



ALPINE SKI & SNOWBOARD PREPARATION

RACING 2010-2011

SWIX MOLDED SHAFTS

IPM TECHNOLOGY

Unsurpassed quality and manufacturing is why World Cup skiers prefer Swix shap-molded shafts. Swix is still the only ski pole manufacturer in the world using this technology, which allows us to shape and bend composite shafts to exacting specifications.

Swix is the leader in supplying innovative composite poles to the world's best alpine skiers. Skiers prefer Swix composite poles for their superior technical properties such as:

- Strength
- Stiffness
- Aerodynamics
- Pendulum

FACTS

DHC

- DH pole based on IPM technology.
- 3 times stiffer than DH poles in aluminum, giving a much more explosive start.
- 50% less wind drag than aluminum poles

FACTS

MACH

- Wing designed composite racing pole based on IPM technology.
- Super pendulum for a great feeling pole.
- For slalom, GS and free skiing.

SWIX®
YOUR WINNING MARGIN

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COVER:
AKSEL LUND SVINDAL
Photo: Alessandro Trovati/
AP/Scanpix



Telenor is the main sponsor
of Aksel Lund Svindal and
the Norwegian Alpine Team.

This manual is made for racers and people who demand the absolute best performance from their skis and snowboards.

The information in this booklet is based upon feed back from our highly successful 2009-2010 World Cup Racing Service Team. Swix takes part in the most important competitions with our own test team and service people. Testing and product development is done together with the ski and snowboard factories and their service technicians leading to new and better products.

STRUCTURE



When the base of a snowboard or ski has a certain surface structure, or texture pattern, the gliding performance is improved compared to a completely smooth base surface.

Prior to setting edge angles on a ski/board (new or old) it is a good idea to have them ground so we are starting with a truly flat edge. It is important to realize that even new skis are not always flat. Stone-grinding will secure a flat base. You can at the same time choose a preferred structure for the conditions the skis are most likely to be used.

It is impossible to classify the infinitely variable types of snow and the unlimited number of possible structure patterns. However the three most common structure types are:

- Linear structures
- Cross structures
- Broken structures

Structure Patterns

Today almost all base structure patterns are created by the stone grinding process. Stone grinding machines have become amazingly sophisticated. The ability to control grinding parameters, and to duplicate specific structure patterns has greatly improved.

LINEAR STRUCTURES

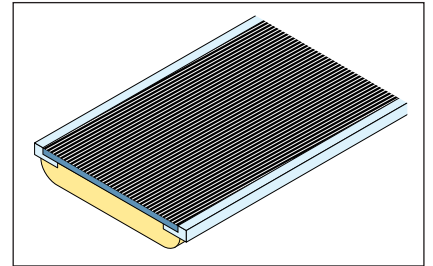
Fine Linear structures work well for colder, drier snow conditions.

CROSS-STRUCTURES

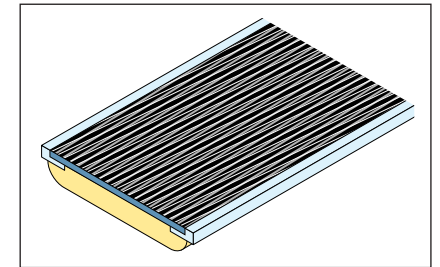
The most often used structures are diagonal structures, stone-ground to cross type structures. They work better for snow with medium to higher moisture content and coarse snow crystals. This structure has an optical diagonal banding appearance that runs at an angle across the base. Too deep, coarse structures will affected the turning ability.

BROKEN STRUCTURES

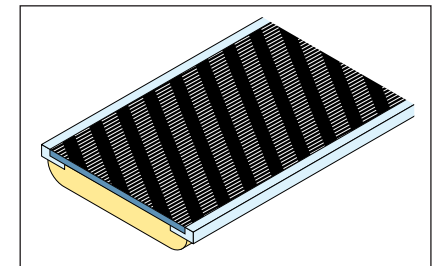
There are also numerous “broken” structure combinations produced by stone grinders or imprint tools. These vary in gliding property and turning ability.



LINEAR STRUCTURE



CROSS STRUCTURE



BROKEN STRUCTURE

PREPARING EDGES ON SNOWBOARDS

IN GENERAL

The set-up of the edges depends upon the type of board, properties of the board, usage of the board, the snowboarder's technical skills and the ability to feel the kind of snow he/she is on. The set-up of the edges must be adapted to each individual. The best results will be achieved through testing and experiencing different snow conditions. Both edges of the snowboard should be treated equally and can be adjusted later when the board has been tested on snow. To make sure that the board performs perfectly on snow and ice, the edge has to be even and polished without scratches or other damage. If the board has been used on rails, the edge could be tempered and almost impossible to file. In this case, stone grinding is highly recommended. To ensure optimal glide and to benefit from the properties of the board, the base-side edges has to be even with the base. If the base of the board is not completely flat, a qualified technician can do this with a good stone grinding machine. The right tools are important and practical for a good result. Top quality snowboard-vises like the Swix SB31XF are a good start in combination with other tools. This will be mentioned later. Keeping your work place and tools clean is essential for the best results. Procedures and the use of different tools are described step by step from page 37.

BASE-SIDE EDGES - PREPARATION AND FILING

To make the snowboard easy to use, the edge has to be beveled. This means that we give the base-side of the edge a certain, fixed angle (see illustration page 9).

By beveling the edges, will give the following benefits:

- The edge has a slight angle to the surface and will carve more progressively.

- The board will be easier to turn and control.
- The edge will be less aggressive sideways towards the snow. The result will be less risk of catching an edge and losing control. This is very important.
- Rotations will feel easier and the ride will have a better flow.

Tools that are used for preparing the base-side edges are Swix TA05, Swix TA075, Swix TA010 or Swix TA0515.

PLANING AND PREPARING THE BOARDS SIDEWALLS

The sidewall of a snowboard normally has a thin plastic directly above the steel edge. This needs to be removed in order to get the best results after filing on sidewall-side edges. By removing a small portion of this edge with a specialized planer, the risk of getting plastic in the files is reduced. This small plastic side-edge gives support to the steel edge and it is important that it is removed gradually. There may be a thin sheet of metal above the steel edge on some snowboards. This is removed together with the plastic with the same tool. We recommend using the specially designed planer for this. The planer blade is either round or square. Swix TA100R (round) is normally used on boards with a cap construction, while the Swix TA100SB (square) is used on traditional sandwich constructions. Use the "panzer" file Swix T108 to get a smooth and even surface on the sidewall. To finish off, use a fine Swix T350 silicone-carbide paper # 180 and Swix Fibertex T264. This is exclusively done on the sidewalls and not on the steel edges. (See illustration page 39.)

FILING AND PREPARING THE SIDEWALL-SIDE EDGES

The sidewall-side of the steel edge is also beveled to give better grip on hard snow and ice.

The sharper the angle between the sidewall-side and the base-side of the edge, the more "aggressive" the grip on the snow will be.

Normally 2 - 3 degrees are used. Tools for this use are Swix TA288, Swix TA287, Swix TA388, Swix TA387 and Swix TA3003. (See pictures page 11.)

DEBURRING THE BASE-SIDE AND SIDEWALL-SIDE EDGES

There will always be small burrs after working with the file on the edges. To prevent the edge from getting dull because these burrs tend to break away the point of the angle causing the edges to become dull sooner. By using the Swix coarse diamond stone Swix TAA200 or the Swix rubber stone, Swix T994, these small burrs are easily removed. (See page 39.)

DAILY MAINTENANCE

Small adjustments and improvements can be obtained by polishing the edges. Edges that are polished are faster, sharper and will stay sharper longer.

Polishing the edges after each day so that the board is ready for the next day, means less time is spent on maintenance. On icy conditions, it could be necessary to bring a file holder for the sidewall-side edge with a diamond stone to polish the edges between each run.

Polish back and forth along the steel-edge (see illustration #4 page 42). Next, the base-side of the edge is polished (see illustration #6 page 39).

If this is not enough to make the edges sharp, a new base prep is needed. Do as described earlier. Finish of the new base prep by polishing the edges.

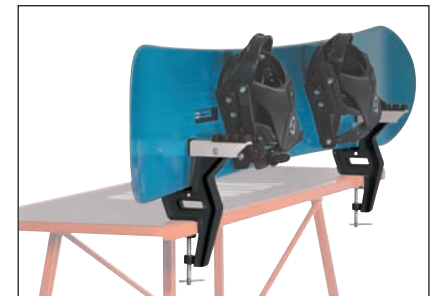
DETUNING AND ADJUSTING STEEL EDGES

To get the full benefit of modern boards, it is recommended that the edges are sharp across the full length of the edge. This ensures a good carve from the tip to the tail of the board. On steep slopes, a little extra pressure on the nose will start the turn more easily. To achieve this, the nose needs to be sharp. If the board feels too aggressive into the turn or it is difficult to finish the turn,



SNOWBOARD VISE (SB031XF)

Simple two piece vise for vertical and horizontal use.



(the same thing also happens when you are in the halfpipe), try either of the following.

First, choose 0.5 degree more beveling of the base-side of the edge or if this is not enough, use the Swix rubber stone Swix T992 or Swix T994 to gently dull the edge. Put the rubber stone on the edge and move it back and forth. A little bit at the time (5 cm). Up to 25 - 30 cm from the nose and backwards and up to 25-30 cm on the tail.

TREATING SCRATCHES AND DAMAGED STEEL EDGES

If an edge has hit a rock, this can temper the steel edge. These areas need to be removed with a stone such as the Swix T240 before you can continue with a file. If this is not done, the file will "skid" over the hardened area, resulting in a damaged file and uneven sharpening of the edge. Removing the damaged area is necessary and

easy, using the Swix T240 stone. After removing the area with the Swix T240 stone, filing the edge can continue and it will be much easier. (See illustration #4 page 37.)



