Hertel™ Corporation – WAXFAX© E-BOOK

Hertel™ Corporation, (http://www.hertelskiwax.com. located in the heart of Silicon Valley (Sunnyvale, California), has successfully encapsulated Surfactants and Fluorocarbons into paraffin, which up to now was said to be impossible! Hertel™ Corporation has been able to accomplish this with **White Gold™ ski Wax, Racing FC739™ ski Wax, Super HotSauce™ ski Wax and Spring Solution™ ski Wax**. We have also created a new extremely slick wax vehicle called **"158 Flex"™** used in our **Racing FC739™ Wax**. This, along with surfactants and Fluoro PEFD, make our new waxes extremely flexible while enhancing durability. This ski wax system actually **bonds** to the PE base of skis and snowboards.

Hertel products are emulated by many, duplicated by none! There is no other ski wax like it in the world today... read on people!

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1.) THE MYTH OF SPEED

HOW THE MYTH BEGAN

Waxing your skis / snowboard is a way to improve your performance. For many years an old myth has been that ski wax makes skis / snowboards go fast. However, your skis / snowboard will go fast if you turn them down hill and let them go, with or without ski wax. This old myth came about when traditional ski waxes were designed forty plus years ago. It seems that people simply waxed their skis / snowboards and started to go down the hill. When they attempted to turn and got resistance, they continued to go straight. When a turn became necessary, they were going too fast and the turn would be made in panic. The results were error loss of control, or in many cases, injury. But the fact is, with or without these traditional ski waxes still sold today, your turning ability was pretty much the same. Thus, the validation for HotSauce™ All Temperature Ski and Snowboard Wax. The product is all white; therefore the color confusion for temperature is eliminated. **One wax, All-Temperature, All-Mountain = Totally UNIVERSAL!**

2.) HERTEL PRODUCTS REDUCE SURFACE TENSION

The reduction of surface tension can produce an improvement in many liquid system properties, especially in the case of the very low values attainable through the use of surfactants. One of the benefits of modifying liquid properties through reduced surface tension results in improved wetting. Low surface tension cleaning solutions provide a quick and complete cleaning operation. Hertel is the leader in reducing surface tension for snow skis and snowboards.

3.) WHAT IS A SURFACTANT?

The term "surfactant" is a contraction of "surface active agent." This refers to any material capable of reducing the surface energy of a liquid at relatively low concentrations. Generally, such a compound having an insoluble moiety (which is inherently insoluble in the liquid in which it is useful) is combined with a stabilizing group.

Such surfactants can be divided into four major chemical classes: 1.) Hydrocarbons 2.) Sodium Dodossil Sulfate (SDS) 3.) Silicones 4.) Flouorchemicals. This classification describes the "tail portion of the surfactant molecule." In regard to their relative ability to reduce surface tension in water-based systems, the general trend is that fluorochemicals and SDS's are more effective than silicones, which in turn are more effective than hydrocarbons. Each class has its own utility. Ultimately the decision as to which one to use is determined by the level of performance needed. If more than one material proves effective, cost-effectiveness parameters are used as the selection basis. To the layman, it simply changes the structure of the water under your ski from a sharp bead of water to a flat layer of water.

4.) LOW SURFACE TENSIONS, LOW CONCENTRATIONS AND STABILITY

Fluorochemical Surfactants differ greatly from conventional hydrocarbon and silicone surfactants. In most systems they are far more efficient in reducing surface tension to levels that are unreachable with other types. Surface tensions as low as 15 to 16 dynes/cm can be attained. The surfactants normally produce these extremely low values at concentrations as low as 100 parts per million, or less. Equally important is the fact that certain of these fluorochemical surface-active agents are stable and effective in many hostile environments. These include strongly acidic, strongly alkaline and even strongly oxidized systems.

5.) WHAT ARE FLUOROCARBONS? Additives Not Linked to Ozone Destruction

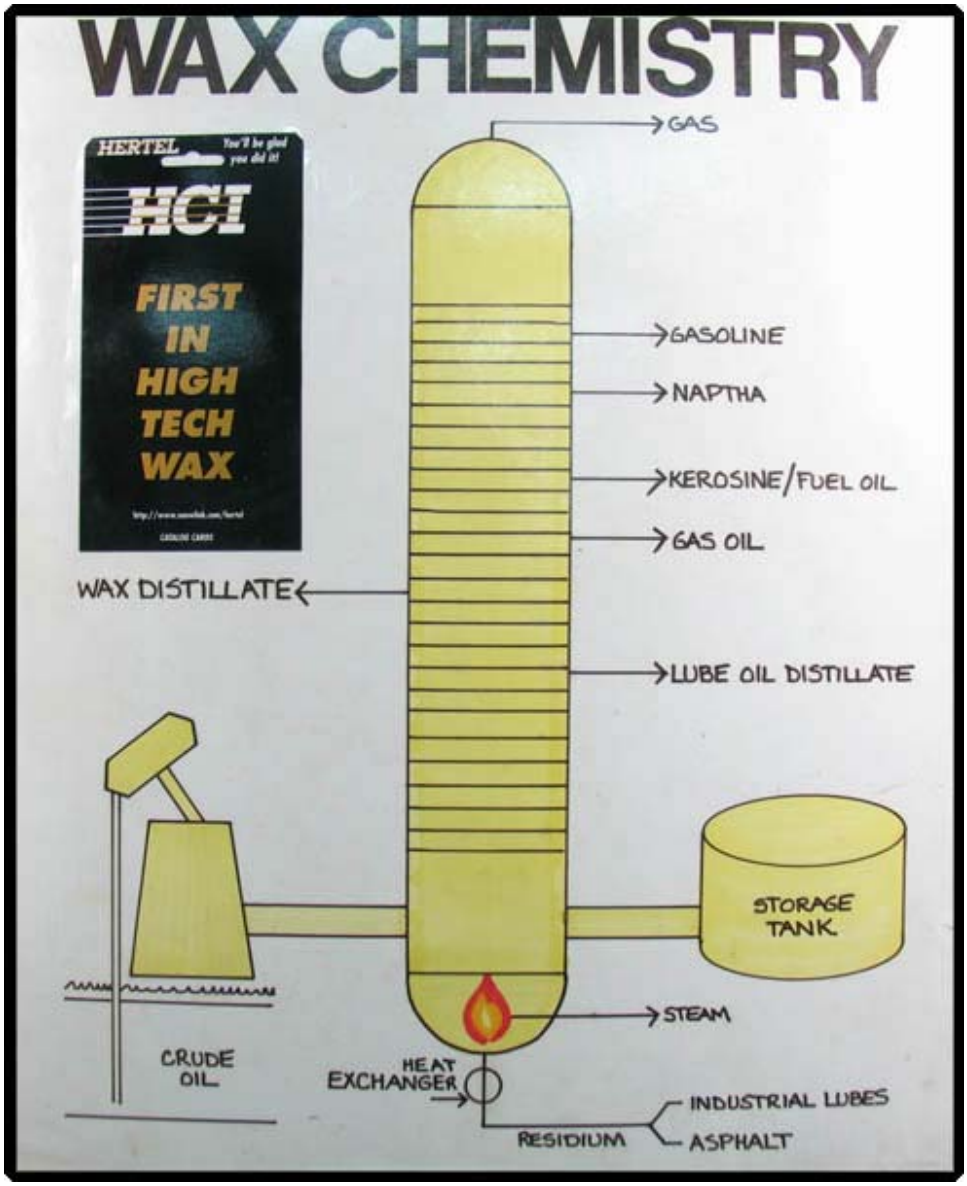
Recent reports by the news media have again raised the public's concern about damage to the earth's ozone layer caused by chlorofluorocarbons (CFC's). Misconceptions and erroneous information also have developed along with this increased publicity. One common misconception is that CFC's and perfluorocarbon are one and the same. Contrary to the misconception, these additives are not CFC's and do not contribute to damage to the ozone layer. It is important to stress the differences because some skiers / snowboarders have expressed concern about the additives, apparently confusing them with CFC's. Even some

scientists, government regulators, and editors of trade journals are confused as evidenced by their public statements on the subject. Chlorofluorocarbons and halons (bromomfluorocarbons), which can evaporate into the atmosphere, are linked to destruction of the ozone layer because they release chlorine and bromine. Chlorine and bromine catalyze the breakdown of ozone, permitting more UV radiation to reach the earth's surface. Hertel uses additives that are perfluorocarbons, completely fluorinated molecules without chlorine, bromine or hydrogen. These additives are much more stable than CFC's and halon and do not degrade when exposed to UV light in the atmosphere.

