

HEALTHY MATERIALS IN THE WORKPLACE

An Introductory Guide



Executive Summary

[Salesforce](#) is the global leader in customer relationship management (CRM) solutions, helping companies connect with their customers in a whole new way. At Salesforce, we believe that great companies do more than create amazing products and services. Truly great companies care about all of their stakeholders – employees, customers, partners, shareholders, the communities where we live and work, and the environment that sustains us. That's why Salesforce is strongly committed to creating healthy, high-performance work spaces that promote wellness and allow our employees to do the best work of their lives.

Through our robust global Real Estate Sustainable Built Environment Program, we've implemented intentional measures to reduce our environmental impact by delivering consistent sustainable certified space while always looking for ways to innovate. As part of this comprehensive mission to create a more sustainable built environment, we launched the Salesforce Healthy and Sustainable Materials Program in 2016 in order to understand, mitigate, and improve the environmental and health impacts of building products. Evaluating products' health, environmental, and social impacts enables us to work with our partners and manufacturers to optimize for health and sustainability before new products become integrated into the Salesforce Global Design Standards. The implications of this work go beyond our own employees by directly impacting those communities and individuals who manufacture these products.

This guide is intended to break down the complex world of material optimization and outline our own approach to building and material health. We still have a lot to learn and discover, but by sharing best practices, inspiring others, and learning from our peers and partners, together we can foster a world that is equal, safer for humans, and generates positive impact.



Table of Contents

Introduction to Salesforce Healthy Materials	1	<i>Living Product Challenge</i>	
Why Healthy Materials?		Path to Optimization	22
Salesforce Healthy Materials Working Group	3	Sustainable Building Certification and Living Product Challenge	
Materials and Sustainable Building Certification		Emissions Testing Certifications	23
Materials Evaluation	4	<i>Floorscore</i>	24
<i>Scoring vs. List Approach</i>	5	<i>Green Label Plus</i>	
Performance Categories	6	<i>Greenguard Gold</i>	25
<i>Salesforce Product Review Process</i>	8	<i>Indoor Advantage Gold</i>	
Path to Optimization for Materials	10	<i>Emissions Testing Report</i>	
Health	11	Carbon	26
Brief History of Material Health		Embodied Carbon	
Let's Start with Disclosure		Industry Frameworks to Assess Carbon Impacts	27
Screening	12	Life Cycle Assessment	
Assessment	13	<i>Product Category Rules</i>	
Optimization	14	Environmental Product Declaration (EPD)	28
The Path to Optimized Product Health		<i>Sustainable Building Certification and EPD</i>	29
Restricted Substance Lists (Chemicals of Concern)	15	Extended Producer Responsibility (EPR)	
<i>The Red List</i>		<i>Sustainable Building Certification and EPR</i>	
<i>The Precautionary List</i>		Environment	30
<i>Six Classes of Chemicals</i>		Industry Frameworks to Assess Environmental Impacts	
<i>Banned List</i>	16	<i>Forest Stewardship Council (FSC)</i>	
<i>GreenScreen List Translator</i>		Sustainable Building Certification and FSC	31
<i>REACH - Substances of Very High Concern (SVHC)</i>		<i>Recycled Content</i>	
Industry Frameworks to Assess Human Health Impacts	17	<i>Other Criteria</i>	
Disclosures		Social Impact	33
<i>Declare</i>		Industry Frameworks to Assess Social Responsibility	
Path to Optimization		Evolution of Healthy and Sustainable Materials	34
Sustainable Building Certification and Declare		Toolbox	35
<i>Health Product Declaration</i>	18	Healthy Materials Attributes Explained Further	
Path to Optimization		Key Healthy Materials Terms	37
Sustainable Building Certification and HPD		Useful Links	38
Certifications	19	Product Resources	
<i>Cradle to Cradle (C2C)</i>		Additional Learning	
C2C Certified Levels		References	39
C2C Material Health Certificate			
Path to Optimization	20		
Sustainable Building Certification and Cradle to Cradle			

INTRODUCTION TO SALESFORCE HEALTHY AND SUSTAINABLE MATERIALS

Helping to drive a market shift toward materials in the built environment that are optimized for human health and environmental stewardship.



WHY HEALTHY AND SUSTAINABLE MATERIALS

“We spend 90% of our lives indoors whether it’s at home, work, school, gym, eating out, etc.”¹

By 2060, over half the world’s population will live in urban environments, in buildings. In fact, the U.N. forecasts that 2.5 trillion square feet of buildings will be constructed over the next 40 years – that’s equivalent to building one New York City every 34 days.² The built environment is growing rapidly and is present in all parts of our life. To build all of this requires a tremendous amount of raw materials, transportation, manufacturing, and eventually disassembly. And what is actually in the final products we put in our houses, offices, and schools? Who ensures the buildings we live, work, and play in are optimized for human health and well-being? Who examines the numerous synthetic chemicals that make up our flooring, ceilings, walls, tables, and chairs used in our spaces, to understand possible toxicity to humans? The answer may surprise you: No one.

Learning From the Past

We don't have to look far to see examples of products that made their way into the built environment only for us to find out later they had harmful effects on human health. Think lead and asbestos. That's because since the 1950s, a tremendous amount of synthetic chemicals have been developed that have significantly impacted our health and environment and that are used in all parts of our lives, from agriculture and food to beauty products and building materials.³ When these chemicals enter the food system or our indoor environments, the interactions with human health can be significant.⁴ There are three main ways that we interact with chemicals: skin contact, inhalation, and ingestion. In the built environment, we most often interact with these chemicals through inhalation and skin contact, also called dermal exposure. Inhalation exposure most often occurs from the off-gassing of volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) from products. Inhalation of even small amounts of these chemicals can have a significant

impact on our cognitive function.⁵ Further inhalation exposure occurs through dust inhalation; many hazardous substances cling to dust after breaking away from their original host. Dermal exposure occurs from surfaces we touch or that otherwise come in contact with our skin and are absorbed. Studies show that exposure to chemicals in our daily lives can have a significant impact on our health by disrupting many of our internal systems, including endocrine, neurological, developmental, and reproductive. Not to mention the impact on local communities where these chemicals and products are manufactured. This is not just a health and sustainability issue, but an environmental justice one as well.

For these reasons and countless others, it's imperative for us to advocate for full transparency and to partner with suppliers to find sustainable, healthier solutions for our built environment.



OFF-GASSING:

Off-gassing occurs when a new product releases chemicals, especially a harmful one, in the form of a gas.

VOC (Volatile Organic Compounds)

SVOC (Semi-volatile Organic Compounds)



Of the 86,000 chemicals found in the TSCA registry, only 200 have been required to be tested, and only nine have been banned. (Asbestos was banned, but the ban was overturned, leaving eight banned now.)⁶



Salesforce Healthy and Sustainable Materials Working Group

In early 2016, Salesforce established our Healthy and Sustainable Materials Working Group to examine the types of materials used in our own built environments and how we can mitigate the associated health and environmental impacts. Made up of the Salesforce internal real estate design team, sustainable built environment team, procurement lead, and external experts, the group's mission is to objectively understand what's in our products and collaborate with industry peers and manufacturers to create positive impact beyond our own walls.

Materials and Sustainable Building Certification

For many institutions, healthy materials often come up first in the form of sustainable building certification. Whether it's Leadership in Energy and Environmental Design (LEED), Building Research Establishment Environmental Assessment Method (BREEAM), Green Star, or Living Building Challenge, they all have materials attributes that address health and sustainability in some form. As these certification standards become more rigorous over time, it is becoming harder and harder to achieve them without some assessment of the impacts from building materials. Salesforce proudly pursues sustainable building certification across its portfolio, and while we remain certification agnostic, LEED has become a predominant market standard that at minimum, all Salesforce interiors align with. Therefore, for the purposes of this guide, we will discuss the various standards and certifications in the context of LEED. The challenge for building projects all around the world is to find the nexus between what will push the industry in the right direction while maximizing the ability to achieve sustainable building certification goals.


Materials Evaluation

So how do you know what makes for a healthy and sustainable material? With the myriad disclosures, certifications, lists, standards, and labels in the building industry, it can be confusing. We recognized the need to translate that complexity into a simple, easy-to-use tool in order for our real estate design and procurement teams to identify preferred products and make informed decisions. The Healthy and Sustainable Materials Working Group was formed and set out to define our goals, objectives, and desired outcomes. This formed the basis of version 1 of our materials evaluation efforts. We explored how specific criteria from these industry-recognized programs aligned with Salesforce goals and values, and then categorized them into four distinct performance categories: 50% for Health, 20% for Carbon, 20% for Environment, and 10% for Social Responsibility. While our approach to scoring continues to evolve to include more holistic criteria, our initial scoring approach was based on an overall final score of 10.

To evaluate products, we awarded points for each criterion in the categories of our initial scoring approach based on the product’s overall impact and performance in that category. For example, if two chairs had BIFMA Level certification but one chair was certified to Level 1 (the lowest level) and the second chair was certified to Level 3 (the highest level), then the chair with Level 3 certification would earn more points in our scoring. A product’s category scores are then added together to create a total overall score. Overall product scores are then compared to each other to facilitate the selection process, while keeping complexity to a minimum.



