

**FDA Market Approved
Acne and Anti-Aging Treatments Using
Blue, Red, NIR and Amber Light Phototherapy**

**Only with Dermillume™
PRO APL, PRO 1500, 4 Panel**

The optimum wavelengths and the right intensity
required by clinical studies



Now

Kill Acne, Reduce Pore Size, Wrinkles & Pits, Scar Patterns
For
More Youthful, Elastic and Firmer Skin



What is Phototherapy?

Phototherapy uses intense single color light to change biological properties of the skin.

- **Near infrared (NIR)** wavelengths promote healing.
- **Red** wavelengths reverse skin damage such as wrinkles, sun damage.
- **Blue** wavelengths are anti-bacterial.
- **Amber** wavelengths promote lymphatic drainage.
- **Green** wavelengths heal damaged capillaries in Rosacea.

How is Phototherapy Different from Laser Therapies?

- LED devices are safer and easier to use than laser devices
- No heating or skin damage.
- No penetration into the deep muscle, bone or organ areas.
- Much less concern about safety for operator.
- Available to licensed aestheticians.
- Does not require physician supervision.

What Does Blue Light Phototherapy Do?

- **Blue light (414 nm)** kills acne bacteria.
- **Blue light** penetrates 1.5 mm, to the bottom of the hair follicle.

What Does Red Light Phototherapy Do?

- **Increases number of skin cells** at small wounds and lesions, and in areas that are deficient
- **Reduces inflammation**, speeds healing on acne lesions.
- **Stimulates skin cell turnover.**
- **Stimulates production of collagen** and other important skin proteins.



What Does This Mean for My Acne Client?

- Blue Light at 414 nm kills acne bacteria
 - Deep in the skin under the sebaceous glands and at the bottom of the hair follicle, where topical agents can't reach
 - Produces clearing in four weeks, compared to minimum twelve for antibiotics.
 - Blue light is safe, fast and effective for all skin types and ethnicities.
 - Has no side effects, skin drying or itchiness
- Red light at 660 nm
 - Reduces inflammation at acne lesions.
 - Reduces pitting and hyper-pigmentation caused by acne lesions.
 - Speeds healing of existing lesions.
- Near Infra-Red light at 940 nm
 - Improves circulation.
 - Reduces hyper-pigmentation
 - Speeds healing of lesions, wounds and surgical incisions.

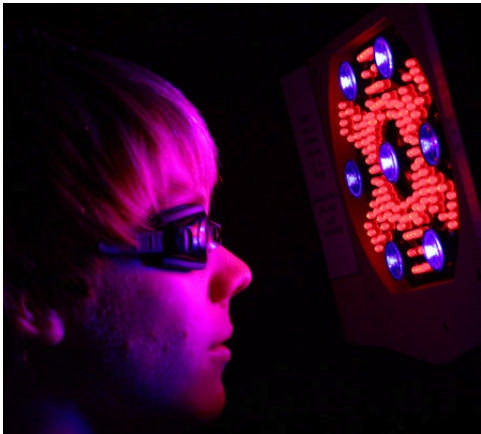
What Does This Mean for My Anti-Aging Client?

- Promotion of skin cell turnover
 - Hyper-pigmentation reduced
 - Quicker clearing of *mask of pregnancy*
 - Reduction in sun damage
 - Reduction of scar patterns
- Increases in skin cells
 - Smoothing of wrinkles and pits
 - Improved skin surface damaged by exposure
- Increased collagen and other important skin cell proteins
 - Firmer, more elastic skin
 - Skin follows contours of bone and muscle better



A Triple Purpose Phototherapy Device

The Light at the End of the Tunnel



Acne Treatments

Fast, Safe and Field Proven
FDA Cleared Phototherapy for Drug-free
Acne Treatment

Efficient Levulan activation
in Blue only Mode
for Medical Acne Treatments

And

Anti-Aging Treatments

- Fine lines, wrinkle relaxation, smooth pits
- Age spots, sun damage
- Reduce Scar patterns



Three Uses – One Device



Add Blue and Red/NIR Phototherapy to your current acne care practice

When used together with good skincare practices, phototherapy is an effective primary treatment for acne.

What can phototherapy do for acne care?

