INDITEX

PFAS-free Manufacturing Guidance

Index - Table of contents

1. Background	3
2. Objective	3
3. Scope and definitions	3
4. Measures to prevent PFAS detections	5
5. Annex I. Testing strategy	10
6. Annex II. Example of SDS and TDS	11
7. Annex III. Example of self-declaration document	13
8. Annex IV. How to find water and oil repellent products in The List by Inditex	14

1. Background

Inditex has committed to eliminating the use of per- and polyfluoroalkyl substances (hereinafter, PFAS) in their supply chain, thus leading to the elimination of PFAS in their articles. Some chemical products can entail the detections of these compounds in finished articles, especially if they contain fluoropolymers. Moreover, Inditex has verified that mills manufacturing for other clients using products made with PFAS chemistry in the same facility, if not properly controlled, have a high risk of generating cross-contamination on articles aimed to be PFAS-free. For this reason, this Guide of Good Manufacturing Practises has been outlined.

2. Objective

To define a phaseout guidance that includes good manufacturing practises to prevent PFAS usage, detections in final articles, cross-contamination in wet process units and to ensure compliance with <u>ZDHC Wastewater Guidelines</u>, especially in those cases where facilities cannot avoid the use of PFAS-based chemicals due to processing non-Inditex P.O. orders.

This guidance includes the following approaches:

- 1. PFAS-free alternatives
- 2. Ensure proper chemical product management
- 3. Communication with the suppliers across the supply chain
- 4. Testing verification
- 5. On-site measures to prevent PFAS detection

3. Scope and definitions

3.1. PFAS description

PFAS (Per- and polyfluoroalkyl substances) are a group of chemical substances derived from hydrocarbons where hydrogen atoms have been replaced by fluorine atoms. PFAS structure is characterized for containing at least one fully fluorinated carbon atom, according to <u>Assembly Bill 652 from the State of California</u>. This definition covers a wide range of compounds that can be further divided in other groups, and the estimated amount of existing individual PFAS is above 10.000 molecules.

The chemical bond between carbon and fluorine is a strong one, thus PFAS are considered a family of forever chemicals and can be found across the globe, as it is difficult that the PFAS concentration levels decrease on its own.

PFAS compounds have been broadly used as auxiliary products in the textile and leather sector to confer water, oil and dirt resistance properties. In addition, fluoropolymers are the base to confer certain special properties such as waterproof, breathable, quick dry, anti-wrinkle or anti-bacterial, among others. Some of these products incorporate technologies with membranes that can release PFAS.

The following set of definitions is a practical guide to understand different types of labelling and its related definition:

- Stain resistant/repellent: the product most likely contains PFAS.
- · Water resistant /repellent: the product might contain PFAS.
- **PFOA and PFOS free**: The product does not contain PFOA or PFOS above specific very low concentration thresholds. These PFAS substances are legally restricted in the EU for example. Products with this claim might still contain other types of PFAS.
- No PFAS or PFC based WR-finishing: Products are not treated with a PFAS-based durable water repellent finish. Sometimes referred to as "C0" by development teams. Inclusion of a PFAS-based membrane like PTFE cannot be ruled out.
- PFC Free: It is still possible to detect PFAS in the product. "PFC" might refer to a specific subset of PFAS only.
- **No intentional use of PFAS**: Product is not intentionally treated with any PFAS; however, it is possible that residual amounts of PFAS can be detected due to unintended PFAS use in material streams, use of recycled materials that contain PFAS, or other possible sources of PFAS contamination.
- No intentional use of PFAS and PFAS not detected: Product is not intentionally treated with PFAS and does not contain a PFAS-based membrane like PTFE. This is the highest standard and implies alternative treatments, proper chemicals management, and control of contamination and residuals. No PFAS can be detected using standardized test methods.

It is worth noting that PFC free, a widely used term, does not imply that the chemical product or the article is PFAS free.

3.2 PFAS regulations

Because of their widespread use, their persistence in the environment and health effects, some target PFAS substances are currently restricted by several national and international regulations, for example in the REACH (Regulation 1907/2006) or the regulation about Persistent Organic Pollutants (Regulation 2019/1021), among others.

