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THE BIO-RESIN SPECIALISTS

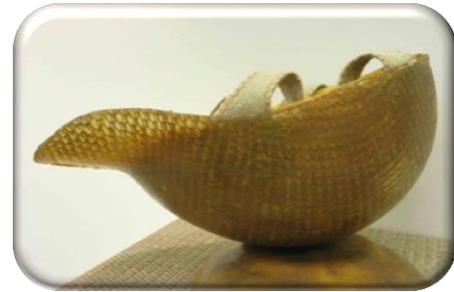
APPLICATION STORY

New developments in bio-resins inspire 'Duo Lin' flax fibre cycle helmet

New developments by Dragonkraft in the bio-resin arena and flax by products have enabled designer James Dart to develop a functional "Duo Lin" cycle helmet incorporating a dense bio-resin foam core interior and tough knitted flax woven outer resin shell.

Flax fibres are amongst the oldest fibre crops in the world dating back as far as Egyptian times. James, a recent 3D Design BA (Hons) graduate has been exploring new biopolymers and flax as part of his studies at Brighton University as part of the BRIDGE* research project. As a keen cyclist, James sought a sustainable approach to the manufacture of cycle helmets which are typically made from petrochemical plastics often with a finite lifespan. Through thoughtful consideration of resources and the environment the Duo Lin project came to life with the aim of conceiving a product with the use of one renewable resource - flax - for virtually all of its parts.

James comments "I had a desire to create a practical product that could demonstrate the incredibly versatile nature of flax and its inherent high strength properties. I needed a bonding resin to help me construct the helmet and came across the Dragonkraft bio-resin system; an eco-friendly two part system consisting of liquid resin and hardener. Unlike epoxy resins, the Dragonkraft resin didn't carry the strong hazardous odours often associated with traditional resins. It is derived from natural flaxseed oils and is safer to handle".



The finished 'Duo Lin' flax fibre cycle helmet



New developments in bio-resins inspire cycle helmet

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New developments in bio-resins inspire 'Duo Lin' flax fibre cycle helmet (continued)

James continues "The bio-resin is extremely flexible and water resistant; by moulding it with woven flax reinforcement and setting it under UV light, the final product is a rugged, lightweight, sustainable bio-composite outer shell".

Although a very durable shell, the outer structure would not be fit for purpose as a cycle helmet without a cushioning interior foam core. James quickly realised through experimentation that the bio-resin would foam and expand when heat and water were added. When it was left to set in a mould under UV, it gave surprisingly good results as a composite interior. A further mould has now been created so the interior foam and exterior shell can be formed together in a single step.

James adds "The finished concept is manufactured using 98% carbon renewable content. Even the helmet straps are made from needle punched flax. The helmet is comfortable but work still needs to be undertaken on the overall mass of the helmet. I now have an early design concept that could now be subjected to tests. I intend on developing my work in this area through further research and am looking forward to taking my concept to the next level".

For more information about the Duo Lin project, please visit www.jamesdart.com.

To learn more about Dragonkraft bio-resins call the team on 0161 785 1313 or e-mail contact@dragonkraft.com



Duo Lin cycle helmet incorporating a tough knitted flax woven outer resin shell (left) and dense bio-resin foam core interior (right)



James Dart testing his concept to the max



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* The Building Research and Innovation Deals for the Green Economy (BRIDGE) is a new European Union INTERREG IV funded research project led by principal investigator, Dr Joan Farrer whose expertise is in Design and Materials.

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