Tough, Injinji

### Description

Toe socks are a good option to reduce blisters on and in between toes.

### Midweight Socks



### Materials

Wool or Wool Blend Socks

### Examples

Smartwool, Bridgedale

### Description

These will be your primary ski socks.

### Heavyweight Socks



### Materials

Wool or Wool Blend Socks

### Examples

Smartwool, Bridgedale, Thorlo, Darn Tough

### Description

Warm socks are great to wear inside your tent.

## Insulated Booties



### Materials

Down or Synthetic Insulation

### Examples

The North Face Thermoball Bootie, Rab Hut Boots

### Description

Insulated down or synthetic booties can be used around camp, inside the tent, or as extra insulation in your sleeping bag. Choose ones with a non-slip sole for trips outside the tent.

## Light Winter Boot or Heavy Hiking Boot



### Materials

Waterproof Outer and Insulation

### Examples

The North Face, Scarpa, Salomon

### Description

On warmer days, you can often wear lighter weight winter boots or heavyweight hiking boots for many excursions around Union Glacier.

### Optional Footwear: Trail Running Shoes

## Sleeping

### Sleeping Bag



### Materials

Down

### Examples

Feathered Friends Snow Goose Ex -40, Mountain Equipment Redline, Marmot CWM

### Description

There are two options for sleeping bags. The first option is to purchase a top quality down sleeping bag rated to  $-40^{\circ}\text{F}$  ( $-40^{\circ}\text{C}$ ). The other option, is to use a combination of a down sleeping bag rated to  $13^{\circ}\text{F}$  to  $-22^{\circ}\text{F}$  ( $-25^{\circ}\text{C}$  to  $-30^{\circ}\text{C}$ ) and an overbag. The two bag option weighs a little more but provides comfort across a wider temperature range and is generally a less expensive option for people that already own a  $-30^{\circ}\text{C}$  bag and do not wish to purchase a  $-40^{\circ}$  bag. If you sleep cold, choose a bag rated on the lower end of the temperature range. We recommend down as it is much lighter and will pack smaller than synthetic bags. Get a full body-length mummy bag with a generous hood and full length zip. A little spare space inside is useful to store water bottles, batteries, and other items you don't want to freeze.

### Insulated Overbag

A synthetic or down insulated outer bag can be used on top of your sleeping bag on the coldest nights. An overbag is required if you bring a  $-13^{\circ}\text{F}$  ( $-25^{\circ}\text{C}$ ) sleeping bag.

### Examples

Helsport Spitsbergen is both bags in one package, PHD Thinsulate Overbag, Halite Overbag



## Foam Mat



### Materials

Closed Cell Foam

### Examples

Therm-a-Rest RidgeRest Solar or Classic

### Description

Full-length, closed cell foam mat with textured surface.

## Inflatable Mattress



### Materials

Nylon, Polyester, Down

### Examples

Exped DownMat, Therm-a-Rest NeoAir All Season SV

### Description

You'll need a full-length inflatable mattress. Look for the warmest model available and don't forget a repair kit!

## Pee Bottle(s)



### Examples

Nalgene 32 oz or 48 oz Wide Mouth Water Bottle(s)

### Description

You will need your own container to urinate in. We recommend a wide mouth water bottle that is marked for urine or 'pee' and can be used at night in your tent or while en-route on expedition.

We recommend practicing with your pee bottle at home so you can be comfortable using it while on expedition. Females may also find a pee funnel (Freshette, SheWee, Go-Girl) helpful.

When in Union Glacier, our staff will show you where to empty pee bottles behind the toilet facility. Once inside 89°S, use your pee bottle to collect urine while en-route and only empty it at communal pee holes at camp sites. At the South Pole and at ALE's South Pole Camp, all human waste **MUST** be collected and removed from the NGO camp.

## Equipment Provided by ALE

The following items are included in ALE's Ski Last Degree Experience. Your boot fitting will be in Punta Arenas and the rest of your equipment will be issued in Union Glacier.

### Ski Boots



#### Boot Option 1:

Baffin 3-pin Guide Pro Boots with 3-pin Bindings

#### Description:

This boot combines the comfort, insulation, and easy to break-in features of a non-technical mukluk boot with the skiing efficiency of a 75 mm 3-pin Nordic 'duckbill' ski binding. It has a durable molded sole unit that cannot de-laminate. The removable liners are soft, flexible, super warm, light, and heat moldable.

