SkinBase™

TRAINING SUPPORT PROGRAMME

# IPL

# Introduction to IPL

## What is IPL

**Simply put, IPL or Intense Pulsed Light is the process by which specific wavelengths of light are used to treat and remove, amongst others, unwanted hair, pigmented lesions and broken capillaries. The wavelengths of light convert to heat within the chromophore (light absorbing target) causing the structure to break down. Each wavelength of light can target a specific structure thus preventing any damage to adjacent tissues and structures.**

The primary principle behind IPL is **Selective Photothermolysis. This is the process by which light energy is converted to heat within a specific target to break down the structure.**

During IPL a specific wavelength or 'colour' of light targets a structure or tissue e.g., melanin in hair, this light energy is absorbed by the target structure and turns into heat energy. When sufficient heat has built up in the structure the protein will breakdown destroying the target; in this case the hair.

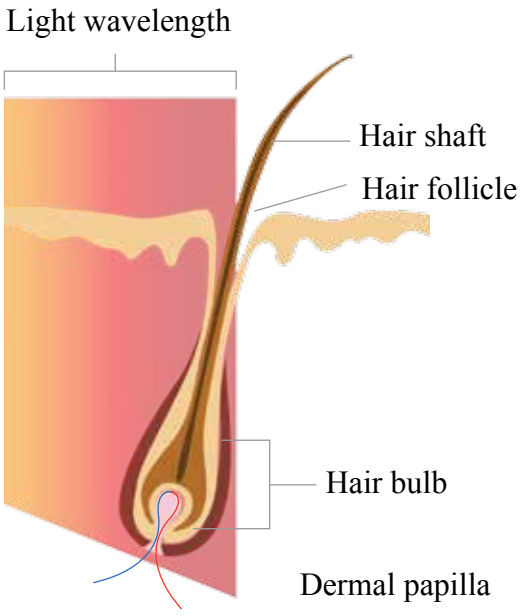
## Brief overview - IPL for hair removal

In order to remove hair effectively the hair needs to be in the active phase of growth, called the anagen phase.

Hairs in this phase of growth contain the most melanin and are still attached to the dermal papilla which provides a food source for the production of new hair.

Light absorbed by the melanin in the hair follicle is heated until the proteins break down and the dermal papilla is destroyed preventing the hair from growing back.

Only about 30% of hairs are in the anagen phase at any one time, therefore a course of treatments are required to see a permanent reduction in hair.

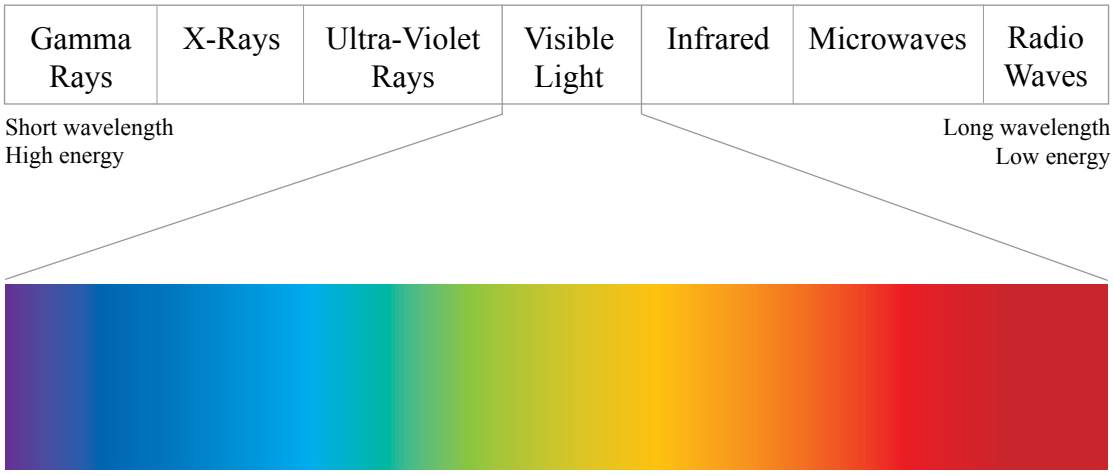


# The Electromagnetic spectrum

IPL uses wavelengths of light within the visible spectrum and you can see in the diagram below where these waves are in relation to other types of Electromagnetic waves. SkinBase IPL emits a broad light spectrum and can target any chromophore (light absorbing target) by using filters to block out the unwanted waves of light.

Different wavelengths of radiation interact with matter in different ways. For example, X-rays can pass through soft tissue making them useful for seeing inside the body. Visible wavelengths are the ones that people with normal vision are able to see. Wavelengths are usually measured in nanometres, shown in abbreviation as 'nm'.

### The Electromagnetic Spectrum




The visible spectrum

The visible spectrum ranges from 400 nm - which is violet light - up to around 700 nm, which is red.

Ultra Violet light exists below 400 nm - this energetic non-visible light can cause serious adverse changes within the structure of the skin inducing radical changes to the DNA within the cells.

Infrared light commences at around 1000 nm. Infrared is not harmful to the skin, however it is absorbed by water molecules, bringing about an increase in temperature within the tissues and may in turn lead to skin damage and pain.

**It is important to know the difference between Laser and Intense Pulsed Light. The following pages detail the characteristics of the two and how they differ.**
**This is also illustrated in the diagram on page five.**

## Laser Light System

Laser is an acronym standing for Light Amplification by Stimulated Emission of Radiation.

**L - light**
**A - amplification**
**S - stimulated**
**E - emission**
**R - radiation**

The characteristics of laser light are that the laser beam consists of photons of a single wavelength (or sometimes more than one) and is made up of one single colour and this is known as monochromatic. The wavelength can emit a different colour which will be used to target different tissue.

A laser beam, when emitted from the laser tube does not spread out as it would when light is discharged from a torch. This means that the beam is collimated (light rays are running parallel). This is useful as it allows us to use a system to focus the beam precisely. Lasers are also coherent which means the light emitted is consistent.

We must remember that Laser does not necessarily refer only to visible light as many lasers produce radiation outside visible range such as ultra-violet and infra-red.
Many lasing materials can be used and they can be solid, liquid or gas producing a specific wavelength(s) of light. For example, a laser of argon gas will produce a blue-green light comprising numerous wavelengths between 488 and 514 nms. The artificial crystal known as Nd:YAG will produce a laser beam at 1064 nm, which is the infra-red region and therefore invisible.

The inclusion of a precision circuit control enabling the system to be switched on and off very quickly, allows the laser to be PULSED. The delivery of a laser beam in short pulses is extremely useful in controlling the effects of a high energy beam on human tissue. The number of pulses per second can vary and this is known as PRF (pulse repetition frequency). PRF is measured in Hertz (Hz) or Kilo-Hertz (kHz) --- 1 Hz is one pulse per second and 1 kHz is 1000 pulses per second.

**Laser light** starts with Pulsed Light but eliminates all but one wavelength (or colour) of light. Laser can deliver only one colour (or wavelength) of light at a time.

