

NIKWAX
WATERPROOFING



Green chemistry: breaking the paradigm



THE QUEEN'S AWARDS
FOR ENTERPRISE:
SUSTAINABLE DEVELOPMENT
2014

PFC free water-repellency



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NIKWAX
HIGH PERFORMANCE | LOW IMPACT

We know that some PFCs are both toxic and bioaccumulative, and are associated with many water-repellent processes

- **PFCs can be absorbed by eating fish because the material is persistent in the environment**
- **Only 50 parts per billion on body weight of PFOA is enough to cause liver damage in rats**
- **At 50 ppb PFOA in children in the Faroes, inhibition of the immune system was observed**
- **Studies of Greenland women indicate enhanced rates of breast cancer associated with PFOA levels**



Nikwax PFC-free Hydrophobic Down

Nikwax has developed a new way to make water-resistant down – we call it *Nikwax Hydrophobic Down*

Apart from being outstandingly water-resistant, this material is different because it is created without the use of persistent chemistry.

Hydrophobic Down has been available to the outdoor industry for some time, but the truly high performance material was made with fluorochemicals that either contain PFCs or break down to PFCs

Nikwax Hydrophobic Down can be shaken with water for 1000 minutes and still floats. This is as good as you can get ...



How did we achieve PFC free Hydrophobic
Down?

THINK DIFFERENTLY!



Much development is just enhancement

I need comfortable, dry transport



I will add a carriage to my horse



I need **faster** comfortable, dry transport



More horses?

Lighter carriage?

I need **faster** comfortable, dry transport **with greater range**



Change the horses at post stops!



Then suddenly someone has a radical idea!

DISPENSE WITH A HORSE



and save the expense, care and anxiety of keeping it. To run a motor carriage costs about $\frac{1}{2}$ cent a mile.

THE WINTON MOTOR CARRIAGE

is the best vehicle of its kind that is made. It is handsomely, strongly and yet lightly constructed and elegantly finished.

Dump the horse and get and install an internal combustion engine!

(Poison the world in the process, but you can go a lot faster and a lot further)

The idea was so radical it had to be called a horseless carriage and not “a carriage with an engine”

But these days we might also have to settle for a different set of primary target benefits:

I need **faster**
comfortable,
dry transport
**with greater
range**



I need **faster**
comfortable, dry
transport **without
carbon emissions
or air pollution**

So a re-design for new green world means

- Review the relative the importance of the benefits
- **Dump the horse** – or equivalent - and think about completely different processes and methodology



- **Ditch the internal combustion engine?**
- **Build recharging stations?**

SO



To create PFC free Hydrophobic Down we looked at ***the whole process of down production***, and not just the waterproofing stage, and *then* we looked at the ***life-time of the down garment***

Products have lives too!

So not only did we produce the Nikwax Hydrophobic Down

But we also created a cleaning agent, Down Wash Direct, that would wash it, and remove dirt, but *not* remove the water-resistant qualities of the down

The equivalent of the re-charging station for your Tesla

A complete system to keep the outdoor person warm and dry, without carcinogens, endocrine disruptors, or bio-accumulation, or environmental persistence



Thank you!