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Personal Protective Equipment**[- survey at bottom](#)**Please survey the utility of this Lesson Learned upon review. Click on Link at bottom of page.****Lesson ID:** LL-2015-LLNL-11 (Source: User Submitted)**Originating Organization or Contracting Company:** Lawrence Livermore National Security, LLC**Date:** 8/3/2015 **Contact:** Jamie King (king75@llnl.gov, 925-423-3077)**Classifier:** N/A **Reviewer:** Constance E. De Grange

**Statement:** Be sure to verify the protective properties of your personal protective equipment before using it. A vigilant employee noticed that three of pairs of laser protective eyewear collected for a new laser task looked similar to but slightly different from the many others collected for this task. A closer look at the protective properties marked on these three revealed that they would not provide protection from the frequencies that would be used on this new task.

**Discussion:** Workers were preparing to perform a new laser task which required different laser protective eyewear than what was previously in use. New laser protective eyewear was purchased and additional pairs were gathered from other work locations. As the laser protective eyewear was being shown, one of the workers noticed that three pairs of laser protective eyewear did not look quite like the rest. The filter media (lens) appeared to be lighter in color and was not labeled as providing coverage for the wavelengths in use (1053nm and 527nm). The worker 'paused' work and requested that the Laser Safety Officer be contacted for clarification.

**Analysis:** Inspection by the Laser Safety Officer confirmed the worker's concern about the laser protective eyewear. It had "VISIBLE ALIGNMENT" imprinted on the left arm of each pair and was mistakenly grabbed in the laser protective eyewear hunt at other locations. This special laser protective eyewear had never been put into service and was still in the original vendor packaging.

As shown in figure 1 (see inset), this laser protective eyewear did not provide coverage for the infrared wavelength (1053nm) that was in use. The worker used proper situational awareness and ensured that the inadequate pairs were not put into use.

In the past, one could typically identify the proper laser protective eyewear to use by the color of the filter media. An infrared blocker (typically 1 um) was a green color and second harmonic (527-532 nm) was an amber-colored media (figure 2). There are many different dyes being used to help the worker see better while wearing laser protective eyewear, so filter media color alone should not be used to determine wavelength coverage.

**Recommended Actions:** Wearing improper laser protective eyewear is like wearing no laser protective eyewear at all.

Laser protective eyewear now comes in many different filter media colors. For example, coverage for 1um (also called 1w) can now be had in typical green, lime green, blue, and even grey. Filter media color alone should never be used to determine the adequacy of laser protective eyewear you are intending to use.

With reliance on laser protective eyewear as the 'last line of defense', it is critical that the user verify that the laser protective eyewear provide proper wavelength coverage and optical density for the wavelength in use (see the insets in Figures 1 and 2) or the laser protective eyewear has verified that proper protection is provided. This is imperative in operations where more than one type of laser protective eyewear is required.

Laser protective eyewear, like all other personal protective equipment, is an administrative control. This means it still requires a properly trained, informed and vigilant worker with good situational awareness for it to be effective.

**Savings:** None.**Keywords:** laser, LASER PROTECTIVE EYEWEAR, LASER SAFETY OFFICER, LPE, OPTICAL DENSITY, PERSONAL PROT**Hazard(s):** Lasers**ISM Code(s):** Analyze Hazards, Develop / Implement Controls**Work Function(s):** Occupational Safety & Health - Personnel Protective Equipment**References:** None.**Priority Descriptor:** Green / Good Work Practice**Attachments:**

LL-2015-11 Verification of PPE Properties Before Use - Laser Eyewear.pdf

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