Fast-Tint Protective Eyewear

ONR Program Code 03I

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At a Glance

What is it?

- The Fast-Tint Protective Eyewear (FTPE) shields warfighters' eyes from ballistic impact and 100 percent of ultraviolet A, B and C rays. The revolutionary single-lens technology, available for both goggles and glasses, rapidly transitions between clear for indoors, blue or amber for low-light/dusk and dark gray for daytime use.

How does it work?

- FTPE maintains warfighters' visual acuity when moving from bright to dark spaces
- Auto-sensor determines appropriate lens color based on environment or lens color can be switched manually
- Liquid crystal solutions within the lens contain customized dyes to create specific color states
- Color states are created when an electric charge is applied to the liquid, causing the crystals to reorient
- Battery lasts more than 55 hours per charge and is rechargeable via USB cable

What it will achieve

- Increases mission efficiency and warfighter readiness and decreases warfighter risk of eye injury.
- Meets the American National Standards Institute standards for ballistic protection

Point of Contact

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FTPE maintains optimal performance for executing missions in desert, woodland, urban and mountainous terrains and extended hot and cold-weather environments. The technology increases mission efficiency and warfighters' readiness level because they no longer need to stop, remove, and replace lenses to accommodate different light levels. FTPE decreases warfighters' risk of eye injury by enabling them to keep protective eyewear on since lenses transition automatically in less than .5 seconds based on ambient conditions or by a manual switch, allowing warfighters to select a specific desired state regardless of environment.

In the event of power failure, lenses default to clear and are replaceable if damaged. All electronic components are corrosion-resistant against humidity and salt fog.

A retired Navy SEAL submitted the request for fast-tint eyewear. TechSolutions created FTPE with Crane and Alpha Micron. The prototype will go through its second warfighter evaluation in Spring 2011, after which the Special Operations Command will purchase 100 updated pairs.

ONR TechSolutions: TechSolutions is a rapid-response technology development program that funds government laboratories to produce prototype solutions to problems identified by fleet/force members. Warfighter input and feedback throughout the development process ensures prototypes meet fleet/force needs. Sailors and Marines can submit requests via https://www.onr.navy.mil/techsolutions (no account needed).

To receive calls for solution ideas, government researchers should register for an account at https://www.onr.navy.mil/techsolutions.

People to People, People to Problems, People to Knowledge

"As a SEAL in Iraq, the issue was either you wore clear lens eye protection and squinted and dealt with the bright, sunny-day operations or you wore the dark lens sunglasses and removed them upon initial entry into dimly lit houses, leaving your eyes unprotected. TheTechSolutions program is unique and streamlined; it is the only rapid development program that, in my opinion, truly works for the warfighter and is about the warfighter."

— Retired Navy SEAL, FTPE submitter