How to use GreenScreen® for LEED v4

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Clean Production Action

&

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Green Circle Certified, LLC

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Outline

- LEED Material Credit Strategy
- Introduction to GreenScreen® & the List Translator
- How to use GreenScreen in LEED v4
- LEED v4 Third Party Compliance with Green Circle Certified
- Questions? type them in chat box
Option 1 – Material Ingredient Reporting (1 point)

Option 2 - Optimization (1 point)
What is GreenScreen?

A chemical hazard assessment method

(hazard x exposure = risk)

– Transparent
  method is freely and publicly available
– Scientifically robust
– Systematic
– Comprehensive
## Comprehensive hazard data

### Chemical Z (CASRN ##-##-#)

<table>
<thead>
<tr>
<th>Green Screen Hazard Ratings</th>
<th>Group I Human</th>
<th>Group II and II* Human</th>
<th>Ecotox</th>
<th>Fate</th>
<th>Physical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carcinogenicity</td>
<td></td>
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<tr>
<td>Genotoxicity/Mutagenicity</td>
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<tr>
<td>Reproductive Toxicity</td>
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<tr>
<td>Developmental Toxicity</td>
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<tr>
<td>Endocrine Activity</td>
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<tr>
<td>Acute Toxicity</td>
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<tr>
<td>Systemic Toxicity</td>
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<tr>
<td>Neurotoxicity</td>
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<tr>
<td>Skin Sensitization*</td>
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<tr>
<td>Respiratory Sensitization*</td>
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<td>Skin Irritation</td>
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<tr>
<td>Eye Irritation</td>
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</tr>
<tr>
<td>Acute Aquatic Toxicity</td>
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<tr>
<td>Chronic Aquatic Toxicity</td>
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<tr>
<td>Persistence</td>
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<tr>
<td>Bioaccumulation</td>
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<tr>
<td>Reactivity</td>
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<tr>
<td>Flammability</td>
<td></td>
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</tr>
</tbody>
</table>

| L | L | L | M | M | L | L | L | LH | H | L | DG | L | L | H | H | vL | L | M | L |

- **L**: Low
- **M**: Moderate
- **H**: High
- **vL**: Very Low
- **DG**: Disease-Grouping

* Single repeated, repeated
Summarizes hazards in a single benchmark score

Benchmark 1
Avoid – Chemical of High Concern

Benchmark 2
Use but Search for Safer Substitutes

Benchmark 3
Use but Still Opportunity for Improvement

Benchmark 4
Prefer – Safer Chemical

Benchmark U: Data gap analysis
Drives the selection of inherently safer chemicals

<table>
<thead>
<tr>
<th>Common Name</th>
<th>CAS #</th>
<th>Full Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preferred</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design</td>
<td>none</td>
<td>Design material out, dematerialize</td>
</tr>
<tr>
<td>Substance 0</td>
<td>#######-###-#</td>
<td>Chemical name</td>
</tr>
<tr>
<td><strong>Use but still opportunity for improvement</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substance 1</td>
<td>#######-###-#</td>
<td>Chemical name</td>
</tr>
<tr>
<td>Substance 2</td>
<td>#######-###-#</td>
<td>Chemical name</td>
</tr>
<tr>
<td><strong>Use but search for alternatives</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substance 3</td>
<td>#######-###-#</td>
<td>Chemical name</td>
</tr>
<tr>
<td>Substance 4</td>
<td>#######-###-#</td>
<td>Chemical name</td>
</tr>
<tr>
<td>Substance 5</td>
<td>#######-###-#</td>
<td>Chemical name</td>
</tr>
<tr>
<td>Substance 6</td>
<td>#######-###-#</td>
<td>Chemical name</td>
</tr>
<tr>
<td><strong>DO NOT USE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substance 7</td>
<td>#######-###-#</td>
<td>Chemical name</td>
</tr>
<tr>
<td>Substance 8</td>
<td>#######-###-#</td>
<td>Chemical name</td>
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<tr>
<td>Substance 9</td>
<td>#######-###-#</td>
<td>Chemical name</td>
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<td>Substance 10</td>
<td>#######-###-#</td>
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<tr>
<td>Substance 11</td>
<td>#######-###-#</td>
<td>Chemical name</td>
</tr>
<tr>
<td>Substance 12</td>
<td>#######-###-#</td>
<td>Chemical name</td>
</tr>
</tbody>
</table>
GreenScreen List Translator