Rider: Per Iver Grimsrud
Photo: Carl Ostberg
Courtesy of SnowboardForbundet (NOR)

PREPARING EDGES ON ALPINE SKIS

IN GENERAL

The set-up of the edges depends upon the type of ski, properties of the ski, usage of the ski, the skiers technical skills and the skiers ability to feel the kind of snow he/she is skiing on. The set-up of the edges must be adapted to each individual skier. The best results will be achieved through testing and experiencing different snow conditions. Both edge on each ski has to be treated equally and can be adjusted later when the skis have been tested on snow. To make sure that the skis perform perfectly on snow and ice, the edge has to be even and polished without scratches or other damage.

To ensure optimal gliding and ski-ability, the base-side edges has to be even with the base.

The right tools are important and practical for a good result. Top quality vises like the Swix T149-50 is a good start, combined with other tools that will be mentioned later.

Keeping your workplace and tools clean is essential for best results. Procedures and the use of different tools are described step by step from page 37.

BASE-SIDE EDGES - PREPARATION AND FILING

All racing skis today use beveled edges. This means that we give the base-side of the edge a certain fixed angle (see illustration page 9).

By beveling the edges, we get the following benefits:

- The edge has a slight angle to the surface and will carve more progressively.
- The ski will be easier to turn and control.
- Both edges of both skis will be less aggressive sideways towards the snow. The result will be less risk of catching an edge and losing control. This is very important, especially in speed events like Super-G and Downhill. In slalom, some racers prefer 0 degree beveling. This means the ski will be precise and feel more aggressive. This demands a

stronger and more technically skilled racer. Tools that are used for base-side preparation are Swix TA05, Swix TA075, Swix TA010 or Swix TA0515. (Read more about the tools on page 11.)

PLANING AND PREPARING THE SKIS SIDEWALLS

The sidewall of a ski normally has a thin plastic (sometimes aluminum) edge directly above the steel edge. This needs to be removed in order to do get the best results after filing on sidewall-side edges. By removing a small portion of this edge with a specialized planer, the risk of getting plastic in the file is reduced. This small plastic side-edge gives support to the steel edge and is important that it is removed gradually. There might be a thin sheet of metal above the steel edge on some skis. This is removed together with the plastic with the same tool. We recommend using a specially designed planer for this. The planer blade is either round or square. Swix TA100R (round) is normally used on skis with a cap construction, while the Swix TA100SB (square) is used on traditional sandwich constructions. Use the "panzer" file Swix T108 to get a smooth and even surface on the sidewall. To finish off, use the fine Swix T350 silicone-carbide paper # 180 and Swix Fibertex T264. This work is done exclusively on the sidewalls and not on the steel edges. (See illustration page 39.)

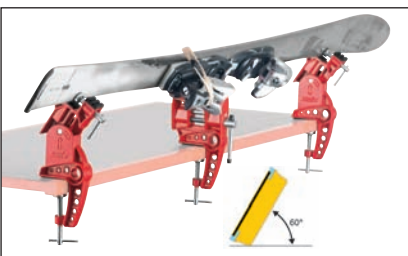
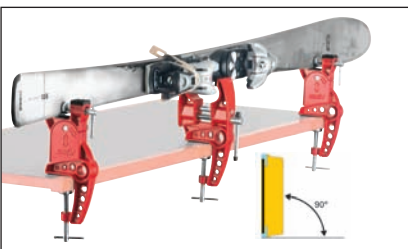
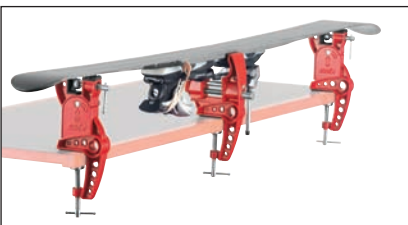
FILING AND PREPARING SIDEWALL-SIDE EDGES

The sidewall-side of the steel edges are also beveled to give better grip on hard snow and ice. The sharper the angle between the sidewall-side and the base-side of the edge, the more "aggressive" the grip on the snow will be. This angle depends upon the following factors:

The skis properties, the skill level of the skier, the skiing discipline (SL, GS, S-G or Downhill) and the type of snow. Kids and junior level skiers may use between 2 - 3 degrees, World Cup skiers up



WORLD CUP SKI VISE (T0149-50)
Swix three piece vise with wider jaws 50 mm for better grip and stability when working on carving skis and radial alpine skis. 40 mm to 85 mm.



to 5 degrees. Tools for this use are Swix TA288, Swix TA287, Swix TA388, Swix TA387 and Swix TA3003. (See illustration page 9.)

DEBURRING THE BASE-SIDE AND SIDEWALL-SIDE EDGES

There will always be small burrs after working with the file on the edges. To prevent the edge from getting dull because these burrs tend to break away the point of the angle causing the edges to become dull sooner. By using the Swix coarse diamond stone Swix TAA200 or the Swix rubber stone, Swix T994, these small burrs are easily removed. (See page 39.)

DAILY MAINTENANCE

Small adjustments and improvements can be obtained by polishing the edges. Edges that are polished are faster, sharper and will stay sharper longer.

Polishing the edges after each day so that the skis are ready for the next day, means less time is spent on maintenance. On icy conditions, it could be necessary to bring a file holder for the sidewall-side edge with a diamond stone to polish the edges between each run.

Polish back and forth along the steel-edge (see illustration #4 page 42). Next, the base-side of the edge is polished (see illustration #6 page 39).

If this is not enough to make the edges sharp, a new base prep is needed. Do as described earlier Finish of the new base prep by polishing the edges.

DETUNING AND ADJUSTING STEEL EDGES

To get the full benefit of modern skis, it is recommended that the skis are sharp across the full length of the edge. This ensures a good carve from the tip to the tail of the ski. On steep slopes, a little extra pressure on the tip will make the ski start the turn more easily. To achieve this, the tip needs to be sharp. Likewise, a little extra pressure on the tail at the end of the turn makes the transition into the next turn easier and faster. If the skis feels too aggressive into the turn or it is difficult to finish the turn, try either of the following.

First, choose 0.5 degree more beveling of the base-side of the edge or if this is not enough,

use the Swix rubber stone Swix T992 or Swix T994 to gently dull the edge. Put the rubber stone on the edge and move it back and forth. A little bit at a time (5 cm). Up to 25 - 35 cm from the tip, backwards and up to 5 cm on the tail.

TREATING SCRATCHES AND DAMAGED STEEL EDGES

If an edge has hit a rock, this can temper the steel edge. These areas need to be removed with a stone such as the Swix T240 before you can continue with a file. If this is not done, the file will "skid" over the hardened area, resulting in a damaged file and uneven sharpening of the edge. Removing the damaged area is necessary and easy, using the Swix T240 stone. After removing the area with the Swix T240 stone, filing the edge can continue and it will be much easier. (See illustration #4 page 37.)

HERE ARE SOME GENERAL GUIDELINES USED ON THE WORLD CUP:

SL base-side edge = 0 to 1 degree bevel

GS base-side edge = 0.5 to 1 degree bevel

SG base-side edge = 0.5 to 1 degree bevel

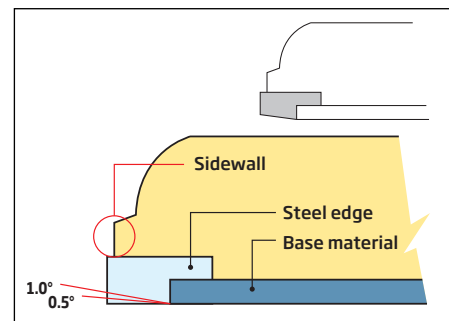
DH base-side edge = 0.5 to 1 degree bevel

SL sidewall-side edge = 3 to 5 degree bevel

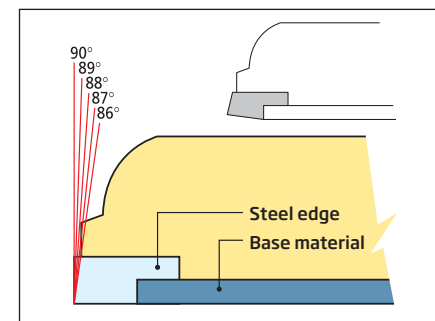
GS sidewall-side edge = 3 to 5 degree bevel

SG sidewall-side edge = 3 degree bevel

DH sidewall-side edge = 3 degree bevel



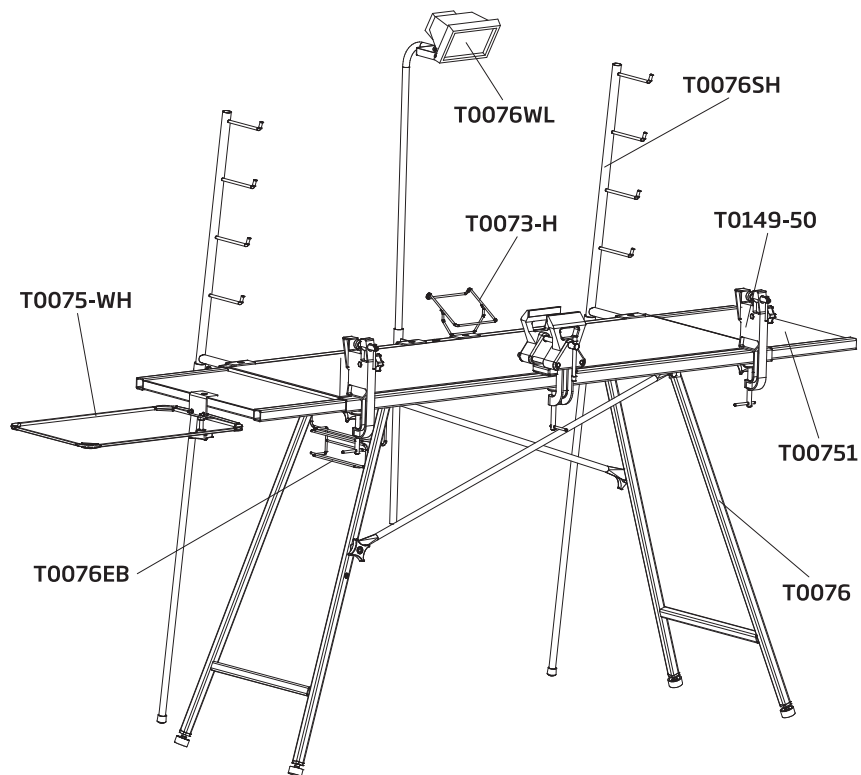
Base Edge Bevel - Usually 0.5 to 1 degree.