# Intense Pulsed Light System

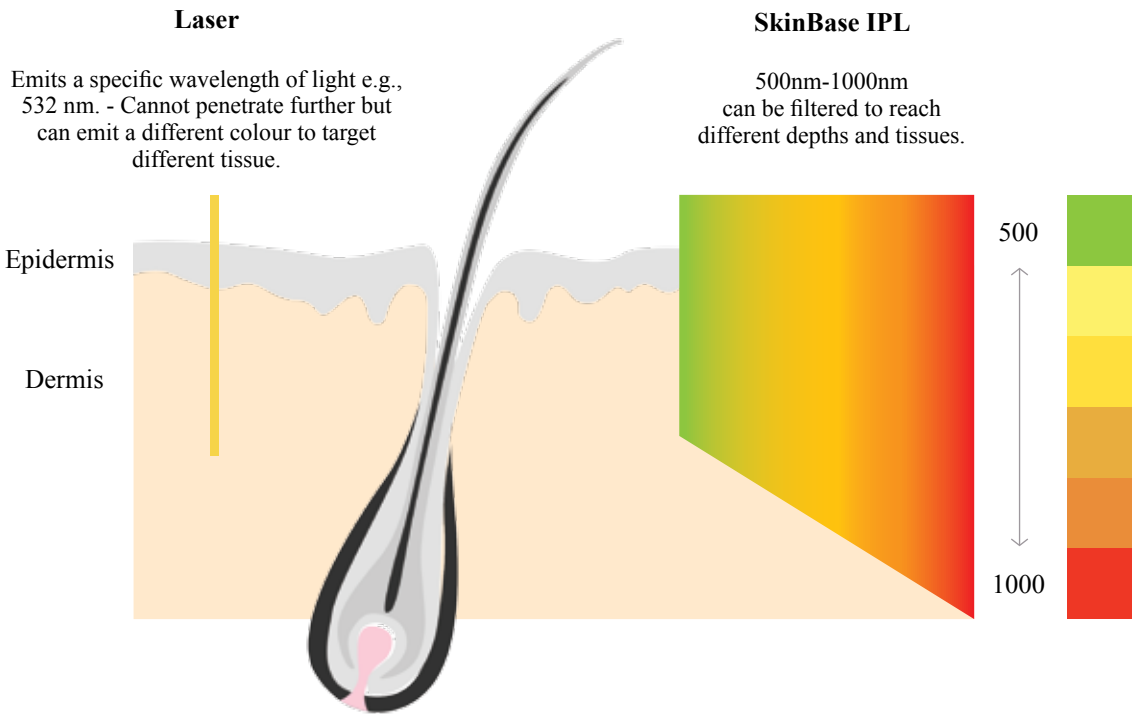
A pulsed light system like SkinBase IPL produces light from an arc lamp which consists of a quartz tube containing a pressurised inert gas such as xenon. A high voltage is applied across the tube and the gas emits light over a wide spectrum. Because the tube emits an even amount of light across the whole visible spectrum, the light appears white i.e., a mixture of all colours.

The delivery of Intense Pulsed Light is emitted through a larger platform (waveguide) than that of a single beam laser, and is therefore able to treat larger areas more proficiently. An IPL system is able to incorporate other colours to increase performance and this increased energy is filtered into the correct wavelength (colour) enabling a more precise result.

Different colours are absorbed by different tissue and it is important to select the correct colour/filter (wavelength) for the light absorbing target.

Pulsed Light appliances use Xenon lamps where the filters block the emission of all UV light. The light from an IPL can diverge in all directions and is therefore not collimated. (light rays are not running parallel). However, it is possible to direct the beam towards the targeted area.

As it has a wide range of wavelengths it is not monochromatic but extra filters are able to absorb any unwanted parts of the spectrum. The beam is pulsed in similar ways to that of a single beam laser and most IPL systems use a pulse width of around 50ms (milliseconds).



# Terms to be familiar with

## Chromophore

The term given to the absorbing material i.e., light absorbing target. Melanin contained within the hair is the chromophore for Intense Pulsed Light and Laser when used for hair removal.

## Pulse Duration or Width

Each time the laser or IPL system is 'fired' energy is emitted in pulses - this refers to the length of time between the pulses of light or laser. Different systems operate using different pulse widths to gain results.

***Short*** *pulses of between 10 - 50 nanoseconds*
Induce mechanical damage, as in Q-switched Nd:Yag and Q switched Ruby Lasers. Insufficient time for conduction of heat to take place, shows immediate results however long term results have not been good.

***Long*** *pulses of between 1-50 milliseconds (1 millisecond= 1 million nanoseconds)*
Induce thermal damage, as in SkinBase or Ellipse IPL systems. The optimum pulse width for photo-thermal hair removal is between 1 - 50 milliseconds

Pulse duration must be equal to or shorter than the thermal relaxation time, the time taken for the target to cool 50% of the initial temperature rise in tissue, to achieve the optimum pulse length.

The length of pulses can be very useful in controlling the effect on skin that has a high pigment content. A hair follicle is cylindrical in shape and retains heat more effectively than a skin cell's spherical shape meaning parameters in the IPL system can be altered such that the follicle is destroyed without causing damage to the skin.

## Energy Density (fluence)

Is the amount of light energy delivered to a unit area in a single pulse. Continuous lasers are measured in Watts whereas pulsed lasers are measured in Joules per square centimetre (Joules/cm2). An IPL delivers energy via a larger spot size than that of a laser and is rectangular in shape. This means large areas can be treated.

The ideal fluence will raise the temperature of the chromophore to a level that causes damage to the target but does not lead to adverse side effects such as burns or blisters.

Energy Density (Joule/cm2) = Laser Output Power (Watts) x Time (Secs)

## To summarise:

Laser light starts with Pulsed Light but eliminates all but one wavelength (or colour) of light. Laser can deliver only one colour (or wavelength) of light at a time.

Intense Pulsed Light can deliver many colours of light at a time and the spot size is known as broad band. Pulsed Light machines use ‘cut off’ filters to selectively deliver the desired wavelengths.

These wavelengths can be customized to reach the specific hair, blood vessels, or skin component being treated; and can be modified with each pulse.

We know that longer wavelengths (higher nanometres) penetrate deeper into the skin therefore longer wavelengths are used to treat deeper targets. All the visible colours can specifically target different chromophores (light absorbing target) selectively avoiding other tissues. It is important to remember that the shorter the wavelength, the more topical the treatment target.

# Types of photo-light delivery:

## PHOTOMECHANICAL (as in Laser)

Photomechanical reactions occur when the Laser is pulsed extremely quickly providing a very high energy peak which itself creates a shockwave effect.

When this process occurs there is insufficient time for conduction of heat to take place. The shock-wave effect induces a mechanical rupturing of the chromophore.

Photomechanical destruction often involves the application of an external chromophore such as carbon in a topical suspension in the form of either a paste or a lotion. The chromophore enters the follicle by manual application, usually after waxing, to increase uptake of energy in the follicle.

Q-Switched Nd:Yag and Q switched Ruby lasers use this technique for hair removal. Although immediate results can be seen with the hair falling out of the follicle at the time of treatment, the long-term results have not been good. Although recognized as suitable for hair management it would appear that insufficient damage is done to the regenerative cells around the follicle to prevent long term or permanent destruction. The melanin in the hair itself can also be used as the chomophore as in the case of the SkinBase system.

## PHOTOTHERMAL (as in IPL)

A photothermal reaction is very different to a photomechanical reaction as described above. There is no need for an external application of a chromophore. The energy is delivered to the targeted area in a ‘slower, more controlled’ pulse.

The heat builds up within the structure (e.g. the hair shaft) and is maintained to the point when denaturation of proteins takes place. This leads to the destruction of the lower hair follicle and germinative cells.

Milliseconds (thousandths) rather than nanoseconds (billionths) are required for the temperature to rise to those levels necessary for the destruction (denaturation) of the follicle. The required temperature is thought to be between 70 and 75°C depending on the structure of the hair.

The essential difference between the photomechanical and photothermal process is the amount of time the absorbing medium (Melanin) remains at the required temperature. In both cases the melanin reaches the required temperature - however, the temperature is only sustained for the necessary duration during photothermal application.

