

PARAT® X-treme PX 1 AMBER LED Safety Lights

“See and to Be Seen” Under Adverse Conditions

When Weather Affects Visibility

Fog, rain and snow all reduce visibility greatly, often to less than 50 metres; the resulting visual impairment becomes acute and especially dangerous at night because obstacles and people cannot be seen and located in time.

“Visibility” encompasses three different meanings:

- 'To see'** – 'active' area illumination for forward visibility, e.g. car headlights, street lights, flashlights, etc.
- 'To be seen'** - using 'reactive' illuminators to enhance obstacles and hazards, e.g. car rear fog light, barrier warning lights, etc.
- 'To be detected'** – passive warning markings so that obstacles and persons can be spotted at short distance, e.g. reflective tapes, reflective vests, etc.

In adverse weather condition, the visibility problem is twofold:

- 'Blooming effect'** – The light beam is reflected by miniature water droplets or ice crystals blinding the normal observer, e.g. drivers, and so reducing the already poor visibility further.
- 'Invisibility'** - Vehicles, obstacles, hazards, persons, etc. which do not contrast against the background might not be detected. Also, research shows that dense fog and low visibility trick the human brain to perceive obstacles and hazards to be further away than they actually are!



Safety Challenges

Flashlights are mainly intended for 'actively' lighting up locations and areas but also to serve as 'reactive' illuminators increasing personal safety and security.

When employing flashlights as 'active' forward area and target illuminators, most users opt for 'maximal light power' forgetting that in inclement weather the 'blooming' light effect will blind them. In dense fog, heavy rain or blizzards, intense light will backscatter reducing the observer's visibility close to zero! For this reason, in adverse weather and poor ambient lighting conditions, **'reactive' illumination is a safety mandate.** In these surroundings, lights in general and flashlights in particular are deployed to highlight the presence of personnel and obstacles, which otherwise would remain indistinct from the background (e.g. persons wearing dark clothing). At high risk are workers repairing train tracks, highway engineers, persons working at height, patrolling policemen, First Responders and rescue teams but also HAZMAT and CWA officers, not to mention school children, pedestrians and cyclists!



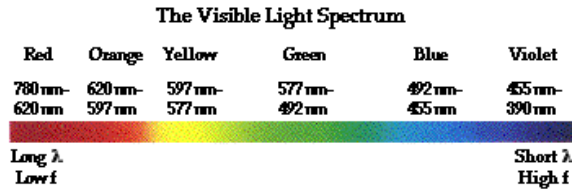
To increase personal visibility and as warning light, individuals are encouraged to carry a flashlight emitting an **amber light beam** which can be spotted easily from a distance, even in bright sun light.

'Passive' warning by wearing reflective vests is in place in clear weather but becomes inutile in adverse conditions. Reasons are that insufficient light will reach the reflective tape to shine up and reflections, if any, will be further deflected by rain, fog or snow to invisibility.



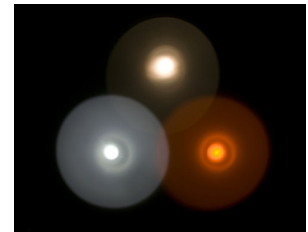
Why Amber Light?

Amber (orange-yellow) is the colour which signals the presence of dangers and hazards. Amber is a relative long wave/low frequency visible light (575 nm and 595 nm) located halfway between the red and yellow spectrum. Amber and yellow lights are often, but *incorrectly*, assumed to 'penetrate' fog, rain, snow and smoke better than white light. The reason why amber light performs better in adverse weather conditions is entirely related to the human eyes (cones and rods), how they respond to different wavelengths (colours), to background luminance (photopic, mesopic and scotopic response) and to the perception of visual 'noise' caused by falling rain drops, snowflakes and perturbed water particles (fog). Simply said and as various research publications prove, **in inclement conditions amber light fares far better than white light** (literature references will be supplied upon request); for this reason, modern street lights are orange/amber!



The solution

The modular **Parat® X-treme PX 1 models** are the only ATEX and IECEx certified safety lights offered with **interchangeable light modules** (Xenon, LED white and LED amber), intended for both, 'active' and 'reactive' personal illumination! Parat® PX 1 can be operated as handheld flashlight or be mounted on firemen's helmets and hardhats. Parat® PX 1 models guarantee **all-round personal safety and security** for professionals when working and operating in adverse weather conditions, in daytime and at night.



Parat® PX 1 LED amber in smoke



Parat® PX 1 LED white in smoke



PX 1 Helmet Mounted

For further product specifications, please visit www.pilatorch.com

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