Scoring

 Material Health	5
 Environment	2
 Material Composition	2
 Social	1
<hr/>	
Points possible + bonus points	10

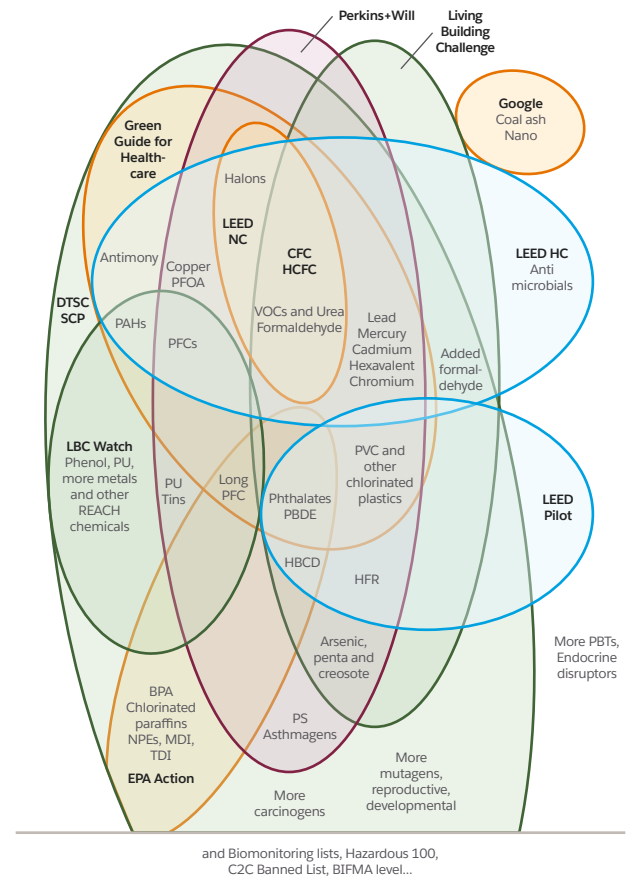
Scoring vs. List Approach

A common way of evaluating products is to compare their ingredients (called substances) to a list of known “chemicals of concern,” chemicals identified as being problematic to human or ecological health. These lists of known hazardous chemicals are often called Restricted Substance Lists (RSLs).

At Salesforce, avoiding chemicals of concern is one of many values important to us, but we needed a more holistic approach. By looking solely at chemicals, we’d miss considering other key attributes like carbon, materials composition, and social responsibility. Therefore, we opted to integrate RSLs into the scoring methodology along with these criteria.

GreenScreen List Translator

The Red List diagram below represents the “worst in class” materials, chemicals, and elements known to pose serious risks to human health and the greater ecosystem.





Performance Categories

The four performance categories represent a snapshot in time from when we started our material evaluation journey. What's most important is to define goals and values and then get started. Like any good process, it will evolve over time. Today's scoring tool builds on these early foundations, and we've since expanded all the criteria within each category and added material management, water, and waste categories.

Health

Evaluates the level of ingredient disclosure provided for a product along with any efforts to remove chemicals of concern. This evaluation aligns with Salesforce's values by supporting products that have a healthier impact on all who enter our space.

Carbon

Evaluates a manufacturer's efforts to reduce the carbon footprint of their product throughout its lifecycle. Just as Salesforce focuses on minimizing our environmental impact, we support those manufacturers who have actively designed their supply chain to encourage low carbon-intensive extraction and manufacturing methods, and renewable energy production technologies.

Environment

Evaluates the material makeup of a product and its overall benefit to the environment, including recycled, reclaimed or bio-based content, and FSC wood, among others. The method of a product's production contributes to the overall health of a product. At Salesforce the environment is a key stakeholder; therefore it's important we understand environmental impacts along with health.

Social Responsibility

Evaluates a manufacturer's commitment to corporate social responsibility, including reporting, sustainable commitments, and certifications. Salesforce believes that business is a powerful platform for change and supports manufacturers with similar values and commitment to transparency.

Establishing a Benchmark

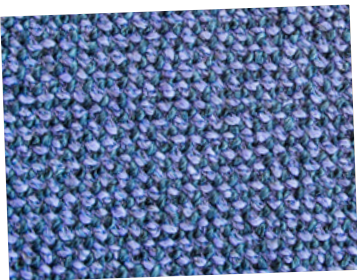
Once we established our evaluation methodology, we began the process of scoring the existing products in the Salesforce Global Design Standards. The process started with gathering all of the relevant transparency data and disclosures. For data that was missing, we agreed on industry averages to use as placeholders, and in cases where we expected data and didn't receive it, we did not award points

(zero). Transparency is a key part of our initiative. These initial scores became benchmarks and are reviewed annually, which allows us to ensure that manufacturers continue to improve their products, and if new products are proposed, they demonstrate an improvement over the existing product.



Salesforce Product Review Process

Our Healthy and Sustainable Materials Program aims to evaluate all finishes, furniture, and construction materials in the [Salesforce Global Design Standards](#) as well as new products being considered for our global portfolio of projects.



1 Product Identification

A member of the Healthy and Sustainable Materials Working Group identifies a new potential product for use in a Salesforce space or a currently used material that should be optimized.

2 Data Collection

Key data is gathered about the product such as certifications, disclosures, and company practices. We have a standard questionnaire that aligns with our scoring objectives that we send out to the manufacturer to respond to and provide supporting documentation to back up their answers. Once all information has been reviewed, the data is used to determine the final combined score for the product.

3 Benchmarking

The new product's final combined score is compared with design standard product(s) in the same category to see which product has a higher score and could therefore be considered an overall improvement. If a new product gets to the stage of being recommended, a scoring report with evaluation highlights is compiled and presented to the Salesforce design and procurement teams for review.

4 Performance Evaluation

Salesforce then verifies how well the product meets performance requirements, overall design objectives, and additional procurement requirements such as lead time, for example. Once this performance is verified, the product moves to the incorporation stage.

5 Incorporation


Salesforce design and procurement teams then lead the logistics for incorporation into the Salesforce Global Design Standards.

Common Challenges

During the data-gathering process we ran up against some challenges, and you likely will too: finding the right person to understand the sustainability attributes and information about each product, obtaining the correct product data, or even getting a response at all. It is generally the hardest to gain detailed information for wet applied products, or products that are in a liquid state when installed on site – such as paints, sealants, and adhesives, and easiest to gain information from larger manufacturers who have experience complying with sustainable building certifications. We recommend tracking all communications and dates for each product, and limiting the number of times you will reach out and how long you will wait to hear initial responses. If not, you'll end up in an endless cycle of data collection. This group of non-responders is getting smaller as time goes by because more and more project teams request this information, so it is important to keep asking manufacturers these questions.

Procurement

Another critical component of any successful healthy and sustainable materials program is the involvement of your strategic sourcing partner. For us, they are a critical part of the working group and have a voice in our strategy-setting. Our Healthy and Sustainable Materials Program would not have experienced the success it has without the incredible support of procurement partners and the close relationship with real estate design and sustainability. Score results are used as part of overall strategic purchasing decisions and are often shared with suppliers as part of a feedback loop meant to help them improve their performance overall. Their deep commitment to identifying best-in-class suppliers that demonstrate a commitment to sustainability has helped propel our efforts forward.



We've seen an exciting evolution with our own suppliers in that even if their initial response was lacking, over time they became aware of the evaluation tool and came to us with their data.

PATH TO OPTIMIZATION FOR MATERIALS

In 2012, the U.S. Green Building Council formed the Harmonization Task Force to bring together the leading certification, label, and disclosure providers in an effort to accelerate the creation of healthier indoor environments and engage stakeholders across the industry. The final report published by the Harmonization Task Force is where the phrase “Path to Optimization” first appeared.

How do we define what a “healthier” or “more sustainable” product is? While the answer to this is still evolving, by and large, the industry uses the term “optimized” as a placeholder for an ideal condition. Optimization is continuous improvement of a product over a baseline set of criteria. Sometimes referred to as the Path to Optimization, this is the journey a manufacturer takes toward better products. The concept of optimization can apply to just about any sustainability attribute, whether related to health, carbon, water, waste, or even social responsibility. There is always room for improvement.

The Path to Optimization is a continuous one, and it is important to know that manufacturing and supply chain changes do not happen quickly. It can take considerable time to engage suppliers to learn enough about product ingredients to create effective and transparent documentation. Understanding this and the process overall will help facilitate a dialogue with manufacturers and set realistic expectations for your healthy and sustainable materials program.

HEALTH

A BRIEF HISTORY OF MATERIAL HEALTH

At Salesforce, we care about the health impacts of the products that go into our spaces because we value not only the health of our employees but anyone who walks through our doors. To better understand healthy materials, let's start with a brief history of the materials industry, the regulatory environment, what we know, where there are market gaps, and why we are seeing more attention to this important topic.



