

A glowing success in collaboration.....

In early August 2014 Pentagon Plastics were contacted by a local company who were looking to partner a proactive plastic injection moulder to run initial samples of a fantastic new material technology.

Eli-Chem Resins UK Ltd are based in Cranleigh, Surrey and had been working for many months on photo-luminescent pigments. The eco-friendly pigments are an alternative to electrical lighting in that they absorb UV energy by day and release it back out in to the darkness with a glow that has been tested to last for up to 10 hours.

We welcomed Aram Friedrich of Eli-Chem to us at Pentagon HQ later that month. It was a first for us to conduct much of the meeting in the dark but we were keen to get a real understanding of the capabilities of this excellent new material as well as evaluate whether we would be a good fit to the project.

Our extensive discussions highlighted the current advances in paint applications for example as a method of improving road markings and to aid visibility of items such as Crash Helmets. We then looked at how this technology could translate into injection moulding. It was agreed that our in-house Paperclip tooling would provide a great product to run initial samples when blended with a thermoplastic and would also work as a useful give away item to generate interest to a wider audience.



Initial trials were run using a compound of the Photo-luminescent powder blended with Natural ABS. We then let this down with a clear MABS provided by our good friends at Ultra Polymers. This offered us a good understanding of the moulding capabilities of the materials.

When completing these types of trials it is a learning curve but our senior Mould Setter worked hard to establish the moulding parameters and establish the optimum process window with only a very limited supply of sample material to work with. Initial shots of the photo-luminescent blend did not go well as one very dark brown Paperclip after another were dropping out of the moulding machine but once the issue was understood our Setter quickly improved things.

Eli-Chems then provided us with further glow material so we could conduct a more extensive trial with varying blend ratios and we introduced other base materials such as LDPE, Polystyrene and Polypropylene into the mix. All of these trials ran well and the results have enabled us to establish the glow capabilities at various mix ratios across a range of thermoplastics. The exercise has also given an insight into the flexibility, texture and aesthetic qualities that can be achieved.

A glowing success in collaboration...continued

One of the components that Eli-Chem Resins had previously trialled was a Mining Helmet which has also shown how the materials could be developed to aid safety products and equipment. The glow achieved is so strong that it is excellent when used in confined dark spaces delivering a torch like effect.



We recently showcased the samples produced at Interplas 2014 held at the NEC, Birmingham. This is the largest UK event for the plastics industry and the technology certainly generated lots of interest with many visitors and exhibitors alike seeking us out to find out more information.....

Our early experience with using Photo-luminescent material in the plastic injection moulding process has been a resounding success. At Pentagon Plastics we are prepared to push the boundaries and thrive on developing new techniques or processes that can deliver solutions to our customer base and a wider audience. We are confident that this technology holds great potential with regard to the applications where it could be utilised across many industries and we are pleased that Eli-Chem Resins selected us to partner them to develop the process further.

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