Team LAB102

CHT:

SAFER ALTERNATIVES IN DENIM FINISHING

WeAr Denim spoke with **CHT**'s **LAB102** team about their efforts to replace hazardous substances in denim finishing, and how economic considerations still outweigh sustainability in decision-making.

Can you summarise CHT's strategic focus in denim finishing today?

From the beginning, our focus has been on sustainable product solutions. LAB102, the garment division of the CHT Group, was the first chemical supplier to bring a true alternative to potassium permanganate to the market, and our goal remains to replace hazardous substances with environmentally compatible options. Our first permanganate replacement product was more than 99% biodegradable. We support the use of laser, nebulization, and ozone technologies in collaboration with machine manufacturers, while also offering fashionable finishes based on CHT's textile expertise. This allows us to provide customers with complete, ready-to-implement solutions.

What evidence proves organIQ removes the occupational and effluent risks that potassium permanganate holds? After all, it is one chemical replacing another.

It is true that one chemical is being replaced by another, but risks differ significantly. A parallel can be seen with formaldehyde resins: highly toxic in the past, they are now manufactured formaldehyde-free and applied only where needed. Potassium permanganate, however, is a persistent CMR substance with the highest level of water toxicity and risks to human health. Today it can be replaced by biodegradable products with far lower risks. While still chemically manufactured, these products are designed to be safer for both humans and the environment.

What are the main barriers that stop laundries from fully switching off permanganate today? Which of those barriers are technical and which are commercial?

Technically, alternatives can still have some limitations. These include slightly different color loss, less attractive spray patterns, occasional elastane damage, or corrosive effects on tools. Indigo is a large pigment molecule, and any agent that destroys it will carry certain challenges. That said, developments have brought us very close to perfect alternatives. Our first generation, organIQ BLEACH T, was almost universally applicable, but the price was the main barrier. Potassium permanganate simply remains cheaper – organIQ BLEACH T adds about €0.30 per pair of jeans to achieve comparable results. We are now finalizing the next generation of alternatives, with costs lower than before and significantly closer to permanganate. Safety and environmental compatibility remain central.

How does CHT ensure chemical traceability and transparency across the supply chain? Which actions would ultimately help the industry move to cleaner chemical solutions?

Traceability largely depends on labels and certification systems, which differ in how they evaluate chemicals and application methods. This allows some production to continue even with harsher chemicals. At least two major certifiers do not view permanganate use as negative enough to exclude products from certification. In 2018, the European Chemicals Agency (ECHA) classified potassium permanganate as a CMR substance, but only products containing it must be labeled – not the treated textiles. The situation would improve if treated textiles were labeled for consumers, similar to food packaging. Uniform standards among certifiers, banning harsh chemicals, are needed for real change.

Where is your R&D department headed next to reduce the trade-offs between cost, result, and sustainability?

Small savings on raw materials will not yield significant improvement and could compromise quality. Real progress depends on innovation. Our upcoming second-generation permanganate replacement aims to close the gap between ecological compatibility, cost, and performance.