Side Edge Bevel.

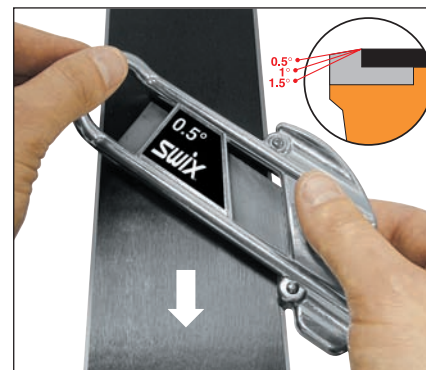


WAXING TABLE RACING (T0076)
 Stable and solid table. Adjustable height 90 cm or 85 cm. All adjustable feet with rubber feet for anti slip. Tabletop: 120 cm x 45 cm. Weight: 15.5 kg/34 lbs.



Edge Preparation Products

The Swix File & Stone Product group is designed specifically for edge work on skis and snowboards. The files' details such as chroming hardness and thickness, cutting tooth angle, depth, and teeth per centimeter, all are based upon expert advice from World Cup technicians and file producers. The line of stones is to-the-point to get the job done accurately and without confusion.



Professional Base-Edge Bevel File Sleeves
 0.5° (TA005), 0.75° (TA0075), 1° (TA010), 1.5° (TA015)



Sidewall Cutter Aluminium (TA103)



Side Edge File Guides
 - for skis and snowboards
 1° (TA289), 2° (TA288), 3° (TA287), 4° (TA286), 5° (TA285)



Side Edge File Guide
 - with Roller Bearings and Clamp for skis and snowboards.
 4° (TA086), 3° (TA087), 2° (TA088), 1° (TA089)



Side Edge File Guide (TA3003)
 Professional Side edge sharpener. Adjustment from 90 to 85 degrees.

STONES

Diamond Files offer the special option of having the cutting ability of a file and the deburring and polishing ability of a stone all in one tool. The Diamond Files are perfect to carry in the pocket for quick removal of the fines burrs created on the edge when ski or riding on aggressive man-made snow. Just a couple of quick passes with the Diamond File on the side-edge will cut away the burrs for smoother turning. Will fit into the Swix file holders for the most accurate results.



Diamond Stone (TAA100/TAA100S)
X-Coarse 100 grit. Deburring and sharpening diamond stone. Works great for removing case hardening in the tip and tail from grinding stone entry and exit of the ski at the manufacturing facility, and from hitting rocks. 100 mm/70 mm.



Diamond Stone (TAA200/TAA200S)
Coarse 200 grit. Deburring and maintenance stone. One of two stones that can do it all in the diamond category. Works great for maintaining sharpness and smoothness. 100 mm/70 mm.



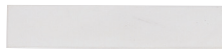
Diamond Stone (TAA400/TAA400S)
Medium 400 grit. 2nd in your must have diamonds to maintain a smooth and sharp edge. Starts to bring out that high polish shine. 100 mm/70 mm.



Diamond Stone (TAA600/TAA600S)
Fine 600 grit. 100 mm/70 mm.



Diamond Stone (TAA1000/TAA1000S)
X-Fine 1000 grit. Final diamond polish when looking for that mirror finish. Extremely exact edge accuracy. Used on alpine skis to achieve that super smooth finish. 100 mm/70 mm.



Ceramic Stone Fine (T0998)
For final polishing of the edge. A very high quality ultra fine grit for final finish of the steel edges.



Pocket stone (T0240)
Fine and coarse. Coarse side for removing hardened steel and burrs after hitting rocks. Fine side for polishing after use of file.



Gummy Stone (T0992)
Soft, for prepping and de-tuning tips and tails.

Gummy Stone (T0994)
Harder for polishing edges.

Gummy Stone (T0995)
Extra hard. Used after filing to remove micro burrs.

RACING PROFESSIONAL FILES

The Swix file program offers specialized files of the highest quality. The files are made to our own specifications to meet the demands of World Cup Service Technicians.

The new Racing "X" files have been especially designed for sharpening ski and snowboard edges. The steel quality, the tooth geometry and the hardening process of the file ensure a high precision tuning and a top-quality surface.



WC Racing Pro Extra Fine File (T0103XF100B)
100 mm. 22 Tpi. Stainless steel. Extremely sharp fine high quality file for edge geometry set up. New generation of files that reduces the need for second use of files for finish. Lasts 10 times as long as regular files.



WC Racing Pro Fine File (T0103X100B)
100 mm. 17 Tpi. Stainless steel. Extremely sharp fine high quality file for edge geometry set up. New generation of files that reduces the need for second use of files for finish. Lasts 10 times as long as regular files.



WC Racing Pro Medium File (T0102X100B)
100 mm. 13 Tpi. Stainless steel. Extremely sharp high quality file for edge geometry set up. New generation of files that reduces the need for second use of files for finish. Lasts 10 times as long as regular files.



Swix Fine File (T0104X120 and T0104X)
6"/15 cm. 20 tpcm, fine cut. Chromed Finishing File. Durable.



Swix 2nd Cut File (T0106X120 and T0106X)
8"/20 cm. 16 tpcm. Chromed all purpose file. Best all round shop/consumer file produced by Swix. Side beveling, base beveling set up before diamond work. Durable beyond all other files offered. A retail must for consumers.



Bastard File (T0107X120 and T0107X)
8"/20 cm. 13 tpcm. Chromed Bastard removal/setup file. Best file for setting side angle. Non-tang files offer a truer, flatter file for exact degree application. Best file for initial side bevel.



Specially designed Panzer file (T0108X)
30 cm/12" anti-rust treated file. Coarse, 13 tpi. Perfect for removing excess base material after repair. Can also be mounted to the waxing table for sharpening acrylic scrapers.



SWIX UNIVERSAL PACK / RE014



SWIX TECH PACK / RE010



COACH VEST II / RE013



COACH VEST II / RE012



COACH START PACK DUFFEL / SG107



SWIX TRI PACK / G0004



SWIX ALPINE POLE BAG / R0299

SWIX
YOUR WINNING MARGIN

BASE BRUSHING

The Swix Brush Programme in General

The Swix Brush Program is subject to continuous development based on feedback from the Swix Racing Service Department that serves World Cup technicians, athletes, and teams throughout each season. As a result, Swix customers are guaranteed the highest quality products taking into account the latest developments and methods of World Cup technicians.

Swix Brushes are divided into three main categories of use, plus the economy line.

- The Swix "Pre-Wax" Brushes are designed to use before waxing for base restoration ("freshening") by removing the burnish and oxidation from the base surface, and brushing old wax out of the structures (base patterns) in ski and snowboard bases to clean and "open" the base for better wax absorption.
- The Swix "Post-Wax" Brushes are for use after waxing and scraping to brush the wax out of the base patterns. To many, these brushes are the most important. The base must be waxed, yet the structure patterns must also be revealed to minimize friction. The brushes in this category are designed to be efficient at removing wax but gentle enough to not have a base scratching effect.
- The Swix "Cera F" Brushes have the purpose of "application brushing" and final finish brushing. Professional technicians reserve these brushes just for use with Cera F so the final waxing result cannot be compromised with wax other than Cera F.



For each of these categories the Swix brushes are carefully selected with special qualities in mind. Swix selects not only the specific material for each purpose, but also the certain length of each fiber, a certain thickness and stiffness for each fiber, and lastly, the bristle density. By specifying the characteristics thoroughly, each of the Swix brushes has its own "personality" and fulfils a specific purpose.

Most of the Swix brushes come in two sizes. The smaller rectangular are easy in use and convenient when travelling. The larger oval brushes are suited for efficiency and comfort when preparing multiple skis.

Brushes after waxing and scraping

T179B/T1790 Steel Brush (or T162B/T1620 Bronze Brush)

A medium coarse steel or bronze brush to use after waxing and scraping. 10-12 strokes. Can also be used before waxing to clean and "open" the base.

T160B/T1600 Blue Nylon Brush

A fine soft nylon brush for polishing. 4-5 strokes.

T191B Steel Brush Ultra Fine

An ultra fine steel brush for renewal and cleaning of bases.

Brushes for Cera F Powder

T194B/T1940 Stiff Nylon Brush

For "brush up" (not away) of Cera F powder after ironing (and before ironing FC7 and FC78 the second time). 4-5 strokes back and forth.

T157B/T1570 Horsehair Brush (or T164B/T1640 Wild Boar Brush)

Second brush on Cera F powder. An "animal" brush for brushing powder away. 10-12 strokes.

