

8. STEP 1: PRODUCT INVENTORY

An inventory of chemical substances in products is necessary for completing both Option 1 and Option 2 Material Ingredient credits in LEED v4. This section provides instructions for accurately documenting the product inventory for both Options 1 and 2.

Limitations and Exemptions: Some chemicals do not have a CASRN because they are substances of unknown or variable composition, complex reaction products, or biological materials (UVCBs). Inputs that do not have a CASRN may be modified or exempt from this type of analysis. Examples include wood products, some metal alloys (e.g., steel), some dyes and pigments, and some recycled content.

Manufacturers can contribute to earning points for one or both options in the following ways:

OPTION 1: Manufacturer Inventory

Public disclosure of the product inventory at or above 1000 ppm in Option 1 will qualify for the point regardless of hazards.

OPTION 2: Material Optimization

Manufacturers can contribute to Option 2 (no GreenScreen LT-1 or Benchmark–1 scores) without public disclosure of the product inventory. However, the inventory must be optimized to 100 ppm (i.e., the product inventory must include no chemicals at or above 100 ppm with LT-1 or Benchmark–1 scores).

8.1. Product Inventory Procedure

A self-inventory can be completed by a manufacturer. To assist, Consultants and Licensed GreenScreen Profilers can conduct research or assist a manufacturer with completing the inventory process with tasks such as obtaining proprietary information from the supply chain. Completing the following steps will ensure products meet Options 1 or 2:

1. Create a Product Inventory using a product's Bill of Materials, including each input's percent by weight in each homogeneous material in the final product that falls within the reporting threshold.
2. Obtain MSDS or SDS sheets for all chemical substances identified by CASRNs within all product inputs. If users are intending to obtain a Third-Party certification mark for Option 1, MSDS or SDS are part of what is required and it is best to collect these at this stage (see Section 11 below on Third-Party Certification for LEED v4 Compliance).
3. Calculate the concentration of each chemical substance within each homogeneous material to determine if thresholds are met for either credit option (i.e., 1000 ppm for Option 1 or 100 ppm for Option 2).

9. Note Table 2 does not apply to other means for satisfying LEED v4 Material Ingredient Credit Requirements such as Health Product Declaration, Cradle to Cradle Certified, the European Union's Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH), or other options.

9. STEP 2: CHEMICAL HAZARD ASSESSMENT

GreenScreen List Translator scores or GreenScreen Benchmark scores can be used to help products meet LEED v4 requirements for either option. The information included in this step is for cases where the manufacturer:

1. Is using a GreenScreen Benchmark or List Translator score as an alternative to reporting trade secret CASRNs for Option 1; and/or
2. Will be looking to claim no GreenScreen Benchmark–1 or LT-1 chemical substances within their product(s) to help contribute to earning the LEED v4 Option 2 Material Optimization credit.

A thorough understanding of the hazards of product contents is essential. Below is a step-by-step procedure for the completion of each LEED Option.

9.1 Procedure for LEED v4 Option 1—Manufacturer Inventory

For Option 1, a combination of GreenScreen List Translator and GreenScreen Benchmark scores can be used in lieu of reporting proprietary CASRNs. There is no difference in point value between the two types of scores for Option 1.

1. Using the Product Inventory, decide which chemical substances are non-proprietary and which will be considered proprietary. Determine which chemical substances are at or above the 1000 ppm threshold to be assessed.
 - a. **Non-proprietary Ingredients:** Disclose the name of ingredients and the CASRNs.
 - b. **Proprietary Ingredients:** Run each chemical substance CASRN through GreenScreen List Translator¹⁰ to generate List Translator scores or obtain a GreenScreen Benchmark score for the substances. Some GreenScreen Benchmark scores are publicly available.¹¹ For substances with no publicly available Benchmark scores, manufacturers can either turn to a GreenScreen Practitioner (in-house) or Licensed Profiler to receive a Benchmark score for a substance.
2. Using the Product Inventory and Chemical Hazard Assessment, create the Manufacturer's Inventory documentation by listing all non-proprietary ingredients by substance name and CASRN. Report proprietary ingredients by role, amount (percent by weight/volume), GreenScreen List Translator score (LT-1, LT-P1 or LT-UNK) or GreenScreen Benchmark score and hazard associated with the LT-1, LT-P1, or Benchmark–1 score. It is not necessary to report hazards associated with LT-UNK or GreenScreen Benchmark scores greater than 1. For examples of acceptable LEED documentation see section "Step 3: Reporting."