- **Blue light** kills acne bacteria deep in the skin
- **Red light** promotes healing of skin damage
- Phototherapy is **more effective and faster** than topical treatments or oral antibiotics
- **Phototherapy is Safe** – no side effects in clinical studies

What can Phototherapy do for skin restoration?

- **Red light** increases collagen and elastin in skin cells
- **Red light** increases production of skin cells in damaged skin
 - **Reduces fine lines & wrinkles**
 - **Reduces age spots, sun damage**
 - **Reduces Rosacea**

What does the Dermillume Pro Series phototherapy lamp provide?

- **A Dual Purpose lamp** – two services with one device
- **Meets clinical requirements** for acne and photo rejuvenation
- **The latest improvements** in acne phototherapy
- **FDA cleared** for use as a medical treatment for acne
- Provides **full-face illumination**
- **Proven results**
- **Compact floor model** device on rollers – use and store anywhere
- **“Point and Click”** simplicity for ease of use
- **Most affordable professional lamp** on market



Can I Use Phototherapy with Other Treatments?

Absolutely

Add Dermillume Phototherapy to Your Current Acne Treatment

- **Dermabrasion may be performed either before or after blue + red light phototherapy**
- **We recommend using a fine anti-oxidant serum (with vitamin C & vitamin E) after the blue + red light phototherapy**
- **Extractions or sonic treatments can be performed before phototherapy**
- **Dermabrasion can be performed before phototherapy.**

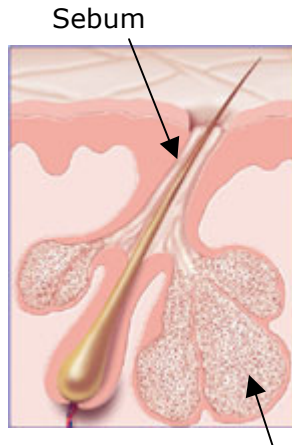
Add Dermillume Phototherapy to Your Current Anti-Aging Treatment

- **Use with collagen peptide wrinkle reduction creams after red light treatment for an even better result**
- **Perform Dermabrasion before red light treatments**



➤ The Steps of Acne Development

The major cause of acne is over stimulation of the sebaceous gland



- Sebum is a waxy substance that protects the skin surface.
- Androgens are produced in both male and female.
- The sebaceous gland reacts to changes in androgens by increasing the production of sebum.

Sebaceous gland

Acne bacteria are a natural component of the organisms that live in and on our bodies.

Causes in Teenagers

- Abrupt fluctuations in hormone levels during puberty are common.
- Stressful events often bring on acne flares.
- Menstrual cycles often make acne flares worse.
- Milk products make acne flares more severe in a small number of young women.

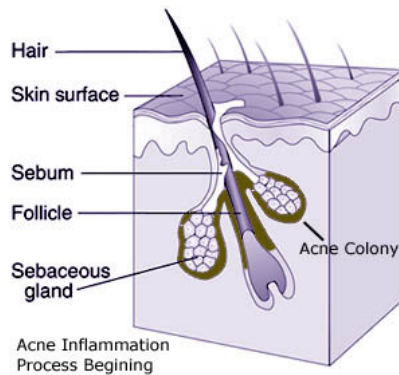
Causes in Adults

- Oil-based cosmetics leave residues in pores and contribute to clogged pores.
- Accumulation of dead cells and debris in pores contribute to acne formation.
- Changes in hormone levels in women such as menstrual cycles, childbirth, taking birth control pills or the onset of menopause, often bring on acne flares.
- Some adults experience acne flares related to stressful events.
- Lithium treatments commonly proscribed for bipolar conditions also produces large fluctuations in hormone levels that promote acne.

Contrary to popular belief, greasy foods are not a contributing factor for most people; likewise, chocolate, dirty skin, and diet seem to have little causal effect on the development of acne in most people.



Acne develops in a step-wise manner



- Clogged pores lead to anaerobic conditions, which promote bacteria growth in the pore.
- The skin reacts to these conditions by digesting the waxy sebum to a more oil-like substance.
- Acne bacteria are able to consume these sebum by-products, further stimulating their growth.
- A well-developed colony causes inflammation and damage to the skin.