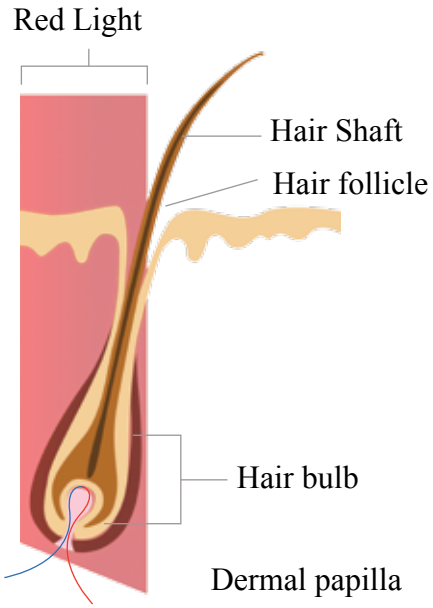
# Selective Photothermolysis

SkinBase IPL treatment is based on the scientific principle of Photothermolysis, which treats only the selected area without damage to the surrounding tissue.

Definition of selective Photothermolysis

| | | |
|---|---|---|
| Selective | = | targets specific chromophore |
| Photo | = | light |
| Thermo | = | heat |
| Lysis | = | 'break-down' of protein |

Photothermal destruction can be selective or non-selective according to the wave-length selected. Photothermal tissue destruction involves selective absorption of light at wavelengths inherent to the target chromophore (in hair removal, this is melanin). It is known that melanin absorbs the red light waves unlike other structures within the skin. The darker hair absorbs red light selectively.




By applying this principle the hair can be induced to absorb the red light, which is then converted into energy, which in turn creates heat within the follicle. When sufficient heat has built up in the follicle, in the region of 65 to 70°C, the proteins surrounding the follicle will be broken down and the follicle will be incapable of producing a new hair.

Treatment is only effective during the anagen phase of hair growth due to the fact that melanin content is at its highest level during this part of the hair growth cycle, and the hair shaft fills the follicle, assisting the conduction of heat.

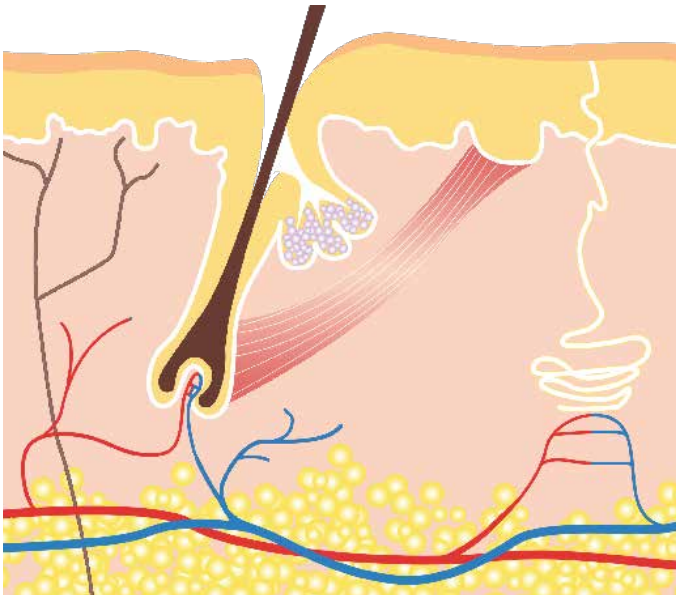
## Hair Follicle Anatomy

Hairs are keratinized structures that grow out of hair follicles, which are sac-like indentations of the epidermis. Keratin is a hard, horny substance, which is insoluble in water, organic substances, dilute acids and alkalis. Keratin is composed of a combination of hydrogen, oxygen, sulphur and nitrogen.

At the base of the hair follicle are sensory nerve fibres that wrap around each hair bulb. Bending the hair stimulates the nerve endings allowing a person to feel that the hair has been moved. One of the main functions of hair is to act as a sensitive touch receptor. Sebaceous glands are also associated with each hair follicle and produce an oily secretion to help condition the hair and surrounding skin.

The terminal hair can be divided into three parts:

- **The shaft** - This is the portion above the skin's surface leading down to the follicle
- **The root** - The portion lying in the follicle
- **The bulb** - The enlarged base of the root



## Types of hair

There are three distinct types of hair: lanugo, vellus and terminal.

**Lanugo Hair** is usually found in foetal life and is normally shed around the seventh to eighth month of pregnancy. This type of hair is fine, downy and soft in texture. It is without a medulla and usually does not contain pigment.

**Vellus Hair** is fine, downy and soft and does not contain pigment. It is generally found on the body and rarely exceeds 2cm in length. These hairs do not contain a medulla. The base of the hairs lies very closely to the skin's surface and do not become terminal hairs unless stimulated by topical or systematic conditions.

**Terminal Hairs** are deeper, longer and coarser than vellus hairs. They contain pigment, vary in shape, diameter, texture and colour. These hairs are found at specific sites in the body and can be divided into three groups:

**1. Asexual**
- Genetic hair present at birth. Asexual hair refers to hair found on the scalp, eyebrows and eyelashes. Steroids do not influence this type of hair growth.

**2. Ambi-sexual**
- Develops in both sexes at puberty. This type of hair growth is influenced by the increased gonadal and androgen production. Areas where ambi-sexual hair growth occurs are the axilla (underarm), pubis, lower limbs and abdomen, in both sexes. Growth on the forearms and legs becomes more profuse at this stage of life. The density and rate of growth differs widely between individuals of the same sex and various body sites.

**3. Sexual**
- Hair includes the beard, moustache, nasal passages, ears and external body hair e.g. back and chest. Sexual hair is influenced by increased androgen hormone production by the gonads. There is also a genetic factor in many cases.

# The hair growth cycle

The follicle has a growth cycle of three distinct phases. The main growing phases are known as:

**Anagen (active growing phase)**
**Catagen (transitional)**
**Telogen (inactive or dormant)**

It is known that treatment using light energy will only be successful when treated in the Anagen growth phase.

### Anagen

The active stage, which results in the complete restructuring of the lower follicle. Hair germ cells contained within the dermal cord begin to multiply by mitosis. The dermal cord grows downwards into the dermis, at the same time growing in width until the dermal papilla is engulfed by the bulb, which has formed at the tip of the dermal papilla.

### Catagen

The transitional stage, when the club hair is formed. The dermal papilla separates from the matrix and the hair starts to rise in the follicle. At this time the hair is held in the follicle by the cells of the inner root sheath and receives its nourishment from the follicle wall.

### Telogen

The final phase in the hair growth cycle. It is known as the resting or dormant stage. The follicle remains inactive or dormant until stimulated into Anagen stage when the whole process is repeated. Telogen only last for a few weeks, with the club hair often being retained within the follicle until the new hair is produced. The club hair is then pushed out of the follicle as the new hair grows. Telogen is approximately one third to half the length of the full Anagen follicle.

# Anatomy of the skin

The skin consists of three main layers:

**1. Epidermis**
- The outer layer, composed of several layers of dead keratinized cells

**2. Dermis**
- Consists of two divisions:
i.. the reticular layer
ii. the papillary layer

**3. Subcutaneous/Hypodermis layer**
- Found immediately below the dermis

## The Skin

The skin is the largest organ of the body. The skin and its derivatives (hair, nails, sweat and oil glands) make up the integumentary system. One of the main functions of the skin is protection. It protects the body from external factors such as bacteria, chemicals, and temperature. The skin contains secretions that can kill bacteria and the pigment melanin provides a chemical pigment defence against ultraviolet light that can damage skin cells.

Another important function of the skin is to regulate body temperature. When the skin is exposed to a cold temperature, the blood vessels in the dermis constrict. This allows the blood which is warm, to bypass the skin. The skin then becomes the temperature of the cold it is exposed to. Body heat is conserved since the blood vessels are not diverting heat to the skin anymore.