It is recommended to use separate brushes for the waxes from the brushes used for Cera F.



ROTO BRUSH PROGRAM

Use of a Roto Brush is a great way to save time when there are many skis or boards to prepare. For club team racers where coaches and parents are preparing the skis for the entire team, a Roto Brush is almost a necessity. Even many top level technicians will use Roto Brushes for initial brushing after scraping, and then usually finish with hand brushing. Also Roto-Fleece is often the preferred way to apply Cera F Powder, Solids and Liquid.

RPMs from about 1000 to 2000 are used for brushing.

T16M Horsehair

The initial brush on all waxes. Used on regular waxes and Cera F. (Do not use the same brush on regular wax and Cera F.) 100 mm wide.

T17W White or Blue Nylon

Polish brush for wax and Cera F. Also preferred by some as "all round" brush. 100 mm wide.

T14HPS

Handle with 100 mm driveshaft and protection cover.

T18F Fleece

The Roto-Fleece improves Cera F performance when the snow is warmer than -4°C. Apply the Cera powder to the base with a wax iron first. The Roto-Fleece should be used a couple of times to get optimal performance. NB! Use separate Fleece brushes for each type of Cera F. 100 mm wide.



FACTORS INFLUENCING WAXING

Temperature

The temperatures shown on the Swix wax products are normally both snow and air temperatures. If nothing is specified, the temperatures are air temperatures. Taking a reading of the air temperature in the shade is the first basic starting point for wax selection. This should be done at several points along the course especially keeping in mind where the most critical point is, such as a flat section. Snow temperature at the surface can also be helpful. But remember that once the temperature reaches the freezing point (0°C or 32°F), snow will remain at that temperature regardless of rising air temperature. At this point it is best to use air temperatures and focus on the proper steps for dealing with the increased water content of the snow.

Humidity

Humidity is important, but more as a local climate trend rather than a need to measure every percentile. It is important to know if the competition is taking place in a dry climate, meaning average humidity below 50%; a normal climate of 50% to 80%, or a high humidity climate 80% to 100%. Beyond this, of course, is adjusting to the situation of falling precipitation.

Snow Granulation

The appearance of the snow crystal and consequent snow surface is important for wax selection. Falling, or very fresh new fallen snow is the most critical situation for waxing. The sharp crystals require a wax that will resist snow crystal penetration, but at warmer temperatures must also have the ability to repel water. It is in this special, critical waxing situation that Cera F excels.

Man-made snow is today the most common snow in racing situations. Freshly made snow at cold temperature definitely require the addition of synthetic paraffin such as with CH4, LF4, HF4 and CH6, LF6, and HF6. After man-made snow

has "settled" for some days and the surrounding atmosphere has affected the snow surface, the gliding characteristics of the snow improve and normal waxing considerations return.

At rising air temperatures above 0°C (32°F) the snow temperature still remains at 0°C (32°F). The water surrounding the snow crystals increases until the snow pack becomes saturated with water. Waxes that are highly water repellent and coarse base structures are needed.

Snow Friction

The friction on ice and snow is a mixed friction. It means that it is neither a true dry friction nor a true fluid friction. The contact is partly dry, partly wet. At very low temperatures the frictional mechanisms gradually might be described by laws governing dry friction.

At intermediate freezing temperatures, around -4°C to -10°C (25°F to 14°F), the water film between the frictional partners has the optimal thickness to create low kinetic friction.

Approaching the freezing point, the water film increases in thickness, and when conditions for melting is present, free water enters the system.

The contact area between ski and snow increases and the friction will increase. Suction gradually builds up as the amount of water increases.



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1
FC
100% Fluorocarbon



With fluorinated compounds from Miteni (Italy)

2
BW
High Fluorocarbon



3
HF
High Fluorocarbon



4
LF
Fluorocarbon



5
CH
Hydrocarbon



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CERA F POWDERS, SOLIDS AND LIQUID

SWIX CERA F - Still...

- the Most Trusted
- the Fastest
- the Highest Purity
- the Most Podium Results

Refinements and improvements were made to the Cera F Line in 2008, and testing is ongoing as usual for further refinements in the quest to be able to supply racers and snowboard riders with the best possible glide performance.

There are many fluorocarbon products in the market, but very few have gone through the synthesizing steps to modify the fluorocarbon powder like Cera F for specific use on ski and snowboard bases.

Swix Cera F has a coded batch production system for tracking quality control. The result is:

- Longevity, outstanding base bonding capacity
- Speed and acceleration
- Resistance to snow contaminants
- Exceptional purity for best performance

Also, Cera F powders, waxes and liquids do not contain CFCs and are not harmful to the environment.



Safety reminder

Neither Cera F powder or its vapor from ironing should be exposed to temperatures above 300°C (570°F). Therefore avoid exposure to torches, heat guns, space heater, and cigarette smoking.

Recommended ironing temperatures for Cera F are approximately 150°C/165°C (300°F/330°F) which are far below the level for Cera F decomposition.

Category 1:
100% Fluorocarbon

Cera F Powder



The Cera F powders are now delivered in larger containers, still containing 30 grams. The new vials make it easier to distribute the powder by reducing the lumps.

FC78 - Super Cera F Powder Old Snow

A sensational new Cera F powder with a wide ideal range from +1°C to -10°C. Positioned between FC8X and FC7. High melting point 144°C. Recommended iron setting 165°C (330°F). FC78 is ironed twice during application. Iron, brush back to powder form, and iron again. The base waxes for FC78 are generally HF6, HF6BW, HF7, HF7BW, HF8 and HF8BW.

OBS! Should be used by experienced waxers to avoid overheating of ski base.

FC7 - Cera F Powder Cold

The Cera F for cold conditions. Very wide range in colder and dryer conditions, new or old snow, -2°C to -30°C (28°F to -22°F). Iron temperature setting of 160°C (320°F). One pass with the iron taking no more than 4 or 5 seconds. FC7 is most often ironed for better base bonding, and because of its high melting point (hardness). FC7 is ironed twice during application. Ironed, brushed back to powder form, and ironed again. FC7 can also be applied using the Roto-Fleece, or by hand corking. The base waxes for FC7 are generally HF6, HF6BW or HF7, HF7BW.

FC8X - Cera F Powder

The temperature range for this powder falls within the average, normal winter temperatures, and therefore FC8X is the most used of all Cera F waxes. Temperature range is +4°C to -4°C (40°F to 25°F). FC8X is ironed once. Maximum ironing temperature setting of 160°C (320°F). One pass with the iron taking no more than 4 or 5 seconds. Roto-Fleece or hand corking application is also possible. The base waxes for FC8X are HF8, HF8BW or LF8.

FC10X - Cera F Powder Wet

This powder is designed for very wet conditions. The temperature range is from 0°C to +20°C (32°F to 68°F). Good during thawing conditions, late season when there is strong sun effect, and wet falling snow at 0°C (32°F). Iron once at maximum ironing setting of 160°C (320°F) with a 4 or 5 second pass of the iron. Application with the Roto-Fleece or hand corking is also possible. The base waxes for FC10X are HF10, HF10BW or LF10.

FC10B0 - Cera F "Black Snow" Powder

Cera F for wet transformed "dirty" snow, 0°C to +20°C. FC10 with black lubricant additive that reduces friction in polluted wet snow. Iron once at maximum ironing setting of 150°C (300°F) with a 4 or 5 second pass of the iron. Application with the Roto-Fleece or hand corking is also possible. Used with HF10BW or HF8BW.

Application of Cera F Powder by ironing and corking

Swix Waxing Techniques are also available on the Swix Website in video form in "The Swix School".

Cera F is applied using an iron more often now due to increasingly aggressive characteristics of man-made snow for top level races. For natural snow, or normal (less icy) man-made snow, Cera F can still be applied just by corking.

IRONING

1. Set the iron temperature to the maximum setting, FC78: 165°C, FC7: 160°C, FC8X: 160°C, FC10X: 160°C, FC10B0: 150°C.
2. Apply an even layer of the powder on the base. Or, if using Cera F Solid, apply an even layer of the block form. Lightly touch the iron along the base to stick the powder to the base.
3. Iron the powder into the base. Make just one pass with the iron taking not more than 5 - 6 seconds to go the length of the ski or board. In the case of snowboards, make one pass on each half of the board.
4. Use a stiff Nylon Brush (T194) to "brush-up" the powder. Use a firm back and forth scrubbing motion. (If using FC78 or FC7, at this point you should make a second pass with the iron.)
5. Continue with a Wild Boar (T164) or Horsehair Brush (T157). 10-15 strokes.

6. Finish by brushing with a Blue Nylon Brush (T160), using about 10 strokes of the brush. Use firm short strokes working your way along the base from tip to tail. Lightly wipe off any remaining powder dust with Fiberlene. Further polishing is not necessary.

For FC8X and FC10X it is recommended to iron only once. For FC78 and FC7 powder, due to its higher melting point, you should iron twice. This means after the "brush-up" Step 4, make another five second pass with the iron, and then continue with the remaining corking and brushing steps.

Note:

It is not recommended to use brushes with metal bristles when working with Cera F powder or Cera F Solid.

CORKING

1. Sprinkle an even layer of powder on the base. When corking, less powder is needed than for ironing. A layer of Cera F can also be applied by rubbing on a layer using Cera F Solid.
2. Polish the powder into the base using the Swix Natural Cork (T20). Use firm pressure back and forth so the cork will generate heat causing the powder to form a wax film.
3. Use the Horsehair Brush (T157) or Wild Boar Brush (T164). Use a firm back and forth scrubbing motion to further polish the powder into the base pattern.
4. Brush the excess powder off the base with the Blue Nylon Brush (T160). 10-15 strokes.

