

SKI SOUTH POLE 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.

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. It is crucial to prevent sweating, as your sweat will freeze and render your high tech clothing useless. Some days you will need more insulation than others, but in general a windproof outer layer and complete face protection are always necessary. 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 choosing boots, 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 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-R3, Rab Power Stretch, Black Diamond CoEfficient, 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. Tops with hoods and thumb holes are great as they seal the neck and wrists to keep you warmer. Pockets are also useful for keeping batteries warm.

Your third layer consists of a midweight fleece jacket. It should be a full-zip jacket but a hood is not essential. Multiple pockets are useful.



Windproof Layers



Materials

Windproof Shell with Fur Ruff

Examples

Bergans Antarctic Expedition Jacket and Antarctic Expedition Salopette, Mountain Equipment Polar Expedition Jacket and 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 a windproof hardshell (Gore-tex) this 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 with a fur ruff. If you purchase a jacket without a ruff, buy and sew one to the inside edge of the hood. 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 South Pole expeditions.

Down Layers

You will need several down 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 Endurance Jacket

Description

Your parka does not need to be the warmest model available but should be expedition quality, rated -31°F (-31°C) and have a generous hood.

Lightweight Down Jacket



Examples

Patagonia Down Sweater Hoody, Rab Microlight Alpine Jacket

Down Vest



Examples

Patagonia Down Sweater Vest, Rab Microlight Down Vest

Down Skirt



Examples

Skhoop Short Down Skirt

Description

A down skirt is an essential piece for both men and women to protect against "polar thigh" cold injury. Make sure the skirt comes down to your knees.

Head

You will need several options to cover your head, neck, and face (mouth and nose) depending on the temperature, wind conditions, and sun exposure.

The face is especially vulnerable to cold injury on a Ski South Pole expedition due to constant headwinds. Complete face protection is essential. The objective is to be able to ski into a freezing headwind with your face and head completely protected from the elements. Try combinations of balaclava, face mask, hat and goggles together 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. **You must be able to breathe freely and moisture from your breath must be able to escape** (so that goggles do not fog).



Item 1:
Hat or Beanie that Covers Ears

Materials:
Wool or Fleece

Item 2:
Face Mask

Materials:
Neoprene



Item 3:
Neck Gaiter or Buff

Materials:
Fleece or Polyester Microfiber



Item 4:
Balaclava

Materials:
Power Stretch Fleece or
Windstopper

Eyes

Sunglasses and Hard Case



Materials

Non-metal frames with 100% UV protection

Examples

Julbo, Smith, Oakley

Description

Quality sunglasses are essential to prevent snow blindness. Look for side-flaps or a contoured shape to prevent light from entering at the sides and dark lenses. Avoid metal frames; they can freeze to your skin. Bring a hard case to protect them in your luggage.

Goggles



Materials

100% UV Protection

Examples

Julbo, Oakley, Smith, Abom

Description

Quality goggles are absolutely necessary 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. 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 and face, 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 in Punta Arenas.

Thin Liner Gloves



Materials

Polyester, Merino Wool, or Silk

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.

Thinsulate Gloves



Materials

Thinsulate, Fleece, or Wool

Examples

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 Thinsulate and fleece for insulation.

Alternative Option: Wool Mittens

Your other option is to use wool mitts, usually called Dachstein Mitts. These are designed to be oversized and boiled to compress them into a tough, thick material.

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.

Thick Insulated Mittens



Materials

Synthetic or Down Insulation

Examples

Mountain Equipment Redline Mitt, Black Diamond Super Light Mitten, Marmot Expedition Mitten

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.

Optional: Chemical Hand Warmers

Chemical hand warmers are optional but keep in mind they add weight to your load even once they are used.

Pogies



Description

We will provide you with ski pole pogies—insulated ski pole handle covers, like the insulated covers available for motorcycle handlebars. These provide wind protection and an additional layer of insulation to keep hands warm while skiing.

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. If you use Intuition Boot Liners, you may find these are warm enough to ski in on most days.

Midweight Socks



Materials

Wool or Wool Blend Socks

Examples

Smartwool, Bridgedale

Description

When skiing in colder temperatures, 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.

Tent 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.

