



## Fluorescing Visible Implant Elastomer and Visible Implant Alpha Tags



During operation, the VI Light radiates intense violet light. Do not look directly into the VI Light. Exposure to the VI Light can cause eye damage to humans and animals. Keep out of the reach of children.

Cuando están encendidos, la 'VI Light' proyecta una intensa luz violeta. No mire directamente a la 'VI Light' cuando el dispositivo esté encendido. La exposición a la 'VI Light' puede causar daños oculares en seres humanos y animales. Manténgase fuera del alcance de los niños.

### Introduction

A powerful feature of Northwest Marine Technology's (NMT) elastomer tags is that red, pink, yellow, blue, orange, and green can be fluoresced. When fluoresced, a small spot of elastomer can be seen at considerable distance and in the dark, tags obscured by pigmentation are often detectable, and VI Alpha tags are easier to read.

Elastomer tags can be fluoresced using blue light with amber glasses, ultraviolet light, or NMT's new VI Light (photo, below).



In January, 2006, NMT switched from supplying the blue light and amber glasses to supplying the VI Light, which has a nearly invisible, regulated,

deep-violet beam. Deep violet (405 nm) is the optimum wavelength for fluorescing our tags. It is safer than using UV light, and has several features that make it superior to the blue light and amber glasses and to commercially available UV lights. Because of its improved performance, we recommend that researchers use the VI Light for detecting tags.

### Why did NMT switch to the VI Light?

The blue light and amber glasses we previously supplied had limitations. Many customers didn't like to wear the amber glasses, and when they don't, the detectability of the tags in blue light is reduced. Blue tags do not fluoresce under blue light, but they will in violet light. Certain colors are indistinguishable when fluoresced in blue light. With an ordinary LED flashlight (such as our previous blue light), the light intensity fades as the batteries weaken, reducing tag detectability by unknown amounts. We designed the VI Light because we could not find an existing flashlight that met our criteria of an intense deep violet beam combined with stable light output and reasonable battery life in an immersion-proof body.

## What are the new features of the VI Light?

The new VI Light is quite different from an ordinary flashlight. Because you can hardly see the light, fluoresced tags are most visible without a filter. To hold detection efficiency constant, the VI Light maintains constant brightness and color right up until its battery fails completely. It provides a beam of uniform intensity, then begins flashing when the batteries near exhaustion. To do this, we included an electronic regulator circuit and deep-violet LEDs in the familiar body previously used for our 7 LED blue light. The VI Light is immersion-proof to a depth of 150 m.

Blue tags will fluoresce with the VI Light, but this fluorescence isn't as strong as that of the other colors. Red and pink tags can usually be distinguished when they are fluoresced with the VI Light, while they looked alike with the blue light and amber glasses.

## Using the VI Light

Our VI Lights are very bright, but you can hardly see their light. They do not trigger the eye's normal defense mechanisms against bright light.

**Never stare directly into any light used for fluorescing elastomer tags, and keep these lights out of the reach of children.**

It may be acceptable to glance briefly at one from the side to judge whether it is on or off, but it is safer and more informative to instead shine the light on a tag sample, and see if the tag fluoresces. This is even more important with ultraviolet lights.

If the VI light begins flashing, you should replace the batteries with fresh ones.

Shine the light directly on the area where the tag is, or is thought to be. Don't try to fluoresce tags in direct sunlight. Rather, you should work in a little shade – even the shade of your body is

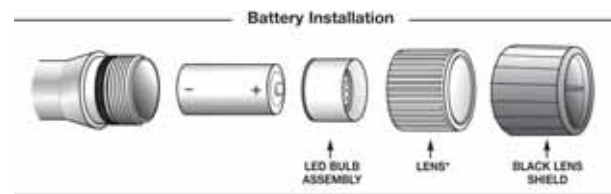
probably enough for most tags. Very faint tags are best seen when fluoresced in darkness.

To maximize tag identification:

- Proper color selection is a vital part of good experimental design. Please see our website ([www.nmt.us](http://www.nmt.us)) for more details.
- Place tags in clear tissue whenever possible.
- Train your samplers – let them practice with the tag colors they will encounter before they start collecting data.
- Fluoresce poor or obscured tags with the VI Light, working out of direct sunlight.
- Use the VIE Color Standard with the VI Light to correctly identify colors. The Color Standard presents the ten colors on a clear card. This allows the sampler to place the color sample beside a tag for comparison, either under or over the tagged tissue.

## Batteries

The VI Light uses three C-cells, and will begin flashing when they need changing. The light will operate after it begins flashing, but it is best to replace the batteries immediately. When operated at moderate temperatures you can expect high-quality alkaline cells to provide about 36 hours of battery life.



The flashlight will work with rechargeable cells, but it may damage them by discharging them too deeply. They are not recommended, but if they are used, you should replace them immediately when flashing begins.

## Maintenance

Occasionally clean and lubricate the threads and O-rings with silicone grease. Never use spray lubricants. Remove batteries from the flashlight for long-term storage.