10. A manual version is available on the GreenScreen website: <http://greenscreenchemicals.org/method/method-documents>. The automated version is available from Pharos (<http://www.pharosproject.net/material>). Pharos also lists published GreenScreen assessments.

11. See GreenScreen Store (<http://www.greenscreenchemicals.org/gs-assessments>) or the Interstate Chemicals Clearinghouse database (<http://theic2.org/hazard-assessment>).

9.2 Procedure for LEED v4 Option 2—Optimization (100% value) using GreenScreen List Translator Scores

1. Using the Product Inventory, assess each chemical substance at or above the 100 ppm threshold. Run each CASRN through GreenScreen List Translator to obtain the List Translator score.
2. Determine if any ingredients have a GreenScreen LT-1 or LT-P1 score:
 - a. If a chemical substance has an LT-1 score, the product cannot contribute to earning points within this credit option. A GreenScreen assessment may be commissioned to determine if a more comprehensive assessment would generate a higher score.
 - b. If a substance has an LT-P1 score, consult a Licensed GreenScreen Profiler to resolve the score to either a Benchmark-U or Benchmark-2 or higher. As an alternative to assessing all hazard endpoints, LT-P1 chemicals may have only the endpoint(s) driving the LT-P1 classification reviewed in depth to determine if the chemical is Benchmark-1. If it is not Benchmark-1 based on an evaluation of the endpoints driving the LT-P1 score, then it is LT-UNK. If it is determined to be a Benchmark-1 based on this evaluation, the product cannot contribute to earning points within this credit option.
 - c. Using a combination of GreenScreen Benchmark and GreenScreen List Translator scores will apply only to the 100% valuation.
3. If the substance(s) do not generate LT-1 or LT-P1 scores, see section “Step 3: Reporting,” for examples of acceptable submittal documentation. LT-UNK scores are acceptable for this credit option.

9.3 Procedure for LEED v4 Option 2 – Optimization (150% value) using GreenScreen Benchmark Scores

1. Using the Product Inventory, obtain valid and Certified GreenScreen assessment reports for all chemical substances (ingredients) at or above 100 ppm of the product and identify the GreenScreen Benchmark scores. Consult public repositories such as the GreenScreen Store, the Interstate Chemicals Clearinghouse (IC2) hazard database, and Pharos to determine if a GreenScreen has been published. If a GreenScreen has not been previously completed for one or many of the substances, consult a GreenScreen Profiler¹² to commission a Certified GreenScreen assessment with associated Benchmark scores for these ingredients.
 - a. If one or more of the substances generates a Benchmark-1 score, the product *cannot* contribute to earning points within this credit option.
 - b. If *all* ingredients in the product inventory at or above 100 ppm generate a GreenScreen Benchmark-2, -3, or -4, the product *can* contribute to earning points within this credit.
 - c. If an ingredient generates a Benchmark-U, then the Licensed Profiler will apply a worst-case analysis to determine if filling the data gaps would result in a Benchmark-1 score. If not, then the ingredient may be considered to be not Benchmark-1. If a worst-case analysis does result in a Benchmark-1 score then the product would not contribute to this credit option. The product may qualify using the Option 2 Optimization procedure using GreenScreen List Translator.
2. Develop a Manufacturer Statement of Disclosure of “No Benchmark-1 Chemicals.” See section “Step 3: Reporting” for examples of a finalized Statement of Disclosure.

12. <http://greenscreenchemicals.org/professionals/profilers>

10. STEP 3: REPORTING

There are various ways to report results for Option 1 and/or Option 2 to fulfill LEED documentation submittal requirements. The following provides directions for this step:

10.1 LEED v4 Option 1—Manufacturer Inventory

For this option, LEED v4 requires all documentation be made publicly available for download without having to be requested. Examples of where to host or find manufacturer LEED submittal documentation include: manufacturer's website, online databases (e.g., GreenWizard, Material IQ, Pharos Building Product Library, and the Health Product Declaration), or a Third-Party Certifier's online database.

