Screen Coatings & Films:

Improving Visibility In Any Condition

Specialized Tablet Screen Coatings and Films –

In an office, under optimal circumstances, any quality electronic screen should be easy enough to read and use. But tablets, unlike other screens, don't spend much time being viewed under optimal conditions. Tablets are taken out in the real world, exposed to bright, direct lights, strange illumination circumstances, and the happenstance of the user. Any of these things can reduce visibility to the point that a device becomes entirely unusable.

Fortunately, Estone Technology rugged tablets offer a solution. Screen Coatings and Films are available to combat specific sources of diminished visibility. Specifically, Estone Technology rugged tablets offer three different screen coatings to protect and enhance visibility – Anti-Glare (AG), Anti-Reflection (AR), and Anti-Polarization (AP) filters. But what are these filters, and how do they benefit users in different settings?

Anti-Glare

For tablets and devices that are likely to be used in full sunlight or other bright conditions, an anti-glare film or coating is essential. When bright lights shine directly on glass or a smooth screen, they show up in a big, bold reflection that can make it hard to see anything "behind" the reflection.

A screen showing glare on an unfiltered screen vs with a filter.

This is not necessarily due to the brightness of the glare, nor the difference between the screen brightness and external brightness. When a bright light glares on a screen, it creates a clear image that is quite easy to see and read. Because this image is frequently so clear and is "on top" of the glass, it is frequently easy to read and hides whatever is "below" it, even if the below message or image is also bright and easy to read.[1]

Glare reduction coatings work by creating a micro-textured surface on top of the glass reflecting area. This texture breaks up glare image, making it diffuse, less clear, and less bright, thereby enhancing the image underneath. In some cases, this can have the effect of reducing image quality or clarity, but the high quality Anti-Glare coatings used by Estone Technology don't suffer from this deficiency, reducing glare with a minimum of impact on image clarity and quality.

Anti-Reflectivity

As opposed to glare reduction, anti-reflectivity coatings work in a different way on both internal and external sources of light reflections. As light passes through the various layers of a modern touchscreen display, some of it is reflected back, both from the inside and the outside, creating a "washed-out" look that requires additional screen brightness. Unfortunately, additional brightness comes at the cost of power, and eye-comfort while using.

In fact, increasing screen brightness can have an extremely adverse effect on battery life for mobile devices. A standard iPhone™'s battery life can be cut by nearly half when screen brightness is increased

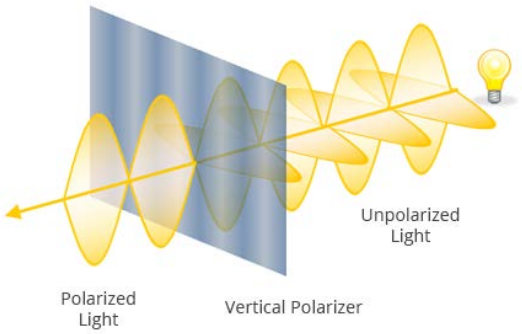
[1] https://www.tspinc.com/anti-glare-vs-anti-reflective/

from the lowest to highest setting.[2] Obviously, one can't afford to have their work tablet out of power in the field just because it was hard to see. Fortunately, anti-reflectivity coatings solve this problem.

By "bending" light as it passes from layer to layer in a touchscreen, an anti-reflectivity coating "bends" the light through the layers, reducing refraction and reflection between layers, creating a clear image without the need for any additional screen brightness. The coatings used by Estone Tech are extremely high quality, allowing more than 99% of light to pass through to the viewer.

Anti-Polarization

In addition to the filters and coatings that may be applied to a tablet's screen, if you're working outdoors, you likely will be wearing sunglasses, which may feature coatings of their own. One of the most common types of these coatings is a polarization film. Polarization films are popular on sunglasses as they work to reduce glare, improve sharpness, and filter out reflections like water on the road.



By depolarizing the screen image, it will not be blocked by polarized lenses.

Basically, a polarized lens blocks out light coming in at angles and brightness levels that are consistent with reflections, while allowing light that is consistent with normal sources to pass through.[3] Unfortunately, under some circumstances, this type of film may block out light from a tablet screen, causing it to appear black. This can usually be fixed by turning the tablet to a different orientation, but often that's not really a reasonable solution.

