

## Advanced Ski Waxing

Waxing cross-country skis is not nearly as mysterious and complicated as many people make it out to be. An investment in some basic equipment and wax, a bit of knowledge and some effort will result in fast skis and more fun for your child (and for you too).

### Basic Equipment

- Waxing iron (Swix or Toko). Old clothes irons are generally not recommended.
- Scrapers: A thin steel and thicker plastic scraper, a plastic scraper to clean out the groove, a steel paint scraper with a handle
- Brushes: A good coarse nylon brush (Swix or Toko)
- Corks: One for warm, one for cold wax
- Wax remover: Vauhti, Toko, Swix
- Fiberlene cloth (expensive) and/or Canadian Tire synthetic rags (cheap and work as well) for cleaning ski bases
- Something to support the ski while waxing: ski form (homemade, Vauhti, Black and Decker Workmate, etc.)

### Wax

- Hard grip wax: A range of waxes from one manufacturer (Rode, Swix, Toko, Vauhti). For temperature of +1 to -20 will require about 5 waxes.
- Klister grip wax: Universal klister
- Glide Wax: A range of waxes from one manufacturer: Swix CH waxes for example: yellow (+2 to +10), red (+1 to -5), blue (-5 to -12), green (below -12) are inexpensive and can be bought in bulk

Check out the Nakkertok Racing Team web page for a [more detailed list of waxes](#). [Swix](#) and [Toko](#) also have informative websites with lots of useful waxing information.

### Glide Wax Application

- Make sure the base is clean
- When skiing on warm dirty snow (as in spring) the base will pick up a lot of dirt. Clean with wax remover and fiberlene. Let the wax remover evaporate before applying glide wax.
- Choose the appropriate glide wax based on the weather report and snow temperature
- The temperature ranges of waxes are based on snow temperature and not air temperature. There is often an important difference between the two depending on humidity, sun, wind, precipitation and the preparation of the track. For glide wax as long the air temperature is within the temperature range of the selected wax then you will be okay.
- Set the iron to the appropriate temperature
- Too hot and the wax of the day will smoke, too cold and the wax will not melt.
- Good irons will have gradual and accurate temperature scales. The SWIX irons actually identify the iron temperature according to SWIX waxes.
- Drip the wax onto the base by holding the wax to the iron over the base (not touching). Alternatively you can rub the glide wax onto the base (like a grip wax). You may need to warm the wax on the base of the iron to do this.
- You do not need a whole lot of wax as most will be scraped off afterwards
- Iron the wax into the base
- No need to iron forever, just enough to ensure that the wax has melted into the base.
- Keep the iron moving at all times and make sure that there is always wax between the iron and the base
- Colder waxes are harder and take higher temperatures and more time to melt, warm waxes are the opposite
- Let the skis cool down before scraping
- Warm waxes take very little time to cool down and can be scraped almost immediately.
- Colder waxes take longer and become quite hard.

- Scrape the base with the thick plastic scraper
- This is where a ski form comes in handy to hold the ski tightly in place and provide support from one end of the base to the other.
- Remember long smooth strokes with the scraper held close to perpendicular to the ski
- Work from tip to tail
- Apply even pressure
- Keep the edge of the scraper sharp (using a flat sharpening stone)
- Use the rounded groove scraper to clean out the groove
- Warm wax (e.g. +1 to +10) is easily scraped and may require just two passes. Cold wax is very hard and brittle and requires a sharp scraper and multiple passes
- Scraping is finished when you can look at the base of the skis under a bright light and not see any clumps of wax, just the texture of the base.
- Brush the base
- Brushing is very important to remove little bits of loose wax, expose the texture of the base and to polish the wax. A good wax brush costs about \$25 but it's a lot more effective than your old tooth brush!
- When a ski is properly scraped and brushed the base will be shiny and have the texture of the base

### **Glide Wax Tips**

- Glide Waxing should be done in a well-ventilated area.
- The fumes from smoking wax (particularly the fluoro waxes) are quite dangerous and should be avoided at all cost (with a good iron this should not be a problem).
- Keep plastic scrapers sharp with a whetstone.
- For warmer conditions ski are sometimes rilled (a pattern is pressed into the base using a special tool) to reduce suction. We have a riller tool in the club wax box.
- When skis are stored for long periods they should have some soft glide wax melted into the base (and not scraped) to keep the base from drying out.
- Ski should always be held together with straps and be carried in ski bags.
- Bases that have become dried out or uneven can be rejuvenated by having the skis stone ground
- While glide waxing is important, proper ski selection and a good base are probably more significant contributors to fast skis