## Functions of the Skin

**Secretion**
**Heat Regulation**
**Absorption**
**Protection**
**Excretion**
**Sensation**

Structures contained within the skin include:

- The hair follicle
- Hair
- Apocrine sweat glands (odour producing)
- Eccrine sweat glands (sweat producing to regulate body temperature)
- Blood and lymph supply
- Nerve endings
- Sebaceous glands

Skin varies in thickness from one part of the body to another, the thickest being on the soles of the feet and palms of the hands, and the thinnest, on the lips.

## The Epidermis

The Epidermis consists of flattened, keratinized cells that shed (desquamate) on a regular basis. The speed of desquamation depends on a number of factors.

- Age. - Faster in younger skin - slowing as we age
- Smoking- asphyxiates the skin - reduces oxygen
- Exposure to the elements - such as wind, extremes of temperature, central heating etc.
- Skin care routine

The Epidermis, which is the outer layer of the skin, consists of five layers:

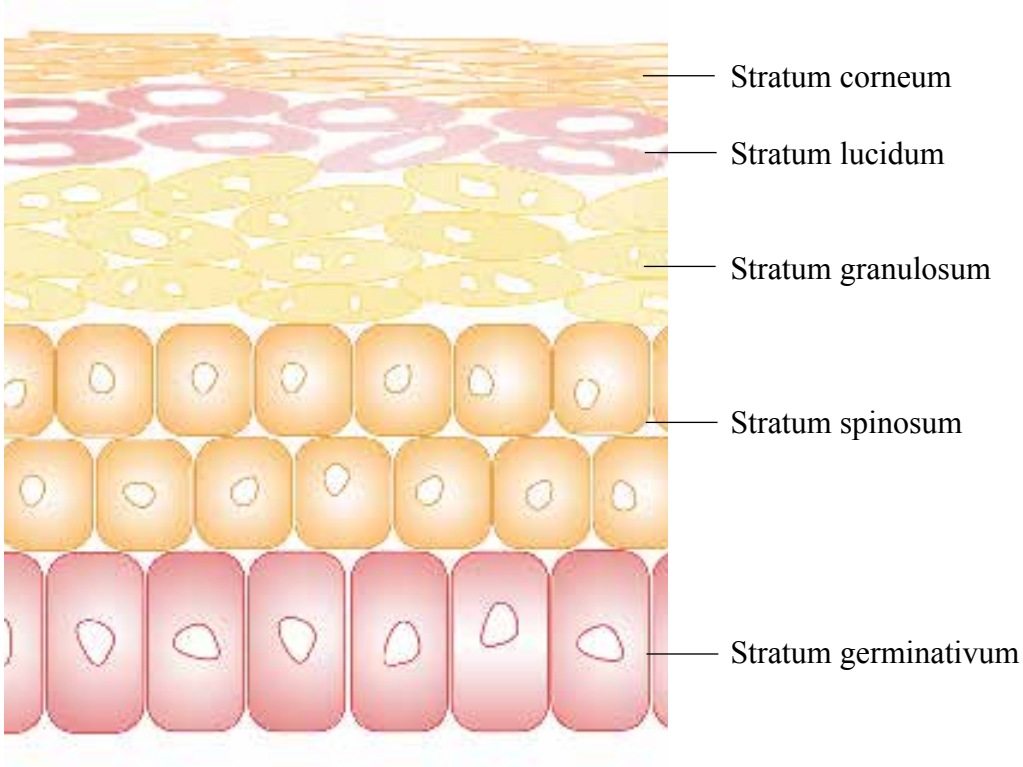
**1. Stratum corneum - the horny layer**
Consists of flattened keratinized cells without a nucleus. This layer is constantly being shed and replaced by the lower layers. Air gaps are found between these cells and make it a poor conductor of light by deflection.

**2. Stratum Lucidium - the clear layer**
This layer, which is only present in the palms of the hand and soles of the feet, consists of flattened closely packed cells. Traces of flattened nuclei may be found. The cells are clear which allows the passage of light into the deeper layers.

**3. Stratum Granulosum - the granular layer**
The third layer consists of granular cells. The granules contain keratohyaline, which is an intermediate substance in the production of keratin.

**4. Stratum Spinosum - prickle cell layer**
The cells in this layer are covered with numerous fibrils that connect with the surface of the cells and these are known as prickle cells. Between the cells are fine intercellular clefts that allow the passage of lymph corpuscles. Pigment granules may be found here.

**5. Stratum germinativium - the basal cell layer**
This is the deepest layer and together with the stratum spinosum is known as the Malpighian layer. The germinativium is closely moulded onto the papillary layer of the dermis below. The cells are keratinized, contain nuclei and are capable of cell division. They are larger than cells in the upper layers. The contents are soft, opaque and granular. These cells contain melanocytes that produce the skin colouring pigment, melanin. The basal cell layer surrounds the hair shaft and bulb.




## The Dermis

The Dermis - Blood vessels, lymph vessels and nerve endings together with collagen and elastin are contained within the dermis, which lies immediately below the epidermis. The dermis forms the bulk of the skin containing many specialized cells and structures. The hair follicles are situated in the dermis with the erector pili muscle that attaches to each follicle. Sebaceous (oil) glands and apocrine (scent) glands are associated with the follicle.

This layer also contains eccrine (sweat) glands, but they are not associated with hair follicles. Blood vessels and nerves course through this layer. The nerves transmit sensations of pain, itch, and temperature. There are also specialized nerve cells called Meissner's and Vater-Pacini corpuscles that transmit the sensations of touch and pressure.

The dermis consists of two parts:

### The Papillary Layer

This is situated on the free surface of the reticular layers and consists of a number of small, highly sensitive projections known as papilla. The papillae are composed of very small, closely interlaced bundles of fibrillated tissue - thin collagen fibres.

### The Reticular Layer

This layer is thicker and is continuous with the subcutaneous/hypodermis layer. It contains the bulk of the structures (such as sweat glands) including thick collagen fibres that are arranged parallel to the surface of the skin.

### Structures within the Dermis

The dermis contains a number of important structures including:

- Sebaceous glands
- Sudoriferous glands - apocrine and eccrine
- Arrector pill muscle
- Hair follicles

Sebaceous glands are situated within the dermis with their ducts opening into the hair follicle. They are absent from the palms of the hands and soles of the feet. These glands secrete sebum via the hair follicle onto the skin surface. The purpose of sebum is to keep the hair pliable and to lubricate the skin. Sebum is also responsible for making the skin waterproof and also plays a major role in the formation and maintenance of the 'acid mantle'.

Sudoriferous, or sweat, glands are found all over the skin surface. Their function is to regulate the skin temperature through the evaporation of sweat. These glands can be divided into eccrine and apocrine glands.

- **Eccrine glands** are present in large numbers — between two and five million in total. They are found in all parts of the skin with the exception of the mucous membranes. These glands are independent of hair follicles and open directly onto the skin's surface.

- **Apocrine glands** are larger than eccrine glands. Their ducts open directly into the hair follicle — only occasionally do they open directly onto the skin surface. These glands are under hormonal control and are stimulated by stress, fright, pain or sexual activity. They can be found in the axilla, groin and around the nipples.

### Subcutaneous/Hypodermis Tissue

The subcutaneous or hypodermis tissue is a dense layer of fat and connective tissue that houses larger blood vessels and nerves. This layer is important in the regulation of temperature of the skin itself and the body. The size of this layer varies throughout the body and from person to person. It contains larger blood vessels and nerves, and is made up of clumps of fat-filled cells called adipose cells.

