

EXTREME ENVIRONMENTS REQUIRE SPECIALIZED SOLUTIONS TO ENSURE EYE SAFETY

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A forklift operator at a major frozen foods company navigates his vehicle from the frigid environment of a giant freezer out to the loading docks in the blazing Florida sunshine as pallets of frozen juice are loaded on semis for delivery to retail outlets. His safety glasses are exposed to an extreme variation in temperature and humidity. The result is inevitable: fog, in the form of water condensation, appears on the lens surface. When this occurs, performing any task is made more difficult, and often more dangerous, because vision is obscured.

Move north to the General Mills grain elevators in Duluth, Minnesota, where the outside temperatures can drop to more than 30 degrees below zero as the wind whips in off of Lake Superior. Inside the grain elevators, the temperature drops even lower as workers go from this bitterly cold environment to warmer locations within the plant. Although these two operations are nearly 1700 miles apart, they share the same challenge: ensuring the safety of their workers in extreme environmental situations.

Safety managers know the importance of keeping safety eyewear in place when fog and condensation may begin to obstruct vision. The last thing they want is for any of their workers to remove their safety glasses to wipe the lenses. This could lead to situations that not only expose the eyes to danger, but could potentially cause an accident.

Jim Collins, Manager of Global Safety, Wellness, and Claims Management at General Mills, shares that sentiment. "We have to eliminate any reason a worker feels he or she needs to remove safety eyewear in the course of doing their jobs. Lens fogging has presented a major challenge in having our workers comply with eyewear safety regulations," says Collins.

Technology provides solutions.

Fortunately, the technology is available to minimize the effects of fogging and condensation, thus enabling workers in extreme environments to perform their jobs safely, efficiently, and without interruption. In both locales, employees rely on eyewear with anti-fog coatings to counteract these conditions.

When an uncoated or hard coated lens is exposed to extreme moisture or humidity, minute water droplets build up on the lens which causes fogging. By using specialized anti-fog coatings on the lens, condensation is controlled to help keep vision clear.

This is the desired effect. If workers don't have to remove their glasses to wipe them, their eyes remain protected at all times. General Mills' Collins adds, "Protecting our

employees is the most important thing. If the safety glasses are able to eliminate any need to remove them, we're way ahead of the game."

Chemical exposure is an extreme condition that requires special treatment.

The safety issues encountered at General Mills are just part of a long list of safety eyewear challenges encountered in various industrial applications—from food-processing to manufacturing to chemical handling—as well as healthcare, laboratories, and construction applications. In addition to being able to withstand impact from all kinds of flying objects, safety eyewear must provide durability and scratch resistance from wood particles, metal projectiles and a host of airborne abrasive materials. Chemical splash resistance in the form of biological materials, solvents and petroleum products is another key property of protective eyewear.

To offer additional protection in these areas, companies should look for eyewear with lens coatings that are designed to significantly reduce scratching from airborne particles and protect eyewear lenses from the harmful effects of chemical exposure, thereby adding longer life to the lens. For situations where workers are subject to chemical splash, the highest degree of chemical resistance is required.

New Coating Technology Delivers Specialized Protection and Longer Lens Life

In environments where one finds a combination of heat, humidity, dust, abrasives and chemicals, workers need specialized eyewear that offers protection from both fogging and particulates or chemicals. Safety eyewear is now available with dual coating technology that delivers scratch- and chemical-resistant hard coating on the exterior surface of the lens and high-performance anti-fog coating on the interior. For the first time, the wearer is able to keep the interior of the lens free from fogging while protecting the outside from scratches and effects of chemicals. Because the lens surfaces are customized to provide maximum performance and protection, dual coated lenses can last longer than those with traditional anti-fog coatings on both sides. And because the lenses last longer and need to be replaced less frequently, cost of ownership is lowered.

Airborne particles and high-speed projectiles? Military grade protection is the answer.

It is essential for safety lenses to protect the eyes from high-speed projectiles in the workplace. At a minimum, protective eyewear must meet the ANSI Z87.1 industrial standard for eye and face protection. Product components will be marked with the manufacturer's logo and with "Z87" indicating compliance. Protectors offering high impact protection will contain lenses marked "Z87+".

Companies that need additional assurance and protection from impact should consider safety eyewear products that provide a higher level of impact protection than required by ANSI Z87.1. Look for eyewear that has been tested to pass the U.S. Military's MIL V₀ ballistic test for impact, requiring that certified products withstand the impact of shrapnel-simulating projectiles moving at the rate of 650 feet per second. This is the equivalent of impact energies seven times higher than the ANSI high impact test. It's

comforting to know that users across all industries can enjoy the same level of protection as prescribed by U.S. military branches for our armed forces.

Tints aren't for looks; they're for improving productivity and preventing accidents.

Specialized tints can be used to solve specific lighting challenges. For example, when intense yellow or sodium vapor lighting is present, a light blue lens filter can be used to overcome the effects. Vermilion—or pink-colored lenses—can reduce glare from fluorescent and halogen lighting and will also increase contrast for inspection processes.

Choosing the correct lens tint can be critical to worker safety. For typical indoor work, or certainly in a dimly lit work area, clear lenses would be recommended. Outdoor conditions can jeopardize safety through visibility-compromising glare, making the best lens choice a sunglass tint. However, if the worker needs to go frequently from indoors to outdoors, a light mirror-coated lens that offers good light transmission while protecting against glare when outdoors is a good choice.

If it's not comfortable and doesn't look good, it won't be worn.

There is one more aspect of eye protection that is essential to having workers comply with safety regulations. If it's not comfortable and doesn't look good, it won't be worn. It is vital for a company to offer protective eyewear that is specifically designed for comfort and adjustability to help improve compliance. Eyewear that is strictly functional is not enough in today's complex work environments. Fashion, style, and comfort are a must for safety eyewear that protects against hazards, can be worn for hours on end without fatigue, and looks good on the wearer.

In the end, workers must be provided with eyewear that protects, provides visual clarity, and increases productivity. Ensuring compliance, fit, comfort, and style are critical. Each year, the world's evolving technologies create new work environments where products that do just that are absolutely essential; and new product development teams are working constantly to provide the solutions.

From improving lens performance and comfort, to providing specialized tints for improved productivity, to providing protection from projectiles moving at speeds up to 650 feet per second, safety eyewear is being asked to do many things. Fortunately, innovative technological advancements have met that challenge with eyewear products and coatings that ensure compliance and help keep companies like General Mills, and other large and small industries humming right along.

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