Declaration

24 April 2013

We know that several factors including the geographical location, the additive package, the quality of pigment, and the moulding conditions can influence the UV stability of a rotomoulded article. Some of my thoughts are so described.

Additive package

In terms of UV stability the addition level and the type of additives to protect the polymers from the harmful action of UV is the major aspect we look at. Our standard rotational moulding grades are UV stabilised by adding HALS (hindered amine light stabilizer). 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 for UV degradation which can be seen as a lot of physical and mechanical properties. UV15 classified PE material in accordance to ASTM G155 means that after 15000 hours the material retains at least 50% of the original elongation performance.

Location

Geographic location, along with changes in climate and elevation, can affect actual UV performance. Sunshine variations remain the key variable when correlating accelerated and outdoor exposure data. For example, UV15 PE material can last up to 12 years in Northern Europe, but it only last 7 years in Florida or in very harsh environment (desert, ocean Pacific). This means that after 12 years in the Northern regions, 50% of the original mechanical properties is left.

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Pigment

The quality of pigment has a big influence on the entire life of the product: heat stability, light-fastness and weather ability need to be looked at. The choice of pigments is also important. And we understand that dark colours like black can enhance the overall UV protection of a material. For the best material performance we advise a compounding colouring process. Black pigments offer a very good UV protection because the pigments absorb the sunlight and transform it in heat. Hence the black pigments enhance the UV protection.

Moulding conditions

The moulding conditions have an important role since the material performance can be affected by them. Overcooking the material will reduce drastically additive protection and hence the UV stabilisers. The Revolve grade performance is based on the fact that the grade is processed at the optimum cure.

Yours sincerely,

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