Self-Reporting or Consultant Report for Manufacturer Inventory

Reporting for Option 1 can be achieved using a custom format. However, a reporting document will need to include the following and be publicly available (see Figure 4, p. 15):

- An overall reporting threshold (i.e., chemical substances listed with their concentrations at or above 1000 ppm).
- For Non-Proprietary Ingredients:
 - chemical name, and
 - CASRN.
- For Proprietary Ingredients all Benchmark claims beyond List Translator must be approved by Clean Production Action:
 - if Benchmark-1, LT-1 or LT-P1, list hazard(s) associated with these scores,
 - chemical function or role, and
 - amount in total product (percent by weight/volume).

10.2 LEED v4 Option 2—Optimization (100% value) using GreenScreen List Translator Scores

Reporting for this credit option can be achieved using a custom format. However, with any reporting template used, the manufacturer must warrant that no ingredients in the product at or above 100 ppm are designated as GreenScreen LT-1 or Benchmark-1 chemicals. There are two ways to submit LEED documentation for Option 2 (100% value):

1. use a Health Product Declaration (HPD), or
2. create a Manufacturer Statement of Disclosure that has been verified by a third-party to be LEED v4 compliant (see section "Step 4: Third-Party Certification for LEED v4 Compliance" for details). A Statement of Disclosure document must be signed by a credible person within the Manufacturer's organization in order to be valid.

Example 1—Health Product Declaration:

Use the HPD Online Builder Tool to generate an HPD to display that there are no LT-1 chemicals within the product. Disclosure must be to the 100 ppm threshold for HPD.

FIGURE 4. Sample Manufacturer’s Inventory Reporting Document for Option 1 (See template in Annex II)

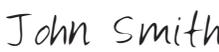


XYZ COMPANY, INC.
Getting the job done

123 E. Main Street • Boston, MA 02108
Phone 555.555.5555 • Fax 555.555.5555 • www.XYZCompanyInc.com

LEED v4 Material Ingredient Credit, Option 1: Manufacturer Inventory
Product Name: Fancy Fence™
Reporting Threshold: 1000 ppm
Expiration Date: 9/01/2018

Homogeneous Material or Chemical Substance	CAS #	Percent of Final Product	Chemical Substances	Percent of Chemical Substances	Function of Chemical Substance	List Translator or Benchmark Score	Hazard
PET	25038-59-9						
Titanium Dioxide	1344-28-1						
Calcium Carbonate	1317-65-3						
Antioxidant	Proprietary MIXTURE	0.68%	Proprietary Substance	95%	Inhibits Oxidation	LT-1	High-Carcinogen
Impact Modifier	Proprietary MIXTURE	0.89%	Proprietary Substance	85%	Improves Impact Resistance	LT-UNK	

Sincerely,

 John Smith, VP of Operations
 XYZ Company, Inc.

Example 2—manufacturer statement of disclosure with third-party certification:

A signed statement (“Statement of Disclosure”) declaring that a product does not contain any GreenScreen LT-1 chemicals at or above 100 ppm (see Figure 5, p. 16). The manufacturer must obtain certification of the Manufacturer Statement of Disclosure from a third party if supporting documentation for the List Translator and/or Benchmark scores is not included. See Step 4 below for further clarification on the certification process.

10.3 LEED v4 Option 2—Optimization (150% value) using GreenScreen Benchmark Scores

Reporting for this credit option can be achieved using a custom format (see Figure 6). However, with any reporting template used, the manufacturer must warrant that no ingredient in the product at or above 100 ppm is a GreenScreen Benchmark-1 chemical. A GreenScreen assessment must be completed for each chemical within the product. GreenScreen verification for LEED v4 compliance is optional for Material Ingredient Option 2 (150%) when supporting documentation is provided to substantiate the Manufacturer Statement of Disclosure. Supporting documentation includes Certified GreenScreen assessments. The HPD Builder also reflects Certified GreenScreen assessments that have been published in the Pharos “Chemical and Material Library,” and can also be used for the 150% LEED point.