Sleeping

Sleeping temperatures will vary drastically during your expedition. Even though temperatures tend to be coldest during the early season, temperatures will also drop as you ski towards the Pole and gain altitude on the polar plateau. 24-hour solar radiation will warm the inside of tents but on cloudy days there is little passive heating. Based on these conditions, we recommend bringing a 4-season down sleeping bag with an insulated overbag instead of the warmest available expedition bag which may be too hot.

Sleeping Bag



Materials

Down

Examples

Feathered Friends Peregrine Ex -25, Mountain Equipment Iceline, Marmot Col

Description

You'll need a quality four season sleeping bag rated -13°F to -22°F (-25°C to -30°C). 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



Materials

Synthetic or Down Insulation

Examples

PHD Overbag

Description

An insulated outer bag to be used on top of or over your down sleeping bag on the coldest nights.

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



Examples

Nalgene 32 oz Wide Mouth Water Bottle

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. When in Union Glacier, our staff will show you where to empty pee bottles behind the toilet facility. While on expedition, use pee bottles whenever possible while traveling and dispose of urine in crevasses or communal snow pits at camp. 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.

Ski Equipment

A Ski South Pole expedition is the longest ski trip that most participants will ever take. The best boot and binding system combines insulation, comfort, durability, and skiing efficiency. While there are several different boot and binding combinations, they are not interchangeable. **Your boots must match your binding system.**

We do not recommend mukluk type boots as they are often high on insulation and low on technical skiing function. They are also matched with a large non-technical binding. They do not provide the skiing efficiency, durability, or reliability needed for a long Ski South Pole expedition.

Please also avoid single layer telemark boots as they are not warm enough. Mountaineering, alpine touring (AT), and plastic telemark boots are also not suitable. AT boots are only used by kiting/ski sailing expeditions.

Please check with your guide before buying boots or if you want to use boots that are not listed below. Your guide may request that all team members utilize the same type of boots and bindings.

BOOT OPTION 1

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



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

Alfa Polar A/P/S Boots with Rottefella NNN BC Binding



This boot has been used by many expeditions to the North and South Poles. It combines the quick clip in and out advantages of a Rottefella NNN BC binding with the warmth of a modern expedition mountaineering boot. While the Rottefella NNN BC bindings are very easy to use, they are more vulnerable to failure. As a result, we recommend bringing a spare binding.

REQUIRED LINER

Intuition Mukluk Liner



No matter which boot you choose, you will also need to purchase an Intuition Mukluk Liner separately. These liners are soft, flexible, super warm, lightweight, and heat moldable. Bring the original boot manufacturer liners as backup.

Optional: Extra Insole/Footbed

An additional insole or footbed in your boot adds warmth, helps eliminates heel lift, and can be used the fill in the liner once it has packed out.

BOOT OPTION 3

Alfa Polar Advance Boots with 3-pin Bindings



If you choose this classic style boot, you will need specialist advice on the inner boots. We recommend sizing and using them with Intuition Mukluk Liners. We also strongly recommend that you buy the insulated super gaiter (overboots) which are designed especially for the Alfa boots and are sold by northwindsexpeditions.com. These boots utilize a 3-pin 75mm telemark ski binding from Voile or Rottefella.

If you choose to use the Alfa felt liners instead of Intuition Liners, bring vapor barrier (VB) socks. VB socks are worn between the liner sock and the thicker insulating sock. They prevent moisture from entering the sock and boot liner, allowing them to maintain their insulating properties.

Backcountry Nordic Skis w/ Mounted Bindings



Materials

Wood core skis with metal-edges

Examples

Åsnes Amundsen or Sondre, Fischer E99 Crown Extralite or Madshus Voss

Description

You will need wood core backcountry cross-country skis with metal edges. The width of the ski is dependent on the boot and binding combination. The wood core will allow bindings to be mounted very securely.

If using Rottefella NNN bindings, we recommend bringing a spare pair of bindings and mounting the bindings using the Quiver Killer mounting system. www.quiverkiller.com

Ski Skins



Materials

Synthetic or Nylon

Examples

Åsnes SHORT Skin Extreme 45mm

Description

Half-length skins are recommended. Full-length skins provide traction along the entire length of the ski which is useful over sastrugi and other undulations but increases drag. Half-length skins provide less traction but offer a little more glide.