6.) IMPROVE YOUR PERFORMANCE

Performance -- Some people look for speed, some people look for performance, some just are looking for fun. With Super HotSauce™ ski wax systems, we supply it all. Super HotSauce™ skiing wax has been designed to give the consumer ultimate control and safety. Super HotSauce™ uses the highest quality waxes on today's market as a vehicle to carry special ingredients that actually interacts with the water created on the base of your ski / snowboard. The water is created through friction and weight. HotSauce™ ski wax changes the water (snow) and makes it work for you. The net result is easier running surface, more control, additional safety and more fun! Now, when you command your skis / snowboard to turn they will slide with ease. One wax covers All-Temperatures, All-Mountains, Totally-UNIVERSAL. This means no more looking up at the sky and asking God, or testing the snow in order to choose the best ski wax.

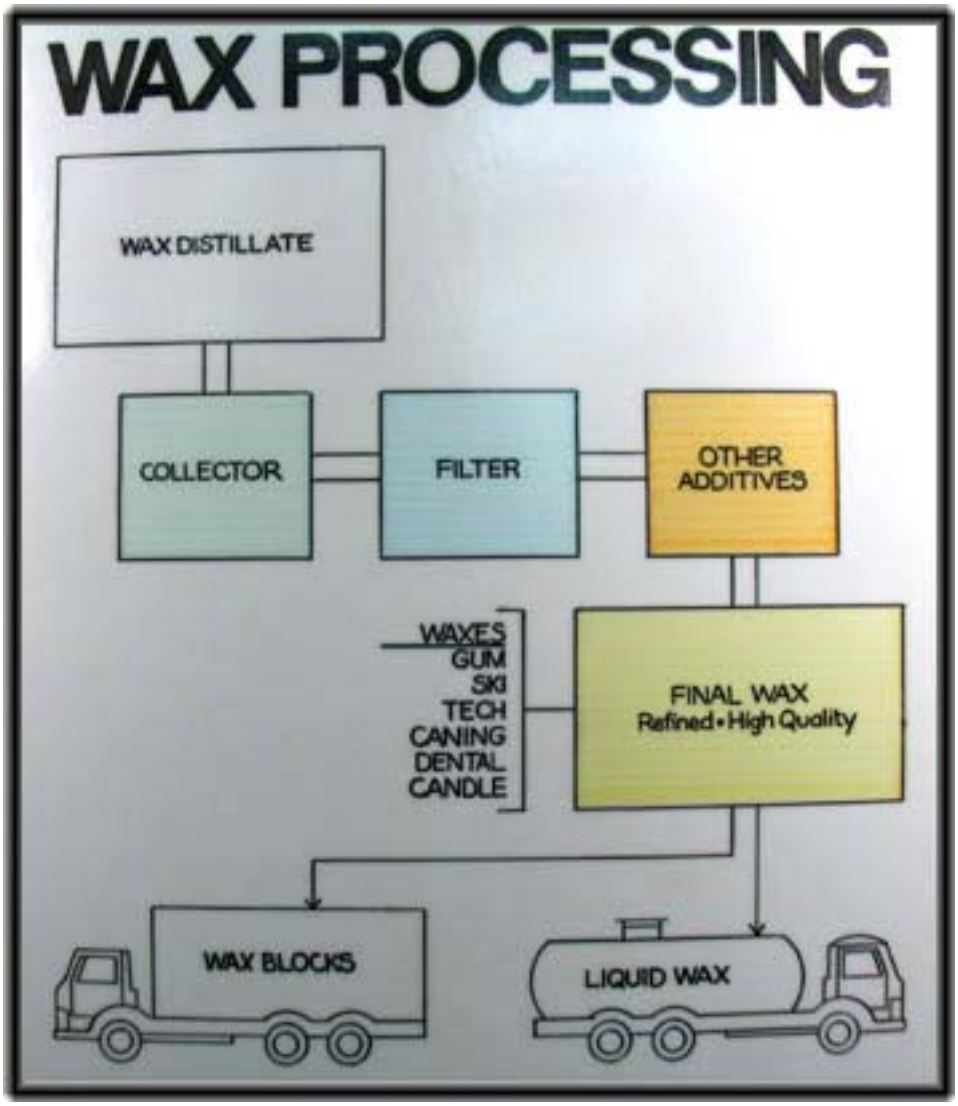
7.) WHAT EXACTLY IS WAX?



WE REVIEW WAX PRODUCTION FROM ITS BEGINNING.

Wax is a process of crude oil production. All oil manufacturers produce wax systems. According to their processes and areas of the country, the wax will vary, resulting in a Western crude versus an Eastern crude. At Hertel™ Corporation, we use Western crude, which is the best for making our product. Once the crude begins the refinement process, as the above picture shows, oil is run through a heat exchanger. As the oil rises in the refractory tower, byproducts are released at different levels for further processing (above diagram - note wax is in the middle). Once products are separated, they are held for further processing or for a wax distillate.

After wax is produced, we explain how the waxes are refined for our use.

