

PFCs PROGRESS REPORT

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2. INTRODUCTION

The perfluorocarbons (PFCs) are compounds used in textile manufacturing to provide water repellent properties. In November 2012, Inditex approved the “PFC Elimination Policy” based on (i) a judicious use of the precautionary principle and, (ii) the recognition that enough scientific evidence is available to consider that PFCs pose an unacceptable level of hazardousness. Thus, in application of this policy, Inditex has phased out the C4, C6 & C8 at the end of 2014.

To ensure the implementation of the “PFC Elimination Policy” in our supply chain, we have carried out the following steps:

- Study to replace perfluorocarbons in water repellent and oil repellent finishing agents.
- Health and Safety teams inform the commercial team about the “PFC Elimination Policy” to communicate it to the supply chain.
- Proper management of chemical products during the manufacturing process, using the Ready To Manufacture program. The List by Inditex as relevant instrument to guarantee the compliance.
- Environmental team develops a risk analysis to identify garments that may contain water repellents products.

In 2015, 92 suppliers were contacted and 13 million units of PFC free garments were placed in the market.

Inditex is also technical advisor of the European Union project MIDWOR-LIFE. The main objective of the MIDWOR-LIFE project is to mitigate the environmental, health and safety impacts of current Durable Water and Oil Repellents (DWOR) and their alternatives by analysing their environmental impact and technical performance in order to assess manufacturers on the best available technologies to provide liquid repellent properties on textiles.

3. IDENTIFICATION OF GARMENTS AT RISK OF BEING MANUFACTURED WITH PFCs

We identified the garments at risk of being manufactured with water repellent products containing PFCs by searching in our internal tools by product family. We focused on outerwear and we applied the following filters: jacket, coat, waistcoat, water repellent trench coat, baby outerwear, parka, anorak, baby jacket and blazer. We also used photos to identify garments that weren't well identified by the filters.



This search was made in a regular basis and we listed all garments bought by Inditex identified as “at risk of being manufactured with PFCs”. We also collected the following information in our internal tools for each identified garment: number of units, reference code, photos, direct supplier and shipment data.

We tested the garment to ensure that didn't content PFCs.

Perfluorinated Compounds (PFCs) in Textiles and Coated Materials		
Test Method: SGS In House Test Method CTSL-SOP-RSTS-CHEM-219-1 & CTSL-SOP-RSTS-CHEM-219-2 - Analysis by LC-MSMS		
Test Item	Cas No	A1
PFOA	335-67-1	n.d.
PFOS	1763-23-1	n.d.
PFOSA	754-91-6	n.d.
PFHxA	307-24-4	n.d.
L-PFHxS	355-46-4	n.d.
PFBS	375-73-5	n.d.
PFBA	375-22-4	n.d.
8:2 FTOH	678-39-7	n.d.
6:2 FTOH	647-42-7	n.d.
	Conclusion	See Results
Note(s):		
	n.d. = not detected	
	Detection Limit = 1 µg/m ² (for individual compound)	
Requirement by the client= No Requirement		

Figure 2. Example of garment test

Lastly, we carried out a performance assessment, the "spray test", according to the ISO standard 4920:2012. This test involves applying a spray to the garment to see the time it takes to absorb the spray and assign a level of performance (1 to 5). Depending on the results achieved in the test, the alternatives are considered suitable to be water repellent or not.

Water Repellency

(ISO 4920:2012(E); Water temperature: 21.0°C)

<u>As received</u>	①	②	③	
Rating	3-4	3-4	3-4	/

Nomenclature for rating:

- ISO 5 – No sticking or wetting of specimen
- ISO 4 – Slight random sticking or wetting of specimen surface
- ISO 3 – Wetting of specimen surface at spray points
- ISO 2 – Partial wetting of the specimen face beyond the spray points
- ISO 1 – Complete wetting of entire specimen face beyond the spray points
- ISO 0 – Complete wetting to the entire face of the specimen

Figure 3. Example of "Spray Test" report

6. CASE STUDY 1 – COTTON TRENCH

Once the filters were applied, we identified the garment “Cotton trench” as risk of being manufactured with PFCs.



Figure 4. Cotton trench

Once the garment was identified, we sent an email to the direct supplier about the “PFC Elimination Policy”. The direct supplier of the cotton trench confirmed that he was in compliance with the “PFC Elimination Policy” and that the garment was manufactured using water repellent products.

