

Spring 2021 Fluorine-Free Waterproofing Sprays

Hannah Ray – Green Science Policy Institute

10/5/21

Data submission to CalSAFER program during the comment period for the regulatory proposal to list Treatments Containing Perfluoroalkyl or Polyfluoroalkyl Substances for Use on Converted Textiles or Leathers as a Priority Product.

Introduction:

In the spring of 2021, the Green Science Policy Institute purchased six samples of waterproofing sprays for apparel, furniture, and leather and submitted them to Professor Graham Peaslee's lab at the University of Notre Dame for total fluorine measurement using the Particle-induced Gamma-ray Emission Spectroscopy (PIGE) method.¹

The products chosen were:

- Grangers Wash + Repel Clothing 2 in 1
- Scotchgard Fabric Water Shield
- Merrell Rain & Stain Waterproofer / Repel Liquid and Stain Barrier
- Timberland Balm Proofer Water & Stain Repellent
- Detrapel Shoe & Sneaker Protector
- Nikwax Fabric & Leather Proof



Figure 1. Photograph of waterproofing sprays tested for total fluorine

Results:

The results of the PIGE measurements are shown in Table 1. For all of these samples, the total fluorine measurement was lower than the limit of detection (LOD). The LOD for this set of measurements was 40 ppm F.

¹ Details about the PIGE method are in Schaider, L.A. et al., Environ Sci Technol Letters. 4(3): 105–111 (2017).

Product	Total Fluorine (ppm F)
Grangers Wash + Repel Clothing 2 in 1	<LOD
Scotchgard Fabric Water Shield	<LOD
Merrell Rain & Stain Waterproofing / Repel Liquid and Stain Barrier	<LOD
Timberland Balm Proofer Water & Stain Repellent	<LOD
Detrapel Shoe & Sneaker Protector	<LOD
Nikwax Fabric & Leather Proof	<LOD

Table 1. Total Fluorine measurements of waterproofing products using PIGE

Discussion and Conclusions:

Since fluorine was not detected in any of these products, we concluded that it is unlikely that they contain per- or polyfluoroalkyl substances.

Products making claims to be PFAS-free such as Detrapel², Nikwax³, Grangers⁴, Scotchgard⁵ and Timberland Balm Proofer⁶ were confirmed not to contain detectable levels of fluorine.

The test results show that some waterproofing sprays were reformulated in recent years, and no longer contain detectable levels of fluorine.

- Scotchgard from 3M was historically based on PFAS⁷, but the label on the spray we tested in 2021 noted that the new formula is based on alkanes and silicones – and our PIGE measurement did not show detectable levels of fluorine.
- PIGE testing performed in 2019 on a waterproofing spray sold by Hush Puppies (a Wolverine Worldwide brand) detected fluorine and follow-up targeted tests confirmed the use of the specific PFAS 6:2 fluorotelomer alcohols and 6:2 fluorotelomer acrylates.⁸ Our 2021 measurement of the Merrell waterproofing spray⁹ (also a Wolverine Worldwide brand) did not mention PFAS on the label or online information, and our PIGE measurement did not show detectable levels of fluorine.

² Detrapel. (2021). Product Shoe and Sneaker Protection. <https://www.detrappel.com/product/shoe-sneaker-protector/>

³ Nikwax (2021). Products Fabric and Leather Proof. <https://www.nikwax.com/en-us/products/fabric-and-leather-proof/>

⁴ Grangers. (2021) Products Clothing Wash Repel. <https://grangers.co.uk/products/clothing-wash-repel>

⁵ Walmart. (2021) Scotchgard Fabric and Upholstery Water Shield Spray 10 oz 1 can. <https://www.walmart.com/ip/Scotchgard-Fabric-and-Upholstery-Water-Shield-Spray-10-oz-1-Can/160333756>

⁶ Timberland. (2021) Product Ingredients. <https://www.timberland.com/product-ingredients.html>

⁷ 3M (2018). Safety Data Sheet Scotchgard Fabric Protector https://multimedia.3m.com/mws/mediawebserver?mwsId=SSSSSuUn_zu8l00xMx_14x2GOv70k17zHvu9lxtD7SSSSSS--

⁸ Ecology Center. (2019). Wolverine Product Testing Report. <https://www.ecocenter.org/healthy-stuff/pages/wolverine-product-testing-report>

⁹ Merrell. (2021) Rain and Stain 6.0 oz. <https://www.merrell.com/US/en/rain-and-stain-6.0-oz/30349U.html>