#### Boot Option 2:

Baffin Impact Boots with Ice Trek Flexi Bindings

#### Description:

If your boot size is smaller than a Men's US 8, you will need to use Baffin Impact Boots. This boot is compatible with Ice Trek Flexi Bindings and has removable liners.

### Skiing & Sledging

Fischer or Asnes cross-country skis, Black Diamond ski poles, pogies, Paris sleds, sledging harnesses, kit bags, and zipped covers for polar bedding.

### Camping

Tents, insulated tent floors, snow shovels, snow saw, tent brushes, and repair kit.

### Meals

Food, packing bags, stuff sacks, stoves, stove boards, fuel, fuel bottles, plastic jerry cans, pans, kettle, kitchen cutlery, cooking equipment, lighters, and matches.

### Communication

Iridium satellite phones, solar panel, and battery pack. Phones are for safety first but if you would like to make personal phone calls during the expedition, you will need to purchase a phone card at Union Glacier Camp and coordinate calls with your guide in advance. Calling cards require a specific SIM card which your guide can request from Union Glacier Comms before departing.

### Medical

Comprehensive first aid kit.

### Navigation

GPS, compasses, chest compass harness, and batteries.

### Toilet

Toilet paper and toilet bags.

# SKI LAST DEGREE CHECKLIST

**You must bring ALL of the items on this list unless they are listed as optional.** We will look for each item on this list at your Gear Check in Punta Arenas. These items may not be available for purchase in Punta Arenas and we will not let you board the aircraft to Antarctica without them.

| X                        | #               | Item                                                               |
|--------------------------|-----------------|--------------------------------------------------------------------|
| <b>Base Layers</b>       |                 |                                                                    |
|                          | 3+ pairs        | Underwear, sports bras, etc.                                       |
|                          | 2               | Light or midweight tops                                            |
|                          | 2 pairs         | Light or midweight bottoms                                         |
| <b>Mid Layers</b>        |                 |                                                                    |
|                          | 1               | Lightweight fleece top or expedition-weight base layer top         |
|                          | 1 pair          | Lightweight fleece pants or expedition-weight base layer bottoms   |
|                          | 1               | Midweight fleece jacket                                            |
|                          | 1 pair          | Hiking/trekking pants                                              |
| <b>Windproof Layers</b>  |                 |                                                                    |
|                          | 1               | Windproof shell jacket with optional fur ruff attached to the hood |
|                          | 1 pair          | Windproof shell pants                                              |
| <b>Insulation Layers</b> |                 |                                                                    |
|                          | 1               | Down parka with hood                                               |
|                          | 1               | Down vest                                                          |
|                          | 1 pair          | Down or synthetic insulated pants with full side-zips              |
|                          | <i>Optional</i> | Down skirt or shorts                                               |
| <b>Headwear</b>          |                 |                                                                    |
|                          | 1               | Wool or fleece hat that cover the ears                             |
|                          | 2               | Bufs                                                               |
|                          | 1               | Balaclava                                                          |
|                          | 1               | Face mask                                                          |
|                          | 1               | Wide brim or baseball hat for sunny weather                        |
| <b>Eyewear</b>           |                 |                                                                    |
|                          | 1 pair          | Sunglasses with side coverage                                      |
|                          | 1               | Sunglass case                                                      |
|                          | 2 pairs         | Goggles                                                            |
|                          | <i>Optional</i> | Spare contact lenses or prescription glasses, if required          |
| <b>Gloves</b>            |                 |                                                                    |
|                          | 2 pairs         | Thin liner gloves                                                  |
|                          | 2 pairs         | Thinsulate fleece gloves or wool mittens                           |
|                          | 1 pair          | Midweight insulated gloves                                         |
|                          | 1 pair          | Thick insulated mittens                                            |
|                          | 1 pair          | Wool mittens                                                       |
|                          | 10              | Chemical hand warmers                                              |
|                          | <i>Optional</i> | Elastic shock cord to make wrist loops for gloves                  |

