

OPERATION MANUAL

BlueWave™ 50 AS

North American Model 39370



UV Curing Spot Light Source



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Operation Manual
Part #39370
10/09/06

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The enclosed BlueWave™ 50 AS UV Curing Light Source was developed and manufactured by the DYMAX team, driven by a desire to best serve your needs. Before shipping, your BlueWave™ 50 AS was thoroughly checked and tested for trouble-free performance.

The proper set up and operation of this Spot Lamp System will maximize safety and user-friendly performance, providing optimum yield of your technological process.

THEREFORE, WE ENCOURAGE YOU TO READ, UNDERSTAND, AND FOLLOW ALL SAFETY AND OPERATING INSTRUCTIONS AND RECOMMENDATIONS COMPILED IN THIS AND OTHER RELATED MANUALS prior to setting up and operating this new Spot Lamp System or its individual components.

Par conséquent, nous vous encouragez à lire, comprendre, et suivre toute sécurité et instructions d'opération et recommandations rédigées dans cette et autres manuels établir un lien avant de mettre en place et de faire fonctionner ce nouveau système de lampe de tâche ou ces composants individuels.

If you encounter a problem, have any questions, or would like to help us with your suggestions or recommendations, please contact our Technical or Customer Service Departments at 860-482-1010. Trained DYMAX professionals are standing by to serve you.

Si vous rencontrez un problème, avez n'importe de questions, ou si vous voudrez de nous aider avec vos suggestions ou recommandations, s'il vous plaît contactez notre département technique ou service client à 860-482-1010. Dymax formé professionnels attendent à vous servir.

1. UNPACKING AND INSPECTION

Upon receipt of the unit, carefully remove the contents from the boxes and check for damage. **DYMAX® is not responsible for damage from shipping – all claims for shipping damage should be made with carrier.**

Check all boxes for contents and write down any serial numbers for further reference. You may wish to retain original shipping cartons in case you need to repackage any item for return.

If you observe or experience any problem with your equipment, notify DYMAX Customer Service, your authorized distributor, or your DYMAX Representative immediately.

