



Tint Man Tips

AUTO | HOME | OFFICE

Tip: Knowing the construction of the advanced automotive products Author: Tint Man
Reference: TMT 008 Revision 001 April 7, 2017

We already understand the basics of the automotive window film sandwich, from Tint Man Tip 007, now let's take it to a higher level. The addition of the Nano-Ceramic technology into the window film industry is one of the most interesting things that I have come across.

While we can compare non-reflective and high performance films by comparing their base layers, we must dig a little deeper when looking at today's IR Films. There is little to no information readily available to us, on this new technology. The construction of these products, are trade secrets and therefore classified as a "need to know basis", and trust me we are not on the need to know list. The sales people probably don't know the real answers either. All we can do on these is to compare solar properties of each and see what fits best for our specific application.

"Nano ceramic" materials are nano sized metal oxide particles and they add functionality to window films, such as IR, UV and Color properties. Generally, they do not affect the optics of window film as they are small enough to be invisible to the eye. Nano ceramic materials have excellent long term stability and usually do not lose effectiveness over time. These products are marketed using the higher IR (Infrared) rejection properties. "IR rejection" means blocking the portion of the solar energy that becomes heat when absorbed by the film, inside of the car or on your arm. I think it's cool that IR rejects heat, and nano is such a cool word. Pun intended.

These products can be made in a variety of ways, dependent upon the equipment, capabilities and techniques of any given manufacturer. Some have the nano additive in the hard coating, some in a single layer of the laminating adhesive and others in two layers of adhesive, the ones with the nano in two adhesive layers have so far proven to have the most IR rejection. It is like adding another metalized layer without really adding another layer. This is a huge change in the basic window film sandwich, one that is not as easy to understand as the basic constructions we are all so familiar with.

Where is the best placement for the nano additive, we ask ourselves? No one can really know, but some in the industry are concerned about those in the hard coat. They think it is possible that it is exposing the chemistry to the elements; primarily moisture which may cause preliminary failure of either the hard coat or falling of the IR rejection numbers. Only time will tell on that concern.

The darker VLT's are normally made with a layer of dyed polyester, a layer of clear and the addition of nano somewhere. The lighter VLT's, the ones that are the most optically clear are usually made with a clear plastic layer, instead of the dyed layer. These products are so clear that no one will ever know that a window film product is even on the window.

The improved IR rejection in these clear films has turned the automotive window tinting industry on its ear. I never thought I would continue to be amazed by the things people can do when new technologies come to market.



Best Regards,

THE TINT MAN