Acne treatments interrupt one or more of these steps

- **Accutane and retinoic acid** treatments act to reduce sebum gland activity.
 - ✚ Accutane has been associated with the onset of severe depression
 - ✚ Retinoic acid is associated with skin reddening in some people.
- **Topical and oral antibiotics** can be helpful, but require extensive periods of treatment.
 - ✚ Not everyone can take tetracycline antibiotics.
 - ✚ Some acne bacteria are resistant to tetracycline.
- **Laser treatments** cause temporary thermal damage to the underlying sebum glands and are useful in treating deep acne cysts.
- **Zinc** or certain botanical treatments are reputed to block the stimulatory effect of androgens on sebaceous glands.
 - ✚ These observations are not medically studied.
 - ✚ Dosage and contra-indications are unknown.
- **Cosmetics containing 2% salicylic acid** reduce pore clogging by removing dead cells ("exfoliation") and accumulated sebum from the pore.
- **Peroxide** compounds release oxygen radicals through the skin, killing any bacteria that they reach.
 - ✚ Peroxide compounds often cause dry, itchy skin.
 - ✚ Peroxide compounds require extensive time periods to be effective.

Blue and red light phototherapy is faster, safer and more effective in reducing acne bacteria to levels that do not promote acne in skin.



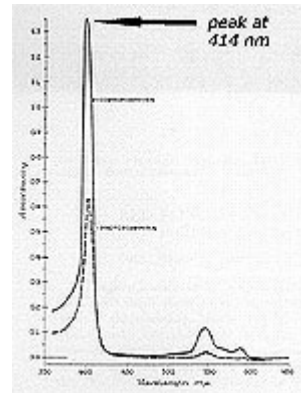
How Does Blue Light Kill Acne?

Blue light creates reactive oxygen in the same way that benzoyl peroxide does, but much more efficiently, and only at the site of the bacteria buried deep within the skin.

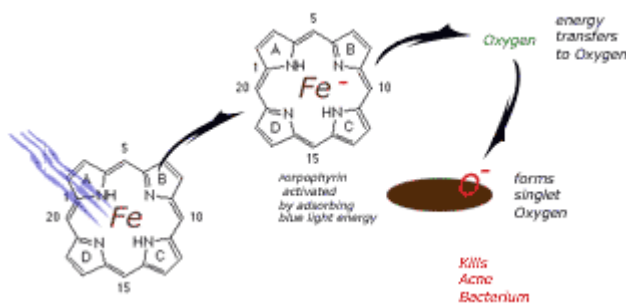
Not just any blue light will do.

- Blue light interacts with a critical molecule in acne bacteria called porphyrin. Porphyrin is necessary for the bacteria's energy storage.
- In this case, as the graph on the right shows, the porphyrin molecules adsorb blue light most strongly at 414 nm.

The Dermillume Pro Series provides exactly this wavelength.



What happens to the absorbed energy?



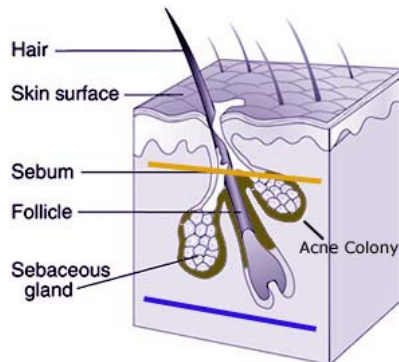
All the blue light energy from Dermillume is focused into an active wavelength to more efficiently kill acne bacteria.

Medical facts:

- Skin tissue has numerous protective mechanisms to guard against oxygen damage.
- Bacteria are totally deficient in protecting themselves against oxygen damage.



Why is phototherapy more efficient at killing bacteria than topical treatment?



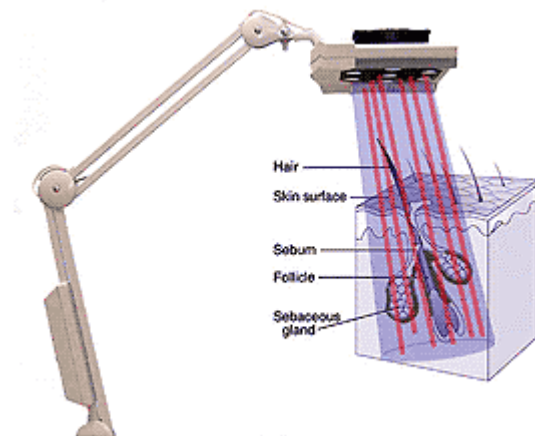
- Intense blue light penetrates deep into skin to reach bacteria at the bottom of the hair follicle and the sebaceous glands (**blue line**).
- Topical medicines such as benzoyl peroxide penetrate about 0.5 mm into the skin, treating only the upper third of the sebaceous gland and pore (**orange line**).