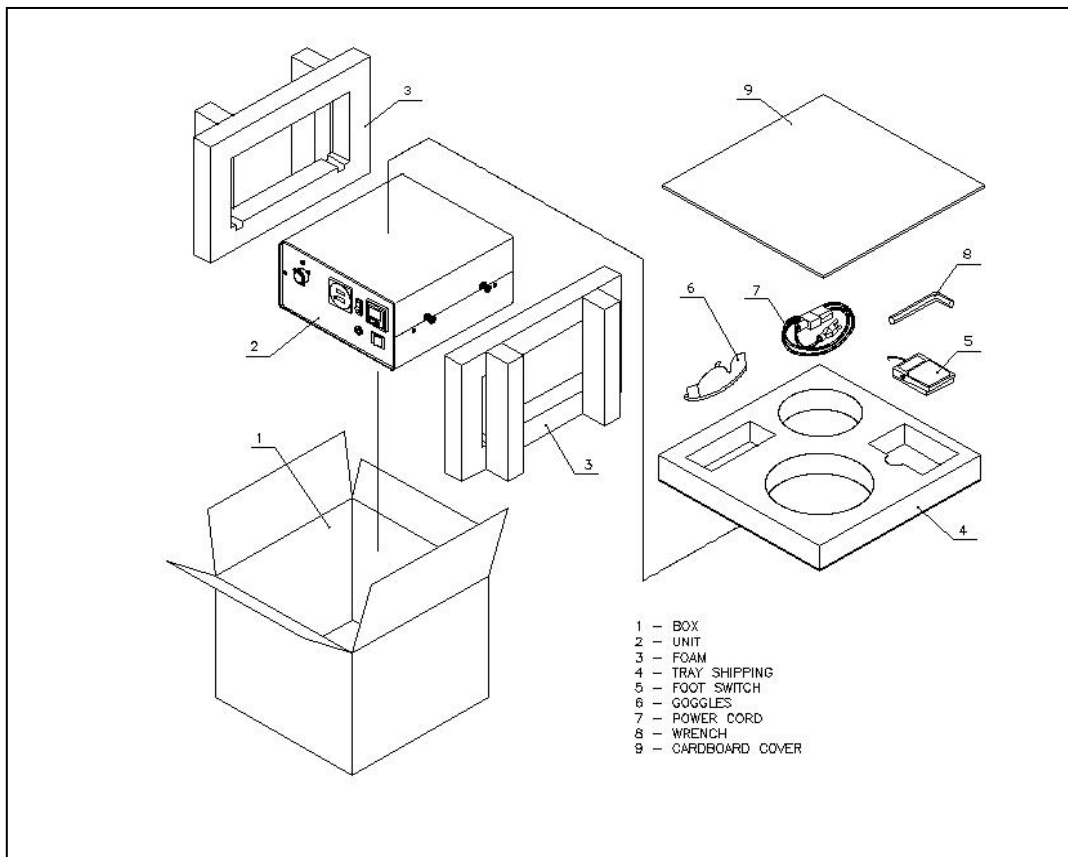


Fig. 1 – Unpacking/Contents

NOTE: LAMPS ARE SHIPPED WITH THE BULB/REFLECTOR INSTALLED.

NOTE: REPORT ANY SHORTAGE TO DYMAX CORPORATION CUSTOMER SERVICE

Phone: 860-626-6326 or 860-482-1010 **Fax:** 860-489-3232

Before continuing with unpacking and installation, please read the following Chapters of this Manual for safety recommendations and installation, running, and troubleshooting instructions.



CAUTION! Always wear protective goggles or face shield when working near the front of the unit which emits UV light! The rear of the unit also emits stray UV light.



WARNING! Always observe safety requirements!



CAUTION! Risk of Electrical Shock when cover is removed!



CAUTION! Cover is warm to the touch when unit is in operation!



PRÉ-CAUTION! Toujours faire de l'usage des lunettes de protection ou protéger de visage marche près du devant d'élément.



AVERTISSEMENT! Remmarquez toujours besoin de sécurité.



PRÉ-CAUTION! Risque de décharge électrique quand le couvert est enlever.



PRÉ-CAUTION! Le couvert est chaud a le touche quand l'élément est en opération.

2. SAFETY

Equipment is designed to be used properly set up, with components correctly connected, and operated in accordance with relevant instructions. Design was developed to maximize operator safety and minimize exposure to UV.

Safety Recommendations:

- Use goggles, provided, or a face shield approved for UV protection to protect your eyes.
- Long-sleeved shirts, or a lab coat, are recommended to protect the arms, and use of UV opaque gloves will protect the hands.

NOTE: With the internal filter installed, the BlueWave™ 50 emits UVA and visible light. Never look directly at the light source while the unit is on.

Sécurité

L'équipement être conçu pour être utilisé correctement constituer, avec composants brancher correctement, et marché en conformément avec instructions important. Le plan états développer pour rendre au maxime opérateur sécurité et minimiser exposition à ultraviolette.

Recommander de sécurité:

- Emploi lunettes, ou un protéger de visage pour protection de ultraviolet pour protéger vous yeux.
- Chemises à manche long, ou manteau de labo, sont recommander pour protéger les bras, et utilisation de ultraviolette gants opaque vais protéger les mains.

Remarquer: avec le filtre intérieur installé, l'Onde Bleu émettre UVA et lumière visible. Ne jamais regardez directement à la source de lumière pendant que l'élément est en opération.

3. GENERAL

The BlueWave™ 50 AS is a high intensity, UV curing spot lamp used for the curing of adhesives, coatings, and potting materials. It emits an UV light from a lightguide. This guide can be hand-held for complete mobility, clamped into position for repetitive operations, or in automated equipment.

The unit consists of a painted aluminum housing, containing an auto switching (voltage sensing) power supply, circuit protection, bulb/reflector assembly, internal light filter for extended lightguide life, twin cooling fans, lightguide mount, bulb status indicator light, an hour-meter with reset feature, and shutter system. Fan filters should be changed or cleaned frequently to prevent blockage and reduced ventilation airflow. The lightguide is separate and plugs into the lightguide holder.

Warning: Engage the Lightguide in the bezel before the light is turned on, and remove the Lightguide from the bezel ONLY AFTER the light is turned off to avoid the possibility of exposure to the light. Lightly tighten the setscrew for safety.