LET'S START WITH DISCLOSURE

The biggest barrier to understanding health implications of building materials has been not knowing what ingredients (substances/materials) exist in the products we specify. Gaining access to product ingredients has historically been difficult. Traditionally, the industry has relied on the information reported in a product's Material Safety Data Sheet (MSDS), now called a Safety Data Sheet (SDS). The intent of the SDS is to report potential hazards based on occupational exposures during production, handling, and installation. But the SDS has limited value because manufacturers are not required to disclose all ingredients, or can classify them as proprietary or a "trade secret." It is all too common to find SDSs with less than 100% of the ingredients disclosed, and in many cases, nothing listed at all. In general, the SDS should not be used as a proxy for a product's full list of ingredients, but rather a place to start.

The public knows little about the vast majority of the chemicals being manufactured and used today in our building products. This is largely because under the Toxic Substance Control Act (TSCA) of 1976, the Environmental Protection Agency (EPA) was given the authority to regulate hazardous chemicals; however, the burden of proof as to a chemical's potential hazard falls largely on the EPA for testing, rather than the chemical producer. This testing is expensive, and insufficient resources are granted to the EPA for this purpose; therefore, most chemicals are not tested.

Pharos Project, built by [Healthy Buildings Network](#) (HBN), was the first platform where manufacturers could have product ingredients screened against the hazard lists in the Chemical and Hazard Database. HBN developed a scoring mechanism ranging from one to seven across five key performance indicators. During an extensive pilot effort, manufacturers were invited to disclose their product contents and have them screened for potential hazard endpoints in HBN's database. While the Pharos Library of screened products never grew to any significant degree, it laid the groundwork for other programs that HBN would release with other partners, including Quartz and the [Health Product Declaration](#) (HPD).

In 2010, HBN led a group of industry professionals in an effort to break down the barriers to ingredient reporting that were preventing designers and owners from understanding what ingredients are in building products. The goal was to create a standard that made reporting of ingredients and their hazards accurate, reliable, and consistent. As a result, the HPD Open Standard pilot program began in 2011. Significant involvement from pioneering manufacturers helped refine the standard further, releasing version 1.0 of the HPD Open Standard to the public in 2012.

Screening

The HPD Open Standard is a standardized way for a manufacturer to disclose product ingredients. An HPD cross-references product content against the [GreenScreen List Translator](#). This process is called screening and is the first step to understanding the known and potential health or environmental impacts of a specific substance. There are two types of screenings that you'll hear referenced in our industry: hazard screening and restricted substance list screening.

Hazard screening refers to cross-checking product ingredients against a wide array of authoritative (international NGOs, governments, for example) hazard lists to identify any known hazards, such as those referenced by GreenScreen and reported in an HPD. Restricted substance list screening is when ingredients are cross-referenced against a very targeted list of chemicals often created by a private organization or group. [You'll often hear things like "Red List Free," which means that the product



TSCA

The Toxic Substance Control Act (TSCA) was passed by congress in 1976, granting the EPA oversight of chemicals in the US. At the time, there were over 62,000 chemicals in production which were grandfathered in under the program, and the burden of proof of a chemicals potential harm fell entirely on the EPA to prove. In 2016 TSCA underwent reform to help make it easier for the EPA to regulate chemicals not yet tested.



doesn't contain any substances from the Red List, a restricted substance list created by the International Living Future Institute (ILFI).] Hazard screening is far more rigorous and is a foundational component to most third-party assessment programs.

Assessment

In order to understand a chemical's intrinsic human health and environmental hazards, it must undergo a "comprehensive and detailed analysis" by a certified assessor that "uses measured data from standardized tests and the scientific literature, hazard

information from the specified lists, and information derived from models and suitable chemical analogs."⁷ This process is referred to as an assessment.

There are several assessment methodologies that exist today, including the GreenScreen Chemical Hazard Assessment and the Cradle to Cradle Material Health Assessment Methodology. They each rate a substance's assessment results across a number of hazard endpoints: 18 for GreenScreen⁸ and 24 for Cradle to Cradle.⁹ Under Cradle to Cradle certification, the percentage of the product's ingredients that have been assessed varies depending on the certification level.



THE COMPARATIVE ASPECT OF INGREDIENT ASSESSMENTS IS HIGHLY IMPORTANT

Assessing a hazardous chemical is very difficult to determine in isolation. It's helpful to consider an analogy—choosing the safest car, for example. If you only tested the safety of one car, this wouldn't provide sufficient information to say this one car was the safest choice. You would need to test at least two cars, across the same performance indicators, to know which one was better. This is the same with assessments: they compare results from known hazards with that of the substance being assessed to determine its potential hazard. Assessments also include a thorough review of scientific literature to ensure that the latest information about a substance is included.



Optimization

GreenScreen:

Once a chemical has been assessed using the GreenScreen Chemical Hazard Assessment methodology, it is given one of four GreenScreen ratings:

- Benchmark 1 (BM-1) very high concern (Avoid)
- Benchmark 2 (BM-2)
- Benchmark 3 (BM-3)
- Benchmark 4 (BM-4) safe (Excellent)

Products with full GreenScreen assessments of all known ingredients that make up at least 0.01% [also known as 100 parts per million (ppm)] of the product's weight represent the ideal assessment level from a manufacturer.

A fully optimized product using GreenScreen would be one that has completed a full GreenScreen assessment with no identified hazards. The definition of “no identified hazards” varies depending on which program you're working with. We'll explore this in future manuals.

Cradle to Cradle (C2C):

Similarly to GreenScreen, Cradle to Cradle rates substances that have gone through its assessments with one of the following ratings:

- A (ideal C2C material, no hazards)
- B (material largely supports C2C objectives,
- C (acceptable with some concerns)
- X (highly problematic properties, must phase out)
- Grey (cannot be fully assessed due to lack of data)

Fully optimized Cradle to Cradle products do not contain X-assessed substances and preferably also exclude Grey substances.

The Path to Optimized Product Health

The path to optimized product health includes the necessary steps a manufacturer must take toward improving the health profile of their products. This entails making sure the substances and materials within their products do not pose any health impacts to building occupants or those working in or living near the manufacturing plants. The following five steps have been identified by the industry:

STEP 1

Know

Fully understand a material's ingredients and its production process.

STEP 2

Disclose

The act of sharing product content and/or its impacts publicly through approved certifications, labels, or standards.

STEP 3

Screen

Using known hazard lists to screen ingredients or processes for potential impacts.

STEP 4

Assess

A more rigorous investigation to determine the health and environmental impacts of each substance or material in the product.

STEP 5

Optimize

Removing or replacing chemicals with ones that have less impact on health or the environment.



Restricted Substance Lists (Chemicals of Concern)

RSLs are lists of substances that are restricted from use in a product due to clear, known health effects. It's worth noting that there are hundreds of lists all across the world established by nongovernmental organizations (NGOs), certification bodies, standards organizations, governmental organizations, research institutes, architects, and others. We'll briefly describe some of the more common lists referenced in the U.S. today and their relationship with sustainable building certifications.

The Red List

The [Red List](#) is a key component in the [Living Building Challenge](#) (LBC) certification program, which is administered by the [International Living Future Institute](#) (ILFI). The Red List is made up of 20 plus "worst-in-class" materials and chemicals that are known carcinogens and must be avoided in all projects attempting to achieve the Materials Petal, or category, of the LBC. Twenty chemicals may seem simple enough, but when these chemicals are expanded to include all chemical formulations, that number rises to well over 800 unique chemicals with their own Chemical Abstract Services Registry Number (CAS RN).

The Precautionary List

[The Precautionary List](#) was developed in 2009 by [Perkins + Will](#), an architecture firm in North America that has been studying material composition and peer-reviewed research on chemical impacts. This resource compiles the most problematic substances that people encounter every day in the built environment and allows design professionals to search for key substances and chemicals of concern using filters like project type, product type, and health and environmental impacts.

Six Classes of Chemicals

[The Six Classes](#) is a program of the [Green Science Policy Institute](#) that focuses on reducing the use of entire classes of chemicals, rather than phasing out problematic chemicals one at a time. The Six Classes contains many of the known chemicals of concern that are or have been commonly used in consumer and building products. Using a class based approach when removing chemicals of concern can prevent "regrettable substitutions" (the act of substituting one chemical of concern with one that could potentially be just as bad from the same class; i.e. Bisphenol-S (BPS) for Bisphenol-A (BPA) in water bottles). The Six Classes of chemicals of concern are highly fluorinated, antimicrobials, flame retardants, bisphenols and phthalates, some solvents, and certain metals.

Banned List

The Banned List contains those chemicals and substances that are banned for use in [Cradle to Cradle Certified™](#) products as intentional inputs above 1,000 parts per million (ppm). These substances were selected for inclusion on the Banned List due to their tendency to accumulate in the biosphere and lead to irreversible negative human health effects. In addition, several substances were selected due to hazardous characteristics associated with their manufacture, use, and disposal.