Besides target PFAS restriction, the presence of PFAS can be estimated by measuring the amount of organic fluorine present in a sample. The state of California has been the first entity to regulate PFAS as a group by means of restrictions in total organic fluorine, for example in Assembly Bill 652 or Assembly Bill 1817, among others. However, currently there is no standardized and validated method to accurately determine the organic portion of fluorine. Thus, the most suitable method consists of the determination of the total fluorine content (TF) which will include the organic and inorganic portions, and work with this value as a screening tool.

European Chemicals Agency (ECHA) is working on a proposal for PFAS restriction that includes both target PFAS substances and TF restriction.

3.3 PFAS testing methodology

Currently, as per the current legislation, a single test method that ensures compliance with the different PFAS international regulations is not available. A combination of two testing approaches is necessary: determining Total Fluorine content (TF) and testing for target PFAS substances.

It is mandatory that the manufactured articles comply with both Total Fluorine content and target PFAS substances requirements as it is specified in the latest version of <u>Clear to Wear</u>, CTW. Additionally, chemical products should also be compliant with the limits described in <u>ZDHC MRSL</u>, <u>version 3.1</u> or the latest version, as those are based on current and future international regulations referred to PFAS as constituents of substances or mixtures put on the market. This can be done by means of selecting safe alternatives and/or by testing the chemical product according to **ITX-PFAS-RM-2020C**.

For further information about the testing strategy, check ANNEX I. Testing strategy.

3.4 PFAS source: intentional use and cross contamination

During PFAS phasing out, there is a high risk of cross-contamination in the facility, especially if PFAS based products have been applied in previous batches/productions in the same facility.

In recent studies, it has been demonstrated that certain chemical products that contain fluoropolymers might release fluorinated molecules, some of which are volatile and can easily spread out to other areas across the whole installation. They are persistent and remain in the facility for quite a long time if a suitable cleaning treatment is not conducted. Cross-contamination can easily carry over in successive productions if good manufacturing practices (hereinafter, GMP) are not followed. Also, PFAS above regulated limits can be found in the final textile in factories that have eliminated intentional use of PFAS products, if PFAS were present in the raw material. This highlights the fact that besides the application of GMP, verifying the absence of these compounds across the whole supply chain is a necessary requirement to ensure final textile articles are free of PFAS.

4. Measures to prevent PFAS detections in textile and leather articles

The following chapters describe the actions required for mills to completely eliminate PFAS detections in textile and/or leather.

4.1 PFAS-free alteratives

Nowadays, water repellence properties for textiles can be achieved with PFAS-free chemistry. There are chemical alternatives that use another chemical nature such as paraffins, silicones, polysiloxanes, polyurethanes and some special polymers, which ensure water repellence in textile and leather articles.

Inditex prohibits the use of PFAS chemistry to achieve water repellent articles. If the mill has installations for applying wet finishing treatments to the fabric, the ideal situation would be to stop using chemical products containing PFAS and substitute them for PFAS-free options.

Please note that there are chemical products that contain PFAS compounds that are currently not regulated internationally, but are restricted in Inditex articles, such as C4 or C6 chemistries among others, that can lead to detections of PFAS listed in the <u>Clear to Wear, CTW</u>. To prevent this, please make sure that the chemical products are sourced from a safe inventory or refer to section 3.3 PFAS testing methodology.

Any intermediary should make sure that its suppliers are well informed about PFAS alternatives and/or aware of the risk. To do so, search and evaluate safer alternatives, making sure the change ends up using products that contribute to a non-problematic substitutions.

- Please see "The List By Inditex" document in "Water and Oil Repellents" section, where you can find a list of commercially available chemicals from several manufacturers, in the following link: <u>The List by Inditex</u> (Click Next > Enter > Water&Oil repellents)
 - Use products classified as A in The List by Inditex IV.1 Edition, or the latest version of the document. These products will ensure CTW 2023 and ZDHC MRSL 3.1 compliance.
 - Please check Annex IV for detailed instructions on how to access the inventory of Water and Oil Repellents available in The List by Inditex.
- 2) Another source for safe chemical products is <u>ZDHC Gateway</u>. Selected products must comply with <u>ZDHC MRSL</u>, <u>version 3.1 or the latest version</u>. Please note that products that comply with ZDHC MRSL 2.0 might still contain PFAS or be based on PFAS chemistry.