Avertissement: Engager le guide de lumière dans le biseau avant la lumière est allumer, et enlève le guide de lumière de le biseau SEULEMENT après la lumière est fermer pour éviter la possibilité d'exposition à la lumière. Reserrer doucement la vis pour sécurité,

The blue indicator light, above the bezel, lights when the bulb is operating. **If the bulb extinguishes due to a momentary power failure, the unit must be turned off, allowed to cool and then on again, to re-ignite the bulb.**

A cooling fan is provided to keep the bulb housing and internal components of the power supply at the optimum operating temperature. The fan must not be covered or otherwise blocked. The UV source is a 50-Watt short arc mercury vapor bulb mounted in a reflector and pre-focused to provide optimum light output. The unit is rated for continuous operation.

4. SPECIFICATIONS

Specification	PN 39370
Voltage	90 to 264 Vac., 50 to 60 Hz
Current	1 Amp
Fuse	F3 Amp
Bulb/Reflector	50 Watt (pre-focused)
Shutter Timer	0.1 to 99.9 sec. electronic
Foot Switch	Rocker type
Hour-Meter	LCD, bulb hours
Dimensions (L X W X H)	12.0" X 11.75" X 6.5" (30.5cm X 29.8cm X 16.5cm)
Weight	21 lbs. (9.5 kg)

Output Intensities (Typical)†**

WAVELENGTH

320-390 nm 3.0+ W/cm²

390-450 nm 3.5+ W/cm²

280-320 nm 1 W/cm²

** Measured with an EIT Spotcure Radiometer or Accu-Cal 20 radiometer using a light guide simulator and standard internal "Cool Blue Filter."

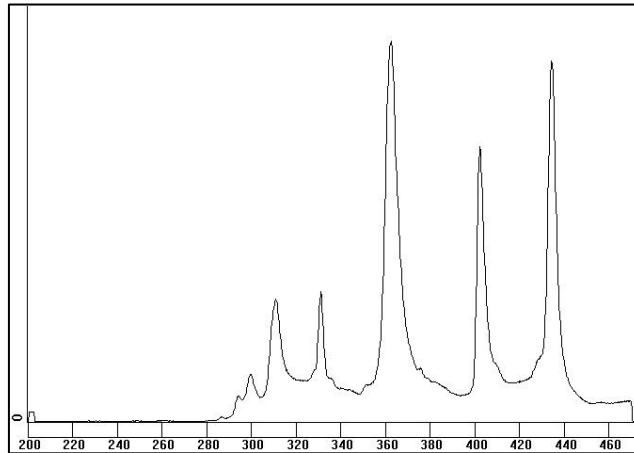


Fig. 2 – 50W Spectral Chart

5. INSTALLATION AND SYSTEM INTERCONNECT

1. Connect power cord (1) to rear of unit and plug into a grounded wall outlet.
2. Connect the foot switch (2) to the connection in the rear of the unit.



Fig. 3 – Cable Connection

3. **Single Pole Lightguide Installation:** Insert lightguide (3) into lightguide mount (4) by removing the cap and inserting and snapping the lightguide into place. Lightly tighten the setscrew on lightguide mount to secure lightguide.



Fig. 4 – Lightguide Connection

Multi-Pole Lightguide Installation:

Remove the protective cover from the BlueWave™ 50 AS's lightguide holder.



Remove the protective end caps from the lightguide. Visually inspect the two ends of the lightguide to verify that no foreign material is present. The liquid filled lightguide ends can be cleaned with isopropyl alcohol as required to remove foreign material and deposition from outgassing.

Insert the large end of the lightguide into the holder until it snaps into place.



If desired, the lightguide may be fastened into place by lightly tightening the securing setscrew installed in the lightguide holder. A hex wrench is provided with the BlueWave™ 50 AS for this purpose. The setscrew should be tightened gently to prevent damaging the lightguide. Note: multi-leg lightguides should be balanced by rotating the lightguide to obtain the desired UV intensity of each leg before tightening the setscrew.

The lightguide is now installed and is ready for use. The end of the lightguide should be periodically cleaned with isopropyl alcohol. Adhesive build-up may be removed from the end of the lightguide by using a razor blade or razor knife.