As the garment was manufactured using water repellent products, we asked the direct supplier about the chemical product used and its MSDS. The product used in the cotton trench was Photobex by Huntsman. This chemical product is included in “The list, by Inditex” as a safe and not PFC content product.

SAFETY DATA SHEET

PHOBOL RHP

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Identification of the substance or mixture

Product name : PHOBOL RHP
 Product type : Liquid.
 Product description : Aqueous solution of a modified resin. Nonionic/cationic.

Use of the substance/mixture

Uses : Textile chemical
 Supplier : Huntsman Textile Effects, Klybeckstrasse 200, CH 4057 Basel, Telephone: +41 61 299 11 11

Figure 5. Photobex MSDS

We performed a Spray test in the cotton trench to ensure that the garment was water repellent. The test showed that the garment had good water repellent properties and as the product used was PFCs free, the cotton trench was approved.

Water Repellancy¹		
Test Method: BS EN ISO 4920:2012		
Test Conditions:		
Sample ID & Colour	Original	Requirement by the Client
A1	3	No Requirement
Rating Table 100 (ISO 5) No sticking or wetting of the specimen 90 (ISO 4) Slight random sticking or wetting of the specimen face 80 (ISO 3) Wetting of specimen face at spray points 70 (ISO 2) Partial wetting of the specimen face beyond the spray points 50 (ISO 1) Complete wetting of the entire specimen face beyond the spray points 0 Complete wetting of the entire face of the specimen		

Figure 6. Cotton trench “Spray test” report

7. CASE STUDY 2 – PADDED JACKET

Once the filters were applied, we identified the garment “Padded jacket” as risk of being manufactured with PFCs.



Figure 7. Padded jacket

Once the garment was identified, we sent an email to the direct supplier about the “PFC Elimination Policy”. The direct supplier of the padded jacket confirmed that he was in compliance with the “PFC Elimination Policy” and that the garment was manufactured using water repellent products.

As the garment was manufactured using water repellent products, we asked the direct supplier about the chemical product used and its MSDS.

Material Safety Data Sheet

NT-X028

SECTION 1: Identification of the mixture and of the company

1.1 Product Identifier

Trade Name: NT-X028

Chemical Name: Proprietary Aqueous Polymer Emulsion

Synonyms: None

Chemical Family: Proprietary Aqueous Polymer Emulsion

Formula: Mixture

Figure 8. Chemical Product MSDS

The product used in the padded jacket as water repellent was not included in our data base so we asked the direct supplier to perform a test showing that PFCs were not detected in the chemical product. El test report confirmed that PFCs were not included in the chemical product used as water repellent and therefore, the padded jacket was approved.

Perfluorinated Compounds (PFCs)

Test Method: In-house method. Analysis was performed by LC-MS or GC-MS.

	<u>CAS-No.</u>	<u>Result</u>
		1
Perfluorobutane Sulfonate (PFBS)	375-73-5	n.d.
Perfluorohexane Sulfonate (PFHxS)	355-46-4	n.d.
Perfluoroheptane Sulfonate (PFHpS)	375-92-8	n.d.
Perfluorooctane Sulfonate (PFOS)	1763-23-1	n.d.
Perfluorodecane Sulfonate (PFDS)	126105-34-8	n.d.
Perfluorooctane Sulfonamide (PFOSA)	754-91-6	n.d.
Perfluorooctanesulphonic acid 1H,1H,2H,2H (H4PFOS; 6:2)	27619-97-2	n.d.
Perfluorobutane Acid (PFBA)	375-22-4	n.d.
Perfluoropentane Acid (PFPA)	2706-90-3	n.d.
Perfluorohexane Acid (PFHxA)	307-24-4	n.d.
Perfluoroheptane Acid (PFHpA)	375-85-9	n.d.
Perfluorooctanoic Acid (PFOA)	335-67-1	n.d.
Perfluorononane Acid (PFNA)	375-95-1	n.d.
Perfluorodecane Acid (PFDA)	335-76-2	n.d.
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	n.d.
Perfluorododecanoic Acid (PFDoA)	307-55-1	n.d.
Perfluorotridecanoic Acid (PFTrA)	72629-94-8	n.d.
Perfluorotetradecanoic Acid (PFTeA)	376-06-7	n.d.
Perfluoro-3,7-dimethyloctanoic Acid (PF-3,7-DMOA)	172155-07-6	n.d.
7H-Dodecafluoroheptane Acid (HPFHpA)	1546-95-8	n.d.
2H,2H-Perfluorodecane Acid	882489-14-7	n.d.

Figure 9. Test report of the chemical product