

PROVIDING GUIDANCE TO MANUFACTURERS AND USER COMMUNITIES

SPECIFYING SURFACE TREATMENTS FOR ROAD TRAFFIC SIGNS



Introduction

The purpose of this Guidance is to provide a basic understanding of the characteristics of Dew-Resistant, Anti-Graffiti and Anti Label coatings which may be applied to road traffic signs and also to demonstrate simple check methods for clients to confirm basic functionality, for the purposes of inspection and verification. (e.g. incoming goods inspection).

Alternative surfaces and overlaminates have been used in the construction of traffic signs for many years. Traditionally, overlaminates have been used to add colour through the use of translucent films or UV protection for digital printing. More advanced technologies have also been developed and used to improve sign visibility depending on the environment the signs are used in.

Today, the most common of these are Anti-Graffiti and Dew-Resistant sheeting.

Compliance to BSEN 12899-1 – Fixed Vertical Road Traffic Signs

It is important to note that the optical performance of all traffic signage must be tested in accordance with BS EN 12899-1 and its UK National Annex.

If dew-resistance or anti-graffiti is specified for a permanent traffic sign, then these components must be included in Initial Type Testing and subjected to testing by an approved test house and certified by a notified body.

This includes full retro-reflectivity and chromaticity testing before and after weathering.

The reasons for this are simple and quite understandable → any coating or surface treatment of a sign can affect its optical properties. This can alter the retro-reflective properties of the sign and reduce its effectiveness.

Application of an untested third-party product may negate the product warranty, which is a critical component of traffic sign tenders and specifications.

It is advisable for purchasers to check the length of life warranty for overlay films, which may differ from that given for the signface material.

Basic Information on resistance

Hydrophilic = Dew-Resistant

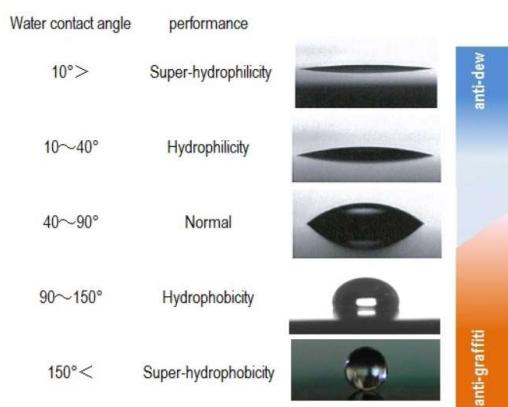
Hydrophobic = Anti-Graffiti

The mechanism by which a material can become anti-dew or anti-graffiti is generally based on contact angles of water.

The contact angle of droplets determines the wettability of the surface → the lower the contact angle, the more hydrophilic, while the greater the contact angle the more hydrophobic the surface.

For dew-resistant films, this means that the droplets spread out over the surface of the sign, creating an even membrane of water. By contrast, droplets on anti-graffiti surfaces “bubble” up similar to droplets on non-stick frying pans.

As such, it is **not possible for a material to be both dew resistant and anti-graffiti**



How does dew reduce visibility?

Road signs are designed to reflect light back to their source, but certain factors and environmental conditions can make the signs appear less bright and harder to read. When water droplets obscure a sign, it becomes extremely dangerous for motorists, as they spend too long trying to view it rather than giving the road their full attention.

These droplets form instantaneously during rainfall, and also in dew conditions.

Dew is formed when air passes over a cool surface, condensing into water droplets when the air can no longer hold the moisture. These droplets refract the light so that the reflected light is diverted away from the driver and results in a stark drop in visibility of the sign.

Dew-Resistant Surface Treatment



How to check for dew-resistance

While contact angles are used in manufacturing, it is not easy to verify the contact angles in the field. However, it is possible to verify the base functionality of dew resistant material on site using a simple water spray. This should immediately verify the functionality of the dew resistant material.

Anti-Graffiti Surface Treatment



As discussed above, anti-graffiti signs are hydrophobic, similar to non-stick frying pans. Adhesives or inks find it hard to attach themselves to the surface and are easily removed. In practise, this means that posters, flyers, graffiti sprays, permanent markers can all be easily removed.

The effect of Anti-graffiti overlays has been well-demonstrated for over twenty years and it is often specified on signage, particularly in urban areas.



Anti-Graffiti surface treatments are also useful in temporary covering or blanking out signs when road layout changes.

This is a simple, instantaneous check that can be performed by anyone at any depot or point of receipt, or for routine checking and inspection on installed signs.

How to check for Anti-Graffiti and Anti-Label Properties

Again, rather than checking the contact angle, which is not feasible to do on site, it is much more practical to check the functionality of the anti-graffiti.

Further, there are other technologies of Anti-Label surface treatments that employ different material textures.

Simple application of graffiti or a sticker, followed by removal in accordance with the manufacturer's instructions will instantly demonstrate the effectiveness and functionality of the surface treatment.

Again, this is a simple inspection, which provides instant results and verification of the product specification.

This can be done equally for new products arriving to site as signage already erected.

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