The Living Building Challenge (LBC) Red List 2023 Updates: A Guide for Manufacturers

Highlights

- Effective May 1, 2023,the International Living Future Institute (ILFI) is updating the Red List to include 5,938 PFAS (Per- and Polyfluoroalkyl Substances) Chemical Abstract Numbers, which were previously on the Priority Watch List. This brings the total number of PFAS on the Red List to 10,819 compounds.
- Manufacturers may need to review product design and performance and assess how these updates may impact their product's status in Declare, or compliance with the LBC Red List Imperative.
- A new temporary exception, RL-023 Wire Sheathing subject to NFPA 90A, NFPA 262, UL® 910, has been added to LBC and Declare that allows the use of fluorinated ethylene propylene (FEP) or PVC-based wire and cable in plenum spaces and similar areas where fire codes require stringent burn tests to ensure health and safety.
- The temporary exception RL-022 PFAS Chemicals in Building Materials, still stands and has been slightly modified to account for the new exception RL-023.
- If you're concerned about PFAS, catch up on the industry discourse and engage your engineers, designers, and suppliers.

2023 Red List Update

The Living Building Challenge (LBC) Red List documents the "worst in class" materials, chemicals, and elements in building products known to pose serious risks to human health and the environment. It is the backbone of materials requirements in the Living Building Challenge, the Living Product Challenge, and the Declare label.

In May 2023, ILFI added 5,938 PFAS to the Red List - bringing the total number of restricted PFAS to over 10,000. Because per- and polyfluoroalkyl substances are persistent, accumulative, mobile, and hazardous, the scientific community recommends managing PFAS as a chemical class. ILFI's actions on PFAS are aligned with those of regulators, companies, certifications, and institutional procurement policies worldwide that are beginning to take this approach.

Recognizing that PFAS are currently unavoidable in some products under current market conditions, and that phasing them out will take time, ILFI introduced a broad temporary Exception in LBC, RL-022 PFAS Chemicals in Building Materials, allowing the use of PFAS in a product if no alternatives are available; its ingredient list is publicly available; and the PFAS function in the product is documented. This Exception cannot be used for a list of product categories for which ILFI is aware that safer alternatives exist. See the Exception language for more details.

Recognizing that some chemicals of concern are necessary for the health, safety, or the functioning of society, ILFI introduced a temporary Exception in Declare and LBC, RL-023 Wire Sheathing subject to NFPA 90A, NFPA 262, UL® 910, allowing fluorinated ethylene propylene (FEP) or polyvinyl chloride (PVC) in wire and cable sheathing subject to fire codes NFPA 90A, NFPA 262 or UL 910, and based on the essential use

approach to chemicals management. Use of this Exception requires full ingredient disclosure, analytical testing, and other documentation.

Guidance and how to incorporate Red List updates

Products with a Declare label

Products that have active Declare labels will be subject to the updated Red List at the time of the labels' renewal. Based on the chemicals represented in their ingredient disclosures, the Declaration status of the label may change. If the manufacturer chooses to renew its Declare label, they should provide the new label documentation to project teams from that time onward.

Products not in the Declare program

Project teams that registered for the Living Building Challenge prior to the publication of this update do not need to follow this current list, but if they wish to avoid PFAS, they may choose to do so. Project teams registering for Living Building Challenge certification after the the time of the list's publication will be required to use the updated Red List to screen for PFAS.

Exceptions RL-022 and RL-023

ILFI is issuing limited and temporary exceptions for PFAS due to their pervasive and currently unavoidable use in building products. Project teams are strongly encouraged to avoid using products with PFAS unless determined essential to the project or specific performance application. As market conditions change, these Exceptions will be modified.

RL-022 PFAS Chemicals in Building Materials

A project team may use certain products that contain PFAS if all of the characteristics listed below under Required Product Characteristics are true, and the project team advocates to the manufacturer to design the PFAS chemical out of the current and future product formulations.

PFAS-containing products in the categories listed below under Excluded Product Categories are not eligible for use under this exception.

Required Product Characteristics

- The product is currently unable to meet performance requirements or perform its essential function without PFAS chemicals,
- There are no other Red List chemicals present, and
- The product has a published transparency label, such as Declare, or publicly available ingredient list at 100 ppm (0.01%).

Documentation Requirements

- Statement clearly articulating why the product was essential to meeting project performance requirements and couldn't be avoided,
- List of the functions the PFAS provides in the product (e.g., stain repellant) if disclosed, and
- Evidence of advocacy to the manufacturer to design the PFAS chemical out of the current and future product formulations.

Excluded Product Categories

This exception does not apply to the following product categories, because ILFI is aware that compliant products exist, or that alternate product types provide a functional equivalency.

- Carpets, including broadloom and carpet tile
- Flooring, including Resilient and Hard Flooring
- Interior Ceiling Products
- Sealants, whether applied onsite or during fabrication.
- Upholstery
- Fabrics used for window or wall coverings
- Systems furniture
- Interior Paints
- Wires and cables subject to NFPA 90A, NFPA 262 or UL 910, and/or used in plenum spaces and other areas used to transport environmental air without enclosed raceways: Refer to the RL-023 Exception, below.