- Checks for chemical on known hazard lists
- Identifies known hazards
- Does not identify safer chemicals
- Does not identify unknown hazards
GreenScreen
List Translator & Assessments

List Translator
• Requires little technical expertise or time
• Good at identifying known hazardous chemicals
• Doesn’t identify safe chemicals or unknown hazardous chemicals
• Doesn’t identify or evaluate transformation products

GreenScreen Assessment
• Requires significant technical expertise and time
• Identifies hazardous, safe, and poorly understood chemicals
• Evaluates transformation products
• Certified GreenScreen trumps List Translator
How to Use GreenScreen® for LEED v4
LEED v4 -- Option 1: Reporting

LEED v4 Option 1: Material Ingredient Reporting

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS #</th>
<th>Percent of Final Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET</td>
<td>25038-59-9</td>
<td>89.27%</td>
</tr>
<tr>
<td>Titanium Dioxide</td>
<td>1344-28-1</td>
<td>1.60%</td>
</tr>
<tr>
<td>Calcium Carbonate</td>
<td>1317-65-3</td>
<td>7.56%</td>
</tr>
</tbody>
</table>
### LEED v4 -- Option 1: Material Ingredient Reporting -- Manufacturer Inventory

<table>
<thead>
<tr>
<th>Homogeneous Material or Chemical Substance</th>
<th>CAS #</th>
<th>Percent of Final Product</th>
<th>Chemical Substances</th>
<th>Percent of Chemical Substances</th>
<th>Function of Chemical Substance</th>
<th>List Translator or Benchmark score</th>
<th>Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-proprietary</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Non-proprietary</td>
<td></td>
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<tr>
<td>Non-proprietary</td>
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<tr>
<td>Proprietary</td>
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<tr>
<td>Proprietary</td>
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<tr>
<td>Proprietary</td>
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</tbody>
</table>

**Note:**
- Proprietary elements are not reported.

**GreenScreen Benchmark score protects proprietary ingredients while revealing hazard**
LEED v4 -- Option 2: Optimization

Option 1: Material Ingredient Reporting (1 Point)

Option 2: Material Ingredient Optimization (1 Point)
**LEED v4 - Optimization**

**Two GreenScreen Pathways**

<table>
<thead>
<tr>
<th>100% Value – List Translator</th>
<th>150% Value – GreenScreen Assessments</th>
</tr>
</thead>
<tbody>
<tr>
<td>List Translator LT-1</td>
<td>GreenScreen Benchmark-1</td>
</tr>
</tbody>
</table>
LEED v4 - Optimization
CPA “How to” guide:
Steps to Optimization w/GreenScreen

1. Product Inventory
2. Chemical Hazard Assessment
3. Reporting
4. Optional Step
   - Obtain Certification Mark
LEED v4 – Optimization
“How to” guide Step 1:
Product Inventory
(100% with List Translator)

LEED CREDIT OPTION 2—Optimization with GreenScreen List Translator (100% value)
- Conduct early research to help the project team identify products that contribute to multiple credits and options.
- Create a list of products/materials/ingredients/chemicals to get an idea of the scope of work.

Can you identify CASRNs at or above 100 ppm reporting threshold, either directly from your suppliers or using a Consultant?

