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Microcellular Moulding with Gas Counter Pressure

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Surface quality is one of the most frequently heard theme of microfoams produced by physical or chemical blowing agent. The surface of microfoamed components is striking. Because, it is drifting the fluid flowing out at the glaze front and the polymer bubbles were destroyed by shear at the surface of the mould. However, the surface quality can be improved by the gas counter pressure process. The visual difference in the surface quality change enormously. By a gas counter pressure (GCP) in the mould, the early foaming up of the gas loaded polymer melt will be prevented.

At microcellular moulding with gas counter pressure using physical blowing agent the so called “hammer blow” effect can be much more frequently watched then by using chemical blowing agent. Small regular dents in the surface as if this is wanted and made by a blacksmith. Hammer blow can be prevented through lower mould temperature. Lower mould temperature is the most effective measure. Through this, even higher melt temperatures and higher SCF levels can be compensated.

Gas counter pressure has two advantages opposite conventional microfoaming. On the one side design and surface aspects, on the other hand the mechanical properties, especially the elongation at break and the impact strength can be improved by gas counter pressure.

The components with few flowing way ends (where the gas can be injected and exit) and no complex geometries that require stepped parting lines, only a few welding lines, no thin ribs and low changes of the thickness are well suitable for gas counter pressure. By a suitable choice of the production parameters 2 mm thick components also can be produced by gas counter pressure.

Gas counter pressure in combination with a breathing mould opens up further fascinating possibilities.