



Kalisz, February 2024

Alloyplast colours – UV stability

We know that several factors including the additive package such as the UV stabilisers, the geographical location, the quality of the selected pigments and the moulding conditions can influence the quality of a rotomoulded product and therefore the lifespan of a rotomoulded article.

Additive package

In terms of UV stability, the addition level and the type of additives used to protect the polymers from the harmful action of UV, are the major aspects we look at. Our standard rotational moulding grades are UV stabilised by adding HALS (hindered amine light stabilizers). They are extremely efficient against the degradation of the polymer caused by sunlight. HALS additives can reduce the formation of free radicals which destroy the PE chemical bonds. UV attacks are the major responsible factor for UV degradation which can be seen as a loss of physical and mechanical properties. A-050935 is classified UV8 in accordance to ASTM G155 (G26). This means that after 8000 hours the material retains at least 50% of the original physical and mechanical performance. The elongation at break is the parameter measured during the execution of the test at specific intervals. We know that it is possible to enhance the UV protection, if required, by adding extra UV stabilisers.

A-050935 is a stabilised polymer which contains a combination of phenol (primary antioxidant) and phosphite (secondary antioxidant). The amount of phenol and phosphite and its ratio is designed to protect the polymer from thermal degradation during every stage of the manufacturing process which include compounding, grinding and rotomoulding. The primary antioxidants are added to the polymer to prevent degradation during the service life of the finished article. The secondary antioxidants are added to the polymer to prevent thermal degradation during the thermal processes (compounding, grinding and moulding). The quantity of phosphite is critical to make sure no thermal degradation occurs during the manufacturing stages of rotomoulded items.

Location

Geographic location, along with changes in climate and elevation, can affect the actual UV performance. Sunshine variation remains the key variable when correlating accelerated and outdoor exposure data. For example, our UV8 natural grades can last more than 5 years in North/Middle Europe, but can last more than 3 years in Florida or in very harsh environment (desert, ocean Pacific).

A= ul. Torowa 107/111 , 62-800 Kalisz
NIP= 1132994676 **KRS=** 0000775271



Kalisz, February 2024

Colouring technique

The quality of pigment has a big influence on the entire life of the product: heat stability, light-fastness and weatherability need to be looked at. The choice of pigments is therefore important. Our pigments are classified 8 in the blue wool scale and are between 280-300 °C heat stable. Good quality of pigments in colour compounded powders will usually enhance the UV stability. Additionally Alloyplast during extrusion in colour production adds extra UV absorbers and stabilizers – that's add value to our product to increase lifetime of the rotomoulded product.

Moulding conditions

The moulding conditions have an important role since the material performance can be affected by them. Overcooking the material will drastically reduce the additive protection because of the oxidation process generated by long exposure to oxygen in a very hot environment (e.g. oven). This would reduce the amount of antioxidant (since they are sacrificial) and therefore the UV stabilisers. The Alloyplast grade's performance is based on the fact that A-050935 is processed at the optimum cure.

Yours sincerely,

Sławomir Górniak
Plant Manager

Disclaimer

To the best of our knowledge, the information contained herein is accurate and reliable as of the date of publication, however, we do not assume any liability whatsoever for the accuracy and completeness of such information.

Alloyplast makes no warranties, which extend beyond the description contained herein. Nothing herein shall constitute any warranty of merchantability or fitness for a particular purpose.

It is the customer's responsibility to inspect and test our products in order to satisfy itself as to the suitability of the products for the customer's particular purpose. The customer is responsible for the appropriate, safe and legal use, processing and handling of our products.

No liability can be accepted in respect of the use of Alloyplast's products in conjunction with other materials. The information contained herein relates exclusively to our products when not used in conjunction with any third party materials.