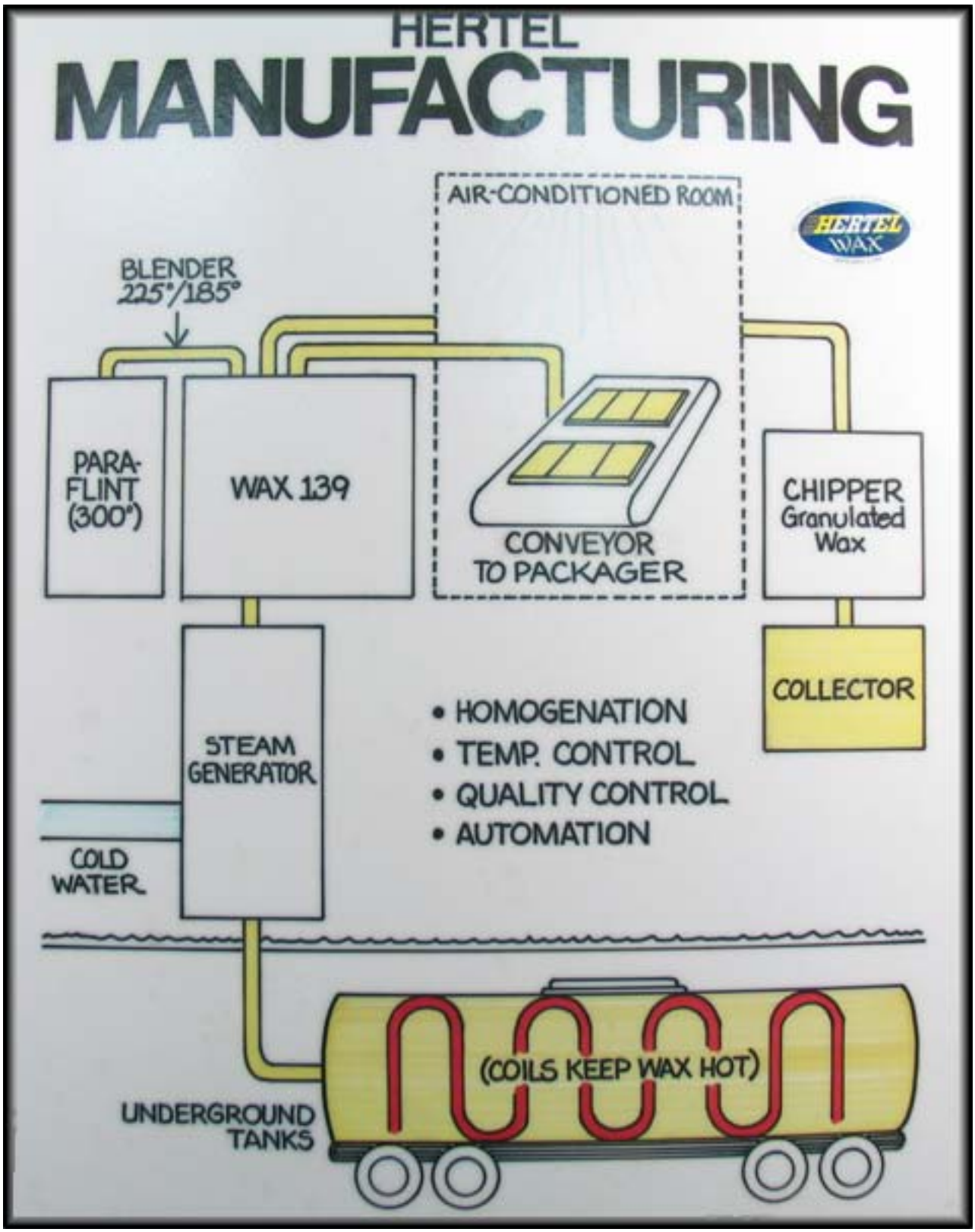


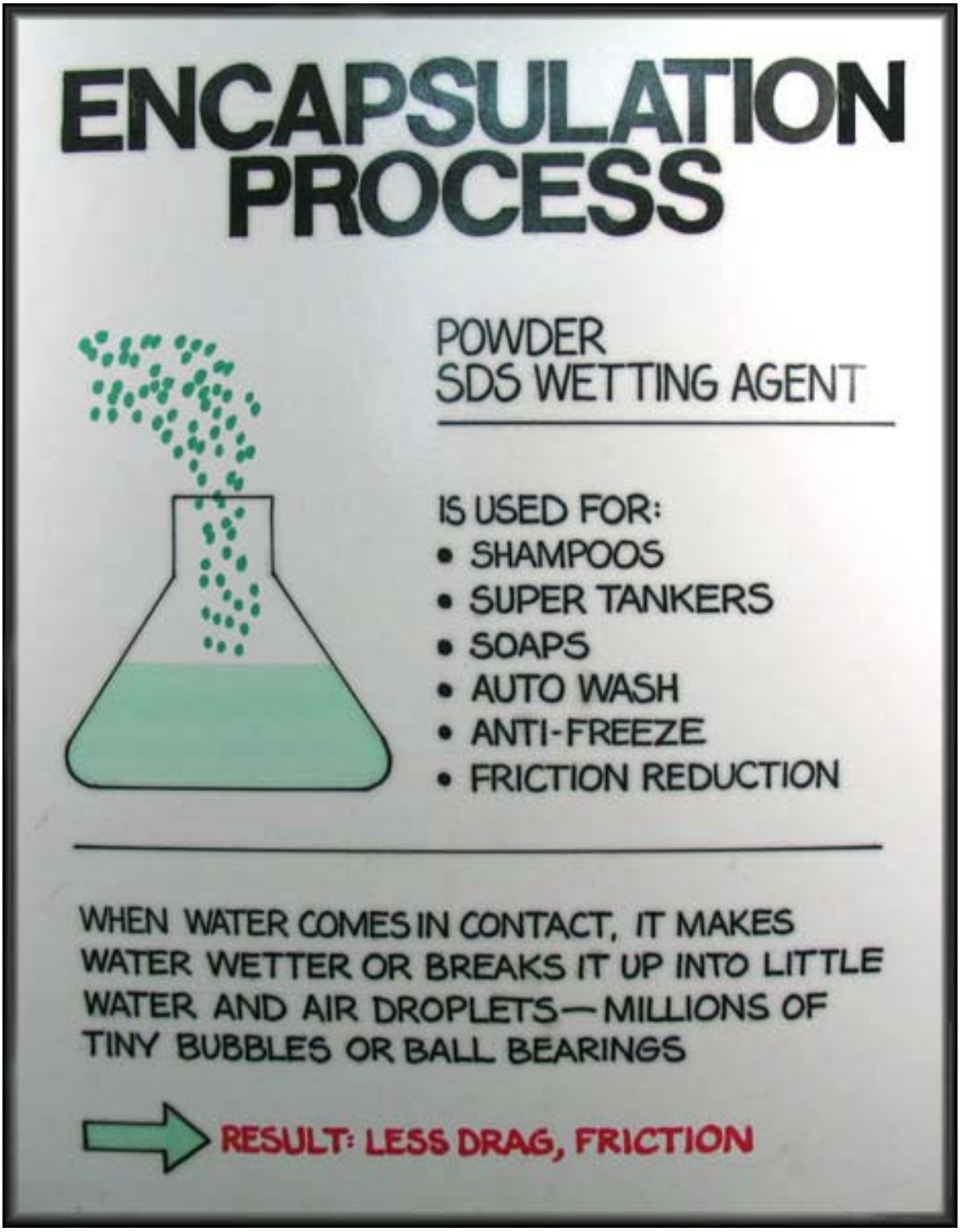
8.) WAX PROCESSING - AFTER CRUDE OIL PROCESSING

Now the wax is in storage waiting further processing. It is put through another process that distills the wax, and separates it into different grades for yet further processing. The distilling process can be thought of as a straining process similar to straining foods or making whiskey. Grades of wax are denoted by their melting points. Thus the oil company collects and filters this distillate, and the end result is a refined product that we use for making ski and snowboard wax. At the same tir

Here we discuss the “What and Why” of wax additives in ski & snowboard waxes.

“Wax Hardener” allows us to change the hardness of the wax used on our skis / snowboards. Traditionally, this is the way we adjusted the wax to work in varied temperature ranges and why we needed colors to distinguish the waxes. We continue to use hardeners, but at Hertel Corporation we use **Fischer Tropes Paraflint** ***higher quality product.*** There are several wax additives; one in particular comes from the distillation process that yields high melting microcrystallines. These microcrystallines result in the various plastic products we all know today, including ski / snowboard wax. There are other products that come from the earth that are similar to the microcrystallines, but for some reason Fischer Tropes Paraflint actually performs better. Hertel Corporation exclusively uses Fischer Tropes Paraflint, enabling us to exceed our high specifications for quality. Our additives come from a coal mining process of which the refining or purifying process can be compared to crude. Thus, we get a Fischer Tropes Paraflint that is by far the highest quality available.