FIGURE 5. **Signed and Certified Statement of Disclosure for Option 2 (100% value)**



XYZ COMPANY, INC.
Getting the job done

123 E. Main Street • Boston, MA 02108
Phone 555.555.5555 • Fax 555.555.5555 • www.XYZCompanyInc.com

LEED v4 Material Ingredient Credit, Optimization: Statement of Disclosure
Option 2 List Translator (100% value)
Product Name: Fancy Fence™
Reporting Threshold: 100 ppm
Expiration Date: 9/01/2018

To Whom It May Concern,

In XYZ Company’s commitment to holistic sustainability, we take pride in not only focusing on reducing the life cycle environmental impacts of our products but also in reducing our products’ impact on human health. This document is to be used as a Statement of Disclosure verifying that there are no GreenScreen LT-1 chemicals (to the 100 ppm level) within the Fancy Fence™ product. J&G Company continues to excel in the realm of sustainability, and takes pride in the fact that Fancy Fence™ does not have any GreenScreen LT-1 chemicals.

For questions or concerns, please contact me at John.Smith@xyzcompanyinc.com.

These claims have been verified by _____ . Please refer to certificate number 00-0000 for further reference. Please contact _____ at _____ for questions in regard to verification.

Sincerely,
John Smith
John Smith, VP of Operations
XYZ Company, Inc.



LEED v4 Compliant
MR Credit
Materials Ingredients
Option 2 Optimization
GreenScreen® List Translator—
100% by Cost

FIGURE 6. Signed and Certified Statement of Disclosure for Option 2 (150% value)



XYZ COMPANY, INC.
Getting the job done

123 E. Main Street • Boston, MA 02108
Phone 555.555.5555 • Fax 555.555.5555 • www.XYZCompanyInc.com

LEED v4 Material Ingredient Credit, Optimization: Statement of Disclosure
Option 2 with Certified GreenScreen assessments (150% value)
Product Name: Fancy Fence™
Reporting Threshold: 100 ppm
Expiration Date: 9/01/2018

To Whom It May Concern,

In XYZ Company’s commitment to holistic sustainability, we take pride in not only focusing on reducing the life cycle environmental impacts of our products but also in reducing our products’ impact on human health. This document is to be used as a Statement of Disclosure verifying that there are no GreenScreen BM-1 chemicals (to the 100 ppm level) within the Fancy Fence™ product. J&G Company continues to excel in the realm of sustainability, and takes pride in the fact that Fancy Fence™ does not have any GreenScreen BM-1 chemicals.

For questions or concerns, please contact me at John.Smith@XYZompanyinc.com.

These claims have been verified by _____. Please refer to certificate number 00-0000 for further reference. Please contact _____ at _____ for questions in regard to verification.

Sincerely,
John Smith
John Smith, VP of Operations
XYZ Company, Inc.



**LEED v4 Compliant
MR Credit
Materials Ingredients
Option 2 Optimization
GreenScreen® Benchmark™—
150% by Cost**

Example 1—manufacturer statement of disclosure with supporting documentation:

A manufacturer’s document warranting that a product does not contain any GreenScreen Benchmark-1 chemicals at or above 100 ppm in a “Statement of Disclosure.” The manufacturer must provide supporting valid and Certified GreenScreen assessments displaying the GreenScreen Benchmark for each chemical substance within the product. If a GreenScreen assessment is purchased through the GreenScreen store or Interstate Chemicals Clearinghouse database, the report must be Certified and valid and meet GreenScreen store terms of use.

Example 2—manufacturer statement of disclosure through a third-party:

A manufacturer’s document warranting that a product does not contain any GreenScreen Benchmark-1 chemicals at or above 100 ppm in a “Statement of Disclosure.” Where no supporting documentation is provided, the manufacturer must obtain certification of their “Statement of Disclosure” through Clean Production Action to be considered a valid form of documentation (see section “Step 4: Third-Party Certification for LEED v4 Compliance” for details). If a GreenScreen assessment is obtained through the GreenScreen store or Interstate Chemicals Clearinghouse database, the report must be Certified and valid and meet GreenScreen store terms of use.

11. STEP 4: THIRD-PARTY CERTIFICATION FOR LEED v4 COMPLIANCE

Verification is available for manufacturer’s claims and documentation to meet all requirements for compliance with LEED v4 Material Ingredient Credit Options 1 and 2. The certification mark gives project teams confidence that the Manufacturer Inventory and/or Manufacturer Statement of Disclosure was verified by a third party. Manufacturers get assurance that their inventories are complete and accurate. This section briefly explains the steps for obtaining a certification mark for Options 1 and 2.