Acne bacteria live deep in the pore and underneath the sebaceous glands.

Medical Facts:

- Blue light phototherapy does not produce the dry, itchy skin seen with peroxide compounds.
 - ✚ Oxygen radicals created by intense blue light are confined to the bacteria
 - ✚ Peroxide compounds release oxygen radicals throughout the skin

Why is the light intensity important?



Dermillume Pro Series produces blue light that reaches deep into the pores where the acne bacteria are living.

- Tissue is semi-transparent to light. Some light is scattered or absorbed by colored components in the tissue as it passes through.

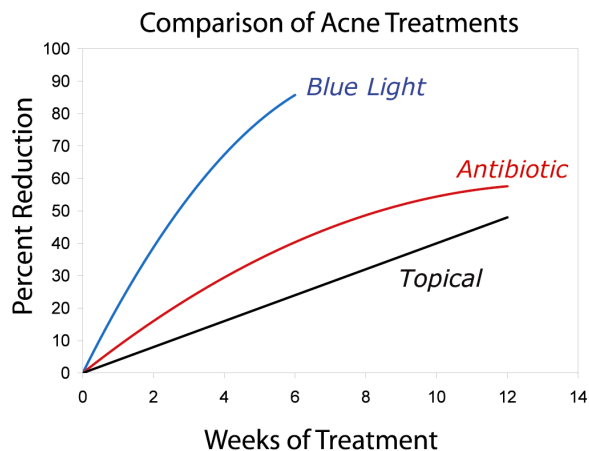
We see this effect every day. Outside light is subdued when it passes through a shade, but not completely blocked.

- Clinical studies have shown that at least 10 joules per treatment of blue light is effective for killing acne bacteria.
- Research shows that at least 5 joules of red light per treatment are effective to promote skin restoration.

Think of it like your car. If the engine is optimally tuned and the wheels are aligned and balanced, the car runs efficiently and gets better gas mileage.



Blue Light Phototherapy is Better than Conventional Topical or Oral Antibiotic Treatments



The topical treatment for this comparison was 5% benzoyl peroxide and the antibiotic treatment was oral tetracycline.

Redrawn from:

AR Shalita MD, Y Harth MD, M Elman MD Clinical Application Notes (2001) 9: 1-4. Acne PhotoClearing (APC™) Using a Novel, High-Intensity, Enhanced, Narrow-Band, Blue Light Source

Why Use Red Light with Blue Light in the Treatment of Acne?

- Acne damages skin by causing inflammation and releasing toxins that cause cell death.
- Killing the acne is only part of the story. Promoting removal of dead bacteria and repair of local damage is also important.

- ✚ Dermillume Pro Series delivers 414 nm blue light to the skin surface, exactly matching clinical requirements and the best research knowledge for killing acne bacteria.
- ✚ Dermillume Pro Series delivers 580 nm amber light to the skin surface, for promoting repair of skin damage and Rosacea.
- ✚ Dermillume Pro Series delivers 660 nm red light to the skin surface, exactly matching the clinical requirements and best research knowledge for promoting repair of skin damage at the acne lesion.
- ✚ Dermillume Pro Series delivers 940 nm NIR light to the skin surface, exactly matching the clinical requirements and best research knowledge for promoting repair of skin damage and improved skin circulation.

The clear leader in the field of phototherapy – and far more affordable

Care Electronics, Inc. ✚ 3301 W. 151 Court ✚ Broomfield, CO 80023
888-444-8284 ✚ tmoody@careelectronics.com for technical questions



Use the **Red/NIR Light Only** Feature of the Pro to Provide Popular **Anti-Aging** Treatments

- Reverse hyper-pigmentation and roughened skin caused by sun or weather damage.
- Smooth fine lines, wrinkles and pitting.
- Close enlarge pores.
- Reduce abnormal pigmentation patterns in scars.

