

17 January 2018**UV Stability Revolve N-307**

Further to your request regarding the UV stability of the Matrix grade Revolve N-307, our observations are as follows. 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. Revolve N-307 is classified UV12 in accordance to ASTM G155 (G26). This means that after 10000 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.

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 UV12 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).

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 Revolve grade's performance is based on the fact that N-307 is processed at the optimum cure.

Because of the many factors which are beyond our direct control (such as moulding conditions, installation of the products, operating life of the product and so on), we advise our customer to test the Rotationally moulded product to assess the suitability of the material for the intended application. Matrix Polymers will work alongside our customer to understand more about colour properties in the moulded product.

This information is to the best of our knowledge accurate. However, the circumstances and conditions in which it may be used are beyond our direct control and we do not accept liability for any loss or damage that may occur.

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