4. Turn the power switch (5) to ON.
5. Allow bulb to warm up for 4-5 minutes to obtain maximum light output.
6. Operate the shutter by pressing foot switch. With the shutter selector switch (6) in the manual position, the shutter operates directly from the foot switch. In the timed position, the shutter opening is determined by the setting on the electronic timer. Simply revolve the timer setting dials to enter the desired number of seconds the shutter is to remain open.

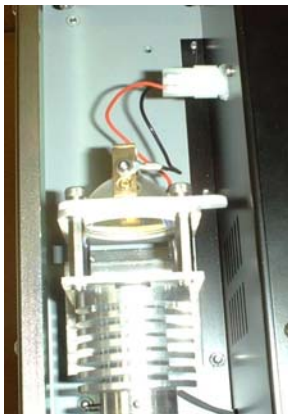
CAUTION: THIS IS AN ARC, NOT A FILAMENT BULB. ONCE IGNITED, IT MUST BE LEFT ON FOR A MINIMUM OF 10 MINUTES TO FULLY VAPORIZE ELEMENTS IN THE BULB. IF NOT, THE BULB MAY BE DIFFICULT TO RE-IGNITE. EACH RE-IGNITION INCREASES THE RATE OF BULB DEGRADATION.

NOTE: The bulb must cool before it can be re-ignited. Leave power switch on should the bulb extinguish. This operates the cooling fan and allows the bulb to re-light when it has cooled sufficiently. If the bulb fails to ignite, refer to the "Troubleshooting" section of this manual. Bulb life is reduced approximately one hour each time the bulb is switched on and off. Avoid repeated cycles that shorten bulb life by leaving unit on through breaks.

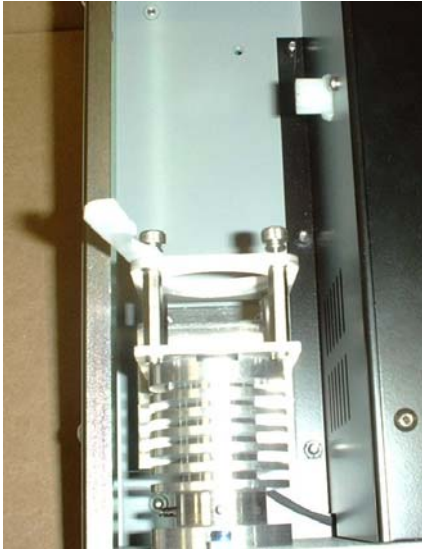
BULB REPLACEMENT PROCEDURE

Bulb replacement is easily accomplished by following the steps below; refer to labeled diagrams immediately under the light source cover.

1. Ensure that the power cord is unplugged from the rear of the unit.
2. If the unit was previously running, allow bulb to cool 10 to 15 minutes.
3. Remove the cover by loosening the four securing captive screws. Remove the cover by lifting it off.
4. Disconnect the bulb plug.
5. Loosen the two bulb retaining thumbscrews.
6. Lift up the bulb-retaining clip.



7. Remove the bulb reflector assembly.



8. Install the new bulb by reversing steps 4 through 6.
9. Reinstall the unit's cover.
10. Plug in the power cord.
11. Turn the power switch on.
12. The bulb will now ignite.
13. Allow the bulb to warm up for 5 minutes.
14. The unit is ready for use.

6. COMPONENTS DESCRIPTION

The BlueWave™ 50 AS is a special purpose UV curing lamp used for small area curing of adhesives, coatings, and potting materials. It emits up to an 8mm diameter spot of UV light from a liquid lightguide (sold separately). The guide is hand-held for complete mobility or clamped into position on assembly equipment or workstations for repetitive operations.

The unit consists of aluminum housing containing a 50-watt auto-switching power module, lamp and lamp mount, an internal UV light bandpass filter, a non-resetable and resetable elapsed time meter, and a shutter system. The shutter is supplied with a timed and manual operation mode. The lightguide is sold separately and plugs into the bezel. It is important to have a lightguide, or the cap, engaged in the bezel since light can escape when the shutter is activated.

