
Consumer Decision Making Contest

1997-98 Study Guide

SUNGLASSES

My future's so bright, I gotta wear shades...

Sunglasses are a part of fashion and fad. But they are also important to the health of eyes. In 1988, a study by Johns Hopkins University indicated that people who did not use some form of eye protection were three times more likely to suffer from eye ailments such as cataracts and cancer of the eyelids than those who wore protective sunglasses. Most sunglasses will protect eyes adequately, although some styles do not include protective features. Nothing, including sunglasses, offers protection against the harm caused by looking directly into the sun.

Choosing sunglasses for eye protection allows a wide range of choice. Selecting a pair of sunglasses based on wearer comfort and personal preference may be more difficult. Knowing what features are available will help in finding the best pair of sunglasses for the conditions in which they will be worn.

What Sunglasses Do

Besides fashion, sunglasses serve other purposes. They can offer protection and comfort for eyes.

Eyes are bombarded with light rays of all wavelengths--from the sun and from artificial light. Much of the concern over eye health involves the shorter wavelengths, called ultraviolet (UV) light. UV light is further divided into two categories--shorter wavelengths are called UVB, longer wavelengths are called UVA. Again, shorter rays (UVB) have been found to cause more eye damage than the longer rays (UVA).

The main protection offered by sunglasses is filtering out these UV rays. How dark the lenses are does not determine how well UV light is filtered out. Blocking UV rays is often accomplished by adding chemicals to the lenses or adding special coatings.

Sunglasses can also be useful in another way. Working or playing in bright light can tire eyes quickly. Wearing sunglasses while working in bright sunlight will provide comfort and keep eyes from tiring out as quickly.

Sunglasses also provide some protection from dust and particles in the air. Sunglasses may serve to keep

dirt from getting into the wearer's eyes and becoming uncomfortable. This is especially true for people who wear contact lenses.

Labeling

The American National Standards Institute (ANSI), in cooperation with the U.S. Food and Drug Administration and the Sunglass Association of America, has set up a voluntary labeling system for sunglasses. Manufacturers may choose whether or not they wish to use the labeling system.

Recommended standards include:

- Sunglasses must block 99% of UVB light. A UVB-blocking sunglass is adequate to protect eyes in moderately bright sunlight like that found in low-altitude, urban areas.
- A UV-blocking sunglass blocks 99% of both UVA and UVB. A UV-blocking sunglass is adequate protection in very bright sunlight like that found in low-altitude snow areas and beaches. Such sunglasses should block 60 to 90% of visible light to adequately reduce glare and increase visual comfort. The lenses should allow you to recognize traffic signals accurately.
- To protect eyes during prolonged daily use in extremely bright sunlight, like high-elevation snow areas and equatorial sand beaches, a UV-blocking

sunglass should block 92 to 97% of visible light and have side shields. Goggles are also acceptable. Side shields are needed in extremely bright sunlight to prevent UV rays and light from being reflected into the eyes. These sunglasses limit a drivers ability to accurately recognize traffic signals. Side shields should not be worn when driving because they eliminate peripheral vision.

- The only medical claims allowed on sunglasses are that they prevent cataracts and photo keratitis.

Types of Lenses

Plain lenses are uniformly tinted throughout the lens and come in lots of different colors. The darkness of the lens has nothing to do with how well it blocks UV light, but it will make a difference in how much visible light gets seen. This may be important for eye comfort during prolonged time in bright sunlight.

Single gradient lenses are tinted darker at the top than at the bottom. They may be useful for tasks like driving, where the road is bright but the dashboard is dark. They are not useful for places like a beach, where light is reflected up from the sand. The difference in tint causes lighting to change as the wearer's head moves, which may be annoying to some wearers.

Double gradient lenses are tinted darker at the top and bottom, but lighter in the center. These are designed for sports such as sailing, skiing, and tennis, where light comes in from above and is also reflected from below, but the center of vision has less light coming in. They are not appropriate for driving, since they darken visibility of the dashboard controls. Like single gradient lenses, the difference in tint may be annoying to wearers.

Polarizing lenses are specifically designed to reduce reflected glare, such as sunlight bouncing off water or pavement. This makes them especially suited to water sports and driving.