How does red light affect skin?

Red light stimulates the growth of new skin cells and collagen and other structural proteins that are important to healthy skin structure.

Not just any red light will do.

- Laboratory experiments show that intense light at 660 nm promotes tissue growth and other effects that support wound healing in animals.

This means:

- ✚ Increases in **collagen production**
- ✚ Increases in **skin structure proteins**
- ✚ Increases in the number of **new skin cells**
- ✚ Shortened time for **wound healing** in animals

An increase in collagen and skin structure proteins yields smoother, more elastic skin that better follows the muscle and bone structure.

An increase in skin cells yields more volume in age and sun damaged areas to smooth wrinkles, fine lines and pits, and close enlarged pores.

Experience shortened healing time (usually by half) for surgical incisions, abrasions and scrapes.

Increasing the rate of skin cell production reduces sun damage hyper-pigmentation and weather damage that results in roughened skin.

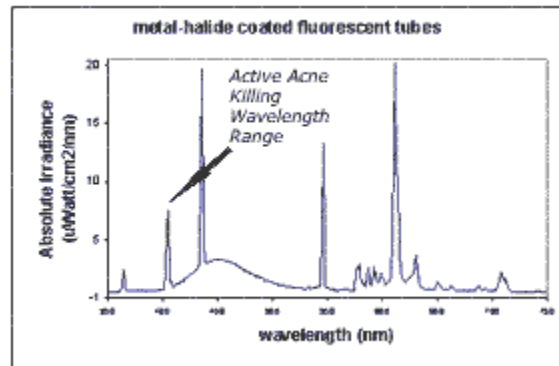
Increasing the rate of skin cell production in scared areas reduces red margins and areas without normal kin tones for overall reduction of scar patterns.



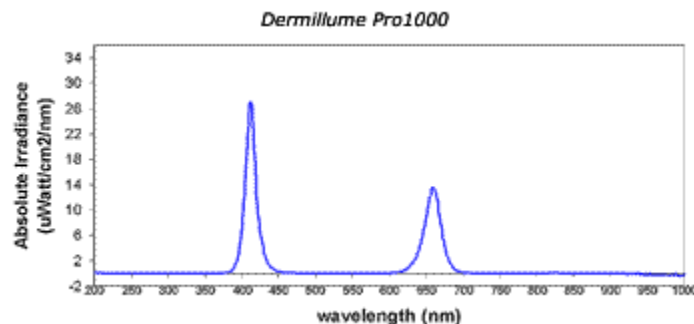
Dermillume Pro Series produces Precision Light Therapy

A comparison of light output delivered by Dermillume Pro Series and fluorescent tubes.

The output of a device using **metal halide-coated fluorescent lamps** such as Blue U indicates that the blue light content in the FDA accepted 405 – 420 nm wavelength range is only a **small portion of the entire output – less than four percent.**



100% of the output of Dermillume ProSeries is focused into the two wavelengths known to kill acne bacteria (414 nm) or promote skin repair (660 nm).



- The technology used to make LEDs produces a very uniform product from batch to batch, so that **every Dermillume Pro Series will deliver the same wavelengths and intensities.** Each device is measured to certify the output before being released for use.
- The technology used to make metal-halide coated fluorescent tubes cannot produce uniform coatings. Therefore these devices vary tremendously in output and composition.
- The effects of the other wavelengths present in metal-halide coated fluorescent tubes are unknown.



The Galleries

Blue + Red Phototherapy for Acne *Vulgarus* using the Pro Series

The Dermillume Pro Series is FDA cleared for treatment of mild to moderate *acne vulgaris*. The following before and after photographs illustrate a variety of treatments using the standard regimen of **8 biweekly treatments of 20'**.

These subjects were given a simple facial cleanser prior to treatment. The cleanser does not contain acne-active ingredients, or silica scrubbing agents. Following the treatment, the subject is given a facial moisturizing treatment.

All subjects agreed to not use peroxide creams, antibiotics, Accutane, retinoic acid or specialized topical treatments with non-FDA recognized acne claims during the treatment period. Subjects use cleansers with 2% salicylic acid on non-treatment days and a sun-blocking agent.



