

Polyethylene & Polypropylene: IR Rays Problem & Their Solution



PaintFlex® is the liquid paint that can be applied directly to the surface of polyethylene & other hard to paint products.

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Problems Caused by Temperature Changes Due to Infrared Radiation in PE and PP Resin Products, and Their Solutions

Resins have the property of deforming in response to temperature.

During the day, when outdoors, infrared radiation is the primary factor contributing to significant temperature changes in the resin itself.

Infrared radiation generates frictional heat within the resin by transmitting waves through it. In particular, resins containing carbon black experience significant temperature changes. Resins such as PE and PP, in particular, undergo considerable expansion and contraction due to temperature changes.

The degradation of PE and PP resins caused by infrared radiation, and the associated issues, have not been widely discussed until now.

In the case of resins containing carbon black, even a gentle breeze can cause very significant temperature fluctuations.

As can be seen from this, resin products undergo constant deformation throughout the day, even if this is not visible to the naked eye.

The problems caused by temperature fluctuations are as follows:

The expansion and contraction of the resin itself causes constant deformation of the resin product, leading to deterioration at the points of connection with metal parts, etc.

Depending on the structure, there is a risk of distortion occurring in areas exposed to direct infrared radiation and in those that are not.

When used as tanks for storing chemical products, the contents may deteriorate due to significant temperature fluctuations.

A method to minimise this problem is already available and, at the same time, is extremely simple.

All you need to do is apply the 'IR Rays Cut' coating to products made from PE or PP resin.

As many of you will already be aware, the PaintFlex® Painting System allows you to easily apply the 'IR Rays Cut' coating to PE and PP resin products anywhere, regardless of the product's size.

Furthermore, IR Rays Cut paint is available in almost all RAL colours, and the same results regarding temperature changes in resin products can be achieved with any colour, including dark shades such as black.

Please refer to the test results for HDPE products provided below.

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**Apply PaintFlex® to an
HDPE Carbon Black Board.**



**Apply "IR Rays cut paint" to an
HDPE Carbon Black Board
painted with PaintFlex®.**

Condition	Low-wind (0-2 m/s)	Medium-wind (2-6 m/s)	High-wind (6-10 m/s)
Black surface temperature	103.7 °C	82.5 °C	61.1 °C
White surface temperature	49.3 °C	44.6 °C	40.8 °C
Sample surface temperature	39.9 °C	38.7 °C	37.8 °C
Solar reflectance index (SRI)	117.2	115.6	114.8

Solar reflectance: **0,910**
Emittance: **0,88**

Solar absorptance: **0.090**
Temperature unit: **Celsius [°C]**