ProLong Antifade Kit, ProLong Gold and *SlowFade* Gold Antifade Mountants

Introduction

We are committed to designing our products with the environment in mind. This fact sheet provides the rationale behind the environmental claims that use of Invitrogen™ ProLong™ Antifade Kit, ProLong™ Gold antifade reagent, and *SlowFade*™ Gold antifade reagent results in reduced personal and environmental exposure to hazardous materials, and less energy used to store and ship the products. These products have been formulated without sodium azide, and are now stable at room temperature—eliminating the need to store these products in the freezer or ship them in coolers on dry ice.

Through these actions, we are decreasing the volume of packaging and refrigerant, thereby reducing:

- Energy used to manufacture the packaging
- Fuel used and greenhouse gas emitted in association with transport and packaging
- Packaging waste at end of life

Product description

The ProLong and *SlowFade* reagents were developed in response to one of the most significant challenges in fluorescence microscopy—minimizing the destructive effects of intense light, which are generally attributed to the generation of highly reactive free radicals. The effects include signal loss (photobleaching) and phototoxicity, and the latter can lead to significant damage to live cells and even cell death—not to mention poor data.

Both ProLong and *SlowFade* reagents are liquid mountants that can be applied directly to fluorescently labeled cell or tissue samples on microscope slides. These products are formulated to protect fluorescent dyes from fading (photobleaching) and phototoxicity during fluorescence microscopy experiments without significantly quenching the initial fluorescence signal.

The ProLong Antifade Kit and ProLong Gold Antifade reagent both provide curing mountants that form a near-perfect optical path (1.47 RI), allowing longer-term storage of the samples. The *SlowFade* Gold Antifade reagent is a nonhardening mountant that was developed to provide the highest degree of antifade protection for the widest range of dyes and is intended for short-term preservation (3–4 weeks). Using these reagents, samples can be viewed immediately after mounting. Both reagent types significantly reduce fluorophore photobleaching while causing little or no quenching of the fluorescence signal..

Green features

Less hazardous

As part of the stability studies for these reagents, we evaluated the need to include a preservative as part of the product formulation. Our data indicate that there is no benefit from adding sodium azide, a preservative, which is very toxic to humans and to the aquatic environment, as well as highly reactive and potentially explosive. The *SlowFade* and ProLong Antifade reagents do not contain sodium azide and are thus nonhazardous.

Responsibly packaged

Since the products can be stored at room temperature, they no longer need to ship on dry ice in coolers. Shipping these products in ambient conditions reduces our environmental footprint because the ambient temperature box is smaller—increasing the freight density, thereby allowing our carriers to transport more boxes in a single trip—and also lighter, as it no longer requires the addition of dry ice to every shipment. This reduces the shipment weight and decreases the fuel consumption needed to transport the product.

More energy efficient

Ambient temperature storage of reagents is one of the key ways to reduce energy usage in the lab. A 2015 study on laboratory energy consumption by the Center for Energy Efficient Laboratories (CEEL) [1] determined that California laboratories alone use at least 800 GWh of energy each year—that's equivalent to the yearly greenhouse gas emissions from 127,489 passenger cars [2]. According to the CEEL study, cold storage makes up approximately 25% of a lab's energy consumption. Ambient temperature storage of the ProLong Antifade Kit and the ProLong Gold and *SlowFade* Gold Antifade Mountants is one small step towards more efficient use of cold storage to help reduce energy consumption in the lab.

References

1. Allison Paradise, "Market Assessment of Energy Efficiency Opportunities in Laboratories," 2015. etcc-ca.com/sites/default/files/reports/ceel_market_assessment_et14pge7591.pdf, accessed September 19, 2017.
2. US EPA Greenhouse Gas Equivalencies Calculator, epa.gov/energy/greenhouse-gas-equivalencies-calculator, accessed September 19, 2017.

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