11.1 LEED v4 Option 1: Material Ingredient Reporting (Optional)

1. Contact third-party certifier, such as Green Circle Certified, LLC (Green Circle), to enter into a third-party certification agreement and to obtain a scope of work and estimate. In order for Green Circle to validate these claims, the following documentation is required:
 - Completed Product Inventory,
 - Purchase Orders for all ingredients under review within the product,
 - A Technical Sheet or MSDS/SDS for the product (as applicable),
 - All MSDS or SDS for all ingredients under review within the product,
 - A copy of the Manufacturer’s Inventory,¹³ and
 - Copies of valid, Certified GreenScreen assessment reports (where applicable).

13. The report generated and publicly disclosed as a result of completing a Product Inventory. It must include GreenScreen List Translator or GreenScreen assessment results for proprietary ingredients.

2. Certifier will complete the following in order to provide validation of claims:
 - Initial Data Collection Phase (includes call(s) with supply chain contacts),
 - Desktop Analysis to verify manufacturer’s claims,
 - Conclusion call to report results of verification, and
 - Final audit process report submitted to the manufacturer.
3. Upon completing verification, a Green Circle certification mark for LEED v4 compliance will be distributed (see Figure 7, p. 20).
 - These marks can be used on the Manufacturer’s Inventory documentation for submittal in LEED v4 projects.
 - Online Product Database: Manufacturer’s documentation can be uploaded and stored on Green Circle’s online product database for download and reference.
 - If Green Circle deems a claim to be in non-conformance, a written explanation will be provided to the manufacturer stating specifically what is non-conformant. The manufacturer will have a certain period of time (determined by the degree of non-conformance) to resolve this issue or certification will not be issued.

11.2 LEED v4 Option 2: Optimization (optional)

In Option 2, documentation (i.e., List Translator results and/or publicly available Certified GreenScreen assessments) is required to prove your claim without third-party certification. If you have third-party certification of your Option 2 claim, additional documentation is not required.

1. Contact Clean Production Action to enter into a certification license agreement. In order for Clean Production Action to verify claims, the following documentation is required:
 - Letter from GreenScreen Licensed Profiler, or other Clean Production Action-approved organizations that contains information sufficient to verify that the product was assessed per the requirements specified in Steps 1, 2, and 3 in this guidance document for Option 2—Optimization.
 - Manufacturer Statement of Disclosure (see Figures 5 and 6, pp. 16 and 17).
2. Upon completing verification of documentation, a GreenScreen certification mark for LEED v4 compliance will be distributed (see Figures 8 and 9, p. 20).
 - These marks can be used on the Manufacturer Statement of Disclosure documentation for submittal in LEED v4 projects.
 - If Clean Production Action deems a claim to be in non-conformance, a written explanation will be provided to the manufacturer stating specifically what is non-conformant. The manufacturer will have a certain period of time (determined by the degree of non-conformance) to resolve this issue or certification will not be issued.

FIGURE 7. LEED-Compliant Option 1



**LEED v4 Compliant
MR Credit
Materials Ingredients
Option 1 Manufacturer Inventory**

FIGURE 8. LEED-Compliant Option 2—GreenScreen List Translator (100%)



**LEED v4 Compliant
MR Credit
Materials Ingredients
Option 2 Optimization
GreenScreen® List Translator—
100% by Cost**

FIGURE 9. LEED-Compliant Option 2—GreenScreen Benchmark (150%)



**LEED v4 Compliant
MR Credit
Materials Ingredients
Option 2 Optimization
GreenScreen® Benchmark™—
150% by Cost**

12. QUALITY CONTROL

Claims made for LEED v4 points for Option 1 or Option 2 must be substantiated by up-to-date information on the product and data on each chemical. GreenScreen Benchmark scores used to earn these points must be valid (unexpired) and Certified. If the product manufacturer, Consultant, Licensed GreenScreen Profiler, or Third-Party Certifier preparing or auditing any part of the reporting documentation becomes newly aware of any significant changes regarding the chemical make-up of a product (e.g., a change in supplier or a change in the formula), or the hazards of a chemical (i.e., List Translator or Benchmark scoring changes), this new information shall be added and resubmitted for approval regardless of expiration date.