3) Any other options can be used upon previous "non detected" PFAS and TF results after testing. To that extent, refer to section 3.3 PFAS testing methodology for details regarding textile, leather and chemical product testing.

4.2 Ensure proper chemical product management

Together with substituting PFAS based or containing chemicals, proper chemical product management ensures that no PFAS will be detected in the final article. Follow latest versions of Sustainable Standards for wet process mills (Green to Wear 2.1 and its supporting documents):

- 1) Track chemical products usage. Recipes need to be tracked and traceable.
- 2) Have a chemical product inventory and update it regularly.
- 3) Implement chemical risk assessment.
- 4) Ensure that chemical products outside of "The List by Inditex" or ZDHC Level 3 are PFAS-free and TF-free by means of testing (Section 3.3).
- 5) For an intermediate supplier, communicate the requirements along the whole supply chain.

4.3 Communication with the suppliers across the supply chain

It is important to identify materials or products considered as stain repellent or resistant, water repellent or resistant, quick dry, products that have breathable membranes, among others. Work with fibre or fabric suppliers and/or with chemical product suppliers to identify the type of finish and/or membrane coating that has been used since there is a high probability that this type of articles contains PFAS.

In case your supplier (chemical product, yarn or fabric suppliers, among others) does not offer PFAS-free guarantees, verify PFAS absence by testing.

To this effect:

 It is convenient to ask suppliers for Safety Data Sheets (SDS) and Technical Data Sheets (TDS) of all the chemical products used in formulations, specifically for finishing products. Note that some PFAS might not be clearly listed in SDS. Some chemical family names might contain PFAS (fluoropolymer, fluorinated acrylate, fluorinated methacrylate, fluorinated urethane, fluorinated sulphonates, fluorinated dimethicone, fluorinated methacrylate, among others).

Please note that some chemical product labels might include only the generalized name (i.e. "acrylate").

Check Annex II to see examples of SDS of products that contain PFAS.

- 2) It is convenient to ask suppliers to provide a written statement from their upstream chemical or material suppliers saying that PFAS substances, including membranes like PTFE or similar, are not present in their materials or chemical formulations and are not formed during manufacturing. Please check Annex III for an example of a selfdeclaration statement.
- 3) It is convenient to ask suppliers to monitor and control stock of different batches of textiles, raw materials, chemical products and other supplies to avoid crossing productions with or without PFAS.

4.4 Testing verification

In case of not having information about PFAS usage, testing for PFAS in the material is a good practise (being textile, chemical product or other) especially when sourcing products from different suppliers. Please refer to section 3.3 for information about testing strategy and methodology.

It is recommended to ensure that PFAS are not intentionally used and/or present in significant concentrations due to contamination by testing chemical products, raw materials and final articles both for TF and target PFAS substances (See last version of Clear to Wear, CTW, and section 3.3 of this document).

4.5 On-site measures to prevent PFAS detection

Chapters 4.1 to 4.4 detail preventive measures to avoid using PFAS-containing chemical products across the supply chain to ensure no PFAS detection altogether. However, it is possible that mills are contaminated with PFAS from previous productions. In that case, it is of paramount importance to maximise precautions.

It is strongly recommended to use an exclusive line for PFAS-Free productions when possible.

In case there is only one production line in the facility, it is extremely important to perform thorough cleaning of the production machinery, along with using specific accessories for PFAS-free chemical products. Please see recommendations below regarding facilities with continuous or exhaust processes.

4.5.1 Continuous padding process application

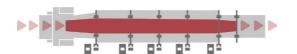
Water and oil repellents based on PFAS are usually applied to fabric with a continuous process, and to do so, padding is needed for chemical application as well as a drier system afterwards to dry and finish the fabric.

1) Mills using PFAS-based chemical products in padding process and stenter drying process shall be very careful to avoid cross-contamination to other purchase orders where PFAS-free products are applied.

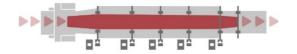


Picture 1. Conventional stenter

2) If the mill uses PFAS-based products and it has more than one production line: Make sure that the production line used for PFAS-free purchase orders is dedicated and separated from the other manufacturing lines to avoid cross-contamination.