The power supply operates on line voltages of 90 to 264 V_{AC} and 50 or 60 Hz.

Twin cooling fans are provided to keep the lamp housing and internal components of the power supply at the optimum operating temperature. The fan must not be covered or otherwise blocked. The UV source is a 50-Watt short arc mercury lamp mounted in a reflector and focused to provide optimum light output. The unit is rated for continuous operation.

7. OPERATION

The BlueWave™ 50 AS will arrive almost fully assembled. Please refer to section 5 for installation of lightguide (sold separately), power cord, and footswitch. The system should be positioned in a dry location that does not obstruct airflow from the rear of the unit.

IMPORTANT: To ensure that proper output of the system is obtained, be sure to completely insert the lightguide into the mount prior to tightening the setscrew. Be sure to lightly tighten the setscrew to ensure the lightguide remains in place during use.

To energize system, turn the power switch from the "O" position to the "I" position; fans, hourmeter, timer, and 50W lamp should begin to function. This can be confirmed by viewing illuminated clear lens above lightguide mount. Before operating unit, allow the 50W lamp to warm-up for approximately 5 minutes.



CAUTION: Always wear protective goggles or face shield when working near UV light. NEVER LOOK DIRECTLY AT LIGHT EXITING LIGHTGUIDE.

PRÉ-CAUTION: Toujours porte lunettes de protection ou protéger de visage en travaillant près lumière ultraviolette. J'AMAIS REGARDE DIRECTEMENT À LUMIÈRE SORTIE DE LE GUIDE DE LUMIÈRE.

Vorsicht: DIE BIRNE IST EINE LICHTBOGENLAMPE. EINMAL ANGESCHALTET, MUSS SIE MINDESTENS 10 MINUTEN ANGESCHALTET BLEIBEN, SONST KANN ES PROBLEMATISCH SEIN, SIE WIEDER ZU ZÜNDEN. JEDES WIEDERANSCHALTEN VERKÜRZT DIE LEBENSDAUER DER BIRNE!

The **Timer** located on the front panel of the BlueWave™ 50 AS is factory set to the appropriate operating mode for operation of the timer.

To operate the timer, select the “timed” option of the switch on the front panel. Set the time into the timer by rotating the timer’s dials and depress the foot-pedal. Factory settings will open the shutter and the present value will begin to count backward. When the timer reaches 00.0, it will reset the value to the set value and close the shutter. Timer cannot be stopped once started. If power is removed from unit, the timer will reset to set value.

To select the time, rotate the three dials until the desired time is set. The timer comes with a range of 0.1 seconds to 99.9 seconds.

8. MAINTENANCE

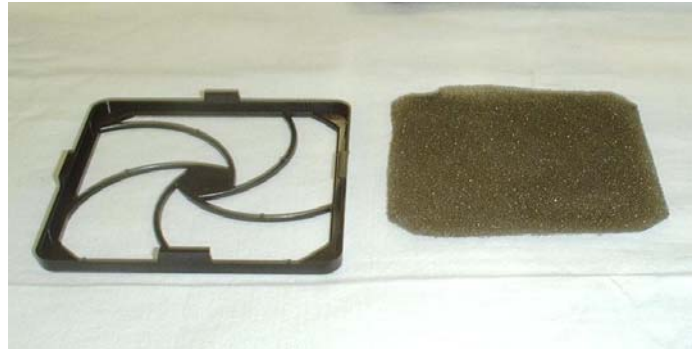
The BlueWave™ 50 AS was designed to operate with minimum maintenance. Follow the schedule below to assure top unit performance.

LIGHT GUIDE

Clean the lightguide ends monthly or as required. The ends of the guide should be kept clean to transmit as much light as possible. Cured adhesive can be removed with a razor blade. Avoid sharp bends with the light guide since this reduces light output and damages guide.

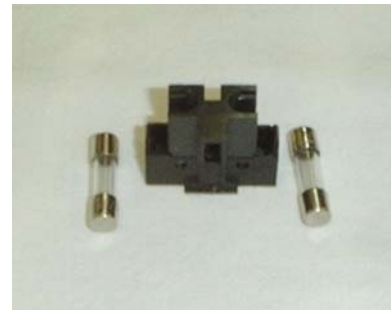
FAN FILTERS

The external fan filters should be inspected and cleaned periodically to prevent dust buildup from affecting airflow through the unit. Spare filters are provided with each unit and with replacement bulbs. The fan filters are washable and may be reused. Remove the fan filter by removing the snap-on cover from the rear of each fan.



