

SECOND SURFACE

Published, now and again

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Second surface metallizing is sometimes called **reverse** or **see-through metallizing**. The front surface which faces a person is referred to as the first surface, and the opposite back surface is referred to as the second surface. A mirror is an example of an item which is second surface metallized. One looks through the clear substrate to the reflective surface on the back. The image is then reflected back through the clear substrate for viewing. In this TIPs we will comment on decorative second surface metallizing and on polycarbonate sheet stock for plastic mirrors.



Second surface metallizing was first done by Gits Molding in Chicago, under the “crystal seal” patents. This was immediately after World War II. Next, a company called F. W. Steward made a clear pointer for automobile radio controls. The two first big jobs were for Hudson and Ford automobiles. Hudson Motorcar had a horn button which featured a silver two-masted schooner sailing on a sea of blue. Ford had their name in script on a nameplate. In Europe, Fiat had gold on clear plastic nameplate. Now we see this type of metallizing done and think nothing about it, but it was a big deal then. Today the technique is common even on inexpensive items. Many point of purchase retail displays are done this way.

For plastic mirror sheets, security mirrors, and security domes, the entire back surface is metallized. The first surface is protected from receiving any metallization by a protective plastic film. After metallizing, mirrors are back-coated with a protective paint. Security products have no protective paint back-coating since they are metallized with a very thin layer of aluminum designed to be seen through and the protective paint is opaque.

Let's look at how a typical second surface metallizing might be applied:

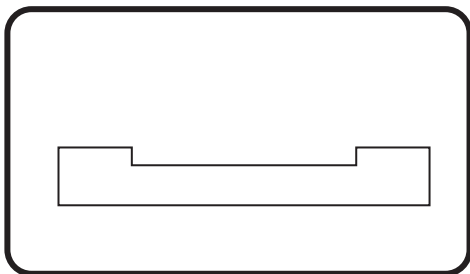


Figure 1 - Clear part is molded with a recessed area. The front face which will be viewed is on the bottom and the back face is on the top. (Cross sectional view)

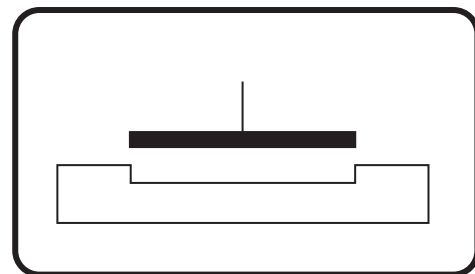


Figure 2 - A mask is created which will plug the recess and protect it during other decorating operations.

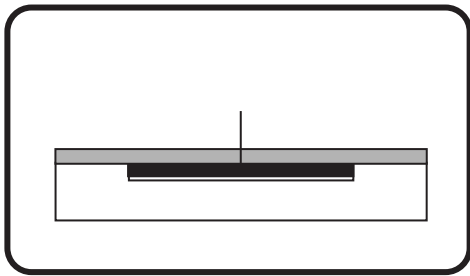


Figure 3 - Decorative paint is applied to the part. Recessed area is protected by the mask.

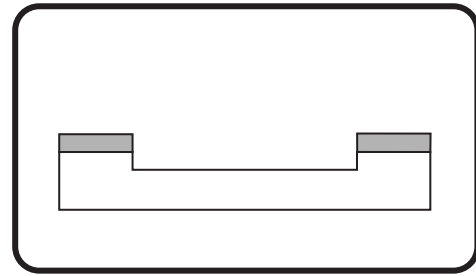


Figure 4 - Mask is removed. Recessed area is uncoated.

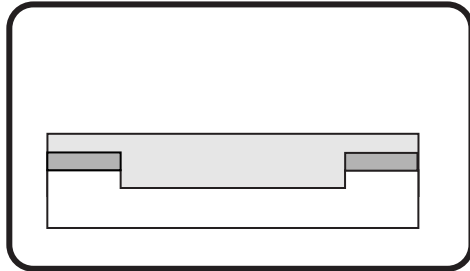


Figure 5 - Back surface is now completely metallized.

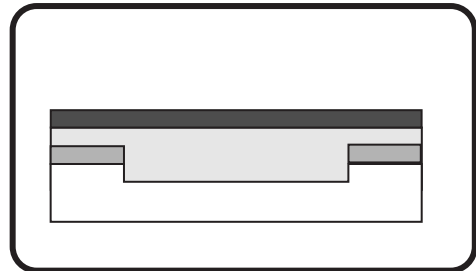
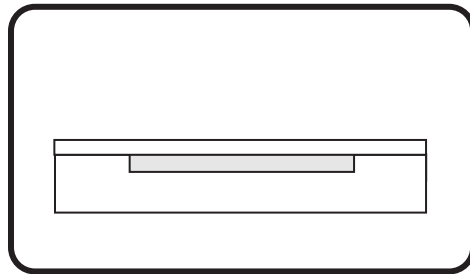
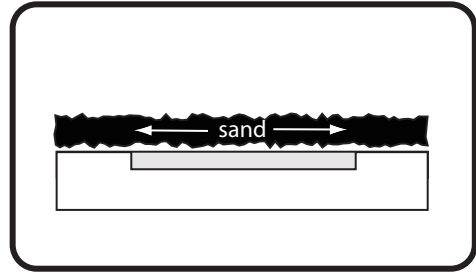
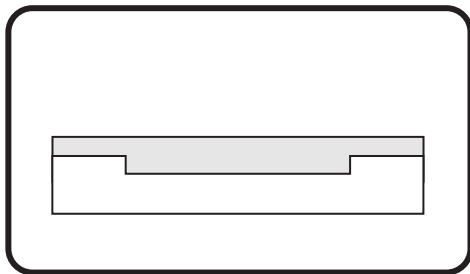


Figure 6 - Back face is covered with a protective coating. From front, metallized surface can be seen projecting into the clear plastic against painted background.

There is also a less popular technique in which the entire back face is metallized, then the high spots sanded down, removing the metallizing from them and leaving metallizing in the recesses only. After a clear lacquer is applied to the entire back surface, the sanded area looks transparent. The result is a metallized figure set in a clear plastic field.



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