HERTEL
MANUFACTURING
AIR-CONDITIONED ROOM
HERTEL WAX
BLENDER
225°/185°
PARA-
FLINT
(300°)
WAX 139
CONVEYOR
TO PACKAGER
CHIPPER
Granulated
Wax
COLLECTOR
STEAM
GENERATOR
• HOMOGENATION
• TEMP. CONTROL
• QUALITY CONTROL
• AUTOMATION
COLD
WATER
(COILS KEEP WAX HOT)
UNDERGROUND
TANKS



We have reviewed other systems and find nothing new. We have upgraded our wax to meet the standards of the 21st century onward. Hertel Corporation produces our wax ensuring you are getting a wax designed for the snow sports industry. We have researched a hardener that

is a one of a kind and performs beyond all expectations. We look at snow ski / snowboard waxing from a practical point, and have decided that wax is a vehicle for getting the proper ingredients to the base of your skis / snowboard. Once the ski / snowboard is in motion, you create a fine layer of water that Super HotSauce Wax reacts to. There is a special ingredient added to the wax that allows it to perform on demand as you ski, IN ANY CONDITION. We call it the **Encapsulation Process**. Tiny bits of powder are formulated into the wax and react upon sensing water. The surface-active agents interact with the water, decreasing surface tension, thereby decreasing friction and increasing your control. Thus, these are just some of the reasons why Hertel™ ski & snowboard waxes are the best! Read on, people!

9.) WHAT ARE DYNES?

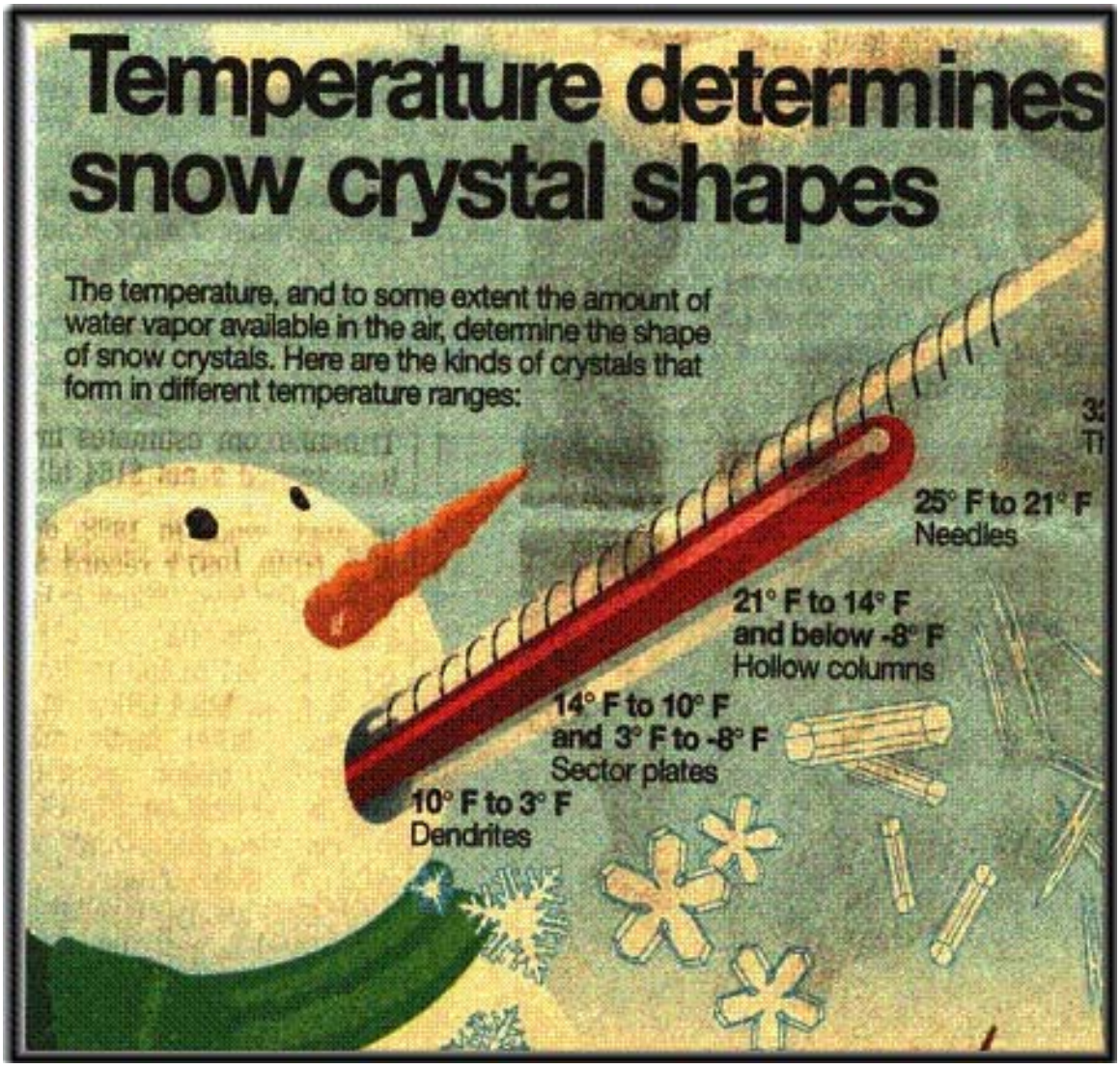
DYNES AS MEANS OF MEASURING

Currently we measure our surface tension in Dynes per square centimeter. Pure water at 25°C has a surface tension of about 72 dynes/cm squared. With our water-soluble agent, using our form of micro encapsulation, we reduce the surface tension down to 20 to 30 dynes per square cm. By using our formula RacingFC 739™, which is a double micro encapsulation process, we reduce the surface down to 14 to 16 dynes per square cm. With our latest formula at very cold temperatures, we reject snow, eliminating friction, thus creating the ultimate control. At the other end of the curve, we activated water-soluble agents, creating the control we need as the water content increases. In the springtime, nature deposits pollens onto the snow this is the black tar substance everyone has claimed to be diesel fuels and oil from the cat machines. Instead, it is actually a sticky wax, and because we have a special ingredient to reject foreign objects, now for the first tie we can make nature's sticky wax (pollen) work for you. Once again, we make it slicker, and you will achieve control never attainable before.

10.) SNOW & WATER

At warmer temperatures, snow takes on the shape of roundness, as we have all witnessed when snow or ice melts. Colder temperature display much harder crystals with a sharp edge-like structure that has the ability to stick together, thus allowing the packing of the crystal. Snow crystals are formed in the upper atmosphere when the temperature is at or below 32° Fahrenheit. If a water droplet freezes or crystallizes, it will form the nucleus of a snow crystal. As

soon as a crystal structure exceeds a certain weight, it starts to fall, resulting in what we know as snow. The transformation of a snow crystal:



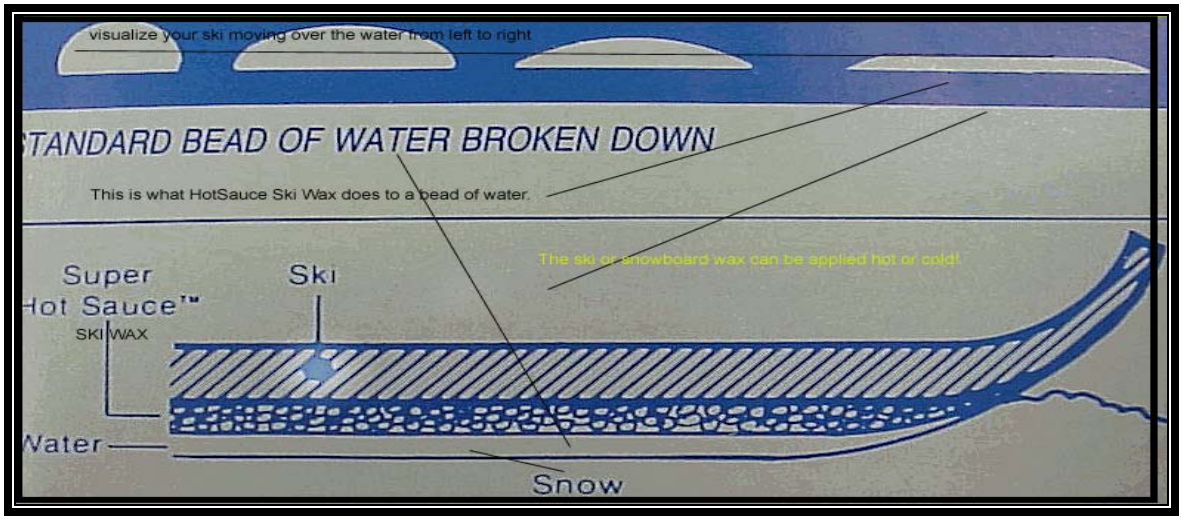
Note the gradual rounding off of the point as the crystal ages

11.) WHAT'S HAPPENING UNDER YOUR SKI

When skiing / snowboarding, the moment you begin to move across the snow you are applying pressure and exerting friction, melting the snow, and creating a fine layer of water between your ski and the snow. Traditionally wax was designed to be hard or soft based on the

outside temperature and the snow temperature. There are many theories that have confused waxing over the past 50 years. We say that was fine in the 1960's but since the 1980's we have had modern technologies that leave the older color traditions behind.

As previously stated, water is created and this is what we are gliding on as we ski. The structure of this water is where we arrive at our control in skiing. The structure of water can be altered to improve our skiing control. If the water is long and tightly chained together, we create suction, as no air is mixed with the water to create a bearing-type surface. HotSauce Wax Systems have been designed with today's skier / snowboarder in mind, as well as today's ski's / snowboards. With new ski / snowboard bases out, we need a wax that will wet its way into the open pores deeply. As the wax seals and protects the ski, we are creating a special surface that is textured to create snow and water air dynamics. The HotSauce Wax Systems have been designed as an encapsulation-type process so as to allow the special water or oil soluble ingredients to activate upon contact with either.



Due to friction and weight, water is produced. HotSauce™ interacts with this water, thus lowering the surface tension. This results in enhanced control of your skis.

12.) KINDS OF WAX

There are several liquid or tube-type waxes on today's market. In the 1970's, I saw everything from silicones and antifreeze to shoe polish, trying to be the one that replaces Hot Waxing. First of all, Teflon is a buzzword and will not work properly for skis / snowboards, as the suction occurs as well. It is primarily used for steel bearing surfaces. Silicones are an oil-based product and we all know getting rid of oils and tars is a problem. Liquid HotSauce™ is an evolution designed to be compatible with the ski base. It is powdered polyethylene emulsion. We add a special water activation product that is encapsulated to do the same process that Super HotSauce does. As you apply it, it actually wets itself into the ski. (We have all seen gasoline spilled onto the ground - as it hits it spreads fast, as that is a wetting process). It gets into every crack and crevice until dry. Surface-active agents cause the water to form thin films. Our skis / snowboards now have reduced surface tension and lateral control never offered by any waxes of today's market. Other ingredients react to the coldest of snows and ice to totally reject it. In the spring season, it will reject the insignificant amounts of fuel and oils left by snow grooming equipment. Moreover, it rejects nature's own pollens as well as that tar-like black substance called diesel fuel and lift grease. We use wax to house side by side the necessary ingredients to make your skis / snowboards have the maximum control in All Temperature conditions. This is not possible with any other product on today's market.

13.) REVEALING THE MYTH OF COLORED WAXES

Are they necessary? I CAN PROVE TO YOU THE ANSWER IS ABSOLUTELY NO. Let us understand ***why*** the competition attempts to continue to sell **colored waxes**. The answer is twofold:

1.) Much of it is on-going **Marketing**

2.) Most of it is **Lack of Technology**

In 1974, the president of certain company (which I will leave nameless) came by my booth at the annual SIA show in Las Vegas and stated that our **white All-Temperature Super HotSauce™ Ski Wax** was causing havoc in the ski wax industry. He mentioned that he sold several different colored waxes to dealers every year – **Red wax** for this type of skiing conditions**, Blue wax** for that type of skiing**, yellow wax** for whatever type of skiing – you get the idea! Thus, he revealed that selling dealers just **one wax color (Hertel's White wax covering *All Temperatures***) was ruining his colored wax sales – bottom line.

Colored ski waxes do not work on all temperatures – their claim is to work on only one specific skiing / snowboarding condition. The truth is, color is only added to make one believe it is doing a specific function. **Hertel All Temperature Ski & Snowboard Wax** covers temperatures ranging from 6° Fahrenheit to 53° Fahrenheit.

I proved **we ski on a fine layer of water**, and NOT on the previously held belief that we ski on "an angle of a snow crystal." That was and continues to be old school, mistaken and erroneous information. Next, I proved that **changing the structure of the water** was the real achievement. Hertel waxes all change the structure of the water through its micro-encapsulation process. I also proved that the brown stuff all over the snow in the spring was not dirt. It was in fact spring-season pollens blown onto the snow by nature. By understanding both wax chemistry technology and nature's elements first, I was able to develop three cutting-edge ski & snowboard waxes – **Racing Fluorocarbon 739™ Wax, White Gold™ Wax** and **Spring Solution™ Wax**. I also listened the consumer and was able to achieve ski & snowboard waxes that last up to seven days without a re-application.

In 1988 I forwarded a press release announcing my new **Racing Fluorinated 739™ ski Wax** to a then tech magazine. Interestingly, in the same magazine a European competitor stated they had invented Fluorocarbon wax and would deliver the fluorinated product that autumn (they actually had no product). By the time autumn had set in, they found a product called PTFE that is still widely used today. PTFE is a trademark of Dupont Corporation and is also known as Teflon.

PTFE was added in all their colored ski waxes; however, this was a poor choice as there are several types of fluorocarbons. **All-Temperature or All-Mountains was NOT part of their product line.** Certain FC's work as ours, and some are inactive. This is why our European competitors still continue to market mass amounts of wax colors to the world. Hertel has chosen the accurate FC and our competitors are certainly aware of it.

In the 30+ years I have been involved in ski wax chemistry, I have openly shared my ski wax technology with students doing research programs. The result was I soon found them as my new competitors in the ski & snowboard world of wax! Hertel is also aware of one competitor who has attempted a direct copy of our snowboard waxes. I must say they came somewhat close in their chemistry, yet not close enough. We have tested several of our competitor's colored ski waxes and noticed **parts of** our formulas slowly sneaking into the market. Yes, imitation is the sincerest form of flattery, however imitation is also infringement on our claims.

Hertel Corporation Ski & Snowboard Wax has been part of the Olympic dream. As it goes, whichever skier won an Olympic medal, the manufacturers representatives had to have our product to sell. When we won the Lillehammer, Norway Olympics with **Hertel White Gold™ Ski Wax** in 1994, our two European competitors decided to flood the market with free product. I wanted you to understand exactly why we lost some of our dealers around the country. Our two gigantic Euro-competitors could not compete with our advanced technology, so they attempted to do the next best thing.