FUSE REPLACEMENT

The unit is fused with two fuses that are installed in the power receptacle. To remove the fuses, unplug the unit and remove the fuse holder with a small screwdriver. Remove the fuses from the holder and install new fuses. Replace the fuse holder into the power receptacle.



9. TROUBLESHOOTING

WARNING: ONLY QUALIFIED MAINTENANCE PERSONNEL SHOULD ATTEMPT THE FOLLOWING PROCEDURES:

AVERTISSEMENT: SEULEMENT PERSONNEL D'ENTRETIEN DIPLOMÉ DEVRAIS ESSAYER LES PROCEDURES SUIVANT.

Problem: Bulb Will Not Ignite

Possible Cause	Testing	Corrective Action
Improper connections	Visually inspect all input/output connections (i.e. power cord, bulb).	Secure all connections.
Bulb beyond useful life or minimum intensity needed for curing application	Replace with a new bulb/reflector assembly.	Replace bulb/reflector assembly if required.
Main line fuse blown (nothing in unit operates)	Remove fuse from power receptacle and check with an ohmmeter.	Replace fuse, if defective.

**Problem: Low Output Intensity
Other Symptoms: Fails To Cure Adhesive in Allotted Time**

Possible Cause	Testing	Corrective Action
Bulb beyond useful life or minimum intensity for application	Use a radiometer (model DYMAX Accu-Cal 30) to measure output intensity.	Replace bulb/reflector assembly if beyond useful life.
Transmission loss in light guide too great	Compare lightguide output against new lightguide (or use the DYMAX Light Guide Simulator) to determine transmission loss.	Replace lightguide.
Contaminants on lightguide	Visually examine ends of light guide for contaminants.	Clean with isopropyl alcohol (or equivalent) Heavy deposits on liquid lightguides may be removed with a razor blade. Replace lightguide if it can not be cleaned.
Bulb/reflector assembly not installed properly	Visually check to make sure the bulb/reflector assembly is seated flush in the bulb mount assembly (any error in installation could cause a low output).	Properly install bulb/reflector assembly.

10. SPARE PARTS

ITEM	PART#
Bulb/Reflector Assembly	5120
Fuses: F3 Amp	35254
50 Watt Power Supply	5340
Liquid-D Lightguide, 5mm X 1 Meter	5720
Fan Filter and Holder	5097
Feet (Rubber Bumper)	5039
Hourmeter	5035
Foot Switch	5028
Footswitch Receptacle	5355
Shutter	5255
Solenoid Assembly	5354
Switch, Manual Timer	35384
Switch, Power	5050
Timer	5297

OPTIONS/ACCESSORIES:

ITEM	PART#
Case with Foam	38679
Liquid-D Lightguide, 5mm X 1 Meter	5720
Liquid-D Lightguide, 5mm X 1.5 Meter	5721
Liquid-D Lightguide, 8mm X 1 Meter	5722
Liquid-D Two Pole Lightguide, 3mm X 1 Meter	38476
Liquid-D Three Pole Lightguide, 3mm X 1 Meter	38477
Liquid-D Four Pole Lightguide, 3mm X 1 Meter	38478
UV Goggles – Green	35286
UV Goggles – Gray	35285
Face Shield	35186
DYMAX Accu-Cal 20 Radiometer	36629
DYMAX Accu-Cal 30 Radiometer	38302
Lightguide Simulator	38408

11. DEFINITION OF TERMS

Bulb - Light source generating Ultraviolet, Visible, and Infrared radiant energy from burning matter stimulated by electrical power conditioned by a proper power supply which is an integral part of a Lamp. A light source is usually placed into a reflector (of various geometry) to increase light source efficiency by collecting and directing radiant energy of selected spectra (for a given curing process).

Intensity - a measure of light energy over the unit of surface area (usually surface at the specified working distance from the bottom of a reflector housing) in W/cm^2 or mW/cm^2 . For the UV portion of light, this measure is often called in literature "irradiance", i.e. radiant energy arriving at a point on a surface per unit area.

