LEED Pilot Credit Library

Pilot Credit 2: PBT Source Reduction: Dioxins and Halogenated Organic Compounds

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Applicable Rating Systems

This credit is available for pilot testing by the following LEED project types:

- New Construction
- Commercial Interiors
- Core & Shell
- Schools
- Healthcare (when available)

Intent

Reduce the release of persistent bioaccumulative toxic chemicals (PBTs) associated with the life cycle of building materials.

Requirements

- Use materials manufactured without added halogenated organic compounds[1] for at least 75% (by cost) of the material totals in a minimum of three of the following four groups:
- Exterior components (including at a minimum, roof membranes, waterproofing membranes, window and door frames, siding).
- Interior finishes (including at a minimum, flooring, base, ceiling tiles, wall coverings, and window treatments).
- Piping, conduit and electrical boxes.
- Building-installed electrical cable and wire jacketing.

Halogenated organic compounds covered in this credit include the following:

- All plastics containing chlorine or fluorine including:

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[1] Halogenated organic compounds (or halocarbons) addressed by this credit are made up of a halogen element (specifically chlorine, bromine or fluorine) and carbon. These compounds are targeted due to their persistence and propensity to dioxin formation. Halogen salts, such as sodium chloride, which are formed with metals instead of carbon have different environmental and health performance characteristics and are not under the purview of this credit.

    - Chlorinated polyethylene (CPE)
    - Chlorinated polyvinyl chloride (CPVC)
    - Chlorosulfonated polyethylene (CSPE)
    - Polychloroprene (CR or chloroprene rubber, also brand name Neoprene)
    - Polyvinyl chloride (PVC)
    - Fluorinated ethylene propylene (FEP)

  - All brominated or halogenated flame retardants (BFRs and HFRs) containing bromine, chlorine, or fluorine including:
    - PBDEs (polybrominated diphenyl ether), including Deca-BDE (Decabromodiphenyl ether),
    - Tetrabromobisphenol-A (TBBPA)
    - Hexabromocyclododecane (HBCD)
    - Tris(2-chloroisopropyl) phosphate (TCPP),
    - Tris(2-chloroethyl)phosphate (TCEP)
    - Dechlorane Plus

- Compounds that constitute less than five percent of the product by weight, are exempt from complying with the credit requirements, with the exception of halogenated flame retardants (HFRs), including, but not limited to, Polybrominated Diphenyl Ethers (PBDEs) which have no minimum threshold.

Potential Technologies & Strategies

While compounds representing less than 5% of the product weight are not required to comply with the credit requirements (with the exception of HFRs), specification and procurement of halogen-free minor parts is encouraged when meet or exceed performance requirements.
Consider materials free of added chlorine or other halogens in all applications which meet or exceed performance requirements. Options of materials with reduced PBTs include, but are not limited to, TPO, FPO, EPDM, and ABB or SBS modified bitumen for roof membranes; natural linoleum, rubber, or alternate polymers for flooring and surfacing; natural fibers, polyethylene, polyester and paint for wall covering; polyethylene for wire & cable jacketing; wood, fiberglass, HDPE, and aluminum with thermal breaks for windows; steel, HDPE and fiberglass for conduit; and copper, steel, concrete, clay, polypropylene and HDPE for piping. Cast iron pipe should be avoided based on air quality concerns associated with manufacturing practices (see TSAC PVC report).
Confirm that halogenated flame retardants are not added to alternative plastic products. The fire retardant attributes of halogenated compounds should be replaced with inherently fire retardant design or alternative materials appropriate to the fire requirements of the product.

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Credit Submittals

General:

1. Register for Pilot Credit(s) here.
2. Register a username at LEEDuser.com, and participate in online forum
3. Submit feedback survey; supply PDF of your survey/confirmation of completion with credit documentation

Credit Specific:

For each product selected that complies with the credit requirements or is used to demonstrate compliance, conduct and submit a multi-parameter alternative product analysis that includes at a minimum one (1) other product that serves the same function.

The multi-parameter alternative product analysis must include at least 4 parameters (in addition to absence of halogenated materials) associated with the product manufacture or service life (for example but not limited to – global warming potential, water use, point of manufacture, ozone depleting potential, nonrenewable resource consumption, use of renewable energy during manufacture, durability) used to assess suitability of the product selected.

Additional Questions

- What other dioxins and halogenated organic compounds need to be included in this credit, or should there be an additional credit?