Stenter 1: PFAS-free chemicals





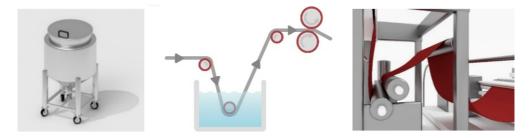
Stenter 2: PFAS-based chemical products

Stenter 3: PFAS-based chemical products

Picture 2. Distribution of production lines

If a mill only has a single padding and stenter machine:

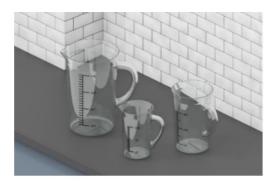
a. All parts of these machines must be cleaned exhaustively with tap water at room temperature, including the padding chemical adding tank, padding, and all metallic rolls that come in contact with fabric. Best option for cleaning is using a water pressure device such as a spray-gun.



Picture 3. Different parts to be cleaned in the machines.

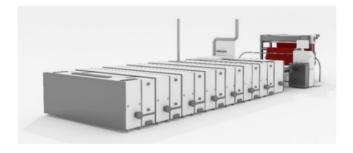
Left: Portable tank for chemical products. Center: Outline of padding machine. Right: Metallic rolls

b. Have all manufacturing accessories clearly identified/labelled and used exclusively for PFAS chemicals, including jars, spoons, weighing accessories, etc. These accessories should never be used for non-PFAS production processes.



Picture 4. Accessories commonly used for auxiliary chemicals manipulation.

- c. Extra or waste fabric without PFAS should be fed through all devices (padding and stenter) before any new production run of non-PFAS fabric. This fabric will help clean the machinery but must be immediately/safely disregarded since reuse will result in new cross-contamination of equipment.
- d. It is critical that the stenter extraction system is working properly and that it eliminates volatile compounds as much as possible, which can only be achieved through proper maintenance and cleaning on a weekly basis.



Picture 5. Example of extraction system in stenter

3) PFAS-based water and oil repellents may also be applied by pad-dry and then dried in a stenter. This process should be avoided since the pad-dry machine will become heavily contaminated and require thorough cleaning after every use. Stenters that include built-in padding should be used to avoid having to split production across different machinery that will increase chances of cross-contamination.

4.5.2 Exhaust process application

Water and oil repellents based on PFAS may also be applied by a fabric exhaust process, which typically involves use of a jet machine. After the application process in the jet machine, a hydro-extraction process needs to be performed in a hydro-extraction machine before the fabric is finished in the stenter.



Picture 6. Conventional jet machine



Picture 7. Hydro-extractor machine

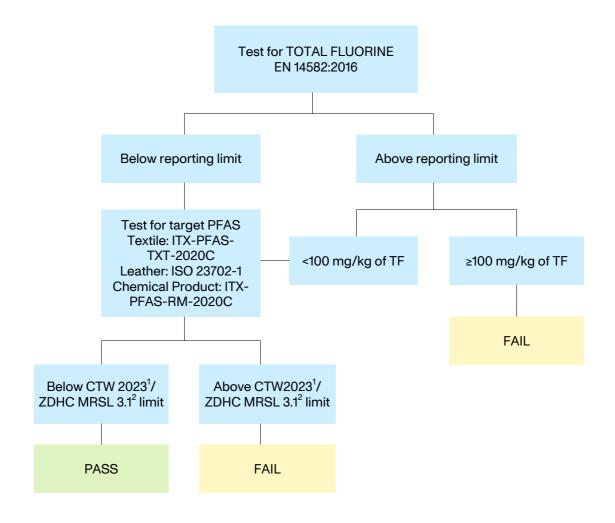
To avoid cross-contamination:

- Have all manufacturing accessories clearly identified/labelled and used exclusively for PFAS chemicals, including
 jars, spoons, weighing accessories, etc. These accessories should never be used for non-PFAS production
 processes.
- 2) Do not use all jets installed for applying PFAS-based chemical finishing.
 - a. Nominate a single jet to perform PFAS manufacturing processes, and an exhaust cleaning process should be performed after every application.
- 3) After the application process is performed, identify any transportation device or trolley for fabric transportation to the hydro-extraction machine. Do not use this trolley for non-PFAS production lines.
- 4) If the mill has more than one hydro-extraction machine, only one of them should be dedicated to PFAS manufacturing processes while saving others for non-PFAS production.
- 5) After the hydro-extraction process is performed, a cleaning process should be carried out.
- 6) For the stenter finishing process, follow the same good manufacturing process explained in the continuous padding process application section.

