

Name: _____

Date: _____

How is a one-way mirror made?

To understand how a one-way mirror is made, first we need to understand how a regular mirror is made.

How is a regular mirror made?

Making a regular mirror starts with a transparent piece of glass or plastic. A thick coating of a very smooth, reflective material, such as tin, silver, aluminum, or nickel, is added to the back side of the glass or plastic. This process is called "silvering." The thick coating leaves the transparent surface fully covered with reflective material. On the side with the coating, no parts of the glass are exposed and the mirror is fully opaque, meaning that no light can transmit through it.



How is a one-way mirror made?

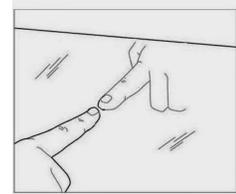
A one-way mirror is made the same way as a regular mirror, starting with a piece of clear glass or plastic film. Instead of adding a thick layer of smooth reflective material, a very thin layer of silver, aluminum, nickel, or tin is added to the front of the glass or plastic film. This creates a "half-silvered" material. Some parts of the glass or plastic film are covered with the reflective coating. However, because the coating is so thin, this leaves some parts of the glass or plastic film still exposed. The result is a material that has some transparent surfaces and some reflective surfaces.

A one-way mirror is similar to a sticker material that people put in their car window for advertising. It would be dangerous to drive if someone covered an entire car window with a fully opaque sticker. The driver would not be able to see out the window. This sticker is not fully opaque, as it has many tiny holes in it. From a distance, most people just see the advertisement and pattern on the sticker, but when you look closely, you can see the holes. This allows you to see out of the car.

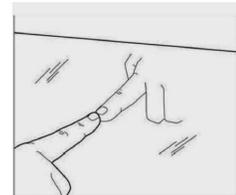




How can you test if you are looking into a one-way mirror? Are you worried that you might not realize there are people on the other side of what appears to be a mirror? How can you tell the difference between a regular mirror and a one-way mirror? When making a regular mirror, the thick coating of reflective material is applied to the back of the transparent glass. Whereas, on a one-way mirror, the thin reflective coating is applied to the front of the glass. This allows you to do a simple test using your finger. When you place your finger against the regular mirror, you should see a small gap between your finger and the reflection. This is because there is glass between your finger and the reflective coating. With a one-way mirror, you won't see any gap. This test may not work for plastic mirrors or mirrors with very thin glass mirror, but it should work for thick glass mirrors. Try it out the next time you see a glass mirror in the bathroom, but make sure to clean your fingerprint smudges!



Regular mirror



One-way mirror