The subcutaneous fat lies on the muscles and bones, to which the whole skin structure is attached by connective tissues. The attachment is quite loose, so the skin can move fairly freely. If the subcutaneous tissues fill up with too much fat the areas of attachment become more obvious and the skin cannot move as easily -this is what gives rise to the notorious condition known as cellulite

The skin is a complicated structure with many functions. If any of the structures in the skin are not working properly, a rash or abnormal sensation is the result. It is therefore essential to understand the functionality of the skin, how it reacts to what is happening to the body on the inside and how this reflects on the outside. Understanding the skin and its important role is essential as any adverse reaction to photo-therapy treatment needs to be avoided.

| Skin Types<br>Based on the Fitzpatrick Skin Type Scale | |
|---|---|
| It is essential to identify the client/patient's Skin Type and tone before commencing treatment. Eye colour, skin colour and genetic disposition will help to determine whether a skin is suitable for treatment and the likely reaction. | |
| Skin Type I | This skin type does not react to UV light and offer no protection. The skin does not tan but burns very easily then goes white. Very fair skin, usually blue eyes, freckles and possibly red hair although this skin type often has fairly dark hair. |
| Skin Type II | Celtic fair skin — eventually produces a tan after UV exposure but can burn very easily. Can also have freckles, red hair and varying colour eyes. |
| Skin Type III | Caucasian / European skin — the skin tans quite well when exposed to UV light. Skin tones vary as indeed do colour of hair and eyes. |
| Skin Type IV | Indicated as Mediterranean — Hispanic skin usually has high melanin colouring, olive skin, dark hair and eyes and although in most cases is suitable for treatment, caution should be exercised with regards to energy levels used. |
| Skin Type V | Noted as Asian or Middle Eastern Skin is normally finer in texture than black skin and can vary in colour. Hair growth tends to be dense but fine and dark. Follicles are usually small and straight. This skin is prone to sensitivity during treatment, reacting to the increase absorption of heat at the skin's surface. This may take several days to appear. The application of excess heat tends to leave dark pigmentation patches that can take up to several months to fade, and then eventually disappear. |
| Skin Type VI | This skin type is Black, Afro- Caribbean skin indicated on the Fitzpatrick scale). The stratum corneum is thicker in black skin than in white skin. In black skin desquamation occurs more easily. Pigment granules are present in the desquamating cells of black skin but not in that of white skin<br>(H. Pierantoni, Essential Notions of Black Skin, 1977)<br><br>This can cause problems when applying any laser or intense pulsed light, due to the lack of contrast between hair and skin colour. It is important to note than when treating black skin it is |

| | |
|---|---|
| Skin Type VI continued | not easy to detect erythema. Keloids are more frequently found on black skin. A keloid is an overgrowth of scar tissue at the site of an injury to the skin, which can continue to grow and harden for several months after the initial injury.<br><br>In black skins there is very little difference between the density of melanin in the skin and melanin in the hair. Therefore particular care must be taken when observing the reaction of black skin to light therapy. It is particularly important to ensure that any client with black skin who receives a test patch is carefully informed of the potential side effects resulting from this type of treatment. |

# The British Medical Laser Association

**Drugs & Lasers/IPL**
**Guidance provided by the British Medical Laser Association**
**Issued December 2009**

**Important**
This advice relates to non-essential aesthetic laser applications and reflects the best data available at the time of this report. Caution should be exercised in interpretation; the results of future studies may require alteration of the recommendations in this document.

The following is a consensus opinion of interested parties from the laser and light source world in the UK and takes into account:
a) Personal opinions
b) Theoretical perspectives
c) Evidence from practical use over very large numbers of clients/patients.
d) Reporting of adverse events in clinical trials and in post marketing surveillance studies.

**Background**
There has been a general trend within the industry to provide end-users of laser devices with guidance on which drugs to avoid, minimising the possibility of drug induced photosensitivity reactions. This guidance has often, in the opinion of the authors, been largely based on an inappropriately rigid interpretation of what data exists.

Reports of photosensitivity reactions as a result of drug administration do occur, but we believe that these reactions have been reported to regulatory bodies with no indication of the wavelength of light that has been responsible. Accurate data are lacking generally.

Photo toxicity generally results from exposure to UVA (315-400nm) radiation with some drugs showing sensitivity into the visible region of the spectrum up to about 460nm. For laser/IPL devices emitting wavelengths above 500nm there is very little likelihood of such a reaction for the vast majority of drugs.

Other drugs may have an effect on the skin's healing ability without causing photosensitivity.

**Practical Advice**
Information regarding all drugs a patient / client is taking should be recorded including:
a) over the counter drugs
b) prescribed drugs
c) herbal remedies.

**Photosensitising drugs that are CONTRAINDICATIONS to laser therapy.**

a. Drugs causing marked whole body sensitivity
- wait 6 months, Drugs administered for systemic Photodynamic Therapy (PDT), e.g. Photofrin, Foscan.

b. Drugs causing marked localised light sensitivity — wait 6 weeks

c. Drugs administered for localised PDT, e.g. ALA, Metvix.

**Other drugs that may cause photosensitivity**

Any treatment should be performed with caution. Test carefully and treat small areas initially. If in doubt, do not treat. If the client / patient wishes to proceed with treatment, the increased risk of hyperpigmentation / photosensitivity should be emphasised and documented.

a. Amiodarone — risk of hyperpigmentation and photosensitivity.

b. Minocycline (Minocin) — risk of hyperpigmentation. Recommend stopping 4 weeks prior to treatment or consider change to alternative.

c. St John's Wort — risk of photosensitivity. Recommend stopping 4 weeks prior to treatment.

d. If taking other medications or herbal remedies of any sort then careful initial test patch, wait 4-7 days in the case of hair removal and 4-6 weeks in the case of vascular/pigmented treatments.

e. If client starts a named photosensitiser then repeat test patch.

**CHECKING OUT MEDICATION / DRUGS**

There are too many types of medication and drugs that may sensitize the skin and it is important to check any medication/drugs prior to commencement of any treatment programme. Your client/patient should check with their medical Practitioner to assess any prescribed medication. However, as a practitioner, by visiting the following medical website, you should be able to check most named drugs and medication.
**http://www.nlm.nih.gov/medlineplus/druginformation.html**

Thorough consultation prior to treatment is imperative to ascertain a client/patient's suitability for any laser/IPL therapy. It is important to remember that internal conditions may also have a detrimental effect to the skin's reaction to treatment.

The pulsed light device may only be used by qualified personnel and the following contraindications must be assessed carefully before the treatment is applied.

Patients with a recent history of cancer, particularly malign or recurrent tumours, benign skin cancer or tumoral lesions; illnesses prone to stimulation by spectral light of 570 nm to 1200 nm; use of photosensitive medications, other products that could cause sensitivity to exposure to light of 570 nm to 1200 nm; use of immunosuppressant drugs. We advise you to consult your doctor before undergoing treatment with intense pulsed light.

It is prohibited to use SkinBase IPL in the following situations:

- In the immediate eye area.
- Patients with heart disease.
- Pregnancy or breastfeeding
- Infections affecting the treatment area.
- Neoplastic processes, ulcers or bedsores, abrasions, wounds, arteriosclerosis obliterans, phlebitis, thrombophlebitis, varicose veins, suspected naevi.
- Metal prostheses or osteosyntheses (except with medical prescription)
- Cerebral palsy (except with medical prescription)
- Avoid use on patients connected to vital signs monitoring equipment.
- Moles or sensitive parts of the skin

# IPL Eye Wear Protection

WARNING! –THE PATIENT, OPERATOR AND ANY OTHER PERSONS IN THE VICINITY OF THE MACHINE MUST WEAR GOGGLES TO PROTECT AGAINST LIGHT RADIATION EMITTED BY THE DEVICE. THESE MUST BE WORN AT ALL TIMES DURING TREATMENT AND FOR ANY ADJUSTMENT OR FUNCTIONAL TEST THAT INVOLVES LIGHT EMISSION.

Never look directly at the intensive light emitted by the device, even when wearing protective goggles. Never direct the intensive light towards any areas that are not within the treatment area. Never direct the intensive light onto reflective objects. It is essential to wear protective eye wear when giving all SkinBase Intense Pulsed Light treatments.