To combat this problem, Estone Technology offers tablets with an anti-polarization coating. These types of coatings function in the opposite way of polarization coatings, scattering light emitted so that it travels in vertical, horizontal, and other wave orientations. When that scattered light reaches a user's sunglasses, they will naturally again block out all but one wave orientation, making the screen comfortably and easily visible.

Anti-Fingerprint

You may have seen the term "Oleophobic" somewhere. In simple terms, Oleophobic refers to a material which resists oils. In terms of electronic products, this most often refers to coatings on glass that is meant to be touched, resisting fingerprints on tablets, ear prints on phones, and so on. A more common name for this Oleophobic coating is 'Anti-Fingerprint', applied as either a film or spray on coating to the top layer of touchscreen glass.

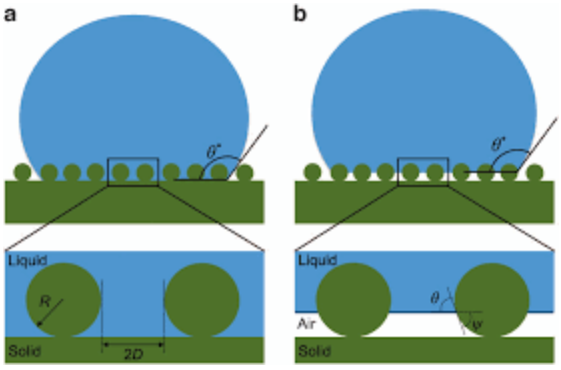
Though Estone Technology tablets and panel PCs are tough and rugged, it's still not recommended to take harsh cleansers to your electronic devices regularly – not to mention in the field that is extremely inconvenient! If a screen were to become smudged from use at a remote jobsite or on a busy public kiosk somewhere, obtaining the time and materials to clean it regularly may be impossible. By applying

[2] https://www.wired.com/2013/04/does-decreased-brightness-increase-your-phones-battery-life/
[3] https://www.fivepointseyecare.com/eyeglasses/polarized-lenses-and-anti-reflection-coating/

an oleophobic fingerprint resistant coating to touchpanels, cleaning them is significantly eased. Simply wipe a properly protected screen with a soft, clean cloth, and prints disappear, rather than smear.

Like hydrophobic coatings that resist water, oleophobic coatings work though a principal of surface tension. When liquids, including oils, are upon a glass surface, they tend to spread out flat, creating a dome-shaped spot of liquid that has a lot of contact area with the glass.

By adding a layer to the glass that does not lie flat, but rather has microscopic peaks and valleys, a liquid is no longer free to lie flat. Surface tension and fluid dynamics rules force the liquid to stand up and form droplet like shapes on top of this layer. Because the drops have low contact area with the glass surface, they are easily wiped away.



Bodily oils and fingerprints, like other fluids, don't sink into microscopic channels.

Bringing It Together

Because rugged tablets designed for field and outdoor use are subjected to all types of conditions, it is incredibly difficult to predict what type of filters and coatings may be needed. Fortunately, the right types of Anti-Glare, Anti-Reflective, Anti-Fingerprint, and Anti-Polarization filters do not interfere with one another, and can be placed on the same device screen. With the right combination of coatings and films, you can be certain that your device remains operable no matter what.

You can find these coating technologies in a variety of Estone Technology products, especially our rugged tablets and panel PCs. For instance, one might wish to combine anti-glare and anti-fingerprint coatings on our MD-100 Medical Version tablet. The tablet features a variety of built in tools like a barcode scanner and a fingerprint reader, making it ideal for use in hospital environments by nurses and other caregivers. Because of this, it is likely to end up touched by a rotation of hands and used under intense florescent lights, making those coatings ideal.

Our MT-140 tablet benefits greatly from anti-fingerprint coatings as well, being commonly used as a mounted screen on wheelchairs or other mobile platforms. Because it is frequently used all day long, the MT-140 screen, with its 20+ hour possible runtime, is subject to traces of whatever oils are left on fingertips throughout the day. An anti-fingerprint coating ensures that the screen will be easy to clean for users, maintenance people, caregivers, and others who regularly interact with the screen.

Anti-polarization coatings are especially popular on our MR-100 rugged tablets, designed for the harshest industrial and outdoor environments. Because these units are often used in full sun, they're frequently used with sunglasses. Without an anti-polarization coating, the device might become impossible to see for a user wearing polarized sunglasses – clearly not a desirable situation.

Estone Technology is a designer and manufacturer of tablet PCs and panel PCs for specialized and rugged industries. Learn more about our products and services online at http:://estonetech.com.