

# Winter Climbing - Equipment Information

*Below is equipment information concerning anything you may need on our winter climbing and mountaineering trips. Please see your particular trips gear list to know what is required for your trip. To help with your selection we have collated some notes which may help you save time and money.*

## **Clothing: Outer and Mid-layers**

### ***Waterproof jacket and trousers***

Waterproof jackets and trousers should be lightweight without any excessive features, mesh or insulating lining which will be hot and heavy.

Waterproof fabrics are usually a sandwich of an outer layer providing strength and an inner membrane that provides water resistance and breathability. Membranes stop liquid water but allow water vapour or sweat to pass through. Many brands of membrane are available with similar performance (such as Gore Tex® or Event®). The outer layer will have a water repellent treatment that prevents it from becoming saturated and compromising the breathability of the membrane. Waterproof clothing should have tape sealed seams

Waterproof clothing must be cared for to prolong their performance. This requires regular washing and tumble drying or ironing to reactivate the water repellent treatment. Refer to the manufacturer's instructions.

Technical mountaineering jackets are ideal but many general-purpose jackets are sufficient. Features include a suitable length to get tucked snugly into a harness, pockets that don't interfere with the harness, a full front zip and an attached hood that fits over a helmet.

Waterproof trousers must have side zips down the legs so they can be put on and taken off whilst wearing boots and crampons. Make sure they have sufficient movement to enable you to lift your legs high. These are often not required with good softshell trousers.

### ***Insulated jacket***

A good insulating layer for breaks stopped, belaying or at the hut or camp in the evening. It should have a full front zip and a hood is useful. Slightly oversized can be good to fit over the active layer (waterproof or windproof). Synthetic fill insulation (such as Primaloft®) is best as it maintains its performance even when wet though many water resistant natural down jackets are now also available.

### ***Trousers***

Softshell materials are best in winter to keep out wind and snow and with a good pair, waterproof over trousers are only required for wetter (warmer conditions). During particularly cold conditions, thermal leggings can be layered underneath. High waists, bibs or braces are good for keeping out snow.

**Clothing: Outer and Mid-layers cont.*****Gaiters***

Full calf-length gaiters keep the snow out and should have a sturdy tie down system under the instep to stop snow creeping up into the boot. These are essential to keep snow from getting in the top of the boot and melting creating a steady flow of meltwater through the boot. Front closing gaiters are much easier to use since they are easier to reach. In deep snow conditions gaiters are useful even for boots with integrated gaiters.

***Mid layers***

A lightweight midlayer can provide insulation and some degree of waterproofness. This can be a fleece (100-200 Polartec®) or wind resistant materials. Wool is heavier and takes longer to dry.

Softshell jackets provide good durability and weather resistance in cold conditions but can be too warm and bulky going into spring.

**Clothing: Base layers*****Underwear***

Quick drying or wicking 'sports' underwear are most comfortable

***Top***

High zip neck, long sleeve synthetic or merino (wool) baselayer. Merino materials have reduced odour on multi-day trips and perform well in dry cold conditions.

***Leggings***

Synthetic or merino leggings are lightweight and provide additional warmth if worn under outer trousers or to wear around the hut or sleeping.

**Hands and head*****Warm gloves***

Good quality warm gloves are essential at all times. Gloves need to be windproof and well insulated and leather palms provide the best grip, longevity and dexterity. Waterproof gloves are significantly more expensive and not necessary. Totally leather gloves are heavier and can be slower to dry out.

Mittens are useful as a backup or for warming up whilst stopped.

***Light gloves***

Light gloves are useful for climbing or other activities where more dexterity is required. Thinner gloves makes it more efficient to grip tools and work with protection whilst climbing. These can be dedicated climbing or even cheap workers 'work' gloves (cold workers gloves are popular for ice and mixed climbing). Warm gloves or mittens can be kept warm inside the jacket or pockets and changed into whilst stopped.

***Warm hat***

Either wool or fleece, must extend over the ears and fit under a helmet.

***Neck gaiter***

A fleece or Buff® neck gaiter are a useful item for keeping warm and keeping out drafts.

***Sunhat***

Even in winter the sun can be strong. A baseball style cap works best under a helmet.

## Feet

### **Boots**

For steep snow and technical ice and mixed climbing, a fully rigid (full shank), 3-4 season mountaineering boot is required. Single boots constructed from leather or synthetic materials (some models with an integrated gaiter) are suitable for conditions encountered during spring and summer in NZ.

For general winter mountaineering, or when only short sections of steep snow climbing is anticipated, then a semi-rigid (3/4 shank) boot is more comfortable.