### **Grip Wax Application**

- Know where the wax pocket is on the skis
  - This can be determined by knowing the weight of the skier and bringing the skis to a ski store to have them tested
  - The wax pocket is the portion of the ski that does not come in contact with the snow when half of a skier's weight is put on the skis (as in gliding with two feet on the skis).
  - When approximately 70% of the skier's weight is placed on the ski the wax pocket should be completely flattened
  - A good wax pocket for a child is one that extends from approximately 20 cm in front of the toes to the heel of the foot.
- Remove the existing grip wax
  - Use a steel scraper (or a steel paint scraper) to remove most of the grip wax and fibrelene and wax remover to get the last bits off of the base (and sometimes the sides and top of the ski!).
  - Let the wax remover evaporate before putting the fresh grip wax on.
  - You can roughen the base in the wax pocket with 100 grit sand paper before applying grip wax to improve adhesion (durability)

- Select the wax of the day
  - Again this is based on the snow temperature
  - Better to err on the side of a wax that is too cold than one that will possibly be too warm
  - Colder wax is easily covered whereas warmer wax not always easily covered
  - Fresh snow has larger crystals and will require slightly softer (warmer) wax than older snow given similar temperatures.
  - The information on the wax canister is often quite helpful (if sometimes a bit cryptic)
- Apply and cork in the wax
  - Generally it is better to apply multiple thin layers than one thick layer.
  - Crayon a thin layer then rub the wax with the cork until it is smooth and evenly applied. You need to generate friction with the cork. Push down and rub vigorously (its easier to apply wax when the ski is warm).
  - There is generally no need for more than three thin layers for any race or training session unless the snow is very abrasive (icy).
  - For a long outing (such as the Canadian Ski Marathon) or for icy conditions a base binder wax should be applied before the wax of the day.
  - Base binders are very durable and sticky wax that greatly increase the longevity of the grip wax that is applied on top. They are usually rubbed on, then heated with an iron and covered with layers of grip wax after it has cooled.
  - For warm and/or icy conditions the best solution may be klister. Klister is squeezed on to the base like toothpaste. It can be smoothed with a scraper or with a thumb (it may need to be heated with a torch first if it is being applied in cold temperatures). It is generally applied in a shorter thicker layer than regular grip waxes. If it provides too much grip regular hard waxes can be applied on top. Klister should be removed from the ski as soon as possible after skiing as it sticks to everything and can make a mess of ski bags, clothing etc.
- Test the wax
  - Kids need to ski at least five minutes (and ten minutes is better) in the tracks with a wax before they inevitably tell you that they need more grip.
  - You can increase grip by going to a warmer wax, lengthening the portion of the ski where the grip wax is applied (further towards the tip) or putting a thicker layer of wax on.
  - Lengthening the layer of grip wax is a solution as long as you can do this without extending into the glide zone. If you already have put grip wax on the whole wax pocket and they are still not getting enough grip then it is time to go to a warmer wax. Putting a thicker layer is the last choice and the least effective solution.

### **Classic Waxing Tips**

- Ski ability (technical skill), ski stiffness (in relation to the child's weight) and confidence are the three variables that can affect how a wax works for a skier.
- This means that a wax that will work perfectly for one child will not be grippy enough for another.
- Kids should learn to select and apply their own grip wax by the time they are twelve years old.
- When re-applying new wax while out on the trail. Rub the base with a cork to heat the base and remove some of the moisture before applying the new wax. This will make it easier to apply.

# Ski Wax

**Notes on waxing:** Get to know one line well, fooling around with 4 or 5 different brands will only serve to confuse. What follows are recommended waxes for Vauhti and Swix. Choose *one* brand and stock up

## Basic List:

(What everyone should have in his or her wax box)

### **Binder:**

**Swix**  
VG35

**Vauhti**  
Basewax AT or Base wax super

### **Kick Wax:**

**Swix**  
V20 Green (-10 to -18C)  
V30 Blue (-5 to -15C)  
V40 Blue Extra (-3 to -10C)  
V45 Special Violet (-2 to -6C)  
V50 Violet (-1 to -3C)  
V55 Red Special (0 to -2C)  
V60 Red (+1 to -1C)

**Vauhti (synthetic)**  
Green (-10 to -30C)  
Blue (-5 to -10C)  
Orange or carrot (-1 to -6C)  
Violet (0 to -2C)  
Violet (0 to +1C / yes there are 2 violets)  
Red (0 to +2C)  
Yellow (+1 to +4C)

### **Klister:**

**Swix**  
Universal Klister  
Silver Universal Klister  
KR50 Flexi Klister  
KR60 Vario Klister

**Vauhti**  
Universal Klister  
Violet  
Silver Plus  
Silver Minus

### **Glide Wax:**

Bulk (any brand) CH line (include Green, Blue, Purple, Pink(red) and Yellow waxes).