- The protective goggles should comply with the British Safety Standards and these should be as follows:
- Optical Density 5 (0D5) for the client
- Optical Density 3 (0D3) for the Practitioner
- Ensure that all eyewear is sterilised between each client to ensure that cross-infection does not take place.
- Ensure that all eyewear is not scratched or broken as this will reduce protection and could cause severe eye damage to your client or yourself.

WARNING: PROTECT YOUR EYES!
BEFORE STARTING, AND DURING TREATMENT, BOTH OPERATOR AND PATIENT MUST WEAR SUITABLE EYE PROTECTION!

## Check List Consultation for SkinBase IPL practitioners

1. Ascertain the source of enquiry and note.

2. Ask the client about their concerns and why they have come to your salon for treatment.

3. Consultation — complete the SkinBase IPL consultation form.

4. Assess skin type and check for contraindications.

5. Discuss and document area(s) for treatment.

6. Advise client of the difference between Lasers and Light Based Therapy (IPL or ISL).

7. In the case of Permanent Hair Reduction, explain how the light interacts with the hair to produce permanent hair reduction.

8. Explain that hair can only be successfully treated in the anagen growth phase and elucidate why.

9. Advise why different areas of the body may take longer to treat than others and the possible link to hormonal and other influences.

10. Give realistic advice on likely achievable results.

11. Advise client of possible adverse reactions or side effects.

12. Explain the importance of pre and post care and advise procedures.

13. Advise the importance of informing the salon of any medical changes in personal circumstances.

14. If photographs are to be taken of the treatment area, advise the client of the protocols adopted by the salon for security purposes.

15. Explain the procedure of patch testing and its significance.

16. Advise the importance of the provided eye protection that will be used during treatment.

17. Inspect and assess the area(s) for treatment.

18. Discuss fees for areas to be treated.

19. Summarise and ask the client if there are any further questions.

20. Complete Consent Form and sign.

21. Carry out Patch Test and document all treatment settings and any reactions.

22. Book first treatment into appointment schedule.

# PATCH TESTS & ENERGY OUTPUTS

It is essential to give each client a patch test before the commencement of any treatment programme. This is usually done during the consultation. The patch test should be carried out very close to or on the actual treatment area. If there is hair in the area to be tested, trim hair to 1 mm in length. It is important to remember that this is a skin test, not to see if the hair will fall out.

When treating the face, it is recommended that the patch test is carried out on the side of the neck, below the ear; this ensures that any reactions are not on the face.

It is advisable to test on two different energy levels and this should be in the parameter treatment window as per the recommendations on the machine — based on the skin type and tone.

Remove any make-up, deodorant or perfume, which may be on the treatment site. Apply the handset and fire a pulse. Observe the skin's reaction. Make a note of any reaction such as oedema (swelling) or erythema (redness).

In the case of Skin Type 1 - 3, the client can be treated after a 2 - 5 day waiting period providing there is no adverse reaction. Skin Types 4 - 5 should be asked to return for evaluation after 7 - 14 days. Skin types 4 and 5 in particular, usually take a longer time to assess due to possible late emerging dyschromia (discolouration of the skin).

You may commence the treatment course with the same pulse duration that was used for the patch test however, you may want to slightly increase the energy if no reaction has been observed. However as the course of treatments progress you may wish to alter the energy levels depending on the reaction of the Chromophore (light absorbing target).

The purpose of the test patch is two-fold. Firstly it allows the operator to assess the skin's suitability for SkinBase Intense Pulse Light. Clients suffering from photosensitivity will undoubtedly have an adverse reaction such as mild burning sensation, blistering or pigmentation.

Secondly the patch test enables the operator to find the most effective pulse duration for optimum results. To test a face, i.e., upper lip, test shots should be generally done at the side of the neck along the hairline. Once an effective energy is reached, and no adverse reaction is noted, use this final energy on the treatment area.

# Treatment Protocols for SkinBase IPL

1) Prepare treatment room - make sure everything is clean and ready for treatment. Check the SkinBase IPL to ensure system is clean and ready for use.

2) Greet client and discuss previous treatment — document responses.

3) Ask client whether there has been any change to documented Medical Record details or UV exposure since her/his last appointment. Ask if there has been any exposure to UV light during the past 3-4 weeks. Request guest signature to confirm.

4) Check area to be treated, document any changes in hair density, colour or thickness adjust SkinBase IPL parameters if necessary and document.

5) Prepare the area to be treated. Cut or shave hair if necessary — cleanse and dry the area removing any loose hair. Grid the treatment area with white kohl pencil — this enables you to work more efficiently and prevent overlapping areas and maintaining a cooler skin.

6) Hand the correct eye protection (OD5) to client. Have OD3 eye protection ready to wear before commencing treatment.

7) Set the Cryo handset to 3°c, check comfort level on client, adjust if necessary.
Place the Cryo cooling handset on the treatment area for 4 seconds then remove.

8) Then apply the IPL applicator on the same area, press the foot pedal to trigger the flash.

9) Move on to next area and continue to treat following the same protocol.

10) When the treatment area has been treated, apply Aloe Vera gel if necessary.
Check for continued erythema (redness) and if necessary, continue to cool.

11) Ask the client how the area feels and document her/his response.

12) If the area continues to cause discomfort, continue to cool the area and reapply soothing gel or cream.

13) Give clear full after care instructions and advise the client how to reduce any discomfort such as continued erythema by using a cold compress together with Aloe Vera gel at home. Follow post care protocols for guidance.

14) If the discomfort continues, or an adverse reaction occurs, it is important that the client advises the SALON within 24 hours and returns no later than 48 hours to enable an assessment of the treated area to take place and company procedures for an adverse incident to be documented and followed

## Pre-treatment advice to clients

Please observe the following take-home instructions:

• Do not expose skin to UV (sun exposure or the use of tanning beds) or self-tan for at least 4 weeks before and/or between IPL treatments;

• Do not depilate with waxing, plucking or threading (shaving or depilatory creams are acceptable) before and/or between IPL treatments;

• Do not use bleaching creams or perfumed products (e.g. aromatherapy oils) for 24 - 48 hrs before treatment sessions;

• Avoid swimming in strong chlorinated water immediately before or after a Light Based Therapy treatment;

• Avoid intense exfoliation, microdermabrasion or peels for 1 week before treatment session;

• Avoid wearing tight clothing when attending treatment sessions especially for bikini treatments;

• Keep the treated area clean and dry and cool;

• Hydrate the body by drinking plenty of water;

• Protect the skin from sun exposure with suitable clothing and use of sun block SPF 30+ before first treatment and between subsequent treatment sessions but do NOT use sun blocking creams within 24hrs of scheduled treatments as this can affect the treatment.

NB. Hot and humid weather conditions can aggravate skin in the period immediately before and after treatment, therefore light, loose fitting clothing is advised.

## Post treatment care

Please follow these take-home instructions:

### For up to 24 hours

The skin may be red and warm after treatment, this redness is called Erythema, this is perfectly normal and will naturally subside. If you wish, you can apply a cold compress to help calm the redness. However, it is advisable to avoid using ice as this may irritate the skin.

You can also use soothing preparations such as aloe vera, witch hazel or tea tree oil. These will all help to soothe the skin and reduce redness after hair removal.

- Avoid using make up on the treated area, thus allowing the skin to cool naturally and more comfortably.

## For 48 Hours

- Avoid all heat treatments including hot baths, saunas, steam baths and showers.
- No swimming in strongly chlorinated water.
- Do not use bleaching creams.
- Avoid perfumed products e.g., soaps, creams or perfumes.
- Leave any temporary skin responses such as redness to subside naturally.
- Do not touch, pick, scratch or otherwise irritate the area.

## For 72 Hours

- No shaving.