Double boots, made from plastic or synthetic materials, are more suited to high altitude climbing and colder conditions than can be expected in NZ. They do provide extra warmth, are easier to dry out during multi-day trips and the liners double up as camp or hut slippers in the evenings. They may be a good option if you are prone to cold feet.

For all trips, all boots must be crampon compatible.

### **Socks**

Sock thickness depends on the boot fit. With a well worn in, well sized boot, choose a close fitting mid weight (non cotton) sock. Thin liner socks can be used underneath to minimise the chance of blisters providing there is space. A too tight fit within the boot with a thick sock can reduce circulation and result in cold feet. Keep a spare dry pair for night time and one pair to climb (and sweat) in.

### **Approach/ hut shoes**

Lightweight approach shoes or running trainers are handy for in and around the hut to get a break from mountaineering boots. Alternatively hut booties or sandals (such as Crocs®) are a popular options.

## Technical Equipment

### **Crampons**

For general mountaineering, crampons with horizontally aligned front-points work best as are less prone to slice down through softer snow.

While general mountaineering crampons can be used for ice and mixed climbing, specialist crampons with vertically aligned front-points are good for more technical objectives. Vertical front points penetrate harder ice easier with less shattering.

The crampon binding system must be compatible with the boots. Step-in (also known as clip on or fully automatic) crampons are only compatible with fully rigid boots otherwise a hybrid (also known as semi-automatic with a heel clip and toe strap) works well in most situations. Strap on crampons can also be used but don't perform as well for front-point climbing but the only option for softer boots.

Due to the variable NZ snow conditions, all crampons must have anti-balling plates.

### **Ice axe**

For general mountaineering, a straight shafted walking axe between 60 cm to 80 cm long is required. A longer tool is more helpful on moderate ground and even the most difficult climbs have approaches and descents for which this is helpful. Walking axes will have a 'classic' shaped curved pick that is ideal for self arresting.

### **Helmet**

A lightweight climbing helmet are designed to deflect falling ice and rocks and protect the head in case of a fall. Check that it is big enough to be worn over a warm or sun hat and the straps are correctly adjusted.

## Technical Equipment cont.

### **Ice tools**

For technical ice and mixed climbs, short technical axes (45cm – 55cm) with curved shafts and ‘technical’ shaped picks are best. Knuckle guards, whilst useful for steep climbing, make it more difficult to plunge the shaft of the axe into the snow on approaches for security and support.

Modern highly curved ice tools make steep climbing more comfortable and more efficient. A pair may or may not have a hammer and adze attachment but definitely a hammer is useful for hammering in pitons.

Leashes are recommended at all times when using ice tools as they allow you to relax your grip and avoid dropping them. A dedicated umbilical or springer leach provides the benefits of leashless climbing (such as easier shaking out and dealing with protection) whilst maintaining a degree of security. If using wrist leashes, clipper leashes that can be detached from the tools makes it easier to deal with protection without fiddling your hand out of the wrist loop every time.

### **Harness**

For general mountaineering, a lightweight a specially designed alpine harness is easier to get in and out of over boots and crampons and packs down small for the walk out.

For more technical climbing a rock climbing harness is more comfortable as more time will be spent hanging in it.

### **Carabiners**

Pear or HMS shaped carabiners are useful for a wider variety of situations associated with mountaineering. A dedicated ‘triple-action’ or secondary gated carabiner is useful for the belay loop of the harness for belaying and clipping into the rope.

### **Ice screws**

Ice screws must have an articulated handle to make it easier to screw them in or out. This is an important piece of safety equipment whenever on glaciers, even if no steep ice climbing is anticipated. In good ice, longer screws aren’t actually stronger so 16 cm - 19 cm screw is sufficient.

### **Prusik loops**

At least one long ( 2 m loop length) and one short (60cm loop length) are required for glacier travel and rescue. They can be made from inexpensive 6mm chord joined into a loop with a double fisherman's knot. When using thinner ropes, a smaller diameter cord may be required. The cheapest and most useful bit of kit that is carried.

### **Slings**

A number of slings made from either nylon or Dyneema® with a 120cm loop length are useful when mountaineering and winter climbing. These can be sewn or tied (nylon only). On more technical climbs, 60cm loops are useful to be used extenders on protection and a 240cm sling or cordalette can be useful for creating anchors.

For technical climbs, a Personal Anchor System (PAS) or similar lanyard is useful for security at belays.

### **Crevasse rescue equipment**

Specific items of crevasse rescue equipment such as lightweight pulleys or progression capture devices (such as the Petzl Micro Traxion®) make the job of rescue significantly easier and have other rescue applications.

## Technical Equipment cont.

### ***Avalanche transceiver***

Avalanche transceivers are required whenever an avalanche danger is expected. All modern transceivers operate on the same frequency.