4.5.3 Finishing applications in garments

In some cases, finishing treatments can be applied directly in manufactured garments. Nominate and use exclusive machinery (garment dyeing machine, tumbler dryer, spin drying machine and laundry trolley). Perform thorough cleaning in case it is not possible to use separate machines.

5. Annex I. Testing strategy for textile, leather and chemical products



¹ For textiles and leather

² For chemical product

6. Annex II. Example of SDS and TDS

<u>Example 1</u>: TDSs or SDSs of chemical products that state sources of PFAS. These products would not be appropriate for Inditex productions. Note that the chemical composition begins or contains the prefix *fluoro*.

1.1:

Chemicals According to Version:		Safety Data Sheet (SDS))
		T17504-0003	SDS No.: Revision date:
3.1 Chemical prope Mixture 3.2 Composition In	formation	I N	
CAS No.	%[weight]	Name	
	19.5-22.5	Fluoroalkyl acrylate copolymer	
24800-44-0	1.0-3.0	Tripropylene glycol	
112-02-7	<2.0	N-Hexadecyltrimethylammonium Chlor	ride
68131-39-5	<3.0	Alkyl alcohol polyethoxylate	
7732-18-5	Hatil 100	Water	

1.2:

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical nature : Fluoralkylacrylate copolymer, aqueous emulsion

Other examples of chemical products that contain PFAS are as follow: fluoropolymer, fluoroacrylate copolymer, cationic fluorinated resin, cationic fluorinated resin extender, fluorocarbon resin, agent for durable water and oil repellent effect, among others.

<u>Example 2</u>: SDSs of chemical products that are not clear about PFAS: These products should be tested to check they are free of both PFAS and TF prior usage for Inditex productions. The following chemical products have had detections of PFAS:

2.1:

SECTION 3: Composition/information on ingredients

3.1. Mixtures

Chemical Name	CAS No.	Content(%)
Water	7732-18-5	67.0 ~ 69.0
C16~C22 Aliphatic alkyl acrylate copolymer	36120-03-3	23.5 ~ 24.5
Dipropylene glycol	25265-71-8	7.5 ~ 8.5

PFAS-free manufacturing guidance

INDITEX PFAS-free manufacturing guidance

2.2:

SECTION 3: Composition / Information on Ingredients

3.1 Substances Not applicable

3.2 Mixtures

Name	EINECS Number	CAS Number	Weight % (w/w)			
Polymer based on branched C13 fatty alcohols ethoxylated	N/A	Proprietary	<2			
Classification:						
GHS: Eye damage cat. 1 (H318)						

See Section 16 for full text

Oher names could include hydrocarbon polymer, mixture of acrylate polymer, ethoxylated fatty alcohol, polymer dispersion, among others

Signed: Mr/Ms

7. Annex III. Example of self-declaration document

Example of statement or declaration from the supplier indicating that no PFAS-containing products were used: Company: _____ _____, acting for and on behalf of the company ____ (hereinafter, Supplier), with registered office at _____ _____, acting in the capacity as _____ DO HEREBY REPRESENT AND STATE: One. That, regarding the Model/Quality/Colour reference no. ______, the chemical products used as finishing agents during its manufacturing to provide water repellence properties, do not contain any per- and polyfluoroalkyl substances (PFAS) Two. That the above-mentioned information is true, updated, complete and accurate. Supplier commits to providing, along with this declaration, the detailed information about the chemical products used as finishing agents to provide water repellence properties during the manufacturing of this reference, accompanied by their safety data sheets (SDS) and Technical data sheets (TDS), and to storing any information or document in support of any and all representations hereunder provided, and to updating the information provided in case any change with regard to the referred Model/ Quality/Colour reference (i.e., by providing a new updated declaration). Three. Supplier expressly accepts that the Inditex Group may, directly or through third parties, carry out, at the times it may deem fit, such reviews and audits it may deem expedient for the purposes of gathering information about the truthfulness of the representations hereunder included. Supplier shall give its full assistance to conduct such audits, providing the documentation requested and allowing free access to its facilities. Four. That Supplier complies with and enforces on its suppliers the prevailing laws, regulations and standards in force at the place of potential performance of the order/s as well as with the current Clear to Wear standard, CTW, approved by the Inditex Group, as well as any other guidelines governing environmental issues approved by the Inditex Group, including its Code of Conduct for Manufacturers and Suppliers of the Inditex Group which Supplier states to be familiar with. Five. Supplier will be solely responsible for any consequence whatsoever which may arise from the breach or defective performance of the representations herein included. And, as evidence thereof, this declaration is hereby subscribed in all its pages in ______[place], on _____ [date].

