

Resource for Complying with the Safer Products for Washington Rule: Electric and Electronic Products

Overview

The Washington Department of Ecology (Ecology) adopted [Chapter 173-337 WAC](#)¹ in 2023. The rule includes reporting requirements and restrictions that apply to priority consumer products that contain priority chemicals. Ecology developed this resource to help businesses comply with [WAC 173-337-112\(1\) and \(2\)](#).² This section of the rule includes reporting requirements and restrictions for organohalogen flame retardants (OFRs) in electric and electronic products. The restriction effective dates and reporting deadlines are included in the [Safer Products for Washington Cycle 1: Adopted Rule Highlights](#).³

You can use this resource to:

- Determine if a product meets the applicability requirements in WAC 173-337-112 (1)(a) and (2)(a). (Step 1, next page.)
- Analyze your supply chain and determine whether any relevant components in your product contain OFRs. (Step 2, page 4.)

Use Figure 1 below to determine if a product meets the applicability requirements in WAC 173-337-112 (1)(a) and (2)(a). Below the figure, you'll find definitions and details corresponding to the questions.

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¹ <https://app.leg.wa.gov/WAC/default.aspx?cite=173-337>

² <https://app.leg.wa.gov/WAC/default.aspx?cite=173-337-112>

³ <https://apps.ecology.wa.gov/publications/SummaryPages/2304039.html>

Step 1. Determine if your product meets the applicability requirements

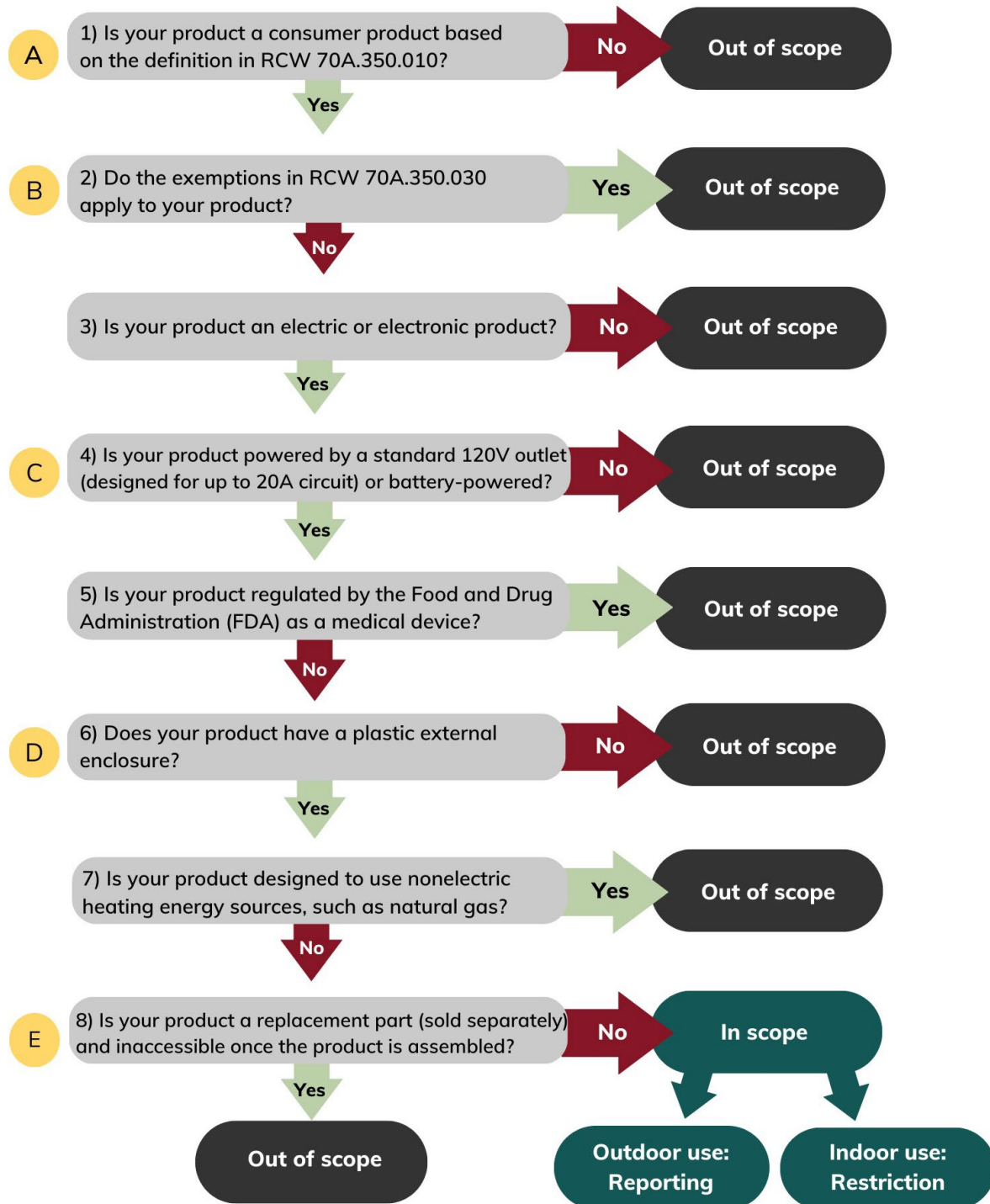


Figure 1. A flowchart to determine whether your product is in scope, meaning it meets the applicability requirements in WAC 173-337-112 (1)(a) and (2)(a).

Figure 1 reference

- A** **Consumer product** means any item, including any component parts and packaging, sold for residential or commercial use.
- B** Exemptions include:
- (i) Plastic shipping pallets manufactured prior to 2012.
 - (ii) Food or beverages.
 - (iii) Tobacco products.
 - (iv) Drug or biological products regulated by the United States Food and Drug Administration.
 - (v) Finished products certified or regulated by the Federal Aviation Administration or the Department of Defense, or both, when used in a manner that was certified or regulated by such agencies, including parts, materials, and processes when used to manufacture or maintain such regulated or certified finished products.
 - (vi) Motorized vehicles, including on and off-highway vehicles, such as all-terrain vehicles, motorcycles, side-by-side vehicles, farm equipment, and personal assistive mobility devices.
 - (vii) Chemical products used to produce an agricultural commodity, as defined in [RCW 17.21.020](#).⁴
- C** Consumer products that receive power only when they are hardwired into and permanently part of the fixed electrical wiring of a building are out of scope. This includes wiring devices, control devices, electrical distribution equipment, and lighting equipment.