RL-023 Wire Sheathing subject to NFPA 90A, NFPA 262, UL® 910

This exception applies to electrical wires and cables and optical fiber cables that are insulated, jacketed, or both, and that are subject to fire codes NFPA 90A, NFPA 262 or UL 910, and/or proposed for use where applicable building codes require the use of fluorinated ethylene propylene (FEP) or polyvinyl chloride (PVC) compounds in wire and cable sheathing. Examples include wires and cables installed in ducts, plenums, and other spaces used to transport environmental air without enclosed raceways.

When used to meet national and local fire codes that require wires and cables in air-handling spaces to be insulated and jacketed with materials that burn slowly and emit low amounts of smoke, that application of FEP and PVC is considered an "essential use" of these Red List materials. To comply with the LBC Materials Petal, project teams must make every effort to design the project in a way that avoids the need for FEP and PVC coatings, for example by designing buildings with open ceilings and no plenums; or running cable in metal conduit, sealed wiring chases, or cellular raceways of concrete decking.

If highly flame-resistant cable is still needed, it must also meet the requirements described below.

For FEP-based wires and cables:

- Product has published and publicly available ingredient transparency for 100% of ingredients at 100 ppm (0.01%) with no proprietary ingredients allowed.
- Process chemicals (e.g., solvents, surfactants, emulsifiers, dispersants, inhibitors, additives) used during the FEP copolymerization process must be fully disclosed.
- Company discloses policy for minimizing emissions and worker exposure to PFAS process chemicals.
- Product is compliant with RoHS III or current standard.

Product has undergone analytical testing showing that:

- Residual monomer levels in the FEP copolymer do not exceed 100 ppm in either the copolymer or the final material/product.
- Residual Red List process chemical levels in the FEP copolymer do not exceed 100 ppm.

For PVC-based wire and cables:

- Product has published and publicly available ingredient transparency for 100% of ingredients at 100 ppm (0.01%) with no proprietary ingredients allowed.
- All plasticizers have full chemical hazard assessments and are rated GreenScreen Benchmark 2 or safer.
- All flame retardants have full chemical hazard assessments and are rated GreenScreen Benchmark 2 or safer.
- Product is compliant with RoHS III or current standard.
- Manufacturer has followed best practices for PVC sourcing, production, and emissions control per the GreenStar Best Practice Guidelines for PVC

Product has undergone analytical testing showing that:

- The residual vinyl chloride monomer content is less than 1 ppm
- No lead, cadmium, mercury, or hexavalent chromium are present in the product above 1 ppm
- The combined level of the following phthalate plasticizers cannot be above 100 ppm: diethylhexyl phthalate (DEHP), benzylbutyl phthalate (BBP), diethylbutyl phthalate (DBP), diisobutyl phthalate (DIBP)

Documentation:

- For FEP and PVC cables:
    - A detailed design narrative explaining the design process and considerations devoted to to maximizing the use of Red List free cable products
    - Applicable codes requiring the use of FEP or PVC
    - Publicly available list documenting all ingredients down to 100 ppm (0.01%) with Red List chemicals flagged
    - Documentation of RoHS III compliance
- Additional for FEP cables:
    - A letter from the manufacturer disclosing all process chemicals used for the FEP copolymerization with Red List chemicals flagged
    - Company policy related to minimization of PFAS emissions and exposure
    - Analytical test data proving that the residual FEP monomers and Red List process chemicals identified are below the required thresholds
- Additional for PVC cables:
    - Affidavit stating that the best practices have been followed for PVC sourcing, production, and emissions control - align with GreenStar Best Practice Guidelines for PVC
    - Chemical Hazard Assessment for each plasticizer used showing that they are rated GreenScreen Benchmark 2 or safer
    - Chemical Hazard Assessment for each flame retardant used showing that they are rated GreenScreen Benchmark 2 or safer
    - Analytical test data showing that the vinyl chloride monomer, lead, cadmium, mercury, hexavalent chromium, DEHP, BBP, DBP, DIBP, are below the required thresholds

Additional information and resources

To help navigate PFAS in building materials, manufacturers can consult the following:

- Building a Better World: Eliminating Unnecessary PFAS in Building Products, Green Science Policy Institute
- Technical Resources for Addressing Environmental Releases of Per- And Polyfluoroalkyl Substances (PFAS), Interstate Technology and Regulatory Council (ITRC).
- PFAS Action: Governments, Retailers, and Brands are Stepping Up, updated November 2021.
- Kwiatkowski, C., Andrews, D., Birnbaum, L.., Bruton, T.., DeWitt, J., Knappe, D.., Maffini, M., Miller, M., Pelch, K., Reade, A., et al. 2020. Scientific Basis for Managing PFAS as a Chemical Class. Environ. Sci. Technol. Lett. 7, 8: 532–543. https://doi.org/10.1021/acs.estlett.0c00255
- Products without intentionally added PFAS or PFCs, Environmental Working Group updated December 2021.

Feedback and questions

- If you have feedback or questions, please contact declare.support@living-future.org.
- For additional details about the Living Building Challenge Red List 2023 update, please visit https://living-future.org/red-list/.