| X                           | #               | Item                                                                                                                                                                                    |
|-----------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Footwear</b>             |                 |                                                                                                                                                                                         |
|                             | 3 pairs         | Thin liner socks                                                                                                                                                                        |
|                             | 3 pairs         | Midweight socks                                                                                                                                                                         |
|                             | 2 pairs         | Heavyweight socks                                                                                                                                                                       |
|                             | 1 pair          | Insulated booties with no-slip sole                                                                                                                                                     |
|                             | 1 pair          | Lightweight winter boots or heavyweight hiking boots                                                                                                                                    |
|                             | <i>Optional</i> | Vapor barrier socks                                                                                                                                                                     |
|                             | <i>Optional</i> | Running shoes                                                                                                                                                                           |
|                             | <i>Optional</i> | Insoles/footbeds                                                                                                                                                                        |
|                             | <i>Optional</i> | Intuition Mukluk Liner                                                                                                                                                                  |
| <b>Sleeping Equipment</b>   |                 |                                                                                                                                                                                         |
|                             | 1               | Sleeping bag                                                                                                                                                                            |
|                             | 1               | Full-length, closed cell foam mat                                                                                                                                                       |
|                             | 1               | Full-length inflatable mattress and repair kit                                                                                                                                          |
|                             | 1               | Eyeshade or eye mask for sleeping in 24-hour daylight                                                                                                                                   |
|                             | 1 pair          | Ear plugs                                                                                                                                                                               |
| <b>Luggage</b>              |                 |                                                                                                                                                                                         |
|                             | 1+              | Extra large duffel bag(s)                                                                                                                                                               |
|                             | 1               | Carry-on backpack 18" x 16" x 10" (46cm x 41cm x 26cm)                                                                                                                                  |
|                             | 4-6             | Stuff sacks of different colors to organize items in the sled and tent                                                                                                                  |
| <b>Other Equipment</b>      |                 |                                                                                                                                                                                         |
|                             | 1               | 32 oz Thermos flask                                                                                                                                                                     |
|                             | 2               | 32 oz Nalgene wide-mouth water bottles (for drinking)                                                                                                                                   |
|                             | 2               | 32 oz Nalgene wide-mouth water bottles (marked for pee). Option to substitute for one 48 oz Nalgene wide-mouth water bottle.                                                            |
|                             | 1-2             | Insulated covers for 32 oz Nalgene water bottles (Outdoor Research or Forty Below)                                                                                                      |
|                             | 1               | Plastic insulated mug with lid with wide bottom                                                                                                                                         |
|                             | 1               | Large lightweight non-breakable Lexan bowl or Fairshare Mug with lid                                                                                                                    |
|                             | 2               | Lexan spoons                                                                                                                                                                            |
|                             | 1               | Lip balm with minimum SPF 50                                                                                                                                                            |
|                             | 2               | 1.75 fl oz packs of sunscreen with minimum SPF 50                                                                                                                                       |
|                             | 1               | Watch with an alarm, new batteries, and a long wrist strap                                                                                                                              |
|                             | 1               | Sewing and repair kit with duct tape                                                                                                                                                    |
|                             | 1               | Personal toilet bag with pack towel, Wet Wipes, toothbrush, toothpaste, anti-bacterial gel, Band-Aids, blister kit, foot powder, lotion, contact lens solution, feminine products, etc. |
|                             | As needed       | Personal medication. Bring enough for your expedition plus an additional 4 weeks' supply.                                                                                               |
| <b>Other Optional Items</b> |                 |                                                                                                                                                                                         |
|                             | <i>Optional</i> | <b>For Antarctica:</b> USB or 120V A/C (North American Type A or B plugs)<br><b>For Chile:</b> Plug adapters and 220V transformers                                                      |
|                             | <i>Optional</i> | US cash to purchase satellite phone cards or merchandise at Union Glacier Camp                                                                                                          |
|                             | <i>Optional</i> | GPS                                                                                                                                                                                     |
|                             | <i>Optional</i> | Compass with global needle or weighted for the southern hemisphere                                                                                                                      |
|                             | <i>Optional</i> | Camera, memory cards, accessories, and case                                                                                                                                             |
|                             | <i>Optional</i> | Phone, iPod, or digital music player with two sets of headphones                                                                                                                        |

| <b>X</b> | <b>#</b>        | <b>Item</b>                                                                             |
|----------|-----------------|-----------------------------------------------------------------------------------------|
|          | <i>Optional</i> | Batteries, chargers, adapters, and solar panels to support all of the devices you bring |
|          | <i>Optional</i> | Cotton t-shirts to wear at Union Glacier Camp                                           |
|          | <i>Optional</i> | Lightweight journal, sketchbook, pencils, pen, e-reader                                 |
|          | <i>Optional</i> | Christmas and birthday treats and gifts                                                 |
|          | <i>Optional</i> | Personal treats like candy bars, photos, favorite poem                                  |
|          | <i>Optional</i> | Handkerchiefs/bandanas                                                                  |
|          | <i>Optional</i> | Pee funnel for women                                                                    |