GreenScreen List Translator

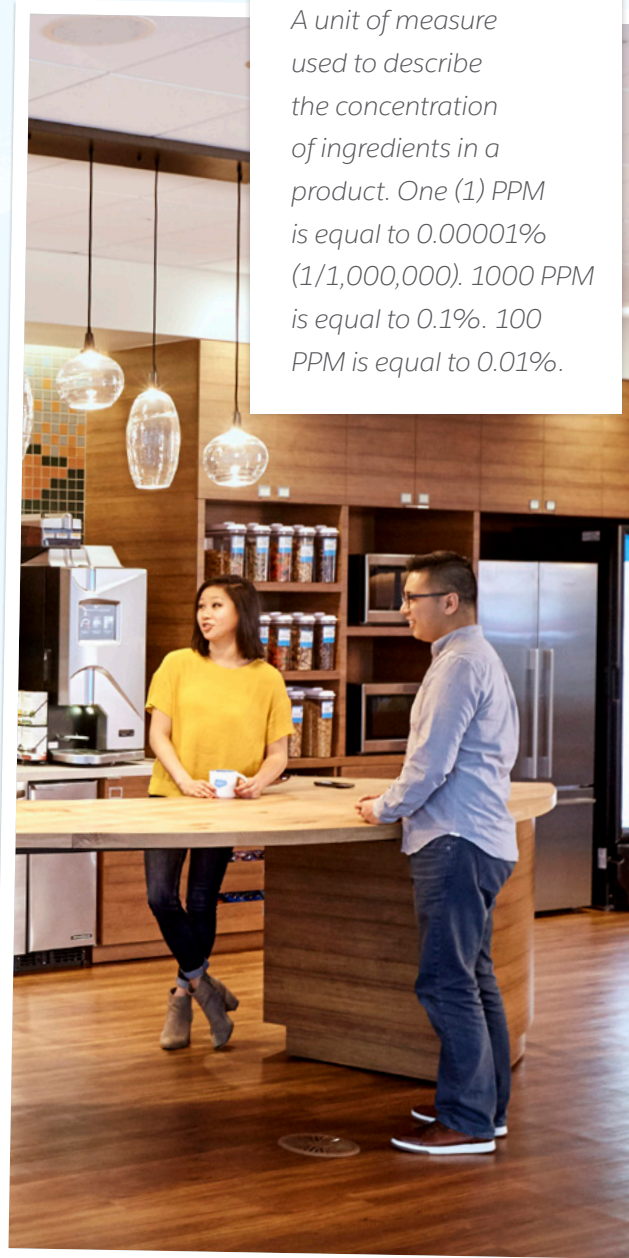
The [GreenScreen List Translator](#) developed by Clean Production Action (CPA) is a quick screening tool that helps identify chemicals of high concern. The List Translator references over 40 hazards lists developed by authoritative scientific bodies. Chemicals are screened against these lists to determine their potential hazard classification and are then assigned a score. The List Translator scores are not a replacement for a full GreenScreen assessment; rather they are meant to guide product designers about the potential for harm.

REACH

[REACH](#) is a regulation of the European Union (EU), adopted to improve the protection of human health and the environment from the risks that can be posed by chemicals, while “enhancing the competitiveness of the EU chemicals industry.” REACH was established in 2007 by the European Chemicals Agency (ECHA).

In principle, REACH applies to all chemical substances – not only those used in industrial processes but also in our day-to-day lives. Substances fulfilling one or more of the criteria defined in Article 57 of the EU REACH Regulation can be identified as “substances of very

A unit of measure used to describe the concentration of ingredients in a product. One (1) PPM is equal to 0.00001% (1/1,000,000). 1000 PPM is equal to 0.1%. 100 PPM is equal to 0.01%.





high concern” (SVHC) and put on the “candidate list for authorization,” which is also called the REACH SVHC list.

Companies established outside the EU are not bound by the obligations of REACH, even if they export their products into the customs territory of the EU. The responsibility for fulfilling the requirements of REACH, such as preregistration or registration, lies with importers established in the EU or with the representative of a non-EU manufacturer established in the EU.

Industry Frameworks Related to Human Health Impacts

The following sections provide an overview of the many disclosures and certifications that aid in the transparency process. We also explore how disclosures and certifications can aid in sustainable building certification. For the purposes of this document we explore this in relation to LEED v4 and clarify where it falls on the path to optimization because these don’t always align.

Disclosures (a.k.a Transparency)

Declare

[Declare](#) is a transparency platform administered by ILFI. Project teams attempting to comply with the Red List imperative of the LBC spend significant amounts of time contacting manufacturers to confirm if their products are free of red list chemicals. This often takes months, and many manufacturers struggle to know this level of detail about their products. To help reduce this research time and to make ingredient knowledge more publicly accessible for all product selectors, ILFI created the Declare Label for products where manufacturers can declare a product’s ingredients and its compliance with the Red List. There are three levels of reporting on a Declare label: Declared, LBC Compliant, and Red List Free.

Path to Optimization

A Declared product signifies that all ingredients have been disclosed but that the product contains nonexempt Red List materials or chemicals. A Red List-compliant product is one that contains a Red List material or chemical but is compliant through a temporary exemption granted by ILFI, usually due to market conditions



that make the chemical difficult to remove. A Red List-free product means that no Red List ingredients are present in the product. This is considered a partial optimization as it avoids over 800 known chemical hazards but may still contain other hazards not included in the Red List.

Sustainable Building Certification and Declare

A Declare label that is Red List-free meets the intent of Option 1 of the Building Product Disclosure: Material Ingredients credit for LEED v4. There is currently no acceptable optimization option for a Declare label; the product either already meets the standard in full or is not allowed.

Health Product Declaration

The [Health Product Declaration](#) (HPD) is a form of screening and is intended to be a standardized means of reporting product ingredients. On its own, an HPD is not a proxy for a safe product but simply offers a glimpse at the disclosed ingredients and their potential for harm. As mentioned previously, each material and chemical listed in an HPD is screened against GreenScreen List Translator in order to identify any known hazards that they may present. As a disclosure and screening mechanism, it allows disclosure to various thresholds that are identified in parts per million (ppm). The smaller the ppm value, the more content that is being disclosed. 1,000 ppm and 100 ppm are considered ideal reporting thresholds, 100 ppm being preferred.

Many times, these screenings will show up as LT-Unk or LT-Unknown. This simply means that there is insufficient research on a material or chemical to provide a Benchmark (BM) classification. The next step for an ingredient with an LT-Unk designation is a full GreenScreen assessment, which the manufacturer could pursue. But in many cases the ingredient is a material/chemical they purchased from another supplier, in which case, it becomes more challenging to determine who should do the assessment.

Path to Optimization

Optimization is more difficult to identify with an HPD alone. One optimization the HPD can demonstrate is when a product/material is free of BM-1 and LT-1 substances as identified by GreenScreen.



*Red List Compliant
Declare labels that
have more than 0.1%
(1000ppm) proprietary
ingredients do not qualify
for LEEDv4 or LEEDv4.1.
Remember proprietary
ingredients means they
are not disclosed.*

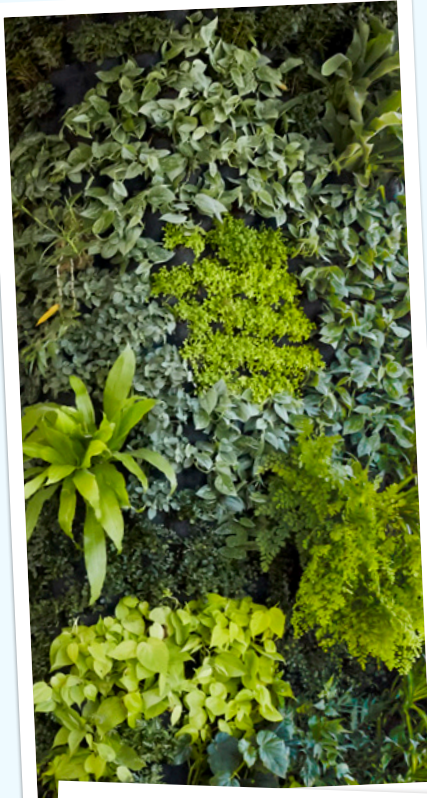




Sustainable Building Certification and HPD

LEED v4 recognizes the value of the HPD as a disclosure tool and requires specific criteria to demonstrate compliance. First, a manufacturer must report all ingredients down to at least 1,000 ppm and no ingredients are identified as BM-1 chemicals. Second,

those ingredients must be fully characterized and fully screened. Lastly, they must consider residuals. Click [here](#) to see a graphic from the HPD Collaborative that helps to visualize what to look for in a valid LEED v4 HPD.



You'll recall that under full certification, a product's overall certification level uses the lowest level of achievement received in any category, so it's possible for a product to have a Bronze C2C Certification but to have a Gold C2C Material Health Certificate.