14.) RUB-ON ski WAX

Traditionally, rub on ski waxes are softer. The bar fits in the grip of the hand so you can smear the product on the base. Due to its softness, longevity is in the neighborhood of ½ to 1 run. With our new multi-use rub on ski wax, we have designed the ski wax to be harder. When you rub the product on, tiny micro-parts of wetting agents and wax work their way into the ski. Corking or Scotch Briteing (Buffing) the ski after will smooth the surface. Longevity will be increased to one day or more. The more applications, day to day, you will notice the ski wax lasting longer due to the activation of additional wetting agents not used and lodged into the pores of the ski / snowboard.

15.) IRON-ON

Traditionally, iron-on ski wax was made of a much harder product. Ski Wax temperature ranges are denoted by hardness. Whatever the temperature, if you are using traditional colors, you have a **Soft for Warm, Medium for Cold, and Hard for Colder**. However, you should not be using any colored ski wax – I further explain exactly **why** under Table of Content **# 32 REVEALING THE MYTH OF COLORED SKI WAXES**. Ironing the ski wax heats the base, opening the pores and the ski wax (that has taken on a liquid state) becomes thinner. The ski wax flows into the ski / snowboard. As it cools, it has a holding effect (bonding), typically lasting the better part of the day. Durability and longevity is dependent on **1.) Quality of Ski wax 2.) Type of base 3.) Method of application 4.) Outside temperature of snow and 5.) The number of runs made.** With the new sintered (formed into a mass by heat and pressure) bases of the 1980's, waxing is mandatory due to the honeycomb pore structure. Without ski wax, performance may be greatly reduced. With a sintered base, due to its deep pores, ski wax, if properly designed, has the ability to reach up to the matting of the ski base. This is a keen feature paralleled by no one except our RacingFC 739™ Ski & Snowboard Wax.

16.) SOLID WAXES

Solid white ski waxes are best for hot waxing in hotwaxer equipment. These ski waxes are the same as traditional iron-on ski / snowboard waxes. Not much change has been made to them. Most companies have cut the color dyes to a minimum so as not to stain the base. Dyes actually slow the ski down. Over 70% of the ski / snowboard waxes sold today are attempts at Universal or All-Temperature. New designs of ski waxes, one color or pure white, is all that is necessary. In this area of technological advances, **Super HotSauce™ is the only known All Temperature Ski Wax on today's market.**

17.) LIQUID SKI WAXES

Liquids. A good liquid ski wax is made of a powerful polyethylene solution plus special ingredients to work with the water under the ski / snowboard. Due to the fact that these products are applied cold, the application will last for a few runs, but with additional applications, better performance ratios will be realized. Do not apply Hertel liquid ski wax to any other-brand ski wax already existing on skis / snowboards (only apply if Super HotSauce™ ski wax is already on your skis / snowboard). The products are incompatible (this goes for most liquids tested by our staff). Our liquid ski wax is compatible with all of our products = inter-compatibility. **HotSauce™ Liquid Ski Wax** will last longer if sprayed on the night before you use the equipment. Simply set the equipment with the bottom up, spray it on, and you're done! The next morning your equipment is ready for skiing or snowboarding. Quite a simple process!

18.) ALL-TEMPERATURE (Definition)

We ski / snowboard at normal temperature ranges of 06* to 65* Fahrenheit. When we designed an All-Temperature product, we designed these temperature boundaries. The ski wax, if applied differently and mixed with other ingredients, may easily be used at the two temperature extremes. Therefore, the general consumer need only buy **All Temperature Super HotSauce™** Ski wax to enjoy and have fun.

19.) PRE-WAXES

One of the best ways to remove old ski wax is to apply a very hot coat onto the ski, scraping immediately to remove old ski waxes, dirt and grime. Applying a new coat will be an excellent primer for the ultimate preparation.

20.) WHY WAX SKIS & SNOWBOARDS?

Skis are made of several different products such as wood, foam, glass, fiberglass, plastic polyethylene, steel, aluminum and glue hot melts, which in many cases bond the skis together. With all these materials, we now see one of the many needs for continued waxing of skis.

1.) It is important to seal your base inside and out. This keeps the contaminants out, such as water and air, and protects your ski from future damage. We call it preventative medicine.

2.) Many manufacturers pre-wax the skis at the factory just for that reason. They want you to start with a ski that is ready for use with the necessary pre-ski treatments made. This, in many cases, eliminates future problems of non-waxing. **I recommend removing the manufacturers pre-wax and applying a good coat of Racing FC739™ ski wax.**

3.) Waxing your skis or snowboard is protecting your investment. It is a proven fact that waxing your skis properly every 20 to 25 runs will extend the life of your skis one year or more.

4.) If you slide across a rock with waxed skis, the ski wax will be between the rock and the ski acting as a lubricant in many cases. The fact is that less or no damage occurs.

21.) WHAT ABOUT SKI WAXING? WHAT IT DOES FOR LATERAL PERFORMANCE

With **Super HotSauce™ Ski & Snowboard Wax**, the lateral performance is greatly improved due to the reduction in surface tension of the ski base. This is the most important feature of ski waxing -- it is essential for greater maneuverability and control. As we stated earlier:

1.) New skis / snowboards should always be hot waxed to protect your investment. This will seal your bases from the inside out.

2.) Your skis / snowboard should be hot waxed daily for you safety, others safety, and for overall control.

3.) If you use traditional ski wax systems, you have to choose the color of the day and apply wax either cold or hot. This is not recommended as it comes from the Dark Ages. ☺

4.) **Super HotSauce™ Ski Wax Systems** is designed for the every day fun customer. It is guaranteed for All Temperatures but works best in temperatures from 06*f to 65*f. **Super HotSauce™** is the only All Temperature wax system available on today's market.

Sintered (formed into a mass through heat and pressure) Ski Base

Traditionally skis were made of wood. Then came plastic or polyethylene extruded bases, as we know today. Just a few years ago a new base was introduced which gave the manufacturer and skier / snowboarder new advantages in production, skier performance and durability. The base being very hard now has a honeycomb like structure, tiny little holes throughout the ski / snowboard base not visible to the eye. If you put a raw ski base against the snow you will notice a drag and not the best performance characteristics. Once the ski wax has penetrated clear up to the matting, the ski / snowboard is ready. With HotSauce™ ski wax products we have designed ski waxes for deep penetration through liquid reconstruction when ski wax is hot, wetting the ski wax deep into the pores. Our **RacingFC 739™ formula** ski wax will last up to seven days if applied properly.

22.) HOW TO APPLY SKI WAX

There are six ways to apply ski wax.

1.) Cold or rub-on ski wax

2.) Applying a think coat of ski wax with a Hotwaxer™

3.) Apply a coat of ski wax with a hot iron

4.) High-speed friction hot waxing

5.) Liquid Wax (spray-on) ski wax

6.) Cream ski Wax

- Make sure your ski bases are clean with no serious gauges. A product called “Chevron 350B solvent is the best product to remove old ski wax from your ski / snowboard base.
- Make sure your edges are as sharp as you desire.
- Make sure there is no rust on the edges.
- Make sure it is in the comfort zone for all waxing 62*f plus Fahrenheit.

Hertel ski Waxes are produced at around 170° Fahrenheit, so your ski / snowboard base does not need to be cooking at high temperatures. Other ski waxes out of Europe require the iron or ski Waxer to be operating at extremely high temperatures that may cause serious harm to your base. These waxes are old technological designs from the 1950's = colors. I do not recommend ski waxes with powdered Fluro due to the fact that is ground up Teflon. Smoking Teflon is extremely harmful to one's health. An overlay was developed because the manufacturer was unable to successfully produce a product like the HotSauce™ ski wax line.