15 year old female

Subject #1: AM is a 15yr old female in generally good health of Caucasian descent. She had persistent severe inflammatory acne on the whole face and upper back. Some pitting has occurred, but there is no associated hyper-pigmentation. The face was treated with standard phototherapy regimen and the back was untreated.



Before Treatment



After Treatment

This subject is prone to acne flares and acne cysts coupled to her menstrual cycle. There is reduction of acne lesions and significant healing on the forehead and cheeks. Inflammation and swelling was greatly reduced under the subject's right eye. The back remained severely involved throughout the treatment period. Extended treatment periods may be useful for these cases.



17 year old male

Subject #2: RC is a 17 yr male in excellent health, physically active and of Caucasian descent. RC had extensive acne distributed across forehead, cheeks and chin. Acne in the chin region was inflammatory and included pustules and open lesions. RC has some acne scars and tends to produce areas of hyper-pigmentation upon healing of acne lesions. RC also had extensive inflammatory acne on the chest. Both areas were treated with the standard phototherapy regimen.



Before Treatment



After Treatment

Facial lesions healed more quickly than usual. The chest area was completely resolved. Lesions occurring just prior to this treatment did not produce hyper-pigmentation or scarring. RC reported that the remaining lesion on the chin disappeared within one week. A small number of non-inflammatory acne lesions continue to appear on the jaw line. RC may benefit from red-light only treatment to remove hyper-pigmentation on the face.



22 year old female

Subject #3: KS is a 22 yr female in excellent health, active outdoors, of Caucasian descent. KS had mild dispersed acne, generally confined to cheeks and forehead. This condition has persisted since puberty. KS reported that the cheek area is prone to close packed swollen pores that become painfully inflamed. The face was treated with the standard phototherapy regimen.



Before Treatment



After Treatment

Facial lesions on the cheek and forehead were almost fully resolved. A close packed inflamed pore group on the cheek healed without further development. Very light involvement remained near the lips. KS did not report significant acne for six months after treatment.



36 yr male

Subject #4: TE is a 36 yr male in good health, active outdoors, of AmerIndian descent with well-tanned skin. TE has experienced mild to moderate acne with inflamed pustules, generally confined to the forehead, throughout his adult life. The condition is exacerbated by stress. TE has used Accutane and oral tetracycline, each for one year without effect. TE has used Proactiv and several herbal remedies, also without effect. The face was treated with the standard phototherapy regimen.



Before Treatment



After Treatment

Lesions and small pimples are almost fully resolved after treatment. Hyperpigmentation and acne scarring is somewhat resolved. New pigmentation did not appear under treated lesions. TE reported a fresh outbreak after a family funeral, but the outbreak was less extensive than usual.



19 yr male with severe acne

Subject #5: KH is a 19 yr male in good health, of Caucasian descent with un-tanned skin. KH has experienced several years of severe acne with inflamed pustules, deep scarring and occasional cysts. Scars, pitting and redness were present from past acne lesions. Severe to moderate lesions were generally distributed across all areas of the face, neckline, and throat. The involvement was especially severe in the jaw area. Environmental toxins may be exacerbating the subject's acne condition.

This subject was given four extra treatments due to the severity of the acne. Improvement was pronounced during the final three weeks.



Before Treatment



After Treatment

Lesions, inflammation and small pimples are all dramatically resolved after treatment. Preexisting acne scarring and inflamed areas are significantly resolved. Acne cysts that appeared early in the treatment resolved without running their full destructive course. This subject may benefit from continued red light only treatment to remodel existing acne scars.



Dermillume Pro 1500 Lamp Specifications

Specifications

The Dermillume Pro Series lamp contains an array of advanced blue LED modules with focusing lenses, and Red, NIR and Amber LEDs that pulse at 5 kHz. The blue modules give exceptionally high intensity blue light. The Dermillume Pro1500 can be used in a Blue + Red mode for Acne treatment or a Red- only mode for photo rejuvenation treatments.

Large areas such as the side of the face, throat, back or abdomen may be treated in a single short session.

Effective Distance: 4 inches from skin surface

Useful treatment area: 11 x 7 inch

Touch-Free: No cleaning is required between uses.