SAFETY RECOMMENDATIONS

- Wax room ventilation. Make the extra effort to see that the area where you work on skis has exhaust fans and fresh air supply. Race organizers usually give the location for working on race equipment too low a priority, and often the waxing areas have little or no ventilation.
- Do not expose waxes to open flames such as from a waxing torch, heat guns, space heaters, fire places, etc. Do not smoke cigarettes while waxing with fluorocarbon or fluorinated hydrocarbon waxes. In fact, don't smoke at all! There is a chemical danger associated with fluorocarbon waxes when they are overheated. If fluorocarbon waxes are exposed to a heat source having a temperature higher than approximately 300°C (570°F), the fluorocarbon material disintegrates developing a poisonous gas. Normal iron temperatures will not cause a harmful breakdown of Swix waxes.
- When using power brushes for brushing waxes a substantial amount of wax "dust" particles occur. To prevent inhalation of the particles use a "particle" mask. This can be the paper-type used in wood working.
- Use safety glasses when power brushing.
- If you question the quality of the waxes you are using, or feel that your exposure amount to waxing is extensive, use a respirator mask. It should be a cartridge type for filtering organic vapors. This type of mask is important to use when doing base repair with a burning polyethylene repair candle or base welder.
- Be aware of the type of base cleaner you are using. Have good ventilation. And dispose of the rags or Fiberlene properly.
- The addition of fluorocarbon materials into the hardwaxes and klisters means they must not be exposed to open flames of any type. Waxing torches should not be used for application or removal of fluorinated kick waxes. During application the warming-in of the wax with an iron is acceptable. Use a solvent for removal.

Category 1: 100% Fluorocarbon

Cera F Solid Turbo

The Solid versions of Cera F Powder are 100% fluorocarbon powder pressed under very high pressure into solid 20 g. blocks. In addition, they contain the BD solid lubricant additive. The purpose of the solid forms of Cera F is for on-hill, rub-on application when it is not possible to return to the indoor waxing rooms when competitions require more than one run.

- 1: Rub on a thin even layer.
- 2: Cork into the base with the Swix Natural Cork (T20).
- 3: Brush the base with the Swix Blue Nylon Brush (T160).

Cera F Solid can also be ironed on. See application steps for Cera F Solid.

FC7WS - Cera F Solid "Cold Turbo"

100% fluorocarbon solid block of wax.
Temperature range from 0°C to -20°C. For transformed/man made snow. Used alone or as the final "accelerator" layer.

FC8WS - Solid White Uni Turbo

100% fluorocarbon solid block of wax.
Temperature range from +4°C to -4°C.
For fine grained snow. For clean white snow covering most normal winter conditions. Wide range. Used alone or as the final "accelerator" layer.

FC10BS - Solid Wet Turbo

100% fluorocarbon solid block of wax.
Temperature range from 0°C/+20°C.
For wet/polluted/coarse snow. The black lubricant additive has positive effect in polluted snow. Used alone or as the final "accelerator" layer.



Category 1:
100% Fluorocarbon

Cera F Liquid

Boost Your Performance to the Max

Swix Cera F Liquid is designed for use as the final layer when waxing for top-level competitions. Based on Cera F technology, Swix Cera F Liquid offers the same high performance quality as the Cera F Powder Waxes.

Quick and easy to apply, Cera F Liquid is also ideal for the quick performance fix at events with multiple runs, such as the second run in alpine races and half-pipe competitions. The snow should be moist to wet, and not new. There are several ways to apply Cera F Liquid:

ROTO FLEECE

Shake well. Then apply a layer of liquid using the included felt applicator or with Fiberlene. Allow 5 minutes for the liquid to dry.

Set the Roto Fleece at approximately 1500 RPMs using medium pressure and a short back and forth motion working along the base from tip to tail. Continue with the Swix Horsehair Hand-Brush (T157) or Wild Boar Brush (T164), and finish with the Swix Blue Nylon Hand-Brush (T160).

HAND CORKING

Shake well. Apply the liquid, allow 5 minutes for the liquid to dry.

Cork into the base with the Swix Natural Cork (T20).

Brush the base with the Swix Blue Nylon Brush (T160).



FC8L Cera F Liquid

100% fluorocarbon. For normal snow conditions +4°C to -4°C (40°F to 25°F). 29 ml.

FC10L Cera F Liquid

100% fluorocarbon.
+2°C to +20°C (36°F to 68°F). For wet fine grained snow and very wet corn snow. 29 ml.

IRONING

Shake well. Then apply a layer of liquid twice using the included felt applicator or with Fiberlene. Allow 5 minutes for the liquid to dry. Set the iron at 145°C (293°F). Make a pass with the iron of 5 seconds. The liquid will bubble like it is boiling, but no harm is being done to the base. Allow cooling for about 5 minutes, then brush with Swix Horsehair Brush (T157) or Wild Boar Brush (T164). Additional final brushing can be done with the Swix Blue Nylon Brush (T160).

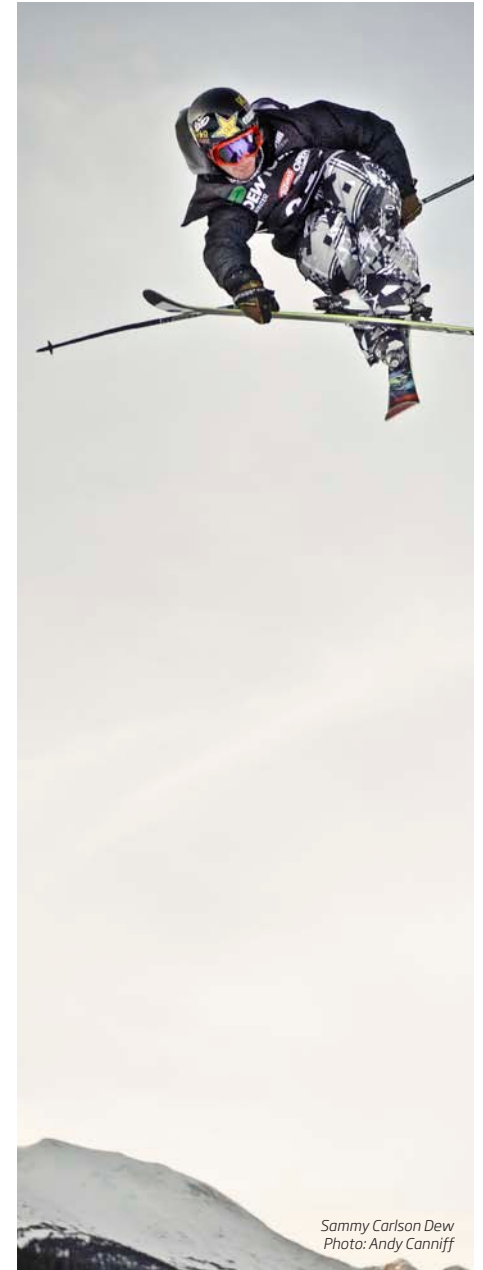


FC8A - Cera F Rocket Spray

100% fluorinated. +4°C to -4°C. For transformed and fine grained snow. Apply on top of HF10, 8, 7 or HFBW10, 8, 7. Also used on top of Cera F powder as "topping". Spray FC8A into the powder and let it dry. Use Roto-fleece or iron in.

New upside down spray-on for better controlled application. Bottle of 70 ml.

Use of Cera F Liquid as the final layer will absolutely assure that there are no voids in the pure fluorocarbon wax layer resulting in the highest possible speed performance.



Sammy Carlson Dew
Photo: Andy Canniff

Category 2:

HFBW Waxes



HFBW Black Wolf is a result of years of intensive research to improve our gliding products and fully substitute the BD-line. The waxes have provided excellent results in the World Cup. The Black Wolf series strength is its performance on artificial snow, transformed snow and dirty snow and also at cold conditions when the dry frictional phenomena is relatively high. This patented additive gives lower frictional coefficient to the waxes than the BD-additive. Available in 40 gram or 180 gram bar size.

HF4BW

Black, -10°C to -32°C (14°F to -25°F). Made for extremely cold conditions, contributing to a high portion of dry friction. To be used alone or as a base for Swix Cera F FC7.

HF6BW

Black, -6°C to -12°C (21°F to 10°F). Very well suited for man-made snow during cold conditions. The BW-additive reduces friction towards snow-particles and has excellent wear resistance. Mainly used as a base for Swix Cera F FC7 or FC78.

HF7BW

Black, -2°C to -8°C (28°F to 18°F). Easy application. Good dirt resistance. To be used on man-made snow or transformed snow, partly polluted. Used as a base for Swix Cera F FC7, FC78 and FC8X.

HF8BW

Black, +1°C to -4°C (34°F to 25°F). Performs extremely well on man-made snow or transformed natural snow as well as dirty snow due to resistance towards pollutants. Normally used as a base for Swix Cera F FC78 or FC8X.

HF10BW

Black, +10°C to 0°C (50°F to 32°F). The softest wax in the Black Wolf -line. The preferred choice on wet, dirty, coarse-grained snow as a base for Swix Cera F FC10X or FC10B0.

Category 3:

HF Waxes



The Swix Cera Nova System is the most used wax line in World Cup competition. The Cera Nova High Fluorocarbon Waxes - HF, topped with Cera F have become a World Cup standard. HF means high performance. Beware of brands using the Swix "HF" classification but having far less fluorocarbon content. The lower price of these brands suggests simplified, lower raw material quality, and/or reduced fluorination, and as a result - less performance.