Certifications

Cradle to Cradle (C2C)

[The Cradle to Cradle \(C2C\) Certified Product Standard](#) (C2CPS) is administered by the Cradle to Cradle Products Innovation Institute (C2CPII). C2CPS is a framework that guides manufacturers in a continual improvement process and is structured around five quality categories: material health, material reutilization, renewable energy and carbon management, water stewardship, and social fairness. The standard was gifted to the C2CPII by its founders, William McDonough and Michael Braungart, in 2010, and is based on their seminal book, *Cradle to Cradle: Remaking the Way We Make Things*. Their work centered around the classification of materials into biological and technical nutrients and the influence nature could have in the way things are made, used, and returned back into other useful cycles. C2CPII is set to release version 4 of the C2CPS in 2020 after five years of development.

C2C Certified Levels

Products certified by the C2CPS receive a ranking across each of the five quality categories. The ranking levels are Basic, Bronze, Silver, Gold, and Platinum. Each level of achievement requires a manufacturer to meet additional criteria. The final certification is based on the lowest score achieved across the five categories. As an example, a product could achieve Gold in four of five quality categories with Silver in the remaining category, and its final certification would be Silver.

C2C Material Health Certificate

The Material Health Certificate was created by the C2CPII as a way to recognize the performance of a product in the material health category. This was done for two reasons. One was to offer a way to complement the HPD by having a single certificate around material health. The second reason was to allow manufacturers an opportunity to showcase when their products are performing well in the material health category but not represented well in the full certification.

Path to Optimization

Cradle to Cradle is a very rigorous certification program that requires screening of products against known hazards and having a certain portion of products' content assessed using the C2C assessment methodology. The amount assessed depends on the level of certification achieved. Products certified at the Bronze and Silver levels are assessed to 75% and 95% respectively. Products certified at the Gold and Platinum levels have 100% of their ingredients assessed.

All C2C certified products are required to eliminate any chemicals found on C2C's restricted substance list. This is considered a form of partial optimization. When combined with a 100% assessment, it is considered an optimized product. Since C2C products are not required to disclose content publicly, we don't recognize it as a disclosure tool. Our scoring tool will count it as a full disclosure if combined with an HPD.

Sustainable Building Certification and Cradle to Cradle

Cradle to Cradle certified products or those with a Material Health Certification that meets the Bronze and Silver levels meet the requirements of Option 1 under LEED v4 Building Products Disclosure and Optimization: Material Ingredients. Products that comply at the Gold and Platinum levels are considered optimized and therefore meet the requirements of Option 2 under the same credit.

Living Product Challenge

The [Living Product Challenge](#) was launched by the International Living Future Institute (ILFI) in 2015 and is considered by many to be the most rigorous product certification in the world. Much like the Living Building Challenge, it has 20 imperatives across seven categories (Place, Water, Energy, Health and Happiness, Materials, Equity, and Beauty) that are all required in order to receive certification. Products can earn partial certification under this program in what is called Petal Recognition or Imperative Recognition. It is important to pay attention to which Petal/Imperatives were achieved under these circumstances.





The Materials Petal carries the most weight in our evaluation tool when evaluating products engaged in the Living Product Challenge. The Materials Petal addresses Red List ingredients, regional sourcing, responsible industry, net positive climate, net positive waste, durability, longevity, and have an end-of-life program. Considered together, these categories have tremendous impact on a product's overall optimization and explain why Materials Petal is currently considered one of the most rigorous standards.

Path to Optimization

A Living Product (one certified under the Living Product Challenge and meeting the Materials Petal) can be considered an optimized product, reducing negative impacts and fostering positive benefits across the product's lifecycle. Because products can be certified to varying levels (full or partial), it is important to examine what was achieved in order to determine a product's level of optimization. Achieving full certification would reflect a product at the forefront of optimization.

Sustainable Building Certification and LEED v4

Living Products are being considered for inclusion in the forthcoming version of LEED.

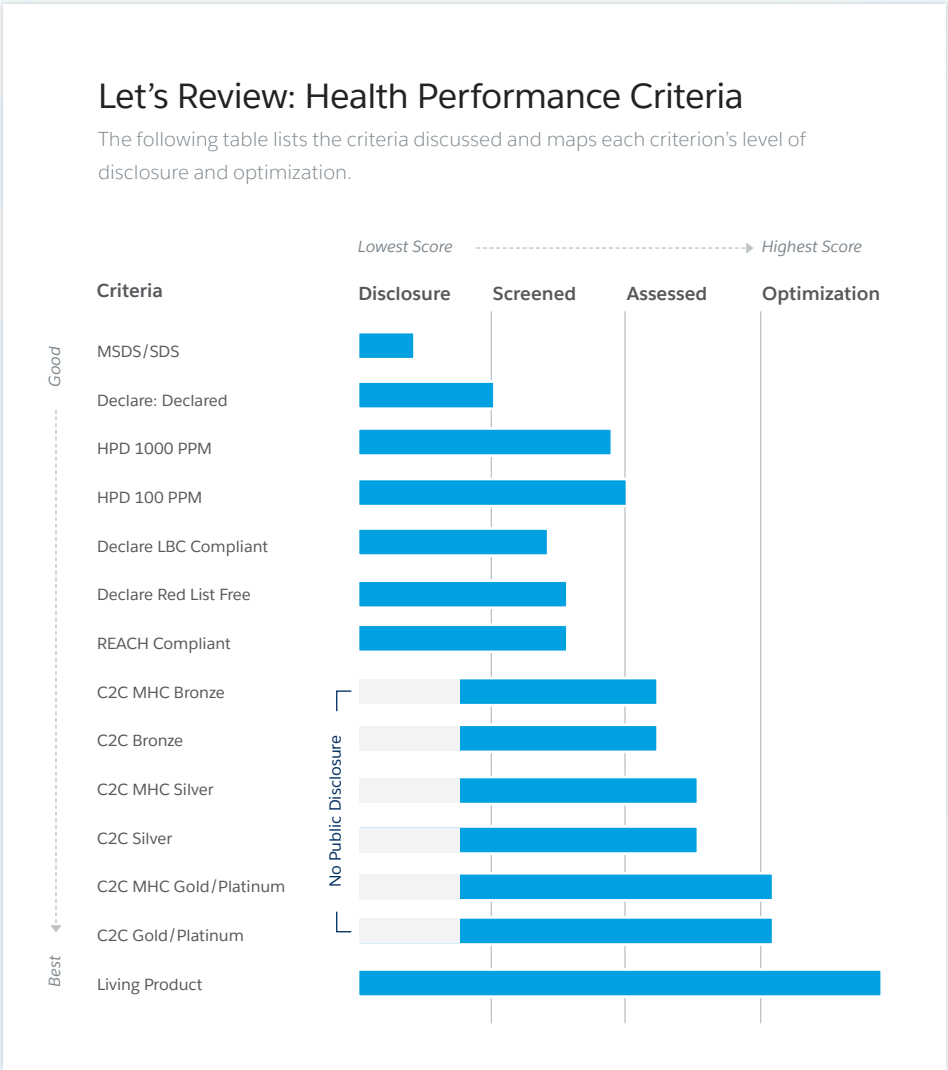
Emissions Testing Certifications

Many of the materials we use in our office spaces – from carpets to ceilings, and furniture to equipment – contain organic compounds. These organic compounds are characterized by their tendency to vaporize under normal conditions. When they vaporize, they cause contamination in the indoor air and are often inhaled by building occupants. In some cases, this vaporization can happen quickly, and in other cases, it can happen over months or years.

To help us measure this, we use emissions testing. These tests, as described below, allow us to measure the amount of vaporization from a number of different common organic compounds. Testing gives us a better understanding of what impacts a material may have after installation in a space. Passing these tests demonstrates that the impacts can be reduced, but passing alone will not ensure that a space is free of potential health concerns; it's merely a vehicle we use to make the best attempt we can with the information we have. Salesforce tries to ensure that as many products as possible can demonstrate compliance with these emissions standards.

California Department of Public Health (CDPH)

One regulatory body moving the needle forward in our industry is the California Department of Public Health (CDPH). The CDPH has been advancing issues around public health for decades. One regulation important to the work Salesforce does today is CDPH Standard Method v1.2-2017, also known as [California Section 01350](#). The CDPH Standard outlines a testing





methodology that requires a product's emissions to be tested for over 35 VOCs over a 14-day period from the date of production. It sets maximum allowable limits for each VOC, and testing is done in sealed chambers to ensure accurate results.

Sustainable Building Certification and CDPH

Emissions testing is not a new concept, but it is a newer feature of the LEED v4 Low Emitting Materials credit. Emissions testing is also required by both WELL and Living Building Challenge. There has been increasing awareness over the last two years around emissions testing, and completing this is slowly becoming a standard for interior finish materials. Some product industries are ahead of others in having this testing available.

The following standards are the most common certifications used to demonstrate compliance with CDPH v1.2-2017 in the U.S. International equivalents are available but not listed here..

FloorScore

[FloorScore](#) is a program developed by the Resilient Floor Coverings Institute (RFCI). It is meant as an Indoor Air Quality (IAQ) certification for hard surface flooring and flooring adhesives. RFCI works in collaboration with Scientific Certification Systems (SCS) as its impartial third party for FloorScore certification. FloorScore testing

follows SCS-EC10.3-2014, which complies with CDPH Standard Method v1.2. SCS issues a FloorScore certificate for products that comply, and a copy of this is required for LEED and WELL documentation if pursuing full certification.