#### **Basic Tool List:**

- 2 x Cork (synthetic is best) – one cork for warm grip wax, one for colder grip wax
- Metal scraper (thin putty knife also works well) – used to scrape grip wax/klister from skis
- Plastic scraper
- Groove Scraper
- Waxing iron – buy an iron designed specifically for waxing, it's a very worthwhile investment
- Nylon Brush
- Shop Towels – for removing grip wax and cleaning skis, fiberline also works
- Wax remover – for removing grip wax
- Wax form

## **Additions:**

For higher performance and unusual conditions. Add over the years.....

### **Advanced Kick Wax:**

#### **Swix Krystal Line**

VR30  
VR40  
VR45  
VR50  
VR55  
VR60  
VR70  
VR75

#### **Vauhti Fluor Line**

Fluor Green  
Fluor Blue  
Fluor Orange (carrot)  
Super Pink  
Fluor Violet  
Aluminum  
Fluor Red  
Fluor Yellow

### **Advanced Klister:**

#### **Swix Krystal Line**

KR20  
KR30  
KR40  
KR50  
KR60  
KR70

#### **Vauhti Fluor Klister**

Silver Minus Fluor  
Blue Fluor  
Violet Fluor  
Universal Fluor  
Silver Plus Fluor  
Red Fluor

### **Glide Wax:**

Bulk (any brand) LF or HF line (include Green, Blue, Purple, Pink(red) and Yellow waxes).

#### **Advanced Tools**

- Gas mask – to protect lungs when waxing in poorly ventilated areas and with Fluorocarbons.
- Riller – used to add structure to the bases of skis in high humidity conditions
- Scraper Sharpener – Keeps plastic scrapers sharp
- Thermometer – For checking snow temperature
- Brass brush – Used to open pores of ski before waxing so that the ski accept wax better (useful for cleaning skis).
- Sand paper (200 grit) – For roughing kick zones

Note: High concentration fluoro waxes (Cera-F etc.) are only necessary for very specific racing conditions and should not be used for training session under any circumstances

### **Nakkertok Waxing Policy**

Waxing is an important part of cross country skiing and a critical part of racing. While a lot can be learned through observation and instruction, it is only with practice and experience that a racer will understand the ways to obtain really fast skis and good grip. On a day-to-day basis and at training a racer's skis are the racer's responsibility. The Coaches will help you to look after them properly.

#### **Race waxing:**

For races, the club provides unusual race waxes, race additives, klister and wax to make last minute touch-ups as required. We also will provide technical and waxing help from the coaching staff as well as waxing benches and tools. We will do our best to make sure you have the best wax when you reach the start line. On race days, racers should concentrate on their warm up routines and race strategies, not their wax, as that is the responsibility of the coaches. To help Nakkertok coaches selected the best wax possible and get skis done efficiently, racers should stay out of the waxing rooms (also a health concern), report back quickly after testing skis and inform coaches of changing snow and

weather conditions. Skis should always be tested at race pace (at least one short burst of intensity) before a final assessment of wax is made. If something needs to be changed, bring your skis to the coaches as soon as possible, we can always make adjustments.

**Nakkertok team member's waxing responsibilities:**

1. Each racer needs a basic wax kit for both glide wax and kick waxes (see wax list). Only basic waxes are required, please ask one of the coaches if you have questions.
2. For training sessions you should arrive with skis waxed and ready to ski. If there is any question about what to do don't hesitate to call or email a Nakkertok coach.
3. For races, you should have basic waxing complete; skis should be glide waxed, scraped and base prepared for kick wax, before you arrive. For local races waxing information will be emailed out the night before the race.
4. On race day the coaching staff will continue trial and error wax testing right up to start time to compensate for changes in conditions, particularly for classic races. Each racer should report to the designated waxing area 45 minutes before their start time, 'not much earlier and definitely not later, for final waxing. Each racer will also be expected to report back promptly after a test ski. Waxing is a team effort.

Your classic skis should have the wax pocket marked. This makes waxing much more consistent. Please ask one of the coaches if you have questions about determining your wax pocket.