- D** External plastic enclosures are also called device casing. This regulation includes plastic external enclosure parts that weigh more than 0.5 grams. Other product components that are not in scope include:
- Printed circuit boards
 - Internal fans
 - Wires, cords, and cables
 - Switches
 - Light bulbs
 - Connectors
 - Screens
- E** Replacement parts sold separately and inaccessible once the product is assembled, are excluded from scope because they function inside the products and may have different performance requirements.

⁴ <https://app.leg.wa.gov/RCW/default.aspx?cite=17.21.020>

Step 2. Determine if your product contains OFRs in the external enclosure

Introduction

This resource is not prescriptive. Instead, it intends to provide options for identifying whether product components may need to be reformulated to comply with the restriction or reported under the reporting requirement.

To identify the components, assess and develop a list of plastic components exceeding 0.5 grams that are part of the plastic external enclosure. For each of these components, ask the suppliers to provide information documenting that the component doesn't contain intentionally added OFRs. There are two main pathways to identify whether product components are free of intentionally added OFRs—disclosure and analytical testing. We discuss these options in more detail below.

Disclosure pathway

Transparency is the most effective way to identify whether a product complies with current or future regulations. To determine if a component contains OFRs, we suggest four options:

1. **Full material disclosure:** Ask for full material disclosure, which is a list of all the materials and chemical additives in the component. Many platforms and third-party assessors can help you gather this information. This will help you not only identify any flame retardants being used but also provide you with additional information to assess compliance with regulations.
 - **What to look for:** Review the list of chemicals provided for “bromo-,” “chloro-,” and “fluoro-.” If you notice any have these prefixes, ask for the function of the chemical(s) and if the concentration is greater than 1,000 ppm.
2. **Disclosure of the chemicals that serve a flame-retardant function:** If you can't get full material disclosure, ask for a list of chemicals that serve the function of flame retardant. Review the chemicals provided for “bromo-,” “chloro-,” and “fluoro-.” If you notice any of these prefixes, ask if the concentration is greater than 1,000 ppm. While not an exhaustive list,⁵ examples of OFRs that can be used in electronic enclosures include:
 - **CAS RN 1163-19-5** — Decabromodiphenyl ether
 - **CAS RN 25713-60-4** — 2,4,6-tris (2,4,6-tribromophenoxy)-1,3,5-triazine (TTBP-TAZ)
 - **CAS RN 29420-49-3** — Potassium nonafluorobutanesulfonate (PFBS)
 - **CAS RN 36483-57-5 or 1522-92-5** — 2,2-dimethylpropan-1-ol, tribromo derivative; 3-bromo-2,2-bis(bromomethyl)propan-1-ol (TBNPA)
 - **CAS RN 37853-59-1** — 1,2 Bis (2,4,6-tribromophenoxy)ethane (BTBPE)