Light Characteristics: Pro 1500

Color	Peak Wavelength (nm)	# LEDs	Bandwidth (nm)	Energy at Device	Energy at skin* (Joules/cm ²)
Blue	414	280	+/- 10	3360mW	31
Red	660	150	+/- 20	9208mW	85
NIR	940	108	+/- 20	1083mW	21

Treatment Modality:

	Treatment Period	Blue Light (J/cm ²)	Red Light (J/cm ²)	Time (Minutes)
Acne	2x weekly, 4- 6 weeks*	24	12	20
Skin remodeling** Sun damage Hyper-pigmentation	1-2x weekly, 6-12 weeks	Not used	12	20

• - mild to moderate – treat four weeks, severe treat 6 weeks

** - skin remodeling includes reduction of pitting, wrinkles and loose skin

See Individual Product Sheets For Up To Date specifications

Never Rate a device by the number of LEDs- here is why:

Some manufacturers boast about the number of LEDs they have in their device. Standard LEDs output 30 millicandles (mcd) and cost 3 cents each. Dermillume uses "Super Bright" high intensity LEDs with an output of 4000- 7000 mcd each with a significantly higher cost. That is why we are able to produce such high output in a small device.



Accessories

Care Electronics provides a laser capable eye shield selected to block the blue light so that the operator can use the device in comfort and safety. A set of opaque metal goggles is provided for the protection of the client's eyes when in use for acne treatments. The goggles have foam cushions that may be easily cleaned with an alcohol swab between uses. Protective disposable shields may be purchased from Care Electronics or other supply houses for client use in the photo rejuvenation treatments.

Description

The Dermillume Pro 1500 lamp is attached to a weighted rolling stand for superb stability and ease of positioning. The lamp is mounted on a mechanical arm, which allows it to be positioned precisely over the area to be treated. At full extension, the arm extends 30 inches from the center of the stand.

The pole on the rolling stand is extendable, and the unit folds into a convenient, compact configuration for easy storage.

The Dermillume Pro Series lamp is provided with a failsafe timer that counts down from the time that the lamp is turned on. A buzzer sounds and the unit shuts off when the treatment is complete. The control is mounted separately from the device so that the lamp can be positioned prior to activating it.

Dual Purpose

The control allows Blue + Red + NIR or Red + NIR-only settings at the touch of a button.

Warranty

Care Electronics, Inc. provides a 2-year parts and labor warranty for the PRO 1500 and 4 Panel Maxi - 1 year parts and labor for the Hand Held PRO. Lamp life is 100,000 hours of constant use.

Operations Manual and Instructional Materials

Care Electronics provides an operational manual for the device, educational materials for presentation to the client, a wall chart explaining the blue light technology for acne use and client brochures that may be handed out to interested parties. Care Electronics provides full telephone and email support and is happy to provide some consultation on ways to integrate these treatments into your current advertising campaign.



Explanation of Energy Terms

The wavelength of light is specified in nm (nanometers), which is the size of an individual wavelength. Visible light extends from deep violet (~ 390 nm) to deep red (~ 750nm). Smaller wavelength light contains proportionally more energy than longer wavelength light.

A is slightly smaller than a yard. There are 100 centimeters (cm) in a meter (2.5 cm to an inch). Metric measurements are divided into steps of 1000. There are 1000 millimeters (mm), 1,000, 000 micrometers (um) and 1,000,000,000 (a billion) nanometers (nm) to a meter. So the measurements of wavelength used to describe visible light are quite small.

The amount of energy deposited on a surface is defined as Watts. It is made more comparable by specifying the Watts in a unit of area. For intense light, the common units of phototherapy are mWatt/cm². (There are 1000 mWatts in a Watt).

The effect of energy deposited on a surface also depends on the amount of time, known as Power. The measurement of power at a surface is a Joule, defined as a Watt deposited in one second for the defined area. In phototherapy the effective range is 1 – 60 Joules/cm².

While most manufacturers offer their specifications in total power output, Dermillume devices are tested for spectral power output. Total power output includes the large amount of waste heat that is created by energizing the LEDs. Usually ³/₄ of total power is wasted as heat. It is the spectral power (the light) that makes changes in the skin.

Many manufacturers list the energy emitted at the face of the device, rather than at the surface of the skin. It is important to know that the energy declines as the inverse square of the distance (1/d²), which is an exponential lessening of strength.

This means that at 4.5 inches from the surface, the spectral energy intensity has decreased 130-fold!