Many skiers glue and screw their skins to their skis for polar expeditions as it eliminates the risk of the skin coming off. Very short counter-sunk screws are needed. Your guide will help you attach your skins in Punta Arenas.

Ski Poles



Examples

Black Diamond Traverse Ski Poles, Swix Mountain Advanced Carbon Composite Ski Poles, Thomas Ulrich Leki Ski Poles

Description

You will need high quality nordic or touring ski poles. Cork or leather handles are warmest. Ensure wrist straps are adjustable and long enough that a thick mitt can pass through the loop. Adjustable length (telescopic) poles are generally not recommended as many models collapse under load with the exception of Black Diamond's FlickLock design. Additionally, most telescopic poles are not long enough, but can make a good spare set between a team.

Optional Electronics

It is useful to standardize your electronics to be powered by AA lithium batteries as much as possible. Make sure all chargers are USB or 12 V DC-DC capable of plugging into a "female" cigarette lighter socket. Electronics can add a lot of weight so prioritize and research the lightest weight and most compact options. At our Union Glacier and South Pole camps, our charging stations have two types of outlets: USB and 120V A/C (North American Type A or B plugs).

GPS

If you already own one, you can bring it but there is no need to purchase as your guide will carry two.

Cameras

Compact digital cameras are light in weight and sufficient for most people. Bring a padded case and several memory cards. Digital SLRs and their accessories add a lot of weight and are a luxury item. If you have professional requirements to bring a digital SLR then please speak with your guide to see if it is possible to share lenses amongst team members.

iPod or Digital Music Player

We've found solid state iPod Shuffles or iPod Nanos to be the most reliable. We recommend two sets of headphones as the thin wires can become brittle in low temperatures.

Mobile Phone

If you have a smart phone with camera, music, e-books, etc. it may be worth taking instead of multiple gadgets. Can be paired with an Iridium Go! for global connectivity.

Iridium Satellite Phone

Iridium is the only mobile satellite telephone system that works in the interior of Antarctica. You can buy pre-paid minutes at Union Glacier Camp using US cash and use our phones for calls during the expedition. If you wish to bring your own phone then there are several models to choose from. You can pair an Iridium GO! with a smart phone or purchase a standalone satellite phone (9575 and 9555). Bring a spare battery, padded case, and charging cable. Make sure you purchase the correct battery for your handset.

Web Posting Equipment

It is not practical to carry a laptop computer and power supply due to the weight. Also, it is unreasonable to assume you'll have enough power or time to post long or regular updates during your expedition. If this is a priority for you, then the lightest option is a Delorme inReach or a smart phone paired with an Iridium GO! unit.

Solar Panel

If you bring any personal electronics, the best way of recharging them is with a solar panel. These vary in size, weight, and cost depending on how many items you need to charge. We recommend Brunton or Powertraveller Powermonkey panels.

Equipment Provided by ALE

Sleds

Acapulka 210 professional sleds (pulks), sledging harnesses, ski pole pogies, 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.

Communications

Two Iridium satellite phones for safety, solar panel, and battery pack.

Medical

Comprehensive first aid kit.

Navigation

Two GPS, compasses, chest compass harness, and batteries.

Toilet

Toilet paper and toilet bags for use during the Last Degree.

SKI SOUTH POLE 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
Base Layers		
	6+ pairs	Underwear, sports bras, etc.
	1 pair	Long Shorts
	3 pairs	Light or midweight bottoms
	3	Light or midweight tops
	<i>Optional</i>	Silk leggings or shorts
Mid Layers		
	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
Windproof Layers		
	1	Windproof shell jacket with fur ruff attached to the hood
	1 pair	Windproof shell pants with full side-zips
Down Layers		
	1	Down parka with hood
	1	Lightweight down jacket
	1	Down vest
	1	Down skirt
Headwear		
	2	Wool or fleece hats that cover the ears
	2	Fleece neck gaiters or Buffs
	2	Neoprene face masks (can substitute for a balaclava with built-in face mask)
	1	Balaclava
Eyewear		
	2 pairs	Goggles (1 pair with nose beak attached)
	1 pair	Sunglasses
	1	Hard sunglass case
	<i>Optional</i>	Spare contact lenses or prescription glasses, if required
Gloves		
	2 pairs	Thin liner gloves
	3 pairs	Thinsulate gloves or wool mittens
	1 pair	Midweight insulated gloves
	1 pair	Thick insulated mittens
	<i>Optional</i>	Elastic shock cord to make wrist loops for gloves
	<i>Optional</i>	Chemical hand warmers