## For 1 week

- Do not exfoliate the treated area or use peels.

## For 2 weeks

- No UV exposure.
- No self tan.
- Avoid waxing, plucking, threading or depilation creams.
- Avoid prolonged outdoor activity that may expose the skin to a lot of wind or sun.

## For 6 weeks

- Use sun protection SPF +30.
- Limit sun exposure and do not use tanning beds for at least six weeks.

NB. Hot and humid weather conditions can aggravate skin in the period immediately following treatment. After hair reduction treatment effective skin cooling can be helpful. The use of ice packs, cooling gel packs, Aloe Vera gel etc., can improve skin comfort and reduce any swelling or post-treatment redness.

**The following pages detailing system set-up and use are provided as a reference. <u>You should not operate the system unless you have received the appropriate training from SkinBase</u>**

At the back of the device are the connectors for power supply, pulsed light applicator, enabling pedal and for the Cryo applicator.

## SYSTEM SETUP

Remove the device from the package in which it was delivered. Keep the package in case you need to return the device to the manufacturer for technical support.

- Lay out all accessories, removing all protective wrapping (nylon and/or bubble wrap).
- Connect the accessories to the device as described below, following all the safety requirements indicated in this manual.
- The socket for connecting the treatment applicator is located on the back of the device (see figure below).

Get hold of the applicator and insert the plug into the socket.

Then install the pedal by connecting it to the connector socket located on the back of the device, turning the ferrule around the connectors without over-tightening.

For the Cryo applicator connect the 8-pole power supply plug (12V) and both water pipes into the sockets located on the back panel of the device.

**CONNECT OR DISCONNECT ACCESSORIES ONLY WHEN THE DEVICE IS SWITCHED OFF**

# Starting the unit

To start using the unit, follow the procedure shown:

- Connect the pedal to the correct socket on the back of the unit
- Connect the applicator to the correct socket on the front of the device
- Connect the power cable to the socket on the rear panel of the device
- Connect the other end of the cable to the mains supply
- Switch the unit on by turning the switch on the rear panel to “I”;

SkinBase IPL IS DESIGNED FOR CONTINUOUS TREATMENT OVER SHORT INTERMITTENT PERIODS ACCORDING TO THE FOLLOWING TIMES: T-ON=4 MIN AND T-OFF=5 MIN. DURING T-ON, LIGHT IS EMITTED EVERY 5 SECONDS; DURING T-OFF, THE DEVICE REMAINS SWITCHED ON BUT WITHOUT EMITTING LIGHT TO ALLOW THE APPLICATOR TO COOL DOWN FASTER.

IF THE COOLING FAN SHOULD TURN OFF DURING OPERATION OR SHOULD FAIL TO START THE FIRST TIME YOU START THE MACHINE, TURN OFF THE DEVICE AND CONTACT TECHNICAL SUPPORT.

**WARNING!!! BEFORE BEGINNING TREATMENT, INSTALL THE OPTICAL FILTERS ON THE APPLICATOR AS FOLLOWS:**

1. Remove the filter cap from the applicator
2. Remove the filter from its housing by sliding it upwards
3. Insert a new filter
4. Replace the filter cap

WARNING!

HANDLE THE APPLICATOR CAREFULLY. IF IT IS DROPPED, CONTACT TECHNICAL SUPPORT. DO NOT USE THE APPLICATOR IF IT HAS BEEN DROPPED.

BEFORE CHANGING THE OPTICAL FILTER, WAIT AT LEAST 10 MINUTES FOR THE METAL SURFACES TO COOL AFTER USE!

# TREATMENT SET-UP

WARNING! DANGER OF BURNING! THE APPLICATOR SURFACE CAN REACH HIGH TEMPERATURES WHEN THE MACHINE IS IN USE.

YOU ARE ADVISED NOT TO EXCEED THE MAXIMUM OF 50 PULSES PER TREATMENT. AFTER 50 PULSES, WAIT 5 MINUTES BEFORE CONTINUING THE TREATMENT.

The SkinBase IPL control panel integrates a Touch Screen colour monitor.

Once you have connected the power supply and applicator cables and put on protective eyewear, switch the device on by pressing the green button on the back. During startup the device will begin the data and system load process, displaying the following screen:

To continue press START; you will then see this screen:


At this point you can create a client card and enter details for the client, click save and proceed with the treatment.


The first window allows you to select the desired treatment: Epilation Acne Photore-juvenation Vascular lesions. On the SkinBase system, epilation will be the only option available to you to begin with.


Select the body area you are going to treat, this will determine how many flashes are required for the treatment.

For epilation, select the thickness of the hair to be treated from the three choices: fine hair, thick hair, double. Select the hair type using the UP and DOWN buttons and confirm by pressing NEXT

Once confirmed, the hair type to be treated is saved onto the next screen where you then select the hair colour, from three options:
- Clear
- Medium
- Dark


Select the hair colour using the UP and DOWN buttons and confirm by pressing NEXT. The next screen is for selecting skin colour:


select the skin type from the following phototypes:
- very light
- light
- medium
- dark

Select the skin type using the UP and DOWN buttons click NEXT to confirm.

The final screen that appears after choosing the settings gives a summary of the selections made. Advanced users can tweek these settings but we do not recommend this. Check all the selections are correct. If during treatment these parameters change. The treatment can be paused and these selections alterred.

Press NEXT to move onto the treatment start screen.
This screen tells you the filter you must have fitted and the number of flashes t-on perform the treatment, click Start and the timer willl start

## PERFORMING TREATMENT

Mark out the area to be treated in a grid using white kohl pencil, cover any moles or freckles using this white kohl.

To use the cryo-handset, insert the applicator connectors in the sockets located on the rear panel. Turn on the applicator using the green switch located on the rear panel of the device. Set the Cryo handset to 3°c. Test the temperature on the client, adjust to the appropriate comfort level.

- Apply the cryo-handset to the skin for 4 seconds

To begin treatment, press the pedal and the button located on top of the applicator; a blue light will indicate that the device is ready to use.

- Then apply the applicator on the same area, press foot pedal.
- Move to the next grid section and repeat.

WARNING! PULSES ARE NOT EMITTED CONTINUOUSLY. THE INTERVAL BETWEEN PULSES IS DETERMINED BY THE LOAD ON THE CONDENSERS. DURING LOADING, THE APPLICATOR WILL NOT LIGHT UP (AND THE BLUE LED WILL BE OFF).

WARNING! DANGER OF BURNING! THE APPLICATOR SURFACE CAN REACH HIGH TEMPERATURES WHEN THE MACHINE IS IN USE. YOU ARE ADVISED NOT TO EXCEED THE MAXIMUM OF 50 PULSES PER TREATMENT. AFTER 50 PULSES, WAIT 5 MINUTES BEFORE CONTINUING THE TREATMENT.

## TURNING OFF THE DEVICE

Once the treatment is complete, replace the applicator in its holder and set the switch to 0.

# Cleaning and Maintenance

• SkinBase IPL cleaning and maintenance procedures must only be performed when the machine is turned off and unplugged from the mains.

• Maintenance procedures entail the cleaning of filters, the applicator and the main unit. After cleaning the applicator, make sure it is dry before reusing.

• After using SkinBase IPL, it is essential that all parts which come into contact with the skin are disinfected.

• When replacing worn or broken parts, always request original replacements from SkinBase

• Never open the device without written authorisation from the manufacturer's technical support service. Failure to observe this requirement will void the guarantee and free the manufacturer from all liability in regard to electrical safety and the pertinent declaration of conformity.