YES → DOES NOT Meet Option 2

NO → NO
LEED v4 – Optimization
“How to” guide Step 2:
Chemical Hazard Assessment
(100% w/LT)
LEED v4 – Optimization “How to” guide Step 3: Reporting (100% w/LT)

Manufacturer Statement of Disclosure – “No LT-1’s”
LEED v4 – Optimization
“How to” guide Step 4 (optional):
Obtain Certification Mark (100% w/LT)
Sample Client Base

MERCK
ASSA ABLOY
Aleris
SAINT-GOBAIN
MASTIC HOME EXTERIORS by Ply Gem
COVANTA ENERGY
Ply Gem
SUPERIOR ESSEX
ARRINGON RELDAN - RECYCLING & REFINING
decoustics SAINT-GOBAIN
CertainTeed SAINT-GOBAIN
deceuninck
GAF
WYNDHAM WORLDWIDE
STANLEY
Security Solutions
Heritage Plastics
EOS SURFACES
REGUPOL AMERICA

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Why Third-Party Certification?

- Confusion in marketplace
- Lack of accuracy
- Ensures completion to proper thresholds
- Ensures compliance to LEED v4
Certification Procedure

• Step 1: Contact approved LEED v4 GreenScreen Certifier

• Step 2: Data Collection and Desk Audit
  – Initial Data Collection Phase (includes call(s) with manufacturer contact)
  – Desk Top Analysis to verify manufacturer’s claims
  – Conclusion call to report results of verification
  – A final report will be submitted to the manufacturer documenting the audit process
Documentation Needed for Certification

• Fully Completed Product Inventory
• Purchase Orders (sampling) for all ingredients within your product
• All MSDS or SDS sheets for all ingredients within your product
• A Technical Sheet or MSDS/SDS for your product (as applicable)
• A copy of either your Manufacturer’s Inventory or Statement of Disclosure (pending the option)
• Copies of valid and certified GreenScreen Assessment Summary Reports (if applicable)
• Step 3: LEED v4 Compliant marks
  – Marks applied directly to Manufacturer’s Inventory or Statement of Disclosure documentation for submittal in LEED v4 projects.
  – Online Product Database: Manufacturer documentation can be uploaded and stored on the Online Product database for download and reference by architects, designers, or other LEED professionals.
LEED v4 Compliance Certification- Option 1 and Option 2

Option 1.

Option 2.

LEED v4 Compliant
MR Credit
Material Ingredients
Option 1 Manufacturer Inventory

LEED v4 Compliant
MR Credit
Materials Ingredients
Option 2 Optimization
GreenScreen List Translator – 100% by Cost
**Company Name Here**

123 E. My Address Avenue • Chicago, IL 60614-0240
Phone (312) 555-5555 • Fax (312) 555-5555 • http://www.companywebsite.com

**Sample Manufacturer’s Inventory Report**

**LEED v4 Material Ingredient Credit, Reporting Option: Manufacturer Inventory**

**Product Name: Fancy Fence™**
**Reporting Threshold: 1000 ppm**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS #</th>
<th>Percent of Final Product</th>
<th>Constituents of Ingredients</th>
<th>Percent of Constituents</th>
<th>Function of Constituent</th>
<th>List Translator or Benchmark score</th>
<th>Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET</td>
<td>26078-59-9</td>
<td>89.27%</td>
<td>CAS 1</td>
<td>95%</td>
<td>Inhibits oxidation</td>
<td>LT-1</td>
<td>High-Carcinogen</td>
</tr>
<tr>
<td>Titanium Dioxide</td>
<td>1344-28-1</td>
<td>1.60%</td>
<td>CAS 2</td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calcium Carbonate</td>
<td>1337-05-3</td>
<td>7.50%</td>
<td>CAS 3</td>
<td>85%</td>
<td>Improves impact resistance</td>
<td>LT-UNK</td>
<td></td>
</tr>
<tr>
<td>Antioxidant</td>
<td>Proprietary MIXTURE</td>
<td>0.68%</td>
<td>CAS 4</td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact modifier</td>
<td>Proprietary MIXTURE</td>
<td>0.89%</td>
<td>CAS 5</td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sincerely,

John Smith, VP of Operations

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Challenges

- Resistant suppliers
- Lack of available certified and valid GreenScreen Assessments
- Lack of understanding of GreenScreen tool and methodology
Benefits of Certification

- Transparency
- Assurance
- Brand Recognition
- Preference

Transparency is the New Green
Thank You!

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Questions?

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