Swix HF Waxes mean high performance from high water repellency, high resistance to snow contaminants, and high longevity. Trust the best! Available in 40 gram or 180 gram bar size.

HF4

Light green, -10°C to -32°C (14°F to -25°F). Normally at temperatures this cold, the advantages of fluorocarbon content become less. However when the humidity is very high, above 80%, and it is very cold, this wax is excellent. It is not necessary to use Cera F as an overlayer. Formula is upgraded for 06/07.

HF6

Light blue, -6°C to -12°C (21°F to 10°F). At this temperature point the base blend to which the fluorocarbon is added also contains a combination of hard synthetic paraffins which have proven very effective at colder temperatures and abrasive man-made snow. Used very often in combination with HF7, or used alone with high humidity (over 70%) from -8°C to -12°C on new snow and -10°C to -12°C on old snow. For lower

humidity it is often mixed with LF6 and CH3 for hard icy slope conditions. Recommended final Cera F powder layer: FC7.

HF7

Violet, -2°C to -8°C (28°F to 18°F). HF7 fits the important wax conditions that fall between -2°C to -8°C (28°F to 18°F). This popular formulation requested by World Cup technicians can be used alone or mixed with other waxes. Its consistency makes it easy to iron and scrape. Cera F Powder FC7.

HF8

Red/pink, +1°C to -4°C (34°F to 25°F). This wax falls into in a common wintertime temperature and therefore is used often. The combination of HF8 and FC8X Cera F as the final layer has become a highly successful racing standard.

HF10

Yellow, +10°C to 0°C (50°F to 32°F). For very wet conditions. Falling wet snow, rain, and a water saturated snow surface. At these temperatures dirt in the snow is often concentrated at the surface, therefore HF10 is best used with Cera F, FC10 as an overlayer. HF10 is often mixed with HF8.

HF12

COMBI. Contents HF7 Violet 20 g and HF8 Pink 20 g. Two of the most used HF waxes in one package. An economical way to get into the HF-line.

Category 4:

LF Waxes



LF stands for Low Fluorocarbon. These are fluorinated hydrocarbon waxes having a lower percentage of low melt-point fluoro additive. They are used as training waxes, or as racing waxes with Cera F as a final layer, or alone as a race wax mostly at lower temperatures. The temperature ranges and wax colors of the LF waxes coincide with the HF category, however they are distinguished from the HF waxes by the 60 gram bar size. They are also available in packages of 180 gram.

LF3

LF3 Cold Powder.

-10°C to -32°C (14°F to -25°F). 30 g.

A very hard powder wax having a high content of fluorocarbon material. Used when the snow is very fine-grained and very cold. Easy to iron and scrape. Also helps to reduce base abrasion on cold, aggressive snow.

LF4

Light green, -10°C to -32°C (14°F to -25°F).

For use alone at low humidity at very cold temperatures and harsh man-made snow.

LF6

Light blue, -6°C to -12°C (21°F to 10°F).

Very good as a base layer for other waxes. Also a very good training and racing wax alone in low humidity conditions. At this temperature range the addition of synthetic waxes increase the resistance against wear on aggressive man-made snow. Many times also mixed with HF6, HF7 or LF4. In World Cup often used with FC7 as final overlay.

LF7

Violet, -2°C to -8°C (28°F to 18°F).

Very good race wax at low humidity. Often mixed with LF6, HF6 or HF7. For racing at normal and high humidity Cera F FC7 is recommended as final overlayer.

LF8

Red/pink, +1°C to -4°C (34°F to 25°F).

The low-percent fluorocarbon counterpart to HF8. For racing it is recommended to use Cera F FC8X as the final overlayer within this temperature range. Also used very often as a wax for training, travelling and cleaning.

LF10

Yellow, +10°C to 0°C (50°F to 32°F).

Good for base preparation.

Category 5:

CH Waxes



CH stands for Hydrocarbon. This category has no fluorocarbon material in the blends. They are 100% high performance hydrocarbon paraffins. Although they can be looked upon as an economical racing wax group, the colder waxes perform very well alone.

Their colors and temperature ranges coincide with the HF and LF Waxes. The CH waxes can be distinguished from the LF waxes by their darker shade of color. They are 60 gram bars or packages of 180 gram.

CH3

-12°C to -32°C (12°F to -25°F). 30 g.

A pure white hydrocarbon powder for very cold conditions. Can be used alone or as a base for other waxes during abrasive conditions. Easier to apply and scrape than other cold conditions waxes.

CH4

Green, -10°C to -32°C (14°F to -25°F).

CH4 is slightly harder than HF4 and LF4. It can be mixed with other Cera Nova waxes to increase durability on ice and aggressive man-made snow, especially for slalom and giant slalom.

CH6

Blue, -6°C to -12°C (21°F to 10°F).

Common wintertime temperature range plus the addition of some synthetic wax to further adapt the wax for man-made snow. CH6 is a very good wax for training and racing. It offers good glide plus base protection at an economical price.

CH7

Violet, -2°C to -8°C (28°F to 18°F).

CH7 is a good general purpose pre wax and travel wax because its range for use falls in the middle of the system. CH7 makes a good base bonding wax for either warmer or colder waxes applied later.

CH8

Red/pink, +1°C to -4°C (34°F to 25°F).

A very good, reliable and economical racing wax, as well as a general base prep wax and "travel" wax.

CH10

Yellow, +10°C to 0°C (50°F to 32°F).

A good wax for base prep and travel wax.

SWIX SPECIAL WAXES

How to avoid base burn on abrasive snow:

- 1: Sprinkle CH3 powder along the base near the edges.
- 2: Use a scraper to push the powder in a row approx. one centimeter from the steel edge.
- 3: Iron carefully so the wax melts into the base along the steel edge.
- 4: Allow the base of the ski or board to return to room temperature.
- 5: Scrape and brush as usual.
- 6: The waxes of the day are applied as usual on top and on the rest of the base. In slalom on icy, abrasive man made snow, apply CH3 on the entire width of the base.

Base Prep Wax (BP88)

This is a special CH blend requested by World Cup technicians for use during initial base preparation and travel waxing. It is economical yet still made with a blend of the highest quality paraffins and microcrystalline waxes. 180 g.

Base Prep Cold (BP77)

This is a blend requested by World Cup Technicians for use on "cold" snow skis. Used on new skis and as travel wax. 180 g.

MB77

A fluorinated wax formula for conditioning ski and snowboard bases. Formulated for mid-range temperatures plus the addition of molybdenum for further resistance to snow abrasion. Can be used alone for general skiing or training, and can also provide a base for Cera F Powders and waxes. Recommended iron setting: 135°C (275°F). 60 g and 180 g.



Travel Wax

Bases should not be left exposed to the air for extended periods of time without a protective layer of wax. Following the race or training, when travelling to the next site, it is a good idea to apply a ironed layer of wax. In this case scraping is not done until it is time to prepare the skis once again for racing or training. The wax layer prevents the base from oxidizing and from getting scratched or dirty.

A good choice of wax for storage or transport is BP88, CH7 or LF7. These waxes have an intermediate range for temperature and use. It is easy and effective to adapt the base to warmer or colder waxes from the temperature range of "7". Also, sometimes, due to late arrival at the race site, there is not enough time to take all the steps for preparing the skis. By having a wax on the skis in the range of "7" all that is necessary is quick scraping and brushing and most conditions will be adequately covered.



SWIX SUGGESTED RACING PROGRAM

T76 Table
T149-50/SB31XF Vises
T76-SH Ski Rack
T75WH Waste Bag Holder
T76WL Light
T73H Iron Holder
T73110 Iron
T823 Scraper
I62 Base Cleaner
T150 Fiberlene Cleaning Paper
T264 Fibertex Debur Pad
TA103 Side Wall Cutter

T107X Bastard File
TAA200 Coarse Diamond Stone
TAA600 Fine Diamond Stone
TA005 Base Edge File Holder
TA287 Side-Edge File Guide
TA022 File Clamp
T179 Steel Brush
T162 Bronze Brush for Wax
T160 Finish Nylon Brush
R271 Wax Apron
T165 Brake Holder
R396 Skistraps

IRONING

Important rules:

- 1: Using the proper iron that keeps a stable temperature.
- 2: Using the proper iron pass speed, like 5 to 6 seconds per length for Cera F.
- 3: Ironing at normal room temperature.
- 4: Having the proper ski base condition at the start of the process.
- 5: Don't hold the iron in one place for any length of time!



Socket Holder (T0076EB)
To mount on T76 waxing table.



Swix Iron Cover (R0384)
For protection and easy traveling. Fits all irons.



Practical Waxing Iron Holder (T0073-H)
For mounting on to waxing table or workbench. Reduces the risk of dropping a valuable iron on floor. Fits all Swix Irons.



"T71" World Cup Waxing Iron (T71110)

For Professional Racing.
110 Volt, 1000 Watt.
A 25 mm thick plate gives stable temperature and optimal control when applying Cera F. Temperature reaches 180°C. Easy to set temperature with LED buttons. The iron remembers the last plotted temperature if current is interrupted. The temperature is regulated at 1°C deviation by a micro processor. The thick plate facilitates the use of the iron at lower temperatures than normal room temperature. The heating plate has an angle to facilitate application of Cera F. In front it is straight to control glide zone waxing of classical skis. Wax-guide with the right temperature setting for Cera Nova waxes included.

The choice of World Cup Service Men!

Note! When waxing with Cera F Powders like FC78 Super Cera, FC7 and FC8X it is important to have an optimal iron like T71 to get a good result.



