ASK THE EXPERT: CERAMIC AND BIOCERAMIC PRODUCTS

In the final part of our question-and-answer series, the Hohenstein Institute's Dr Jan Beringer shares his thoughts on ceramic and bioceramic products in fibres, coatings and membranes. Claimed advantages include improved circulation, pain relief and faster recovery from injury.

Feeling the benefits?

Dr Jan Beringer has extensive knowledge in textile and fibre chemistry, functionalisation, nanotechnology, coating and finishing. He joined Germany's Hohenstein Institute as head of the Competence Centre, Innovative Textiles, in 2003 and has been head of research and development in the Department of Function and Care since 2009. The department specialises in research and testing in the fields of clothing physiology, fit and workmanship of garments, functionalisation of fabrics, textile UV protection and textile reprocessing.

Question: What are the benefits to using ceramics in textiles?

Answer: There are a lot of benefits claimed for using ceramics in textiles, like enhancing blood flow and so on, but from our opinion they have not been scientifically proven as yet. We tried various methods of scientific testing – from physical testing and spectroscopy and so on – but it was very difficult to prove any of the claimed effects. Sometimes you might have products that seem to work when you believe in the benefits, but as a neutral testing and research institute we have to rely on hard data that can be measured and that we can evaluate our statement on.

Q: Can you tell us a bit about how you measure the properties/performance of FIR materials?

A: For far infrared we start with spectroscopy – far infrared spectroscopy, medium infrared spectroscopy – and we did some investigations on materials but the measurable effects were within the standard deviation. We had some hint that there was something, but it was not enough to be statistically significant.

We also did some measurements with our WATson testing system, which is our newly developed testing system for measuring heat loss in garments. Some of those materials claim that the heat is kept inside the garment and will warm up the skin, for example, but we were not able to measure any reduced heat loss in the garments. There was always something very small that could be detected, but again, it fell within the standard deviation so it is not significant – it could simply be a change in the baseline or a change in the background noise.



Dr Jan Beringer, head of research and development in the Department of Function and Care, Hohenstein Institute.

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Q: In terms of the proportion of ceramic particles, what is the threshold under which these materials will have little or no effect?

A: As mentioned before, we have seen something but it was not significant – we always propose to the client that they should increase the proportion of the ceramic particles inside the polymer or on the fibre, but this was not possible in the cases we were testing. Maybe if you had a material which had a larger percentage of ceramic particles inside the fabric or inside the polymer there might be a chance to detect something.

Q: Is there a difference in how these materials work if they are coated on a fabric or embedded inside a yarn?

A: Generally speaking, if you add a coating to fabric it can be removed by abrasion and washing so it's not as durable; if a functional material is embedded inside a yarn or the polymer it tends to be more durable. But as we could not detect anything, so far we cannot say how the application is affected by putting it on the material or inside the material.

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