



From CFJ May 2013

EcoBuild Review

I haven't detected any recent drop off in the efforts of flooring companies to improve their green credentials and to introduce greener products. It was therefore surprising that there were so few flooring companies exhibiting at EcoBuild which was notably quieter. Is sustainability actually becoming something that flooring manufacturers feel is less commercially important? Are key architects, specifiers and procurement managers losing interest? Apparently not as a presentation from Robert Palmer of Palmer Market Research on behalf of CRUK confirmed. Over the last few years there has been a significant upturn in the number of key decision makers factoring sustainable issues into tendering processes. In other words sustainable credentials are increasingly helping to win important business. At the same seminar Bill McWhirter of BMW Associates confirmed the growth in eco flooring products. Are the days of the mega exhibition simply waning and are the marketing people planning to spend their budgets in other ways to promote their eco offerings? Perhaps some enterprising exhibition company may see an opportunity to do something different, less expensive and more eco friendly?

My main objective at Ecobuild was to look for examples of flooring products manufactured from polymers derived from plants. Bio-based chemicals have been promoted as the next big thing with the potential to solve our dependence on petroleum. They emit less greenhouse gases and reduce our consumption of nonrenewable resources. The drumbeat for bio based polymers has thundered for some time so has their day now come? The particular source of bio chemical that is causing most interest is the castor bean plant. These are plants that can grow in virtual deserts and need little watering and this provides valuable employment for agricultural workers and revenues for erstwhile poorer countries notably India and Brazil. They do however require strict weed control and it would be interesting to know how this is achieved. Farming techniques in some producing countries is non-intensive and often done manually, other countries use more intensive methods which may include the use of environmentally hazardous chemicals to control weeds. Apart from the unpredictability of crop yields due to the weather, the economics of global agriculture are complex. This makes the availability of bio materials subject to political volatility, price instability and supply uncertainty. These are important factors if presenting bio chemicals as viable replacements for petrochemicals. I should add that the castor bean plant -*Ricinus communis* - contains the deadly toxin ricin which means that the beans must be processed with great care and the toxin safely dealt with! This serves to remind us that growing and processing renewable organic materials is not problem free! However Castor Oil is now considered a staple on world markets which is practical, natural, renewable and very versatile, as well as one which offers consistent benefits that no other vegetable oil has been able to match. However given the multiple sources of the commodity it may be wise to ensure that supplies come with certification for responsible farming in the way that natural rubber and wood can be supplied with accreditations for sustainable forestry management.

The world's largest single use of castor oil in one product, outside the lubricants markets, is in the manufacture of Nylon 11. This is a polymer that has been around since the 1940's and is used in high-performance applications such as automotive fuel lines, sports shoes and electronic components. The process of conversion of castor oil to Nylon 11 requires several complex reactions each having environmental impacts. Nylon 11 has a lower melting point, lower specific gravity and the lower moisture absorption than Nylon 6 and 6-6 and is much more expensive, so is not an obvious source of carpet yarn.

I was therefore particularly interested to see the pioneering Interface "Fotosfera" range which was exhibited on their stand. The stand incidentally achieved a "highly commended" nod from the UK Green Building Council's "most sustainable stand" awards which were introduced to encourage exhibitors to cut back on the negative environmental impacts of the Ecobuild exhibition itself! The "Fotosfera" range offers two low pile weight micro tufted or pattern loop products which feature nylon 6:10 pile of which 63% is castor oil based. Nylon 6:10 has hitherto mainly been a niche chemical used in applications such as Zip fasteners, electrical insulators, precision parts and filaments for brushes. Nylon 6:10 remains tough at lower room temperatures than Nylon 6 and 6:6 and absorbs less water so has good dimensional stability characteristics. It is significantly more expensive than the conventional nylon yarns but cost per sq metre is offset by the relatively low pile weights in this range. Interface have EPD's available on a number of its carpet tiles but Fotosfera does not as yet appear on the list. I would have been interested to see a Life Cycle Assessment/EPD on this product to be able to identify and quantify the environmental benefits over conventional nylon products, particularly those with high recycled nylon content and recycling potential such as nylon 6. There is no doubt that castor beans are a renewable raw material but I am not sure of the recycling potential of Nylon 6:10 mixtures tufted into a low profile carpet tile and would have welcomed more detail on this.

The second bio chemical based flooring I was able to see came from a non exhibitor who I met at a presentation. This was "RE/COVER green" from Vorwerk which is a bio chemical based resilient flooring which is targeted at the vinyl flooring market. This time the organic polyols come from both the castor bean and rapeseed oil and the polymer created by the conversion processes is a permanently elastic polyurethane. The polymer contains no chlorine, solvents, plasticisers or formaldehyde and comes with impressive technical performance and 3rd party accreditation including the respected German Blue Angel Ecolabel and Life Cycle Assessment data. The product is recyclable so the environmental gains accrue from the bio alternative to petrochemical raw materials together with end of life recycling. The product is also promoted heavily on safety factors such as low VOC's and the absence of phthalates found in PVC. If all that is claimed is true then specifiers are going to have an interesting new option when the product is launched in the spring.

I also noted more evidence of Cradle to Cradle™ design. This in my view is an exemplary model of how to rethink product manufacture to maximise materials efficiency and reduce environmental impacts. Raw materials are selected to meet price and performance goals as well as certified chemical safety and environmental criteria and, in particular, their suitability for post consumer reclamation and recycling. Shaw Industries pioneered this many years ago and are by some considerable margin the world's largest recyclers/up cyclers of post consumer carpet. I visited Desso who have clearly set Cradle to Cradle™ as their guiding philosophy. They have partnered with the Aquafil nylon recycling facility and now feature Econyl® 100% recycled yarn in 60% of its carpet tile range. New Cradle to Cradle™ certified products are being added to their ranges and this certification is becoming a 3rd party verified process with an inbuilt need for certified companies to commit to programmes of continuous environmental improvement. In addition Desso has developed its equipment and

capability to process more than 3000 tonnes of used carpet material through its Take Back™ programme

Alan Best

Alan Best is a Sustainability Consultant who works with a number of construction related industries specialising in Environmental Certification, substitution of hazardous chemicals and waste reduction. Alan is a member of the Flooring Sustainability Partnership and represents Shaw Industries Inc on this and other international bodies. www.alanbestsustainability.com