8. Annex IV. How to find water and oil repellent products in The List by Inditex

- 1. Please click the following link to access The List PowerBi app.
- 2. Click on NEXT:

INDITEX | THE LIST

The List by INDITEX

Inditex has developed its sustainability code, called "Green To Wear 2.1" (GTW 2.1) to ensure that all our products comply with the most stringent environmental and product health requirements.

This code is intended for all Inditex direct suppliers and the wet processing units (dyeing, printing and polyurethane coating mills, laundries, tanneries and in any stage using adhesives or glues) included in their supply chain.

The Group has introduced some updates to The List to further improve the accessibility and quality of the data. These upgrades include a new web format that makes it easier to consult the formulation allowed for the facilities, as well as the revised classification and correct identification of some products that have been discontinued in this edition.

Due to the importance of selecting appropriate chemical products for compliance of its sustainability policies, Inditex focus its chemical management strategy in "The List by INDITEX", a program linked to GTW 2.1 and essential to comply with its requirements.

"The List by INDITEX" classifies commercially available chemical products used for textile and leather manufacturing process as "A", "B" or "C" according to their level of compliance with Inditex product health standard "Clear To Wear" (CTW) and manufacturing restricted substance list (MRSL) for the following substances:

/ Formaldehyde. / Phenols. / Heavy metals. / Phthalates. / Chromium. / Fluorocarbons. / Arylamines. / Allergenic dyes. / Alkylphenols and alkylphenol ethoxylates.
/ Organotin compounds.
/ Organochlorinated compounds.
/ Brominated / chlorinated flame retardants.

/ Other restricted substances.

Category created to allow chemical companies involved in this program the possibility to categorize chemicals as "C" for any reason they consider and not included in the restricted substances already listed.

NEXT

3. Click on ENTER:

INDITEX | THE LIST

The List by INDITEX

Chemical product classification are as follows:

/ Chemical products classified as "A": These chemicals can be used without any restriction. It is not necessary to test them for controlled substances on the chemical product nor on its application.

/ Chemical products classified as "B": Our experience as Inditex tells us that due to the nature of the manufacturing process of these chemicals there is a possibility that their application could lead to a CTW non-compliance in the finished item. For this reason, every time they are used, it is mandatory to follow their TDS strictly and to perform an analysis of every first production lot.

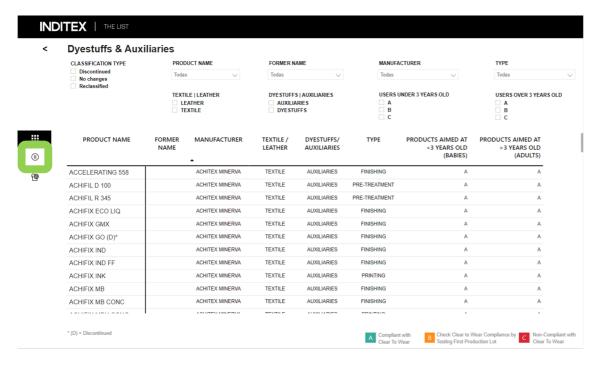
/ Chemical products classified as "C": These chemicals cannot be used in any Inditex production

Please be aware that not all facilities in the Inditex supply chain work exclusively with chemicals included in "The List by INDITEX", Inditex has designed a strategy to properly control chemicals outside this program that can be found in section "Chemical management strategy" in "GTW 2.1 supporting documents".

- ▲ Since the chemical product classification showed in this document is based on thirteen substances, full compliance with CTW should be checked once the goods are finished.
- ⚠ Chemical products will be considered as included in "The List by INDITEX" only if its commercial name matches exactly with the description shown in this document.
- A Risk of CTW non-compliance for color fastness was not considered in chemical product classification since it depends not only on the chemical itself but also on its application.



4. Click on the sign for Water and Oil Repellents:



5. Explore the range of products:



INDITEX

Product Sustainability

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