### ***Avalanche shovel and probe***

Shovel and probe are essential avalanche safety gear and also useful for camping in the snow. 2 to 3 metre probes are most commonly used in NZ. Shovels must be strong and durable in order to be effective for digging in hard avalanche debris. Lightweight models often fall short in this respect.

## Accessories

### ***Water bottle***

Have capacity to carry 2 litres of water on an ascent. Bladder systems (such as Camelback® or Platypus®) are useful but can freeze in cold conditions or get damaged and don't fit well in a stuffed pack. Wide mouth plastic bottles (such as Nalgene®) are useful for filling from streams and can handle boiling water so can be used for hot drinks on the go and as a hot water bottle at night. PET bottles that come with bottled water or fizzy drinks are cheap, light and crushable.

In winter an insulated flask is useful for carrying hot drinks or a Jetboil® type stove is great for melting snow and making hot drinks quickly whilst out and about.

### ***Compass, map, notebook and pencil***

Compass and map are important navigational tools. Ensure your compass is suitable for the Southern Hemisphere. Notebook and pencil is useful for taking notes on techniques, routes, conditions and weather.

### ***Sun glasses***

Must provide good protection with a close fitting wraparound or glacier style. Category 4 lenses are mandatory for alpine trips above the snowline where there is intense reflection from the snow. Polarized lenses don't increase the protection but remove the glare from surfaces (such as water) that can make it more difficult to differentiate snow from ice.

### ***Snow goggles***

Goggles are an essential safety item. In stormy weather it can be impossible to navigate without proper eye protection. They can be used as a backup in case sunglasses are lost or damaged. A low light orange/yellow lense is best.

### ***Trekking poles***

If used to using trekking poles, they are a useful addition for walking through deep snow. Most people prefer to use two rather than just one. Poles need to be collapsible so they will fit in or onto your pack when not in use.

### ***Headlamp***

LED headlamps are vital for nocturnal toileting and short winter daylight hours. Start the trip with fresh batteries and bring spare in case it gets left on in the pack.

### ***Sun block***

A small bottle of high protection sunblock and lip protection is required for the strong NZ sun even in the depths of winter.

### ***Snow study kit***

If interested in snow science a snow study kit containing a digital thermometer, magnification glass and snow crystal card is a good addition to kit.

## Sleeping and carrying

### **Backpack**

A suitable backpack for winter mountaineering trips in NZ has 40 to 60 litre capacity. Larger than this will be too heavy when correctly packed. It must be light and it is useful if it can be stripped (lid or waist strap removed) or collapsed down to make it more comfortable for climbing in on day trips when less needs to be carried. It must have ice tool attachments.

On fly in and out trips a duffle bag for overnight equipment and a smaller 'summit' pack is a good option.

### **Stuff sacs or dry bags**

Lightweight nylon stuff sacs with draw cords or dry bags with roll tops are good for keeping stuff in your pack organised and dry.

### **Sleeping bag**

For use in huts during winter a mid weight sleeping bag rated to -5°C (23°F) is usually fine. If you are a 'cold' person, camping or bivvying out, go slightly warmer to -10°C (14°F). Additional warmth can come from wearing more clothing inside the bag. Down fill has a better weight to warmth ratio but many modern synthetic fill materials are getting very close. Synthetic material has the advantage of staying warm when wet so good in damper conditions such as when snow caving.

Silk or cotton liners are recommend to prolong the life of your sleeping bag.

### **Ear plugs**

Huts are communal places so For light sleepers ear plugs can be a great help!

### **Bivvy bag**

A bivvy bag is a lightweight bag to put a sleeping bag inside to give it more weather protection when spending the night bivvying out. They are usually much lighter than a tent but not as good in bad weather and handy to have in an emergency. They are only required if the conditions are conducive to sleeping out.

### **Sleeping pad**

Most huts have mattresses and sleeping pads do not need to be carried unless camping or bivvying.

Inflatable mattress (such as Thermarest®) are most comfortable and provide superior insulation properties. They can puncture so a repair kit must be carried. Closed-cell foam mats are reliable and cheap and can be layered under an inflatable mattress to protect it from sharp rocks or to give more insulation when sleeping on snow.

### **Toiletries**

Toiletries should be minimised as much as possible. There is little opportunity for washing with soap in the high mountains and can be a drain on resources. Your guide will carry a comprehensive first aid kit for emergencies but personal medications such as blister tape, anti inflammatories etc. is useful (Please inform your guide if you are on prescription medication).

A towel is useful for nights spent in town and after arriving back from the mountains.

### **Plastic bowl, cup & spoon**

Most huts have a supply of cooking utensils, cutlery and crockery. If camping or bivvying, a lightweight plastic cup, bowl and spoon is required.

**Please check the equipment list for your particular trip**