What is MuCell® technology and how does it work?

MuCell is a foam that performs like a solid plastic. MuCell technology creates microbubbles in the centre of plastic extrusions by injecting gas into the melt as they are manufactured. The end user will not notice any change in the part as the MuCell bubbles in the centre layer are so small that they are barely visible to the naked eye. The outside layers are often solid plastic. Pure atmospheric gases – nitrogen and carbon dioxide – are the foaming agents which create the bubbles.

Where can MuCell technology be applied?

MuCell technology can be applied to all extrusion applications, including packaging applications, ranging from large containers for products like motor oils or laundry detergent, to smaller packages for cosmetics and personal care.

Unilever is using MuCell Microcellular Extrusion Solutions to produce bottles for its Dove body wash range, achieving substantial solid waste and greenhouse gas reductions. Paccor is using MuCell to produce FFS sheet for food containers like yoghurt pots. Plastilene is also using the technology in thin flexible packaging for products like wet wipes, pet care and detergent pouches.

MuCell Extrusion films manufactured from Dow polymers were developed for many flexible packaging applications, to reduce the carbon footprint of the Rio Olympics. New industries and new applications are under development.

What are the end use benefits of MuCell technology?

The films and sheets produced by the technology are lighter, greener, and cheaper than traditionally manufactured equivalents. Products manufactured using MuCell Microcellular Extrusion Solutions typical need 15–20% less polymer than those using traditional extrusion technologies.

Lighter, Greener, Lower cost

How are MuCell Microcellular Extrusion Solutions applied?

This technology fits seamlessly into all existing extrusion lines. There are three key components which transform the line into a microcellular one. These are the MuCell SCF unit and Interface Kit, which pressurize, control, and inject the gas in a Super Critical Fluid (SCF) state, and the MTM barrel extension, which mixes polymers and gas in a single phase solution. MuCell also offers proprietary sheet, film, and blow moulding dies optimized for microcellular foaming, as well as true gauge control systems for sheet and film applications.
Q Can MuCell technology be applied to existing products?

A MuCell foaming can be applied to many existing products as well as being designed into new product development projects. The technique is suitable for most polymers, and most extrusion products can benefit from the MuCell microfoaming advantage.

Q Which extrusion technologies are suitable for conversion to MuCell technology?

A The technology is suited to all extrusion processes including sheet, film, blow moulding, and pipe and profile extrusion lines.

Q What is the environmental benefit?

A MuCell has many positive environmental benefits over traditional techniques. As nothing but atmospheric gases are added to the foamed polymer, harmful emissions are avoided and recycling these pure materials is easy and cost effective. As the technology reduces plastics use at the source, its widespread adoption could significantly reduce the volume of plastics used, as well as greenhouse gas emissions and carbon footprint. In addition to reduced plastic consumption, MuCell delivers reduced fossil fuel usage as a result of weight reduction derived from lighter finished parts. MuCell technology also enables mono-material solutions in many packaging applications to replace composite packaging of laminated paper, plastic and metal for 100% recyclability.

Q What is the story behind MuCell technology extrusion?

A MuCell Extrusion LLC, based in Woburn just outside Boston, USA, is owned and funded by Zotefoams plc, a UK-based pioneer in global cellular materials technology company which is quoted on the London Stock Exchange. Zotefoams formed MuCell Extrusion LLC to develop the intellectual property in 2008 and became 100% owner in 2011.

Q What is the MuCell approach to New Product Development?

A The MuCell team relishes the opportunity to work side by side with customer development teams. MuCell’s state-of-the-art material test lab and multilayer film and sheet extrusion lab create the ideal environment for New Product Development.
Microcellular Extrusion Solutions

Q What is the MuCell Extrusion business model?

A MuCell Extrusion licenses Intellectual Property and sells related equipment. Licensees obtain rights to the products they design and manufacture and gain a competitive advantage.

Licensees pay a royalty fee which is normally a percentage of their cost savings or a percentage of their sales.

MuCell seeks to form close relationships with Microcellular Extrusion Solutions owners to provide the opportunity to extract maximum potential within their specialist business areas.

MuCell Compatible Polymers

- Polyethylene
- Polypropylene
- PLA
- PET
- PVC
- Polyurethanes
- Polystyrene
- Polycarbonate
- ABS
- Nylon
And many more...

More Lighter, Greener, Lower Cost Applications

<table>
<thead>
<tr>
<th>Process</th>
<th>Product</th>
</tr>
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<tbody>
<tr>
<td>Film</td>
<td>Stand up pouch</td>
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<tr>
<td>Sheet</td>
<td>Yoghurt pots</td>
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<tr>
<td>Blow moulding</td>
<td>H&amp;B bottles</td>
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</tbody>
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Call your extrusion partner to discuss your next MuCell project

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Our partners
MuCell Extrusion greatly values its relationships with global partners Dow Chemical, Kyoraku, Paccor, Plasticrene, Trinseo and Unilever and their critical roles in advancing and proliferating MuCell Extrusion Technology all over the world.

Packaging  Industrial  Automotive  Aerospace  Medical