



CASE STUDY

Wooden garden furniture with coating that lasts for up to 20 years

Uralac[®] Ultra is long-lasting, looks great and is eco-friendly

When Dutch designer Jan Willem Henssen wanted to breathe new life into an old idea, he turned to the DSM R&D department. The result is a range of wooden garden furniture that lasts for up to 20 years without any maintenance whatsoever. A range that looks great and requires no cleaning, scraping or recoating. And best of all, it is extremely friendly to the environment. “The idea of making furniture from discarded wooden crates and pallets was first explored by the famous designer Gerrit Rietveld in the 1930s,” says Jan Willem. “Since then, various other designers have experimented with the idea, but in 2010 I decided it was time to really push this eco-friendly, cost-effective idea to its full potential. Because I like wood, and I don’t like waste.”

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Trials with linseed oil

Jan Willem began designing prototype models that tested various strategies in stability, aesthetics and ease-of-construction, keeping in mind the “pallet look and feel”. “To continue the theme of eco-friendliness, we finished the prototypes with linseed oil – a natural, renewable material, that requires no primer or cross-linking chemicals” says Jan Willem. “Initial results were good, but we later found that linseed oil on unseasoned pallet wood becomes unstable and gets sticky in strong sunshine. Not really what you want in garden furniture.”



Success with powder coatings

“Amazingly, the day after we discovered that linseed oil was not possible, I stumbled across an article on the internet about DSM’s work in powder coating resins – and the latest breakthrough in relatively low curing temperatures. This low temperature curing meant that it could be applied to my pallet wood furniture. What’s more, the performance characteristics of this powder coating – in terms of scratch resistance, humidity resistance and chemical resistance – meant that it would significantly prolong the life of the furniture. So I immediately contacted the relevant departments and started tests with Jos Verlaak, DSM’s New Business Development Manager.”

“We both instinctively knew that our newly developed single-coating of powder resin for heat-sensitive substrates was the perfect finish for Jan Willem’s chairs,” says Jos. “Both the chairs and the resins have very strong eco credentials. But we needed to identify the best coating and curing process for unseasoned pallet wood, and we spent many hours in our special coating laboratory testing various application pressures, coating thickness, and curing temperatures and times. Eventually, we found the best parameters to ensure excellent surface appearance and very high scratch and humidity resistance.”



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Jan Willem Henssen, designer, architect, entrepreneur

Pallet wood transformed

With his almost free-of-charge raw materials (pallet wood), his new designs, and DSM’s innovative coating solution, it looked like Jan Willem made a lot of progress rolling out his new product. Then disaster struck. “Pallet wood is not of good quality, says Jan Willem. “It is not seasoned, so there is plenty of air and wood resin in the material. We found that even with low curing temperatures, the internal air and resin expanded to the surface and often spoiled the powder coating finish. But guess what, soon after that disappointment, I stumbled on yet another internet article that was to again resurrect my pallet-wood furniture idea. This time it was the research of a petrochemicals company research that provided the answer. I read that the company had perfected a process of gently steaming and baking wood so that all water and resin is removed. This was exactly what I was looking for. Even better, the steaming and baking process also destroyed all nutrients in the wood, so my furniture would be of no interest to any insects or fungus. This, together with the durable coating, is the reason for its projected 20 year lifetime.”

Production is started

With all obstacles overcome, it was time to start production. And, to further continue the theme of care for society, Jan Willem chose a social-work residence – Fraam Farm

More about Fraam Farm

Fraam Farm’s mission is to help disadvantaged people play a meaningful role in society. The farm has donkeys, sheep, chickens and rabbits and attracts many visitors. There’s a camp site with idyllic views, several bed & breakfast chalets, and a terrace offering drinks and snacks. It is also the home and day centre for several mentally and physically disadvantaged people, who now often spend time making the pallet wood furniture pioneered by Jan Willem Henssen and DSM. “Our guests here take great pride in making the furniture,” says Joop de Wit, the centre’s manager. “It’s nice work in a safe environment, and they can easily fit it in around all the other activities we have here such as painting, animal care and gardening.”



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Jos Verlaak, New Business Development Manager
Powder Coatings at DSM



“Our guests here take great pride
in making the furniture”

Joop de Wit, manager at Fraam

(Boerderij Fraam) – where mentally and physically disadvantaged people meet and work. “I was actually contacted by the organisation’s manager, Joop de Wit, after he had read about my pallet wood furniture. Joop suggested that constructing the chairs may be a good pastime for Fraam Farm’s clients. The simple construction with very few tools seemed the perfect match. And indeed it was. We started producing in 2013, selling the product via my online outlet and at Fraam’s own souvenir shop. By 2014 the venture was making a small net profit.”

Everyone wins

Jan Willem’s story is one of those very rare events where everyone wins. The Fraam Farm residents get an interesting and worthwhile pastime, DSM gets to put its radical innovation into yet another good use – shaping a sustainable coatings future together with designers. And society in general gets the benefits of very low carbon footprint production, and the fact that the furniture does not need recoating every two years, all thanks to the reuse by Jan Willem of materials that would otherwise have been thrown away. But perhaps the best winners of all are the new owners of the pallet-wood furniture: sturdy stylish tables and chairs that make an eco-friendly statement.



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