⁵ For additional examples, visit https://www.epa.gov/sites/default/files/2014-05/documents/decabde_final.pdf

- **CAS RN 68928-70-1** — Brominated epoxy
 - **CAS RN 71342-77-3** — Phenoxy-terminated carbonate oligomer of tetrabromobisphenol A
 - **CAS RN 79-94-7** — Tetrabromobisphenol A (TBBPA)
 - **CAS RN 84852-53-9** — Decabromodiphenyl ethane
 - **CAS RN 88497-56-7** — Brominated polystyrene (BPS)
3. **Disclosure of the flame-retardant code:** Some resins marketed to meet flammability standards have two-digit codes to voluntarily identify the materials and flame-retardant types used. The term FR, in capital letters without spaces, is followed by a two-digit code that discloses the type of flame retardant used, such as “FR (18).” In Table 1, we list flame retardants that include halogenated compounds in their grouping.

Table 1. Codes for halogenated flame retardants.

FR code	Flame retardant type
10	Aliphatic/alicyclic chlorinated compounds
11	Aliphatic/alicyclic chlorinated compounds in combination with antimony compounds
12	Aromatic chlorinated compounds
13	Aromatic chlorinated compounds in combination with antimony compounds
14	Aliphatic/alicyclic brominated compounds
15	Aliphatic/alicyclic brominated compounds in combination with antimony compounds
16	Aromatic brominated compounds (excluding brominated diphenyl ether and biphenyls)
17	Aromatic brominated compounds (excluding brominated diphenyl ether and biphenyls) in combination with antimony compounds
18	Polybrominated diphenyl ether
19	Polybrominated diphenyl ether in combination with antimony compounds
20	Polybrominated biphenyls
21	Polybrominated biphenyls in combination with antimony compounds
22	Aliphatic/alicyclic chlorinated and brominated compounds
25	Aliphatic fluorinated compounds
41	Chlorinated organic phosphorus compounds
42	Brominated organic phosphorus compounds

Table note: FR codes 23, 24, and 26 through 29 are unallocated.

4. **Statement documenting the supplier used safer flame retardants:** Another way to confirm your components are not using OFRs is to ask your supplier if the component or resin fulfills the requirements for materials used in the manufacture of TCO Certified products.
 - Request they provide a statement stating the components use only flame retardants on the [TCO Certified Accepted Substance list](#).⁶

Analytical testing pathway

If your suppliers do not provide the information you request, another way to confirm whether your components do or do not contain OFRs is by gathering test data.

Before you test, however, it is beneficial to first ask your supplier whether they have test data analyzing the current material (preferably less than two years old). They might have already assessed the material.

- **Certification ratings:** Ask your supplier or look at the relevant UL Yellow Card to determine whether the material in the component was tested and meets certain certifications.
 - **UL 746H Non-Halogenated Material certification** confirms that the material has been evaluated and is less than 900 ppm for bromine, chlorine, and fluorine individually and less than 1,500 ppm for their sum.
 - **UL Non-Chlorine and Non-Bromine** also likely indicates that OFRs are not intentionally used. However, you would need to ask about the use of fluorinated flame retardants (though these are less common).
- **XRF:** XRF analyzers are commonly used to inspect components for chemicals the EU Restriction of Hazardous Substances (RoHS) addresses. If components of your product were assessed using an XRF analyzer and any components screened for bromine greater than 1,000 ppm, it likely contains OFRs.
 - It is also worth asking if the XRF used can accurately screen for chlorine. Further, you would need to ask about the use of fluorinated flame retardants (though these are less common) because the XRF cannot screen for fluorine.
- **Lab data:** You or your supplier can test the components for total halogens (total bromine, total chlorine, and total fluorine). If the results are 1,000 ppm or less, your product likely doesn't contain intentionally added OFRs.

⁶ <https://tcocertified.com/industry/accepted-substance-list/>

If you need to change your flame retardants or materials, we encourage you to go beyond compliance and seek out alternatives that are safer. If you need technical assistance or resources to find safer alternatives, contact our chemists at Safer.Chem@ecy.wa.gov.

Understanding rebuttable presumptions

The rule includes presumptions to preview our compliance approach to detections of OFRs in products. These statements below from WAC 173-337-112(1)(c)(ii), are presumptions Ecology will make based on product testing results.

- Total bromine concentrations above 1,000 ppm in the homogeneous material indicate intentionally added OFRs.
- Total chlorine concentrations above 1,000 ppm in the homogeneous material indicate intentionally added OFRs.
- Total fluorine concentrations above 1,000 ppm with less than 5,000 ppm total phosphorus in the homogeneous material indicate intentionally added OFRs.