• Handle all accessories with care; improper handling could be detrimental to their operation and lead to potentially dangerous situations or malfunctions. More specifically:
- avoid accidental dropping
- avoid knotting or twisting cables
- do not use solvents or abrasives to clean the device
- do not use sprays, liquids or solvents in proximity of the device and its accessories

• To remove marks or stains from the device or filters, use a soft cloth slightly dampened with water and a little detergent (non-aggressive and non-abrasive), or a water-alcohol solution (75% water-25% alcohol) and dry thoroughly.
• DO NOT use abrasives or chemical cleaning agents (e.g. thinners) of any nature.

• Check for any build-up of dust or other impurities in the air vents which could impede the free circulation of air.

If the device does not turn on, even after making sure all connections are tight and that the main switch is set to "1", check the fuses located inside the same unit as the mains socket.

Disconnect the power cable from the mains when replacing fuses.

The fuses consist of 2 X 8 AF type.

## Technical issues

Below is a list of possible device malfunctions. Please contact SkinBase for assistance in using or repairing the device.

**The machine does not turn on**
Power cable not connected, check the plug at the wall socket or on the back

**External fuses burnt**
Replace those located on the supply tank

**Panel commands do not work**
Internal damage, contact technical support

**No image appears on the LCD monitor**
Display damage, contact technical support

**Pulse light doesn't switch on**
Damaged lamp or applicator, contact technical support

# General safety recommendations

The following actions could compromise the compliance and/or performance of the device:

- Incorrect installation
- Improper use
- Use of third party parts and/or accessories not approved by the manufacturer
- Operation and/or tampering by unauthorised personnel
- Lack of/or incorrect maintenance

Described below are warnings and precautions to be followed during the installation, use and maintenance of the device in order to ensure satisfaction of the requirements regarding the safety of both operator and patient and the correct working order of the SkinBase IPL Device.

- Use a suitable power cable. Only use a power cable that is specified and certified for the country of use. Check the integrity of the cable on a regular basis. Make sure the plug is fully inserted into the correct socket on the back of the device;

- Make sure the machine is turned off before disconnecting power or signal cables;

- Operate at a voltage of 220-230VAC 50/60Hz or as shown on the technical rating plate;

- To avoid danger to people or property, follow all specifications and labels shown on the product. Consult the manual (see Installation) before connecting power to the device;

- Avoid unprotected circuits. Do not touch powered connections or components that are unprotected;

- Do not operate if you suspect a fault or find the casing to be damaged. If you believe the device to be faulty and/or damaged, have it inspected by a trained technician;

- Always unplug the device from the mains before performing cleaning or maintenance;

- Do not allow liquids or powders to come into contact with or get inside the device;

- Do not operate in potentially explosive atmospheres and/or in the presence of flammable compounds;

- Avoid exposure to excess heat. The device should be operated at a temperature of between 10 and 40 °C.

• Only use spare parts supplied by the device manufacturer.

• Make sure your mains supply specifications meet the electrical requirements for the device indicated on the label and in this manual.

• Do not use several devices at once in addition to the SkinBase IPL system.

• Do not use the device in environments with high electromagnetic fields as these could cause the SkinBase IPL or other nearby devices to malfunction.

• Do not use mobile phones in the treatment area.

• Carry out device maintenance according to the manufacturer's instructions.

• The device must be installed and put into service according to the instructions contained in this manual

• Portable and mobile radio communication devices may affect the operation of the device

• Do not operate in proximity of a short-wave or microwave therapy APPARATUS (e.g. within 1m);

• Do not connect the patient to a high-frequency electrosurgery apparatus simultaneously;

## SPECIFICATIONS

SkinBase IPL is a high intensity pulsed light system intended for hair removal and photorejunevation. This treatment is based on the scientific principle of selective photothermolysis, which treats only the selected area without damaging the surrounding tissue.

SKINBASE IPL IS DESIGNED FOR CONTINUOUS TREATMENT OVER SHORT INTERMITTENT PERIODS ACCORDING TO THE FOLLOWING TIMES: T-ON=4 MIN AND T-OFF=5 MIN. DURING TO-N, LIGHT IS EMITTED EVERY 5 SECONDS; DURING T-OFF, THE DEVICE REMAINS SWITCHED ON BUT WITHOUT EMITTING LIGHT TO ALLOW THE APPLICATOR TO COOL DOWN FASTER.

# Technical data

**BASE UNIT**

| | |
|---|---|
| MODEL | INTENSIVE SKIN LIGHT (PLP) P |
| OWER SUPPLY | 220-230 VAC |
| OPERATING FREQUENCY | 50 Hz/60 Hz |
| INTERNAL OPERATING VOLTAGE | 24 VDC |
| MAXIMUM INPUT POWER | 1 – 100 VA max |
| FUSES | 2 x 8 A F 5x20 mm |
| ELECTRICAL SAFETY CLASS | I B |
| MAIN UNIT DIMENSIONS (LxHxW) | 546 x 448 x 203 |
| MAIN UNIT WEIGHT | 21 Kg |

**LIGHT SOURCE:**

| | |
|---|---|
| LIGHT SOURCE: | Xenon Lamp |
| WAVELENGTH: | 500–1000 nm +/-20% |
| OUTPUT BEAM DIAMETER: | 35 x 45 mm |
| OPERATING MODE: | Single pulse (programmable) |
| PULSE REPETITION INTERVAL: | 3 sec. |
| DURATION OF EACH PULSE: | 1 to 50 ms |
| MAXIMUM ENERGY SUPPLIED: | +/- 110 J/cm2 |
| CRYO APPLICATOR (if any) | |
| POWER SUPPLY | 12 Volt**OPERATING CONDITIONS:** |

| | |
|---|---|
| Room temperature: | from 10°C to 40°C |
| Relative humidity: | from 30% to 75% without condensate. |
| Pressure: | from 700 –1060 hPa |

**TRANSPORTATION AND STORAGE CONDITIONS:**

| | |
|---|---|
| Temperature: | from 10 to 40°C |
| Humidity: | from 5 to 95% |
| Pressure: | from 700 –1060 hPa |

# Service Guarantee

As part of our PAYG Service Agreement we guarantee the device against software and manufacturing faults. The guarantee takes effect on the date of installation.

Note: any attempt by personnel not authorised by SkinBase to repair, restore or modify the system, which goes against the specifications of the user manual, shall render the guarantee void and may affect your deposit.

Under no circumstances will Dermasave Ltd (SkinBase) be held responsible for direct, indirect, incidental or consequential loss deriving from agreements, tort or any other legal concept.

- Any modification or tampering of the device or the use of non-original spare parts or parts not compatible with Elmac Elettronica quality standards shall free the manufacturer from all responsibility and void all rights awarded under guarantee.

- Do not leave the SkinBase IPL system exposed to dust, humidity or temperatures less than 5°C. (If stored at lower temperatures the machine will require around 15 hours of acclimatisation to work correctly).

- SkinBase IPL must not be stored at temperatures of less than 10°C.

- SkinBase IPL is fully compliant with European standards on protection against electromagnetic interference. However, this instrument may be susceptible to electromagnetic interference from devices such as microwave ovens, mobile telephones, ultrasound generators or devices of other frequencies. It is therefore recommended to avoid using SkinBase IPL in the vicinity of such devices.

- When SkinBase IPL is left unused, it must be secured against unauthorised use.

- Do not warp, bend, tread on or knot the power cable or pulsed light applicator cable. Replace these cables following any signs of wear, using original parts only

- Do not place liquid containers on top of SkinBase IPL

- Do not use the device in the presence of flammable compounds.

- Any improper use of the device frees the manufacturer of all responsibility.

- The use of commands, controls or procedures other than those listed in this manual may cause damage. This device must be used for its intended purpose only; Dermasave Ltd assumes no responsibility for damages to people or property caused by incorrect use of the device.

SkinBase™

**Dermasave Ltd, Unit 1 West Avenue, Talke, Stoke-on-Trent, ST7 1TL**

0845 226 27 23 • info@skinbase.co.uk • www.skinbaseipl.co.uk