

Injection Moulding Facility

1. ISO test Specimen Preparation

Intertek MSG operates a 40 tonne high precision injection moulding machine to help customers solve injection moulding problems and challenges including those arising from nano-composite feedstock.

The equipment utilises very accurate electric injection and hydraulic mould control and is available for both customer use and consultancy. The machine is equipped with a high wear and high temperature barrel and 25mm screw (plus spare) and is capable of operating at temperatures of up to 400°C (barrel) and 300°C (mould).

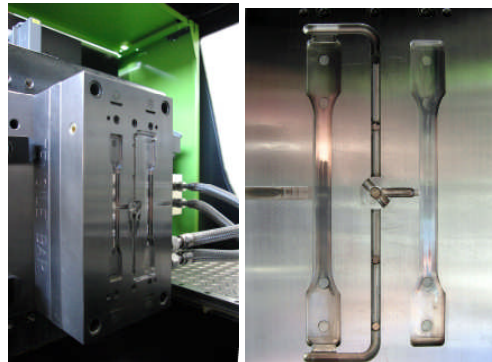
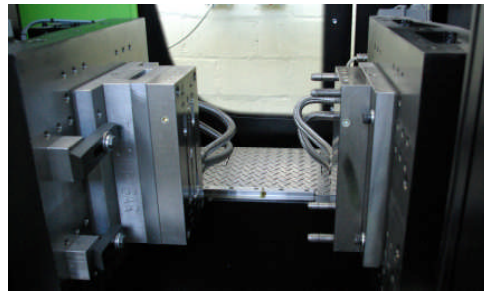
ISO tensile and impact bar moulds are available both of which have 3 different gate positions which enable the effect of injection conditions on the final mechanical properties and/or dispersion of filler particles to be studied.

We are able to handle samples from a wide variety of clients and industries. Advantages for client research, material development and trouble shooting challenges come from the combination of this facility combined with the significant polymer and plastics laboratory expertise within Intertek MSG.

Example Case Study.

The strength of weld lines in injection moulded parts can be studied with the available moulds.

Many complex injection mouldings have areas where the polymer flow meets and forms what are known as 'weld lines' These weld lines are invariably weak points in the moulding and in particular when the moulding is made from a filled material (as the filler particles tend to congregate at melt flow fronts and hence weld lines). The strength of such weak points can be directly measured by producing test samples with weld lines (mould filled from both ends) and comparing data with specimens produced in a 'standard' manner (mould filled from one end only).



2. Instrumented Spiral Flow Measurements

Spiral flow is a method for determining the flow properties of a thermoplastic or thermosetting resin based on the distance it will flow, under controlled conditions of pressure and temperature, along a spiral runner of constant cross section.

A fully instrumented spiral flow mould is available to more closely determine material rheological properties as the length of the material which flows into the cavity and its weight gives a relative indication of the flow properties of the resin.

Capture and recording of conditions within the mould can be performed with a Kistler SCP cavity pressure and temperature data logging system as the tool is fitted with 8 transducer ports in which the appropriate sensors can be placed in any order – this enables measurements of parameters such as mould cavity pressure, fill times and cooling rates to be monitored as a function of a variety of process conditions as well as comparison of different resin formulations under identical processing conditions. The mould design also allows inserts to be added that reduce the thickness of the spiral without compromising measurements.

Examples of spiral flow lengths in a PP sample under produced at different injection speeds (at constant temperature and injection pressure) are shown below:-



For further information on the materials processing and rheological service offered by Intertek MSG, please do not hesitate to contact:-

Dave Stocks
Intertek MSG
The Wilton Centre
Redcar
Cleveland TS10 4RF
United Kingdom
Direct line +44 (0)1642 435770
E-mail: dave.stocks@intertek.com

www.measurementscience.co.uk
www.intertek.com