Here is an example. Using the presumption in WAC 173-337-112(1)(c)(ii)(C), total fluorine concentrations above 1,000 ppm with less than 5,000 ppm total phosphorus in the homogeneous material indicate intentionally added OFRs.

- If we detect high concentrations of total fluorine (over 1000 ppm) without phosphates (or total phosphate less than 5000 ppm), we assume that a fluorinated flame retardant is used. Fluorinated flame retardants are restricted. This product may be viewed as non-compliant. A letter of inquiry will follow.
- If we detect high concentrations of total fluorine (over 1000 ppm) and high concentrations of total phosphate (over 5,000 ppm) we assume the fluorine is indicative of an anti-drip agent used in conjunction with a phosphate-based flame retardant. The product is likely in compliance. Phosphate concentrations and anti-drip agents are not regulated. A letter of inquiry will follow.

WAC 173-337-112 (1)(c)(iii) states that manufacturers may rebut Ecology's presumption by submitting a statement to Ecology that includes the following information.

- The name and address of the person submitting the statement.
- A statement that an OFR was not intentionally added. Provide credible evidence supporting that statement and include information, data, or sources relevant to demonstrate that an OFR was not intentionally added.

This also applies to WAC 173-337-112(2)(c)(ii), electric and electronic products with plastic external enclosures, intended for outdoor use.

Email the Safer Products for Washington team (SaferProductsWA@ecy.wa.gov) if you have questions, concerns, or feedback regarding the information in this document.

Appendix A. Figure 1 Description

To determine if your product meets the applicability requirements, answer this series of questions.

- 1) Is your product a consumer product based on the definition in RCW 70A350.010?
 - If the answer is no, then it doesn't meet the applicability requirement. It is out of the scope of this regulation.
 - If the answer is yes, go to question 2.

Consumer product means any item, including any component parts and packaging, sold for residential or commercial use.

- 2) Do the exemptions in RCW 70A350.030 apply to your product?
 - If the answer is yes, then it doesn't meet the applicability requirement and is out of scope of this regulation.
 - If the answer is no, go to question 3.

Exemptions include:

- i. Plastic shipping pallets manufactured prior to 2012.
 - ii. Food or beverages.
 - iii. Tobacco products.
 - iv. Drug or biological products regulated by the United States Food and Drug Administration.
 - v. Finished products certified or regulated by the Federal Aviation Administration or the Department of Defense, or both, when used in a manner that was certified or regulated by such agencies, including parts, materials, and processes when used to manufacture or maintain such regulated or certified finished products.
 - vi. Motorized vehicles, including on and off-highway vehicles, such as all-terrain vehicles, motorcycles, side-by-side vehicles, farm equipment, and personal assistive mobility devices.
 - vii. Chemical products used to produce an agricultural commodity, as defined in RCW 17.21.020.
- 3) Is your product an electric or electronic product?
 - If the answer is no, then it doesn't meet the applicability requirement and is out of scope of this regulation.
 - If the answer is yes, go to question 4.
 - 4) Is your product powered by a standard 120V outlet (designated for up to 20A circuit) or battery-powered?

- If the answer is no, then it doesn't meet the applicability requirement and is out of scope of this regulation.
- If the answer is yes, go to question 5.

Consumer products that receive power only when they are hardwired into and permanently part of the fixed electrical wiring of a building are out of scope. This includes wiring devices, control devices, electrical distribution equipment, and lighting equipment.

- 5) Is your product regulated by the Food and Drug Administration (FDA) as a medical device?
- If the answer is yes, then it doesn't meet the applicability requirement and is out of scope of this regulation.
 - If the answer is no, go to question 6.
- 6) Does your product have a plastic external enclosure?
- If the answer is no, then it doesn't meet the applicability requirement and is out of scope of this regulation.
 - If the answer is yes, go to question 7.

External plastic enclosures are also called device casings. This regulation includes external plastic enclosure components that weigh more than 0.5 grams. Components of the product that are not in scope include printed circuit boards, internal fans, wires, cords, cables, switches, light bulbs, connectors, and screens.

- 7) Is your product designed to use nonelectric heating energy sources, such as natural gas?
- If the answer is yes, then it doesn't meet the applicability requirement and is out of scope of this regulation.
 - If the answer is no, go to question 8.
- 8) Is your product a replacement part (sold separately) and inaccessible once the product is assembled?
- If the answer is no, the product meets the applicability requirements and is in scope of this regulation.
 - If the answer is yes, then it doesn't meet the applicability requirement and is out of scope of this regulation.

Replacement parts sold separately and inaccessible once the product is assembled, are excluded from scope because they function inside the products and may have different performance requirements.