"T72" Racing Digital Iron (T72110)

110 Volt, 550 Watt.
A 12 mm plate gives optimal temperature stability. The iron is controlled by a micro processor and has digital temperature regulation. On the back, the heating plate has an angle to facilitate application of Cera F. In front it is straight to control glide zone waxing and classical skis. Wax-guide with the right temperature setting for Cera Nova waxes included.



"T73" Performance Waxing Iron (T73110)

110 Volt, 500 Watt.
8 mm plate gives a stable temperature. T73 has manual choice of temperature by indication of degrees and is simply done by an adjustment-wheel. Adjustment range from 100°C to 165°C. Wax-guide with the right temperature setting for Cera Nova waxes included.

 	  		160°C 320°F
  			150°C 300°F
  			150°C 300°F
  			140°C 280°F
  			135°C 275°F
  			120°C 245°F
  			110°C 230°F

REPAIR BASE SCRATCHES AND EDGES



1. Repair base scratches by melting Polystick into the damaged part.



2. Remove excess repair material with a Panzer file (T0108).



3. Finish the repair area by sanding with #100 grit sandpaper. If needed, structure or align the existing structure using the Swix Steel Brush (T179) and Fibertex T264 orange Aluminium Oxide.



4. Edges. If edges have damaged or case hardened spots, stone the edges with the Swix Pocket Stone (T0240), coarse side or a coarse Diamond stone/file (TAA100).

STEP BY STEP TREATMENT OF BOARDS AND SKIS WHEN NEW OR AFTER STONE GRINDING

Skis or boards put through a stone grinder and structured by hand need accurate follow-up treatment for optimum performance. This process depends partly on the type of pattern given to the base.

Cold snow patterns need more extensive treatment than wet snow patterns. It is very critical that all micro-burrs are removed from the base, in cold snow conditions.



- 1.** Work the base with Swix Fibertex T264, both directions at least 100 times. This removes oxidation and polyethylene micro fibers (hairs) from the surface.



- 2.** During the Fibertex treatment, use the Steel Brush (T179) from time to time to help lift and expose fibers to be cut away with the Fibertex.



- 3.** Base edge filing with Chrome file (T107X or T106X). Use Swix Base Edge Bevel Guide (TA005). 0.5° bevel is most common.



- 4.** Sidewalls may need to have be cut back or planed to expose more steel edge before filing. Use the Sidewall Cutter (TA103 or TA102).



- 5.** Side edge filing. Initial filing with Panzer File (T0108) one or two strokes is enough. Finish filing with Chrome File (T0106X). Most used angles in SL and GS are from 2° to 5°.



- 6.** Deburr the edge by running a fine grit stone along the edge. A smooth edge without burrs will keep its sharpness longer. Use the Swix Ceramic Stone (T0998) or a Diamond Stone (TAA100).



- 7.** Clean with a soft wax, CH8, at least twice to remove the filings and particles from Fibertex. Use Hot Scrape Cleaning Method - see page 59.

Simultaneously the soft wax also saturates and protects the base, which later is treated with a harder wax.



- 8.**
Moisten a piece of Fiberlene (T150) with the Glide Wax Cleaner (I84) and apply to the base.



- 9.**
Rub forward and backward a few times with a Nylon Brush (T161).



- 10.**
Wipe off as much as possible with Fiberlene (T150).

Let the ski dry for 5-10 minutes.



- 11.**
Brush firmly with the Steel Brush (T179 or T162). The ski is now ready for application of new wax.



- 12.**
Iron on the harder CH4 or CH6. Just melt the wax on the base surface without heating the entire board or ski. The purpose is to lift and stiffen polyethylene micro-hairs to be more easily cut away with the scraper.



- 13.**
Scrape away the layer of CH4 or CH6. Use a sharp acrylic scraper. Use light strokes, shaving away the excess wax.



- 14.**
Brush the base using the Steel Brush (T179), approx. 50 strokes.



- 15.**
Hot wax with CH8 or BP88. Let cool approx. 5 minutes. Scrape with 3 mm plexi scraper (T0823) and brush with Steel Brush (T179). Repeat 5 to 10 times before skis are put on snow.

Continuous use of skis and boards, in between waxing, improves glide.

STEP BY STEP - RACE PREPARATION

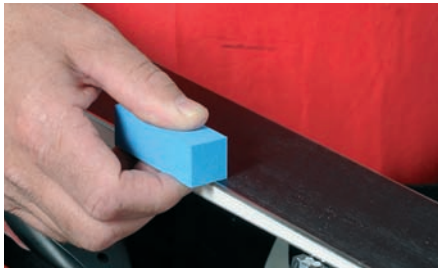
This is a general description used by top level technicians.



- 1.**
Scrape off travel wax with a plexi scraper.



- 2.**
Brush with the Steel Brush (T179).
10-20 strokes.



- 3.**
Polish the base edges with a Hard Gummy Stone (blue, T0995).



- 4.**
Polish the steel edges with the Fine Diamond Stone (TAA600).



- 5.**
Apply the race wax for the day. For cold conditions use first CH3 to protect base burn by the edge.



- 6.**
When using LF4, HF4 and CH4, the harder, brittle waxes for colder temperatures, scrape the excess layer while the wax is still semi-soft to avoid chipping of the wax later.



- 7.**
When the skis or board have cooled, or allowed to stand overnight, scrape once again with a sharp plexi scraper (T0823) using light strokes. Scrape the excess wax from the sides.



- 8.**
Brush the base with the Steel Brush (T179).
10-20 strokes.

ROTO BRUSHING WAX

When you have many skis to do Roto brushing can be timesaving.

You will need a drill that can do a minimum of 1000rpm and ideally up to 2000rpm or more. It is recommended to use protection eyewear.

ROTO BRUSHING CERA NOVA WAXES



After Scraping:

1.

Use the Steel Brush T179 from tip to tail in one movement. Two repetitions.



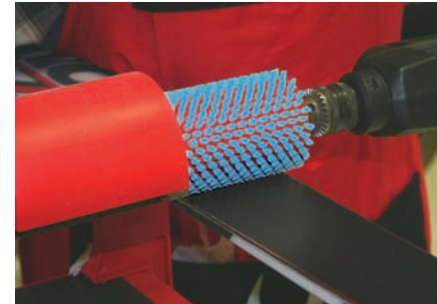
2.

Use the T16M Horsehair Initial Roto Brush with a speed of 1000rpm to 2000rpm. Use light pressure. Start from the tip. Wax particles should be thrown towards the tail. Move the drill back and forth approx. a foot at the time as you gradually work your way towards the tail.



3.

Continue to use the T16M Horsehair Roto Brush (1000rpm/2000rpm) from tip to tail two more times in one continuous pass of three to five seconds.



4.

Finish with the T17W Blue Nylon Roto Brush, 1000rpm/2000rpm. Make a continuous pass three times from tip to tail in three to five seconds.

Now the ski or snowboard is ready or you can start with application of Cera F.



R0392

SKI STRAPS FOR CARVING SKIS

With base protector. 50 mm height.
Takes skis 120 mm wide.



RA045

BASE PROTECTOR

XS: 140 cm to 165 cm (SL).
S: 170 cm to 195 cm (GS).
D: up to 220 cm (DH/SG).



R0271

APRON

for professional waxers.



T220-13

WARM SLEEVES FOR ALPINE SKIS

This is an alternative to Hot Box heating.
Temperature is fixed at 55°C.
Recommended wax: CH10. Let sit for four hours and your base is saturated with wax.

CERA F APPLICATION

CORKED APPLICATION OF CERA F POWDER

Complete edge filing and polishing. The base should be waxed and thoroughly brushed according to the steps outlined in the manual.



- 1.** Sprinkle an even layer of powder on the base. When corking, less powder is needed than for ironing. A layer of Cera F can also be applied by rubbing on a layer using Cera F Solid.



- 2.** Polish the powder into the base using a Cork (T20) or Cera F Polisher (T154) with Fiberlene. Use firm pressure back and forth so the cork will generate heat causing the powder to form a waxy film.



- 3.** Use the Wild Boar Brush (T164) or Horsehair Brush (T157). Use a firm back and forth scrubbing motion to further polish the powder into the base pattern.



- 4.** Brush the powder out of the base with the Wild Boar Brush (T164) or Horsehair Brush (T157). 10-20 strokes.



- 5.** Follow with more brushing using the Blue Nylon Polishing Brush (T160).

Lightly wipe the base with Swix Fiberlene. 5-10 strokes.



- 6.** Put the board or skis base down in the snow for a few minutes. This is usually done at the start site. Brush once again with the Blue Nylon Polishing Brush (T160) and lightly wipe with Fiberlene. 5-10 strokes.



IRONING APPLICATION OF CERA F POWDER

A standard package of 30 grams normally is enough to wax 2 to 3 pairs of Downhill skis. A sufficient layer of powder has to be applied. If the layer is too thin, the high temperature of the iron might destroy the base.

Before the application of Cera F, the skis have to be waxed with the actual, traditional wax for today's conditions.



- 1.** Distribute the Cera F powder evenly on the base. Don't forget to apply enough powder to protect the base from direct contact with the iron. Lightly touch the iron along the base to stick the powder to the base.



- 2.** Iron the powder into the base. Make just one pass with the iron, taking approx. 5 to 6 seconds. Recommended iron temperature setting for FC7, FC8X and FC10X is 160°C (320°F), and for FC78 it is 165°C (330°F).
For FC10B0 the temperature setting should be approx. 150°C.



- 3.** After cooling to room temperature (5 min.) brush the powder up from the base with the stiff Black Nylon Brush (T194). 10 strokes.



- Note:**
FC78 and FC7 Powders should be ironed twice: Brush the powder up (not away) with the Stiff Nylon Brush T194. Iron once more. Wait 5 minutes.