Hertel™ ski Waxes are *All-Temperature*. All other ski waxes on today's market are not! This can be proven by the fact that all European ski waxes are set up to be used in specified temperature ranges (i.e. red colored wax for so & so temperature, blue colored wax for this & that temperature, etc.). Note the red at one company is not the same as the red for another company. Consequently, there is no such thing as a standard for each specific ski wax color. Confusing, wouldn't you say?! Much of the European color confusion is caused by the lack of scientific laboratory developments, the zest to market for profits only, as well as resistance to change. Their emphasis is clearly not on safety.

23.) Cross Country Ski Waxing:

Cross Country skiing waxing is much the same as Alpine ski waxing. The Cross Country skis are waxed the same as Alpine **only on the tips and tails**. The center of the ski is where different tackoniques are used. One is a klister or stick type ski wax so the skier can get a better grip when applying energy to thrust forward. Often a fish scale type surface is used instead of the sticky stuff. Our **Spring Solution™ Ski Wax** is the product of main interest here.

24.) How To Iron-On ski Wax:

1.) If you are using an iron, NEVER allow the iron to be in one place for more than a few seconds! If you do, you will be purchasing a new ski / snowboard!

2.) Touch the bottom of the iron with the ski wax allowing it to drip onto the base. With the iron, spread the ski wax evenly.

3.) Set the iron down making sure it is off or out of the way to prevent burning yourself or other things. Use extreme safety measurements!

4.) Have good ventilation at all times.

5.) Do not smoke the ski wax. When the ski wax is smoking the lower melting point wax is dissipating into the atmosphere, thus the ski wax specifications will not apply.

6.) Once you have applied the ski wax with the iron, use a plastic scraper to scrape the base.

7.) Put the scraper in both hands using the bottom side of the scraper pulling it toward you. It is actually a mash / scrape process.

8.) After scraping, use a cork or scotchbrite pad to buff the ski wax smooth. You are ready to go and have some fun now!!

25.) GENERAL SKI MAINTENANCE

Today most manufacturers attempt to produce a ski that is ready to ski right out of the factory. This cannot be true in all cases. I suggest to match the pair up first making sure they are a matched set (pair). Look for abnormal bends or poor workmanship. After mounting your bindings, you should perform an quick & easy **"Touch Up-Tune Up."**

- Check the bases making sure it is flat and the edges are tuned and sharpened to your ability.
- Next, make sure they have been waxed (it's called pre-waxing). This is done by making sure the ski wax is of a hotter nature, so the flow of contaminants (i.e. water, oil, road grime), does not penetrate the ski / snowboard inner core and start premature deterioration.

After prep, you should be ready for a very enjoyable skiing experience. Please remember to ski wax daily... **YES DAILY**, unless you use our **Racing FC739™ Formula ski Wax** (which lasts up to seven days.) After skiing / snowboarding a certain amount of time, you will notice the normal wear and tear on your ski base -- scratches, gouges, etc.

When you purchase your equipment it is a lot like buying a new car or a new dress. You have to check it out first, make sure it's gassed up, tire pressure is okay, and ensure other checks and balances have been made. A new piece of clothing may have to be hemmed, threads cut off or you might want to check stitching and material for quality and workmanship. Check skis /

snowboards for trueness, make sure they are as close to flat as possible, there are no gouges in the base, and that the edges are sharpened properly. Lastly, make sure your bindings are set to your physical specifications. Never take chances. The better your ski / snowboard is tuned, the higher performance you will get out of the ski / snowboard. The better your equipment is tuned, the safer you will be and skiing will become a much more enjoyable sport.

If you are fortunate enough to work in the snow sports industry, please make sure your dealer is using Hertel Super HotSauce ski waxes! If not, ask them why! Most dealers go for cheap, bottom-line cost, or sadly, have become accustomed to using a poor quality wax products. You know your skis & boots thoroughly; it is your right to know your ski wax just as well! I soundly believe Hertel ski waxes are the key to major injury reductions on the mountains slopes.

26.) TUNING YOUR SKIS / SNOWBOARD & BASIC REPAIR

The following process should provide guidelines for preparing and maintaining skis / snowboards. Both skis & snowboards should be thought of as a tool that must be properly kept finely tuned. Working on skis / snowboards for a few minutes after each day on the slopes will keep them tuned to provide optimum performance.

27.) TUNING KIT – BASIC TOOLS:

1. Steel Scraper – *For scraping Base material*
2. Plastic Scraper – *For scraping ski wax*
3. Mill Bastard Files, 8” and 10” – *For scraping edges*
4. File Card – *For cleaning files*
5. Roll Bar – *For checking trueness of ski base*
6. Stone – *For cleaning edges after sharpening*
7. Base material Candles – *Repair Material to 7:11 gauges*
8. Waxer (optional) -- *An old household iron works well*

9.) Clamps / Vice – *To hold skis & snowboards*

10.) 180 Grit wet – *Dry sandpaper (not the type normally used to sand wood)*

11.) Scotchbrite – *For buffing ski wax*

12.) Base Cleaner – *For removing old ski wax*

28.) BASE PREPARATION

Generally, skis / snowboards arrive from the factory concave, or edge high. This must be corrected by flat filing. It may take a considerable amount work to get the bases flat, but will greatly improve performance. I suggest having good stone work performed on the bases.

1.) Check base with a roll bar to determine if it is concave, convex or flat.

2.) If the base is concave, the steel edges must be brought down with a file until the ski / snowboard is flat. As you file the edges, remove the excess base material with a steel scraper to make the filing job easier.

3.) If the base is convex, use a sharp steel scraper to remove the excess base material. It is very important to constantly check you work with a roll bar.

29.) BASE REPAIR

1.) Skis / snowboard should be at room temperature and free of ski wax before attempting to repair base.

2.) Light (polyethylene) candle until the material is clear and burning with a blue flame. Hold candle low and close to metal scraper. **Be very careful, as you do not want to get hot material on your hand! It is at three hundred f or hotter.**

3.) The most effective technique in filling gouges is to drip the burning candle, holding it close to the damaged area. Use the scraper as a palette.

4.) After the gouge is filled in and the area completely cooled, use the scraper to take off excess material.

30.) SKI SHARPENING

1.) Flat Filing – see Base Preparation.

2.) Side Filing – Hold the file in one hand and use long strokes with constant pressure. Be sure to hold the file at a 90* angle to the base using fingers and your second hand as a stabilizer.

3.) Polishing with a stone. Normally, use a stone on bottom edge only to remove burrs. Stoning the side edge for extra sharpness is only necessary under extreme conditions.

4.) De-tuning tip and tail with sandpaper. Dull the tip 3” – 5” from base of shovel and the last 2” – 3” of the tail.

5.) The sharpest portion of the ski should be the middle half, with the sharpness decreasing gradually toward the tip and tail.

**All of the above can be accomplished at your dealers with high-tech machines that, if properly maintained, will perform a wonderful job.

31.) SHARPENING HINTS

- Use a file card to keep the file clean. Remove filing from the base frequently with a cloth.

- After sharpening, run fingers along the edge to check for burrs.

32.) SKI WAXING

1.) In pre-wax preparation, roughing up the base structure will make the base more receptive to ski wax. This is accomplished by first using sandpaper, followed by Scotchbrite.

2.) Wrap Scotchbrite around file.

Ironing (you can use a Hot Waxer™ or household iron). Touch ski wax to base of iron and allow the ski wax to drip to the base. Ski Wax should not smoke during application. If it does, lower the temperature of the iron. Smooth out the ski wax, using the iron and make sure the iron is continually moving.

3.) Scraping – Use a plastic scraper to remove all excess ski wax. The base should be scraped very clean for all snow conditions.