Green Label Plus

[Green Label Plus](#) is a program developed by the Carpet and Rug Institute (CRI). Its testing requirements align with CDPH Standard Method v1.2 and applies to carpet, carpet adhesive, and carpet cushion. The Green Label Plus program is operated by the CRI and is not considered a third-party testing program. While this is the case, it is still a trusted resource for emissions testing in the carpet industry. CRI issues a certificate for products that comply, and a copy of this is required for LEED and WELL documentation if pursuing full certification.

GREENGUARD Gold

[GREENGUARD Gold](#) is a program operated by Underwriters Laboratories (UL). UL's testing method for emission follows UL Standard 2818 and Test Method 2821, which comply with CDPH Standard Method v1.2. UL issues a certificate for products that comply, and a copy of this is recommended for LEED and WELL

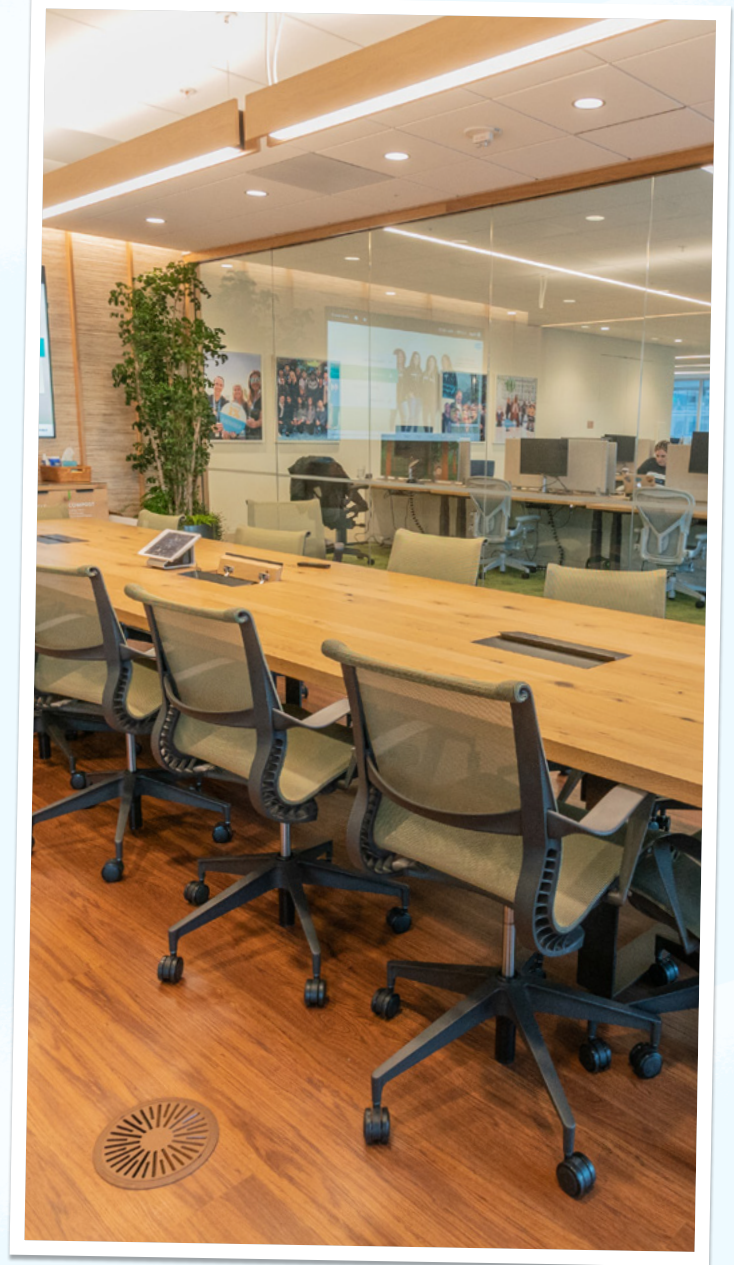
documentation purposes. GREENGUARD Gold certification can apply to a wide array of product types, including furniture.

Indoor Advantage Gold

[Indoor Advantage Gold](#) is a testing protocol managed by SCS and follows SCS-EC10.3-2014, which complies with CDPH Standard Method v1.2. SCS Indoor Advantage Gold certification can apply to a wide array of product types, including furniture. SCS issues a certificate for products that comply, and a copy of this is recommended for LEED and WELL documentation purposes.

Emissions Testing Report

In some instances, manufacturers will demonstrate their compliance with emissions testing using a testing report. These reports simply show that the testing has been done and that the product has passed. They differ from certification in that certification requires annual/semiannual retesting. It's always good to look at the date when the testing report was authored and confirm with the manufacturer that no changes have been made. If you find a testing report that is older than three years, ask the manufacturer to update their report.



CARBON

We believe that the business of business is to improve the state of the world, and we work to make sure Salesforce is a platform for change through serving the interests of all our stakeholders – employees, customers, partners, communities, and the environment. We're working to play a meaningful role in creating a sustainable, low-carbon future. Salesforce has made the commitment that all major, new Salesforce office interiors will align with LEED Platinum v4 standards by 2020 and pursue ILFI Zero Carbon certification by 2030.



Embodied Carbon

There are two types of carbon emissions that make up all buildings: operational and embodied. Carbon emissions from operations of a building are easy to precisely measure today, but this doesn't include the carbon emissions that went into making the materials that created the building in the first place. Carbon emitted during the manufacturing, transportation, installation, use, and end of life of a product is called the embodied carbon of a product. The embodied carbon on day one of all the products that make up a building represents a significant amount of emissions, equal to 17 years of operational energy use emissions (considering an average office building), according to a 2013 analysis of a typical office building completed by Architecture 2030.¹⁰

Salesforce is engaged in several efforts to reduce the embodied carbon of the products we specify. In September 2018, Salesforce went further with our existing environmental commitments, pledging to [measure and reduce the embodied carbon](#) in all of our major interior office spaces. We have begun this work and will start to integrate it into the next version of our Healthy Materials Evaluation tool.

Industry Frameworks to Assess Carbon Impacts

When Salesforce speaks of disclosure from an environmental perspective, we are generally referring to the environmental impacts associated with a product that can be measured from the earliest stages of its extraction to the end of its useful life. This is sometimes referred to as its cradle-to-grave impact or its lifecycle impact. Simply put, disclosure is the act of measuring and assessing a product's impact and making that information available.

Life Cycle Assessment

Life Cycle assessments (LCAs) were introduced in the 1960s because of concerns regarding raw material limitations and energy resources.¹¹ Over the next 30 years, revisions to these assessments were minimal, and only a handful of them were produced. In 1997, after several years of international coordination, the International Organization for Standardization ISO 14000 series of standards were introduced.¹²

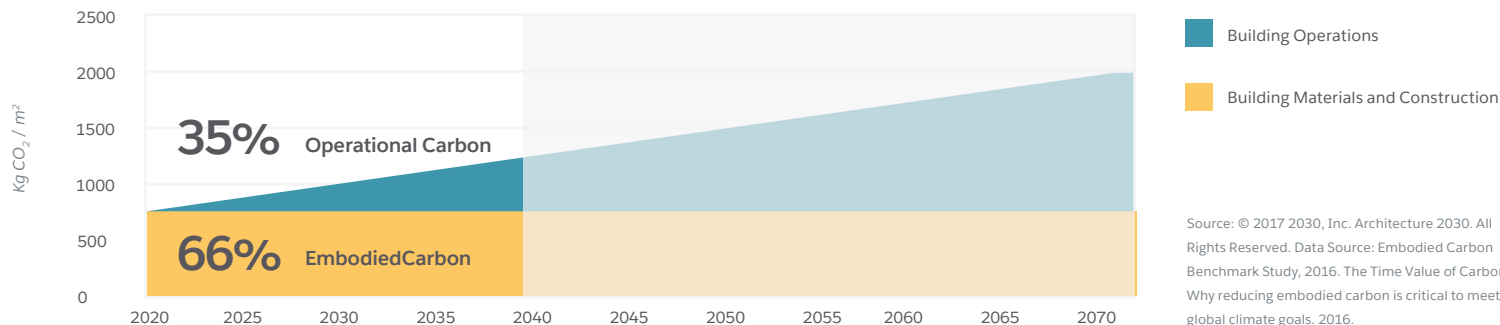
These standards are utilized extensively today, and international cooperation continues to refine the practice of Life Cycle Inventory (LCI), which helps manufacturers understand the carbon footprint of a product or group of products from a specific manufacturing facility. LCI data forms the backbone of an LCA. Products today will typically get this data for at least a cradle-to-gate or point-of-purchase scope.