The Manufacturer Inventory and Manufacturer Statement of Disclosure will expire after three years. Renewing these documents includes an update to GreenScreen List Translator scores, renewing expired GreenScreen assessments, and verifying that formulations and suppliers have not changed.

Certification marks are valid for a period of one year. Annual renewal will ensure that any claims being made based on List Translator or the GreenScreen method are still valid, suppliers used are still the same, and to verify any changes in the product composition or GreenScreen List Translator or Benchmark scores.

13. ANNEX I—FULL REQUIREMENTS FOR LEED v4

LEED BD+C: Core and Shell | v4—LEED v4

Building product disclosure and optimization - material ingredients

Intent

To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts. To reward project teams for selecting products for which the chemical ingredients in the product are inventoried using an accepted methodology and for selecting products verified to minimize the use and generation of harmful substances. To reward raw material manufacturers who produce products verified to have improved life-cycle impacts.

Requirements

Option 1. material ingredient reporting (1 point)

Use at least 20 different permanently installed products from at least five different manufacturers that use any of the following programs to demonstrate the chemical inventory of the product to at least 0.1% (1000 ppm).

- Manufacturer Inventory. The manufacturer has published complete content inventory for the product following these guidelines:
 - A publicly available inventory of all ingredients identified by name and Chemical Abstract Service Registration Number (CASRN)
 - Materials defined as trade secret or intellectual property may withhold the name and/or CASRN but must disclose role, amount and GreenScreen Benchmark, as defined in GreenScreen v1.2.
- Health Product Declaration. The end use product has a published, complete Health Product Declaration with complete disclosure of known hazards in compliance with the Health Product Declaration open Standard.
- Cradle to Cradle. The end use product has been certified at the Cradle to Cradle v2 Basic level or Cradle to Cradle v3 Bronze level.
- USGBC approved program. Other USGBC approved programs meeting the material ingredient reporting criteria.

AND/OR

Option 2. Material ingredient optimization (1 point)

Use products that document their material ingredient optimization using the paths below for at least 25%, by cost, of the total value of permanently installed products in the project.

14. For the optimization credit, you can also use GreenScreen assessments to meet the Cradle to Cradle® Certification pathways (v2 gold and platinum; v3 silver, gold or platinum). Through a Memorandum of Understanding between Clean Production Action and the Cradle to Cradle Product Innovation Institute, GreenScreen assessments on individual chemicals will be accepted toward the material health section of the C2C standard. This ensures that your work will be valued and you will not need to pay twice.

- GreenScreen v1.2 Benchmark. Products that have fully inventoried chemical ingredients to 100 ppm that have no Benchmark–1 hazards:
 - If any ingredients are assessed with the GreenScreen List Translator, value these products at 100% of cost.
 - If all ingredients have undergone a GreenScreen Assessment, value these products at 150% of cost.¹⁴
- Cradle to Cradle Certified. End use products are certified Cradle to Cradle. Products will be valued as follows:
 - Cradle to Cradle v2 Gold: 100% of cost
 - Cradle to Cradle v2 Platinum: 150% of cost
 - Cradle to Cradle v3 Silver: 100% of cost
 - Cradle to Cradle v3 Gold or Platinum: 150% of cost
- International Alternative Compliance Path—REACH Optimization. End use products and materials that do not contain substances that meet REACH criteria for substances of very high concern. If the product contains no ingredients listed on the REACH Authorization or Candidate list, value at 100% of cost.
- USGBC approved program. Products that comply with USGBC approved building product optimization criteria.

14. ANNEX II—MANUFACTURER INVENTORY TEMPLATE

Homogeneous Material or Chemical Substance	CAS #	Percent of Final Product	Chemical Substances	Percent of Chemical Substances	Function of Chemical Substance	List Translator or Benchmark score	Hazard
Non-proprietary							
Non-proprietary							
Non-proprietary							
Proprietary	Not reported						
Proprietary	Not reported						
Proprietary	Not reported						

* Exact format of template is dependent on product complexity, and must include an expiration date.