**Different types of Skis & Snowboards to wax:

Alpine Skis – Downhill, Free-Style, Cross Country, GS

Alpine Snowboard – Downhill, Boarder cross

Cross-Country Skis – Tip & Tales

33.) SKI WAXING HINTS

- The best way to clean the ski / snowboard is to ski wax and scrape immediately. The ski wax will draw impurities from the base without drying it out.
- Ski Wax should be kept on skis / snowboards at all times when traveling.
- Most ski waxes come with waxing charts that are reliable. Use them please!

34.) SKI & SNOWBOARD STORAGE

In the summer months do not store your skis / snowboard on a concrete floor. I suggest storage is at eye-level in your garage. Do not allow your ski / snowboard to be in the direct sun for any length of time.

35.) ACL NOTE FROM WINTERSPORT BUSINESS INC. SKI TECH

(www.wintersportsbiz.com)

Ski Binding, ACL Link Question:

Breuil-Cervinia, Italy – There may be no link between serious knee injuries and ski bindings despite binding manufacturers' claims of "knee-friendly bindings" and a host of research into the relationship. That's the claim of a trio of US researchers who called on the industry to look elsewhere if it wants to solve the ACL injury epidemic.

"There is no significant relationship between the quality or choice of the release system (bindings) and the quantity of ACL injuries," said Dr. Robert Johnson of the University of Vermont's Orthopedics department. Johnson and researchers Jasper Shealy and Carl Ettinger have headed a 27-year study of ski and snowboard injuries at the Sugarbush resort in Vermont and have studied more than 2,000 ACL injuries.

"No one product has been identified that can sense and respond appropriately to potentially injurious loads," Johnson told the 13th International Congress on Ski Trauma & Skiing Safety. Ettlinger said afterwards that no single brand or type of ski binding has been shown to affect ACL injuries. Johnson instead urged researchers to turn their attention to other possible factors, such as the interactions betweenski boots and skis. "Clearly, the ACL injury is the most troublesome problem in our industry," he said.

ACL injuries – the acronym stands for "anterior cruciate ligament" – are the most serious injury in alpine skiing today, although their frequency has leveled off in the last 6 years. In the Sugarbush study, ACL injuries account for about 20% of all ski injuries. Knee injuries of all kinds make up a third of all ski injuries.

Johnson said recent studies confirm well-known trends in ACL patterns: 1.) Women are more than twice as likely as men to suffer an ACL injury. 2.) Less serious knee injuries have declined in frequency while the most serious types – primarily ACL injuries – have increased. 3.) Oddly, the left knee is more likely to be injured than the right. Johnson had no explanation, but said the research found no relationship to whether a skier was right or left-handed.

Other researchers disagree with Johnson and say binding design could hold a key to reducing ACL injuries. Richard Greenwald, a biomechanical engineer with TUV Product Service in Providence, RI, said forward twisting falls, which could be reduced through binding design are a significant contributor to ACL injuries and should not be discounted. "We shouldn't be putting all our eggs in one basket," Greenwald said.

Some said the newer style of higher, stiffer boots contributes to the problem because the boot does not “give” in a backwards fall. One German researcher said his is working on a boot with a rear “spoiler” that will release in dangerous positions.

CAN PROPER WAXING HELP SOLVE THE ACL PROBLEM?

Letter from Terry Hertel to the Editor:

I continue to read about ACL injuries. Now we are reading that is not the binding’s fault. Poorly tuned equipment could be a major factor in injury. A study should be done on the amount of resistance created by equipment with no wax, equipment using any old wax, and equipment using inferior wax systems.

If everyone has good equipment that is adjusted and maintained properly, our mountains would be much safer. We know that 95% of snowboarders and kiers have never addressed waxing. It’s no wonder that, when a person has not one drop of good wax on their equipment and they meet with resistance, the added energy applied often results in an accident.

If I am right, if could mean profits for all wax companies, safer mountains, reduced medical bills and possibly reduced insurance rates. Most importantly, it could mean more fun for all.

Many people think wax makes you go faster. This is true if you point your skis or your snowboard downhill. The speed gained by a properly waxed ski is insignificant compared to the gain in lateral control. Most novices don’t point their equipment downhill. It’s only done when the skier or rider is unable to make the desired turn. Then they are faced with speeds that cause them to panic. Because they are afraid to turn or doing anything, the obvious occurs.

This needs to be addressed for slower speeds also. With Hertel™ Wax, you can turn on a dime while going fast or slow. Try to spin a poorly waxed board or ski in a 360-degree motion at a slow speed.

Our products reduce resistance and give the user added control, allowing their equipment to perform on demand. There is nothing else like the HotSauce line.

**Via email from Terry Hertel™ Hertel™ Corporation, Sunnyvale, Ca. – September 1999.

36.) STANFORD UNIVERSITY GRADUATE STUDY

In 1988, a group of Stanford University graduate students in the Masters of Business Administration Division conducted a three-year study on Hertel Corporation Ski Wax. The purpose of this study was to:

1.) Research the background and inner workings of Hertel™ Ski Wax business.
2.) Understand how Hertel Ski Wax fit into the larger snow sports industry.
3.) Provide recommendations for streamlining the business.
4.) Provide recommendations for marketing Hertel™ Ski Wax, thereby increasing sales.

At the time, Hertel™ was not only selling ski wax, but also skiing accessories such as Ski Tooling Kits, Hot Waxers™, Waxing Irons, etc. The results of the Stanford study were as follows: Since Hertel™ Ski Wax is high quality ski wax, the study recommended focusing solely on volume sales & marketing of the ski wax. The accessories were considered secondary, and not an area of focus for volume sales.

I indeed took the study's advice and slowly phased out the accessories. From there, I focused my efforts on creating new sales & marketing strategies, as well as inventing new ski wax formulas.

The invention area was interesting, as the creative process is always exciting! With assistance from UC Davis Chemist, Dr. Timothy C. Donnelly, Hertel was able to achieve maximum ski wax chemistry in creating Hertel's™ HotSauce™ ski wax (my first marketed ski wax). From there, I worked on my own to invent three more ski wax products in addition to HotSauce™. The three newer ski waxes are:

1.) Hertel Racing FC739™ ski wax(For experienced skiers who desire a long lasting, durable product. Also great for fast skiing with maximum control).
2.) Hertel White Gold™ ski wax (For experts only -- This is THE FASTEST ski wax on the market, used in the Olympics, etc.)
3.) Hertel Spring Solution™ skiing wax(for skiing in the spring-season, when pollens have blown onto the snow).

Lastly, with the introduction of snowboarding in the late-1980's, I invented the above waxes for snowboards as well.

37.) CONCLUSION

Since 1972 (for over 34 years now), I have committed my focus to creating and perfecting Hertel™ Ski & Snowboard Waxes. My original background in college was Computer Science, which gave rise to constant laboratory experiments. However, it was my tremendous love of skiing that sparked interest to invent a high quality, durable ski wax product. During those early years working in the laboratory, I became further motivated to achieve the highest quality All-Temperature ski & snowboard wax on the market. I believe the ski waxes succeeded in this perfecting process. **Hertel's™** line of **All-Temperature, All-Mountain, and Totally Universal Ski & Snowboard Waxes** are the **BEST!!** I just know that if you compare Hertel™ to any ski wax competitor, you will immediately experience the high-quality difference in speed, durability, and maximum control.

Waxing is an extremely important part of tuning. We believe proper application of Hertel All-Temperature Ski & Snowboard Waxes will make the positive difference to your skiing / snowboard performance.

SKI & SNOWBOARD SAFELY… AND HAVE FUN TOO! ☺