Brightness, also known as **Luminance** - description of energy in the visible region of the spectrum (approximately from 400 to 700 nm) and recorded in photometric units. "**Intensity**" (see below) of visible light energy is called Illuminance.

Illuminance - luminous flux (energy of visible light) incident per unit area, and measured in **Lx** (lux) or **Lumen/cm²**.

Ultraviolet (UV) - The invisible region of the spectrum just beyond the violet end of the visible region. Wavelength ranges in general from 1.0 to 400 nm. DYMAX[®] bulbs (burners) do not radiate energy in deep Ultraviolet; there are very minute amounts below 220 nm and practically nothing can be sensed below 200 nm. This is due to the use of an ozone blocking quartz bulb envelope (See Ozone).

1. **Ultraviolet A (UV-A)** - UV of long wavelength from within approximately 400 to 320nm of the spectral band (4000 to 3200 \oplus) - predominately produced by DYMAX Flood Lamps.
2. **Ultraviolet B (UV-B)** - UV of medium wavelength from within approximately 320 to 280nm - DYMAX Flood Lamps produce some amount of their energy within this bandwidth.
3. **Ultraviolet C (UV-C)** - UV of short wavelength below 280nm (we say from 280 to 200nm) – a large amount of this energy is present in the Sunlight.
4. **Visible** – Light that can be seen 400-700 nm.

Dose - is irradiance integrated over time, or Irradiance (W/cm^2) x Time (s) = Dose (Joules/cm²). Note: Watt is the power that gives rise to the production of energy at the rate of 1-joule (J) per second (s).

Ozone - oxidizing agent (O₃) produced by the action of Ultraviolet radiant energy (below 185 nm) or electrical corona discharge of oxygen on air.

OSHA 1910.145: "Regulation of Accident prevention Signs and Tags" defines the following headers as:

WARNING – is used when there is a hazardous situation that has some probability of severe injury.

CAUTION - is used to indicate a hazardous situation that may result in minor or moderate injury.

NOTICE - is used to convey a message related directly or indirectly to the safety of personnel, or protection of property.

OSHA 1910.145: "Regulation de la prevention d'accident Signes et Étiquettes" défin les têtes comme:

AVERTISSEMENT-est utilisser quand il ya un situation hasardeux qu'il avais de probabilité de se blesser sévère.

PRE-CAUTION-est user pour indiquer un situation hasardeux qu'il peut être en consequence en minueur ou modère blessure.

ATTENTION-est user pour communiquer un message lié directement ou indirectement à la sécurité de personnel, ou protection de propriété.

TM-030 PN 39370 BlueWaveTM 50 AS
PN 39370
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12. WARRANTY

DYMAX® CORPORATION RESERVES THE RIGHT TO INVALIDATE ANY WARRANTIES, EXPRESSED OR IMPLIED, DUE TO ANY REPAIRS PERFORMED OR ATTEMPTED ON DYMAX EQUIPMENT WITHOUT WRITTEN AUTHORIZATION FROM DYMAX. THOSE CORRECTIVE ACTIONS LISTED BELOW ARE LIMITED TO THIS AUTHORIZATION.

WARRANTY CARD MUST BE RETURNED OR WARRANTY WILL BE VOID

DYMAX offers a one-year warranty against defects in material and workmanship on all system components, except the bulb, *with proof of purchase date*. Unauthorized repair, modification, or improper use of equipment may void warranty. The use of aftermarket replacement parts not supplied or approved by DYMAX Corporation, will void any effective warranties and may result in damage to the equipment.

REPLACEMENT BULB WARRANTY

If the bulb fails to ignite during the warranty period of 2000 hours, the bulb will be replaced under warranty.

The data contained in this bulletin is furnished for information only and is believed to be reliable. We cannot assume responsibility for results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any product or methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and persons against any hazards that may be involved in the handling and use thereof. Nothing in this bulletin is to be interpreted as a representation of freedom from domination of patents owned by others or a license under a DYMAX® Corporation patent. We recommend that each prospective user test his proposed application before repetitive use, using the data as a guide.



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