Photosensitive lenses darken and lighten in response to the amount of available light. Photosensitive lenses darken more quickly than they lighten. They also do not darken as quickly in hot weather as in cold. They will not darken much while driving, since the car shades out much of the direct UV light to which the lenses respond. Lenses that start out with a dark tint will be darker when they change tint. Some wearers may be bothered by the length of time the lenses take to change. In addition, some

lenses "wear out" and fail to darken or lighten after a period of time.

Flash lenses have a mirrorlike finish on one side of the lens. It may be silver, colored, or iridescent. The coatings add more to appearance than usefulness and can scratch easily.

Color

Lens color can be a dye in the lens or a coating on the lens. Color on coated lenses is more likely than dyed lenses to scratch or wear off. Coated lenses can be protected by the manufacturer through use of scratch-resistant layers. Overall, dyed lenses retain color longer.

Darkness of a lens determines how much visible light will be let in. No special instruments are needed for this--the wearer can tell just by looking through the lenses. If glasses are to be worn in very bright conditions such as for water sports a darker lens is more practical. For everyday wear, a medium to light lens is usually sufficient and may be more versatile. The main point is to match the amount of tint to the purpose for which the glasses will be used.

At one time, amber lenses were claimed to be superior because they reduced "blue light," or shorter light rays. Because amber colored glasses reduce the transmission of blue light, they are sometimes preferred by pilots or others who need enhanced clarity of distant objects which may be obscured by a blue haze. However, no studies have proven that amber glasses provide any more protection to the eye than other colors.

Lens color actually makes little to no difference in effectiveness. The color preference of the wearer is the main basis for color choice. Gray colored lenses offer the least color distortion to the wearer. Because of this, they are preferred by some people.

Lens Quality

Most sunglass lenses are made of plastic. Some are glass. Plastic lenses generally do not break as easily as glass ones. In addition, plastic lenses can be made much thinner than glass lenses, reducing overall weight of the glasses. Plastic lenses scratch more easily than glass lenses, so they should be coated with a scratch-resistant layer. One way to judge the lens quality is to look for scratches on the lenses at the store to see if they are already scratched. Any lenses which cannot survive transport to the store without scratching will scratch easily in everyday conditions.

Lens distortion occurs in both glass and plastic lenses. It means that looking at objects through the lenses causes objects to look oddly shaped. In glass lenses, this may occur if the glass has been formed rather than ground. In plastic lenses, distortion may occur because of handling after manufacture. Either way, distortion is easy to detect. If an object with straight lines (like a floor tile) is viewed through glasses held at arm's length, the lines should appear straight. If the lines warp or curve when the glasses are moved up and down, the lens is distorted. Cost is not a guarantee of distortion-free lenses. Inexpensive lenses will often be free of distortion. All sunglass lenses must pass the Food & Drug Administration's safety test for breakage.

Frames

Frames should be sturdy and comfortable. When choosing a pair of sunglasses, be sure to try them on. Check to see that the frames have not been bent out of shape in transport or storage. Be sure that the frames are not designed so that they block side vision either around the lenses or at the temples. The frames should be long enough to fit comfortably over the ears. They should be wide enough not to press on the temples. If glasses with identical frames are already broken on the shelf, that indicates that the frame will not be sturdy enough to last under normal conditions.

As with color, the main criterion for choosing frame style is wearer preference. As long as a style is comfortable and does not block vision, preference is the deciding factor.

Cost

With sunglasses, price bears little relation to performance. Effective, reliable, high quality sunglasses can be found among even inexpensive pairs.

The lowest priced sunglasses may be more prone to lens distortion or scratching, but both of these conditions can be determined by visual inspection and reading labels for protective coatings. High fashion and brand names may raise the price. More expensive glasses often provide more information on materials and manufacturing processes than lower priced ones.

Accessories

As with most consumer products, a variety of accessories is available to go with sunglasses.

Decals can be purchased to personalize lenses or frames. If these are used, they should be carefully placed so that vision is not obscured.

"Snuggies," or cords to hold sunglasses around the wearer's neck, are available in a wide variety of styles and colors. These can be useful to keep from losing sunglasses, since the glasses are usually taken off indoors.

Cases for storing and transporting sunglasses are also available. Some cases are soft, others offer hard-shell protection. The type of case chosen will depend on the type of use it will receive. Less expensive glasses will usually come without cases, while more expensive glasses may sport fancy designer cases, adding to cost without adding to performance of the glasses themselves. Cases can be purchased separately at most optical shops and some department stores.

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