Biodegradability takes centre stage in Munich

The issue of biodegradability in textiles featured prominently alongside performance and durability at a packed series of seminars at the recent Performance Days functional fabric trade fair held in Munich. **Tony Whitfield** reports.

Synthetic fibres that can be produced from biopolymers have grabbed the attention of apparel retailers and brands in recent years as they offer a potential new solution to the growing problem of garment waste in an industry where most products end up being dumped into landfill or incinerated once they enter the waste stream.

So it wasn't a surprise that there was a healthy attendance at the fair's workshops and 'hotspot tours' – designed to promote the use of biodegradable materials as a sustainable solution at the point where consumers discard their old clothing.

However, while it's acknowledged that biopolymers and 'biodegradability' have potential for growth, the consensus from attendees was that there needs to be more understanding about what biodegradable products are – and how they work – if these products are to make it beyond the designer's drawing board.

"When you think about soil quality, not everything we are currently producing is necessarily going to create the environment we will need to grow crops to sustain the rising population," noted independent textile consultant Sophie Mather.

"As the population rises, I believe synthetics are going to be our only answer. We can engineer synthetics to be far more sustainable than a natural fibre – in terms of how much water is needed in production, for example – so I think designing or engineering something for upcycling (or biodegradation) is going to give us a better option."

Mather emphasised further distinctions need to be made, as, "not all bio-synthetic fabrics are biodegradable," and designers must account for accessories such as trims, zippers, sewing threads and chemistries, which can all prevent a product from meeting the criteria.

"Furthermore, there should be an alignment between end-of-use waste stream providers and localised authorities, because biodegradable products mean very little without an effective infrastructure for industrial composting," Mather added.

Breaking … bad chemistry

Philip Schar from environmental systems partner, bluesign, also noted the suitability of finishes as a further obstacle for biodegradable textiles, as many commonly-used chemistries have not been designed with this prospect in mind.

Schar said: "I think the driving force has to be the brand, because the brand can find out from its own customers if there truly is a market for biodegradable textiles; or indeed the brand can raise awareness by having end-of-life topics as its ethos (and then marketing this). From there, brands then need to talk to suppliers and source truly biodegradable materials to match the design features for specific apparel items.

> "Medium term, I think C6 products are definitely going to disappear."

"However, it doesn't matter whether you use synthetic fabrics or natural fibre fabrics, there is always the question of what happens with the chemicals used during the dyeing and finishing processes – as a lot of these chemicals are certainly not biodegradable."

And if they are biodegradable, then the question needs to be asked, "will they biodegrade into something more or less hazardous?" This is important, since essentially the textile industry deals with reactive chemistry – and the potential for these products to react with other unknown substances in the waste stream is a very real problem, and in fact highly likely in wet processing.

Schar added: "There is no shortcut to detox the supply chain," but he claims the latest release of the bluesign Bluefinder considers all the latest technology for risk evaluation – including the requirements of REACH and GHS – and allows textile mills to become ready for the next generation of chemicals and their assessment.

"Awareness about biodegradability is rising – we've seen that it is on the radar amongst Scandinavian brands – but I think another reason why we are not currently seeing broader demand is because there are huge limitations in terms of functionality and colouring using 'natural chemistry' products," he said.

Regulatory hurdles

Approval from the US Environmental Protection Agency (EPA) carries equal significance to performance when it comes to sustainable solutions and, claims Juan Carlos Gonzales Reyes, European sales director for US textile manufacturer, Burlington. "We cover several areas of innovation – not just in relation to the way we produce the fabric, but also in relation to the chemicals, as you have to focus on the performance of the fabric for its target market. For example, we have a very strong association with' No Fly Zone', a patented insect-repellent treatment based on permethrin, which is EPA approved for the United States. For DWR technologies, we offer fluorocarbon-free products or C6-based, depending on the performance levels required.

"It's a difficult balance, but we do think the quality of PFC-free solutions is improving."

Eric Argast from Swiss technology company HeiQ, flagged up the company's durable water repellent (DWR), which he says complies with EU REACH, US TSCA, JP METI, ZDHC and most RSL regulations. Argast does note, however, that, "a lot of work still needs to be done in the quest to find PFC-free DWRs that match the performance levels of the increasingly unpopular C4 and C6-based predecessors."

This theory was backed by Bruno Terrier, research and technology, global project manager, at Huntsman Textile Effects, who said: "I am highly involved in finishing effects for new developments in smart textiles and a major trend is definitely PFC-free water repellents, provided that performance levels are met.

"There are different ways to reduce PFCs; for example, we can try to optimise the recipes to reduce the amount of fluorochemicals and boost these with water repellent products, using extender chemistries. However, HEIQ Repel is our main focus at the moment.

"Medium term, I think C6 products are definitely going to disappear – they will only be used for technical textiles in certain areas where there is currently no alternative. For example, workwear for chemical repellency, bullet-proof vests, nonwovens that are not impacted by NGOs or pressure groups, and other areas where safety comes first.

"Requests for PFC-free with oil repellency are starting to rise, but this still has a long way to go – we are definitely moving forward but it is going to take time."

Performance ratings

The April 2017 edition of Performance Days attracted 1,520 visitors from 49 countries – with a total of 177 exhibitors from 24 countries (51.6 per cent of whom were from Asia). The figures show a small increase on the equivalent show last year.

"Feedback on the 'Biodegradable' Focus Topic suggests that we hit upon the right theme," said Stefanie Sacherow, the show's senior project manager. "Environmental aspects are very important and will become an even bigger issue for all of us in the future. We have only limited resources on this one planet earth. So the question isn't simply will biodegradability come to prominence in the future, but what we can do in general? Therefore, it has to be worth thinking about all angles and perspectives…awareness on both sides of industry – suppliers and brands and the consumer – is the key."

Sacherow is convinced biodegradable materials can solve the waste problem in apparel and hopes the focus topic at this show will give added impetus in the search for new biodegradable solutions within the sportswear market – which is dominated by synthetic fabrics.

Yet this eventuality remains a long way off and most consumers still prefer the feel and fit of textiles worn next to the skin that are made from a naturally biodegradable and compostable fibre – cotton. ■