- 4.** Continue with the Wild Boar Brush (T164) or Horsehair Brush (T157). 10 strokes.



- 5.** Finish with the Fine Blue Nylon Brush (T160). 3-4 strokes.



- 6.** At the start site place the board or skis in the snow. After the base has adjusted to temperature of snow make final brushing with the Blue Nylon Polishing Brush (T160). 5-10 strokes.



CERA F POWDER ROTO FLEECE APPLICATION

The initial steps before Cera F Roto Corking are the same as for the ironing in method of Cera F.

It is recommended to have one separate Roto Fleece (T18F) for each different Cera F.

Cera F applied with Roto Fleece is sometimes applied on top of ironed and brushed Cera F as a "topping".



- 1.**
Apply Cera F evenly.



- 2.**
Use a waxing iron to fix the Cera F powder to the base. Iron temperature to be around 150°C to 155°C (300°F to 310°F). Iron quickly, 3 to 4 seconds for one ski or board.

After cooling brush the powder up from the base with the Horsehair Brush (T157). Spray FC8A into the powder and let it dry.



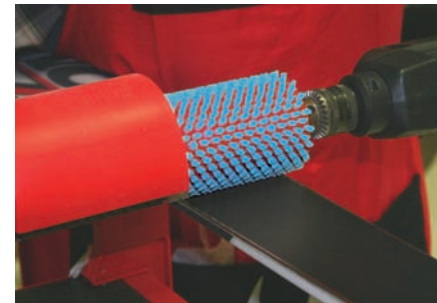
- 3.**
Use the Roto Fleece (T18F) at a speed of approx. 1.500 RPM. Start from the tip and work the Cera F powder into the base by moving the drill back and forth approx. a foot at a time as you work your way towards the tail. Use light pressure. Let the skis/snowboard rest for 5 minutes at room temperature.



- 4.**
Use the Horsehair Roto Brush (T16M) with speed 1000/2000 RPM. Start from the tip and move back and forth approx. a foot at a time towards the tail. (OBS! Do not use the same brush as for standard waxes.) Use light pressure.



- 5.**
Continue with the Horsehair Roto Brush (T16M) from tip to tail two more times in one movement of four to five seconds.



- 6.**
Finish with the Blue or White Nylon Roto Brush (T17W). Twice in one continuous pass from tip to tail in four to five seconds. Use light pressure. (OBS! Do not use the same brush as on standard waxes).



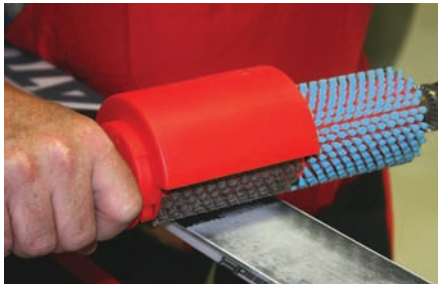
CERA F SOLID TURBO ROTO FLEECE APPLICATION



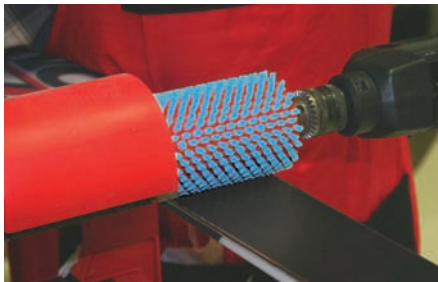
- 1.**
Rub on an even layer.



- 2.**
Use the T18F Roto Fleece at a speed of approx. 1.500 RPM. Start from the tip and work the Cera F into the base by moving the drill back and forth approx. a foot at a time as you work your way towards the tail. Use light pressure.



- 3.**
Use the T16M Horsehair Roto Brush with speed 1.500 RPM. Start from the tip and move back and forth approx. a foot at a time towards the tail. (OBS! Do not use the same brush as for standard waxes.) Use light pressure.



- 4.**
Finish with the T17W Blue or White Nylon Roto Brush. Twice in one continuous pass from tip to tail in four to five seconds. (OBS! Do not use the same brush as on standard waxes.) Use light pressure.



CERA F SOLID TURBO HAND CORK APPLICATION



- 1.**
Rub on an even layer.



- 2.**
Cork in with a Natural Cork (T20/T22).



- 3.**
Brush with the Blue Nylon Brush (T160). Approx. 10 strokes.



FC8A ROCKET ROTO FLEECE APPLICATION



- 1.** Spray on the FC8A while pressing the button. Keep the nozzle 4-5 cm above the base.

Let dry for approximately 5 minutes.



- 2.** Work the liquid into the base with the Roto Fleece (T18F). 1000-1500 rpm. Work from tip to tail moving the drill back and forth. Do not press too hard.



- 3.** Finish with the Blue Nylon Brush (T160).



FC8A ROCKET HAND CORK APPLICATION



- 1.** Spray on the FC8A while pressing the button. Keep the nozzle 4-5 cm above the base.

Let dry approximately 5 minutes.



- 2.** Work the liquid into the base with a Natural Cork (T20 or T22). 15-25 strokes.



- 3.** Finish with the Blue Nylon Brush (T160). 5 strokes.



CERA F LIQUID ROTO FLEECE APPLICATION



- 1.**
Apply with Fiberlene or felt applicator.
Let dry for 5 minutes.



- 2.**
Use the T18F Roto Fleece at a speed of approx. 1.500 RPM. Start from the tip and work the Cera F into the base by moving the drill back and forth approx. a foot at a time as you work your way towards the tail. Use light pressure.



- 3.**
Brush with the Wild Boar Brush (T164). Approx. 10 strokes.



- 4.**
Finish with the Blue Nylon Brush (T160). 5 strokes.



CERA F LIQUID HAND CORK APPLICATION



- 1.**
Apply with Fiberlene or felt applicator.
Let dry for 5 minutes.



- 2.**
Cork in with a Natural Cork (T20/T22). 15 - 25 strokes.



- 3.**
Finish with the Blue Nylon (T160). 10 - 15 strokes





CERA F LIQUID IRON APPLICATION



1. Apply with Fiberlene or felt applicator twice. Let dry for 5 minutes.



2. Two passes with the iron. 3 - 4 seconds. Wait 5 minutes for the ski to cool down.



3. Brush with the Wild Boar Brush (T164) or Horsehair Brush (T157). Approx. 10 strokes.



4. Finish with the Blue Nylon Brush (T160). 5 strokes.

CLEANING THE BASES WITH WAX

An important method for cleaning the bases on alpine skis and snowboards is to use wax instead of solvents. The following method also applies to cleaning the bases after using Cera F.



1. Start with firm brushing of the base with the Swix Steel Brush (T179) to remove oxidation and to open the base structure from dirt and old wax.



2. Select a soft wax (lower melting point) such as BP88 (Base Prep), CH10 or CH8. The iron temperature should be approximately 100°C to 120°C (212°F to 250°F). Iron the wax continuously moving the iron until the board or ski is thoroughly warmed and the wax remains in a liquid form on the base. The warming of the base and the liquid state of the wax will "open" the base surface microstructure and float contaminants away from the base into the wax.



3. While the wax is still in liquid form, scrape the wax off the base. It is possible to wipe the liquid wax off as well, followed by a few light passes with the scraper.

Repeat if necessary. Following riding or skiing in very dirty conditions you may want to repeat the "hot-scrape" process 2 or 3 times with additional brushing with the Swix Bronze Brush in between wax applications.

The "hot scraping" method of cleaning avoids the "drying-out" of bases caused by some solvents.

Note:

This is the same procedure that is used to condition the base to the wax selected to fit the day's conditions. For example, if LFB is the wax choice, iron the wax into the base and scrape while it is still liquid or soft. Apply LFB once more, iron, but then allow the base to completely return to room temperature before scraping. This will adjust and condition the base from the soft cleaning wax to LFB.

Clean bases are faster bases!

CLEANER FOR FLUOR GLIDE WAX & CONDITIONER FOR RACING SKIS

THREE EFFECTS IN ONE OPERATION

- Cleans
- Conditions
- Solves fluoro components

Cleaner for fluoro glide wax and CH wax. Improves glide and conditions the base. For glide sections on all racing skis and snowboards.

- Involves no hard mechanical treatment of the base.
- No wearing of the stone grind pattern in the ski base.
- Makes the ski faster!

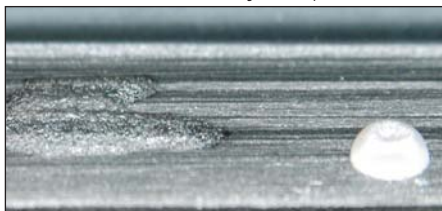


10084
500 ml
17.5 fl. oz.

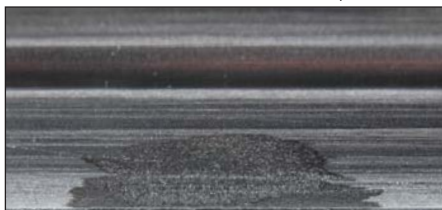
10084-150
150 ml
5 fl. oz.

How does it work?

Untreated Base: The wax stays on top.



Base treated with I84: Better wax adsorption.



THE USE OF GLIDE WAX CLEANER (I84)



1. Brush lightly with the Steel Brush (T179).



2. Moisten a piece of Fiberlene (T150) and apply to the glide zone of the base.



3. Rub forward and backward a few times with a Nylon Brush (T161).



4. Wipe off as much as possible with Fiberlene (T150).

Let the ski dry for 5-10 minutes.



5. Brush firmly with the Steel Brush (T179 or T162). The ski is now ready for application of new glide wax.

PR1024E
ENGLISH \$5

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