LCAs do not take into consideration all possible:

- *Land use impacts*
- *Land use changes*
- *Local impacts*
- *Habitat disruptions*
- *Amount of water used to make the product*
- *Effluent water temperature changes*
- *Human health impacts of the product*

Total Carbon Emissions of a Single Building

Global Average Building Carbon Footprint: 50% Better Operational Performance





LCAs typically include the following LCA impact categories:

- *Global warming potential (greenhouse gases)*
- *Depletion of the stratospheric ozone layer*
- *Acidification of land and water sources*
- *Eutrophication*
- *Formation of tropospheric ozone (smog)*
- *Depletion of nonrenewable energy resources*

Other programs are emerging to account for these missing impacts, and Salesforce is working to incorporate these in other performance categories of our scoring tool.

Product Category Rules

Product category rules (PCR) are rules that govern the development of a lifecycle assessment (LCA) within a specific product group. Manufacturers that wish to develop EPDs must follow the PCR for their product type in order for their EPD to be recognized by LEED and other certification systems. PCRs are typically established by industry groups and define the scope, impact categories, and functional unit that should be used. Some manufacturers participate in the development of the PCRs, and their products can help establish best practices and baseline metrics for their industry.

Environmental Product Declaration (EPD)

An [Environmental Product Declaration](#) (EPD) is an independently verified and registered document that summarizes the results of an LCA. Think of it as an executive summary of the lifecycle assessment. They follow the guidelines established by the [International Standards Organization \(ISO\)](#) 14025. There are various types of EPDs, but the one most commonly referenced in the design community is the Product-specific Type III EPD (PS-Type III). LCAs will typically reference ISO 14040 or ISO 14044.



The other type of EPD that you will see is an Industry-wide Type EPD (IW-EPD). These are typically produced by trade associations or industry groups as a generic EPD based on industry average information. Manufacturers that participate in the development of the IW-EPD are the ones who can take credit for its development and are recognized by the EPD program developer.

Sustainable Building Certification and EPDs

EPDs are recognized in USGBC's LEED v4 Building Product Disclosure and Optimization: Environmental Product Declarations. The credit has two pathways for compliance. The first is to specify 20 products that have EPDs. The value of these EPDs varies depending on the type of EPD provided. Product-specific Type III EPDs are valued at one full product point. Industrywide (generic) Type III EPDs are valued at one-half of a full product. LCAs that are only cradle-to-gate in scope are valued at one-quarter of a full product.

The second option under the Building Product Disclosure and Optimization: Environmental Product Declaration credit is to specify products that can demonstrate they have reduced their overall impact against an industry-established baseline across three different impact categories by 50%, by cost, of the installed products. While there are manufacturers that comply, it is difficult at this time to meet the cost requirements in Option 2.

Extended Producer Responsibility (EPR)

Often referred to as a take-back program, extended producer responsibility (EPR) is a program established by a manufacturer regarding the end-of-life treatment of their products. This is more than just a disposal program. Comprehensive take-back programs are those where the products are returned to the manufacturer and reutilized in the same manufacturing process. The carpet, tile, and acoustic ceiling industries are the furthest along with these practices and have outstanding programs worth considering. These practices are important functions of a circular economy, a concept of considerable value to Salesforce. In addition, products that incorporate recycled old products tend to show significant carbon reductions over their virgin material counterparts.

Sustainable Building Certification and EPR

USGBC's LEED v4 Building Product Disclosure and Optimization: Raw Material Sourcing credit recognizes EPR programs. Products with actual EPR programs can contribute to the same credits as recycled content, FSC, bio-based, and so on.



Salesforce's global ceiling tile and flooring suppliers all have robust take back programs!

ENVIRONMENT

At Salesforce we consider the environment to be a key stakeholder, and we are constantly working to incorporate sustainability into every area of our business. We knew that our scoring tool must evaluate the environmental attributes of the products we bring into our spaces. We value attributes such as responsibly harvested materials, designing for disassembly, zero waste, and bio-based materials.



Industry Frameworks to Assess Environmental Impacts

Forest Stewardship Council (FSC)

[The Forest Stewardship Council](#) (FSC) is an international nonprofit organization that has outlined guidelines for the sustainable management of forests all around the globe. It has established a system for tracking wood from forest to place of installation called Chain of Custody (CoC). Every part of the supply chain is required to have a CoC certificate demonstrating that they have the necessary practices in place to ensure that certified wood and uncertified wood are tracked separated. Using wood from FSC-certified sources is an important goal for Salesforce. By using FSC-certified wood, we ensure that the wood being used is not coming from old growth forests, rainforests, or contributing to the destruction of vital habitat for other species, among many other elements that make up responsible forestry practices.



Sustainable Building Certification and FSC

FSC-certified wood can help teams earn one LEED v4 point under Option 2: Leadership Extraction Practices of the LEED v4 Sourcing of Raw Materials credit. All projects pursuing the Materials Petal of the Living Building Challenge are required to use FSC-certified wood for all permanent and temporary wood onsite. The only exceptions to this rule are using wood from an invasive tree species (such as juniper in Eastern Oregon) or beetle-kill wood. Permanently installed wood that has been reclaimed or salvaged does not need to be FSC, nor does temporary site wood that has come from another project.

Recycled Content

For a long time, LEED has been a primary driver of the use of recycled content. Because of this, recycled content is something that just about everyone in the building industry publishes about their products. Recycled content is generally categorized as pre-consumer (also called post-industrial) and post-consumer content.

Pre-consumer recycled content is content that has never been used outside of the industrial process. During manufacturing, when leftover material remains, like cut-offs from metal fabrication, this industrial scrap is not discarded as trash; it is often returned to the same process from which it was generated.

Post-consumer recycled content is content that has been consumed by the market and returned for reuse. Aluminum cans are a primary example of post-consumer recycled content. While recycled content has gotten a fair amount of attention, recent discoveries have shown that some recycled content can contain large amounts of hazardous materials. When manufacturers gather and mix recycled content from sources all over the world, then you begin to limit your ability to control any contamination that might have existed in the source material. For this reason, manufacturers have started to explore their sources of recycled content and perform testing to ensure contaminants are not accidentally introduced into their products.

Other Criteria

There are additional criteria that are included in product evaluations, such as bio-based materials, biodegradability, rapidly renewable, and reclaimed. All of these attributes are taken into consideration when present, but they represent a very small percentage of the current materials marketplace.

Bio-based materials: The U.S. Department of Agriculture (USDA) defines bio-based materials as “commercial or industrial products that are composed in whole, or in significant part, of biological products or renewable domestic agricultural materials or forestry materials.”¹³ LEED requires that all non-wood bio-based materials be certified through the [Sustainable Agricultural Network \(SAN\)](#) and that all products originating on farms must also be [Rainforest Alliance certified](#).¹⁴

Biodegradable materials: These easily break down to organic matter at their end of life, especially in utility-scale composting facilities. The best biodegradable materials break down to contribute to a nutrient-rich compost that can be sold for use in gardens or farms.¹⁵ Biodegradable plastics are some of the worst biodegradable materials because they are made using added chemicals of suspected toxicity, must go through special processes at the composting facility, and do not break down into nutritious compost, but rather CO₂.¹⁶

Rapidly renewable materials: The most commonly referenced definition of rapidly renewable materials is LEED v2009, which explains how they’re made from agricultural products that are typically harvested within a 10-year or shorter cycle, such as bamboo. Choosing rapidly renewable materials over materials that take longer to grow has the potential to limit environmental and habitat degradation. This criteria has been removed and is no longer part of LEED v4.

Reclaimed materials: These are materials that have been used before and are being used again. This can include salvaged beams or other structural materials, salvaged woodwork, doors, flooring, and so forth. Use of reclaimed materials is of growing importance as we work to reduce the embodied carbon of our buildings, since these materials essentially eliminate the need for additional raw materials to be extracted and made into that product.



SOCIAL IMPACT

At Salesforce, we evaluate a manufacturer's social responsibility efforts to give us a more holistic view about the supplier's values. Salesforce believes that instilling a strong culture of corporate social responsibility across internal and external stakeholders will help to create a positive and productive environment.



Industry Frameworks to Assess Social Responsibility

While the idea of social responsibility has been around for some time, there are few metrics or programs that truly capture the breadth and depth of all impacts, either globally or in local communities. As such, it is a difficult category to measure. There are best practice resources to consider, such as the [Global Reporting Initiative \(GRI\)](#), Corporate Social Responsibility (CSR) reports, and ILFI's business social justice certification JUST Label, among others. The challenge with each of these programs is that they don't fully offer a clear lens into all the efforts a company undertakes around social outreach and engagement. Additionally, the way companies measure this impact is continually evolving. For the time being, we start with understanding if a manufacturer or supplier has an externally facing, recent Corporate Social Responsibility (CSR) report as this indicates a business' commitment to transparency.

EVOLUTION OF HEALTHY AND SUSTAINABLE MATERIALS

As new chemicals are developed every day, research continues to evolve, and manufacturers are increasingly providing transparency of their products' ingredients, their business practices, and their environmental impacts. Healthy and sustainable materials is a dynamic field that is continuously changing, often for the better. As such, the Salesforce Healthy and Sustainable Materials Program will evolve as the industry does, collaborating with peers and suppliers to continue developing and learning best practices.



