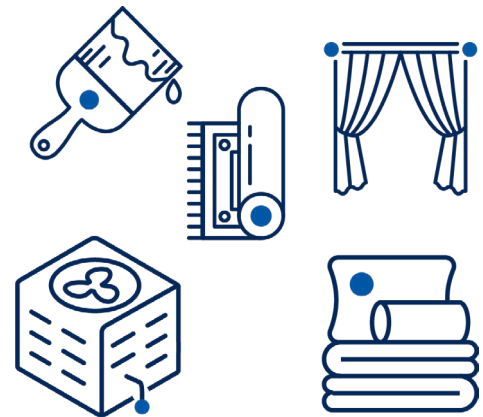




# PFAS in the Built Environment

The class of chemical compounds known as per- and polyfluoroalkyl substances (PFAS) are ubiquitous environmental contaminants commonly known as “forever chemicals.” Since the 1940s, PFAS have been commercialized and widely valued in product manufacturing due to their thermal stability, resistance to degradation, and surfactant ability, allowing them to repel water, grease, and stains. Thousands of different PFAS are in use today, including in building products such as exterior and interior coatings, carpets, textiles, and refrigerants.

In these products, PFAS provide unique properties, such as durability, stain resistance (surfactant ability), and fire resistance.



**Scientists are working to fully understand the health effects of exposure to PFAS emissions. The best way to protect yourself is by taking a precautionary approach.**

## Reducing PFAS in Building Design and Construction

PFAS emissions can migrate into other materials and can remain there even after the initial source is removed. Therefore, avoiding introducing PFAS into a space (source reduction) is the most effective way to reduce exposure risks. This means avoiding the specification or use of products that contain PFAS. This may involve:

- Asking manufacturers if their supply chain contains PFAS
- Educating clients and suppliers about PFAS
- Avoiding use of certain performance fabrics (e.g., stain resistance)
- Using an independent, third-party verification program that evaluates PFAS in products (see table on page 2).

**Unfortunately, avoiding the use of specific chemicals poses the risk of regrettable substitution, when a chemical with an unknown or unforeseen hazard is used to replace a chemical identified as problematic.**

As legacy (or long-chain) PFAS, such as PFOA and PFOS, have been phased out, they have been replaced with newer, emerging (or short-chain) PFAS. Less is known about these newer alternatives, but limited research suggests that they may pose the same potential risks human health. Because of this, most independent, third-party verification programs apply a class-based approach to PFAS, aiming to avoid PFAS chemicals altogether. Ideally, PFAS-free alternatives should have Chemical Hazard Assessments showing that they will not be detrimental to the environment or human health.

There are many product certification programs for sustainable or healthy materials. Here is a brief look at how several of the most common programs address PFAS:

Program	Description	PFAS Requirements
<a href="#">Declare: LBC Red List Free</a> (The LBC Red List is used for Declare, Living Product Challenge, and Living Building Challenge)	A disclosure tool that presents information about product ingredients in an easy-to understand format—LBC Red List Free is one of three possible Declaration Statuses	<ul style="list-style-type: none"> <li>• Products may not contain any Red List chemicals.</li> <li>• There are 10,819 PFAS compounds on the Red List.</li> </ul>
<a href="#">GreenScreen® for Safer Chemicals</a>	An open, transparent, and publicly accessible method for chemical hazard assessment	<ul style="list-style-type: none"> <li>• Zero intentionally added PFAS are allowed.</li> <li>• PFAS contamination must be below 100 ppm.</li> <li>• Analytical testing is required to verify that total fluorine (a proxy for the sum of all PFAS) is below the threshold for fabric.</li> <li>• During the duration of a certification, total fluorine testing is required on three samples per quarter.</li> </ul>
<a href="#">Cradle to Cradle Certified®, Version 4.0</a>	A globally recognized measure of safer, more sustainable products made for the circular economy	<ul style="list-style-type: none"> <li>• PFAS are not permitted for use.</li> <li>• If present as an impurity or minor additive in an otherwise non-fluorinated organic material, PFAS must be at very low levels.</li> <li>• At the Bronze and Silver levels, there are exceptions for materials present at very low levels.</li> <li>• Materials that are surface coatings applied to textiles, including apparel, carpets, and furnishings, do not qualify for this exemption.</li> </ul>

## Reducing PFAS in Operations and Maintenance

While source reduction during the design and construction phase is essential, ongoing operations and maintenance also play an important role in reducing exposure to PFAS, especially since the emissions off-gas over a long period of time and absorb readily into other materials.

### KEY STRATEGIES INCLUDE:

- Avoiding use of PFAS-based stain repellent treatments.
- Avoiding use of cleaning products containing PFAS.
- Implementing routine cleaning protocols to ensure spills are cleaned promptly and dust is removed from all surfaces.



Science for a safer, healthier tomorrow.