X	#	Item
Footwear		
	6-8 pairs	Thin liner socks
	3 pairs	Midweight socks
	2 pairs	Heavyweight socks
	1 pair	Tent booties
Sleeping Equipment		
	1	Sleeping bag
	1	Insulated overbag
	1	Full-length, closed cell foam mat
	1	Full-length inflatable mattress and repair kit
	2	Eyeshades or eye masks for sleeping in 24-hour daylight
	2 pairs	Earplugs
Ski Equipment		
	1 pair	Ski boots
	1 pair	Intuition Mukluk Liner
	1 pair	Backcountry nordic skis with boot compatible bindings
	2 pairs	Half-length ski skins
	1 pair	Ski poles
	<i>Optional</i>	Insoles/footbeds
	<i>Optional</i>	Insulated overboots and vapor barrier socks (only required if using the Alfa Polar Advance Boots)
Luggage		
	1	Large lightweight duffel bag (avoid heavy bags like The North Face Base Camp Duffel)
	1	Carry-on backpack 18" x 16" x 10" (46cm x 41cm x 26cm). You will use this bag on your Antarctic flights as your carry-on and can leave it Union Glacier with a change of clothing for after your expedition (t-shirt, jeans, underwear, socks, lightweight boots, shower toiletries, and a towel)
	4-6	Stuff sacks of different colors to organize items in the sled and tent
Other Equipment		
	2	32-oz Nalgene wide-mouth water bottles (option to substitute one for a stainless steel thermos flask)
	1	32-oz Nalgene wide-mouth water bottle (marked for pee)
	2	Insulated covers for 32-oz Nalgene water bottles (Outdoor Research or Forty Below)
	1	Pee funnel for women (Freshette or Shewee)
	1	Plastic insulated mug with lid with wide bottom
	1	Large lightweight non-breakable Lexan bowl or Fairshare Mug with lid
	1 set	Lexan cutlery
	2	4 fl oz pack of sunscreen with minimum SPF 50
	2	Lip balm with minimum SPF 50
	2	Handkerchiefs/bandanas
	1	Small pocket knife
	1	Watch with an alarm, new batteries, and a long wrist strap
	1	Sewing and repair kit with duct tape and screwdriver for bindings

X	#	Item
	1	Personal toilet bag with pack towel, Wet Wipes, toothbrush, toothpaste, anti-bacterial gel, lotion, contact lens solution, feminine products, etc.
	1	Personal first-aid kit that includes Band-Aids, super glue, blister kit, foot powder, tape, antiseptic, pain medication
	As needed	Personal medication. Bring enough for your expedition plus an additional 4 weeks' supply. High quality multi-vitamins are recommended.
Optional Electronics		
	<i>Optional</i>	GPS
	<i>Optional</i>	DelLorme inReach, Iridium GO!, or Iridium satellite phone and case
	<i>Optional</i>	Camera, memory cards, accessories, and case
	<i>Optional</i>	iPod or digital music player with two sets of headphones
	<i>Optional</i>	Mobile phone
	<i>Optional</i>	Batteries, chargers, adapters, and solar panels to support all of the devices you bring
	<i>Optional</i>	For Antarctica: USB or 120V A/C (North American Type A or B plugs) For Chile: Plug adapters and 220V transformers
Other Optional Items		
	<i>Optional</i>	Lightweight journal, sketchbook, pencils, pen, e-reader
	<i>Optional</i>	Compass with global needle or weighted for the southern hemisphere
	<i>Optional</i>	Christmas and birthday treats and gifts
	<i>Optional</i>	Personal treats like candy bars, photos, favorite poem
	<i>Optional</i>	US cash to purchase satellite phone cards or merchandise at Union Glacier Camp