We encourage you to get involved. Please pass on this knowledge to those you work with and share best practices with your architecture and design teams. Encourage manufacturers to continue to innovate, and form partnerships with them to drive the health and sustainability of our indoor environment. All of us have a role to play, and we hope this guide lays a foundation

and sparks innovative solutions that move us collectively toward a healthier and more sustainable built environment.

Also, don't forget to read about all of Salesforce's social and environmental initiatives in our [Stakeholder Impact Report](#).

Toolbox

Healthy Materials Attributes Explained Further

Key Healthy Materials Terms

Useful Links

References

Healthy Materials Attributes Explained Further

Listed from most lenient to most strict disclosure and product ingredients requirements.

Manufacturer's Inventory Disclosure (MID)

A Manufacturer's Inventory Disclosure (MID), released by a manufacturer, that does not follow other program requirements. A MID should list all product ingredients to the 1,000 ppm level and their associated chemical abstracts service registry number (CAS RN) and should be publicly available.

Declare

A product with a Declare label that does not meet the Living Building Challenge's Red List requirements is considered a declared product, meaning it has just declared its ingredients as a formal disclosure.

Declare: LBC Compliant

A product with a Declare label that meets the Living Building Challenge's Red List requirements but does so only because an exception currently exists that allows for compliance. It does contain a Red List material or chemical, but is currently allowed due to [market constraints](#).

Health Product Declaration (HPD) at 1000 ppm

An [HPD](#) that is disclosed at the 1,000 ppm level (0.1%) AND lists all known hazards and confirms that it has considered residuals and impurities.

Health Product Declaration (HPD) at 100 ppm

An HPD that is disclosed at the 100 ppm level (0.01%) AND lists all known hazards and confirms that it has considered residuals and impurities.

Health Product Declaration (HPD) at 1000 ppm: No BM-1, LT-1 or LT-P1

An HPD that is disclosed at the 1,000 ppm level (0.1%) AND lists all known hazards and confirms that it has considered residuals and impurities. It must not contain any materials considered to be BM-1 (Benchmark 1), LT-1 (List Translator 1), or LT-P1 (List Translator Probable 1). These products are considered optimized under LEED v4.

Toolbox

Healthy Materials Attributes Explained Further

Key Healthy Materials Terms

Useful Links

References

Health Product Declaration (HPD) at 100 ppm: No BM-1, LT-1 or LT-P1

An HPD that is disclosed at the 100 ppm level (0.01%) AND lists all known hazards and confirms that it has considered residuals and impurities. It must not contain any materials considered to be BM-1 (Benchmark 1), LT-1 (List Translator 1), or LT-P1 (List Translator Probable 1). These products are considered optimized under LEED v4.

Declare: Red List Free

A product with a Declare label that meets the Living Building Challenge's Red List requirements by not having any Red List materials or chemicals.

REACH Compliance

A product that complies with REACH does not contain any materials or chemicals that have been identified as substances of very high concern (SVHC). REACH is a European program.

Cradle to Cradle Certified (C2C) and Material Health Certificate (MHC):

Silver/Bronze - v3.1

Products with a Bronze/Silver C2C Certification or MHC have removed chemicals from the [C2C banned list](#), are 75% assessed, but not optimized or tested for emissions.

Cradle to Cradle Certified and Material Health Certificate (MHC): Gold - v3.1

Products with a Gold C2C Certification or MHC have removed chemicals from the C2C banned list, are 95% assessed, partially optimized, and tested for emissions.

Cradle to Cradle Certified and Material Health Certificate (MHC): Platinum - v3.1

Products with a Gold C2C Certification or MHC have removed chemicals from the C2C banned list, are 100% assessed, fully optimized, and tested for emissions.

Living Product

Living Products comply with the requirements of the Living Product Challenge, which is a framework for manufacturers to use to create products that are healthy, inspirational, and that give back to the environment.

Toolbox

Healthy Materials Attributes
Explained Further

Key Healthy Materials Terms

Useful Links

References

Key Healthy Materials Terms

Chemicals of Concern (COC)

Any chemical that can cause harm or has the potential to cause harm.

Global Harmonized System (GHS)

An international, standardized approach to hazard communication, labeling elements, and SDSs.

Hazards

Something that can cause harm.

Parts Per Million (PPM)

A unit of measure used to describe the concentration of ingredients in a product. One PPM is equal to 0.00001% (1/1,000,000). 1,000 PPM is equal to 0.1%. 100 PPM is equal to 0.01%.

Precautionary Principle

“Guilty until proven innocent”: the theory that if the effects are unknown, then the product should not be used until evidence proves otherwise.

Proprietary (in the context of disclosures)

Content considered a trade secret or private by a manufacturer; often left undisclosed when reporting data.

Risk

The chance, high or low, that a hazard will actually cause harm.

Safety Data Sheet (SDS)

Summary documents that provide information about the hazards of a product and advice about safety precautions.

Transparency

The act of sharing product content and/or impacts publicly.

Volatile Organic Compounds (VOCs)

Organic chemicals that have high vapor pressure at ordinary room temperature.

Toolbox

Healthy Materials Attributes
Explained Further

Key Healthy Materials Terms

Useful Links

References

Useful Links

Use these links to research if a product has certifications and to learn more about the topics covered in this guidance manual.

Product Resources

[Cradle to Cradle Product Registry](#)

[Declare Products](#)

[Ecomedes](#)

[HPDC Repository](#)

[mindful MATERIALS Library](#)

[UL Spot](#)

[MAS Certified Products](#)

[Sustainable Minds Transparency Catalog](#)

[FSC Public Search](#)

Additional Learning

[Green Science Policy Institute](#)

[Six Classes of Chemicals of Concern](#)

[Building Green](#)

[Healthy Building Network](#)

[AIA Materials](#)

[Pharos Project](#)

[Perkins & Will Precautionary List](#)

[Harvard Study on the Impact of Green Building on Cognitive Function - Report \(Link\)](#)

Toolbox

Healthy Materials Attributes
Explained Further

Key Healthy Materials Terms

Useful Links

References

References

- 1 N. E. Klepeis, et al., “The National Human Activity Pattern Survey (NHAPS): A Resource for Assessing Exposure to Environmental Pollutants,” *Journal of Exposure Analysis and Environmental Epidemiology* 11, no. 3 (2001): 231--252.
- 2 “New Buildings: Operational Emissions.” (n.d.). Retrieved from architecture2030.org/new-buildings-operations/.
- 3 Cary Institute of Ecosystem Studies (2017, January 24). “Synthetic chemicals: Ignored Agents of Global Change.” Retrieved from phys.org/news/2017-01-synthetic-chemicals-agents-global.html.
- 4 S. E. Serrano et al., “Phthalates and Diet: A Review of the Food Monitoring and Epidemiology Data,” *Environmental Health* 13 (2014): 43.
- 5 Joseph G. Allen et al., “Associations of Cognitive Function Scores with Carbon Dioxide, Ventilation, and Volatile Organic Compound Exposures in Office Workers: A Controlled Exposure Study of Green and Conventional Office Environments,” *Environmental Health Perspectives* 124 (6) (2015): a805-812. doi:10.1289/ehp.1510037. dx.doi.org/10.1289/ehp.1510037.
- 6 Toxic Substances Control Act of 1976. (2019, February 21). Retrieved from en.wikipedia.org/wiki/Toxic_Substances_Control_Act_of_1976.
- 7 GreenScreen® Method. (n.d.). Retrieved from greenscreenchemicals.org/learn/full-greenscreen-method.
- 8 GreenScreen® Method. (n.d.). Retrieved from greenscreenchemicals.org/learn/full-greenscreen-method.

Toolbox

Healthy Materials Attributes
Explained Further

Key Healthy Materials Terms

Useful Links

References

References

- 9 *Material Health Assessment Methodology Cradle to Cradle Certified Product Standard Version 3.0* (Rep.). (2012). Retrieved 2019, from Cradle to Cradle website: https://www.c2ccertified.org/resources/detail/cradle_to_cradle_certified_product_standard
- 10 The Zero Code. (n.d.). Retrieved from architecture2030.org/.
- 11 “The changing nature of life cycle assessment.” (2015, May 23). Retrieved from sciencedirect.com/science/article/pii/S0961953415001609.
- 12 ISO 14000 family – Environmental management. (2019, May 17). Retrieved from iso.org/iso-14001-environmental-management.html.
- 13 *Federal Biobased Products Preferred Procurement Program [Pamphlet]*. (2006). USDA.
- 14 Retrieved from <https://www.usgbc.org/node/2616388?view=guide&return=/credits#>
- 15 J. Serle. (n.d.). “How long do biodegradable bags take to decompose?” Retrieved 2019, from sciencefocus.com/science/how-long-do-biodegradable-bags-take-to-decompose/.
- 16 B. Katz. (2019, May 1). “Do ‘Biodegradable’ Plastic Bags Actually Degrade?” Retrieved from smithsonianmag.com/smart-news/do-biodegradable-plastic-bags-actually-biodegrade-180972074/.



Blaze your trail.

For more information,
email us at healthymaterials@salesforce.com
Or, visit us at salesforce.com