



## DECLARE MANUFACTURER'S GUIDE

As awareness of the health impacts of building product ingredients has increased within the design and construction industry, materials transparency and toxic chemical avoidance have emerged as crucial factors in product selection. The Declare program allows manufacturers of ecologically sound products to demonstrate market leadership in the growing movement towards product transparency and toxic chemical avoidance.

Declare also offers manufacturers an expanded point-of-entry into projects pursuing the Living Building Challenge (LBC), the most advanced measure of sustainability in the built environment possible today. Over 200 teams pursuing the Living Building Challenge are using the Declare database to select products that meet the requirements of the program's Materials requirements. The Declaration on the label aligns with the Materials and Health & Happiness Petals, simplifying the process of both materials specification and project certification.

### THE LIVING BUILDING CHALLENGE

The LBC acts to rapidly diminish the gap between current limits and end-game positive solutions. It aims to transform how we think about every single act of design and construction as an opportunity to positively impact the greater community of life and the cultural fabric of our human communities.

The Challenge is a philosophy first, an advocacy tool second and a certification program third. Within the larger Living Future Challenge framework that covers the creation of all human artifacts and edifices, the Living Building Challenge focuses on humanity's largest creations—its buildings. It is in essence a unified tool for transformative thought, allowing us to envision a future that is Socially Just, Culturally Rich and Ecologically Restorative.

The Living Building Challenge is comprised of seven performance categories, or 'Petals': Place, Water, Energy, Health & Happiness, Materials, Equity and Beauty. Petals are subdivided into a total of twenty Imperatives, each of which focuses on a specific sphere of influence. This compilation of Imperatives can be applied to almost every conceivable building project, of any scale and any location—be it a new building or an existing structure.

To learn more about the Living Building Challenge, visit [living-future.org/lbc](http://living-future.org/lbc).

### DECLARE AND THE LIVING BUILDING CHALLENGE

Declare offers a transparency platform to help project teams select materials that comply with the Health & Happiness and Materials Petals, ensuring not only that the projects are free of worst-in-class toxins, but that they support a materials industry that safeguards the health of the environmental and workers throughout the supply chain.

- Imperative 08, Healthy Interior Environment, requires compliance with the California Department of Public Health (CDPH) Standard Method v1.1-2010 (or international equivalent) for all interior building products that have the potential to emit Volatile Organic Compounds. The Declare label lists a product's VOC content, as well as confirmation that a product complies with CDPH testing.

- Imperative 10, Red List, requires that manufacturers disclose the ingredients in their products to ensure that they are free of Red List chemicals and materials. Declare supports the Living Building Challenge by providing a transparent materials database that project teams can select from to meet the Red List requirements.
- Imperative 12, Responsible Industry, requires that every project includes at least one Declare-labeled product per 500 square meters of gross building area.
- Imperative 14, Living Economy Sourcing, requires that products are sourced locally to support regional economies. The manufacturer and raw material sourcing information on the Declare label assists project teams in determining which products will help them comply with this Imperative.

## RED LIST

The Red List represents the “worst in class” materials, chemicals, and elements known to pose serious risks to human health and the greater ecosystem. We believe these materials should be phased out of production due to health and toxicity concerns. The Living Building Challenge worked with the Healthy Building Network and the Pharos Project to develop the Red List; new items will be added as new research and becomes available.

The original Red List, launched in 2006, has been significantly updated with the release of LBC 3.0 in May 2014. The update ensures that the program aligns with other authoritative hazard lists including the EPA Action Plan Published Lists; the REACH Substances of Very High Concern (SVHC) List; and the Cradle to Cradle Banned List and was done in collaboration with the Pharos Project.

While any material can be listed in the Declare database, a Living Building Project cannot contain any of the following materials or compounds:

- Alkylphenols
- Asbestos
- Bisphenol A (BPA)
- Cadmium
- Chlorinated Polyethylene and Chlorosulfonated Polyethylene
- Chlorobenzenes
- Chlorofluorocarbons (CFCs) and Hydrochlorofluorocarbons (HCFCs)
- Chloroprene (Neoprene)
- Chromium VI
- Chlorinated Polyvinyl Chloride (CPVC)
- Formaldehyde (added)
- Halogenated Flame Retardants (HFRs)
- Lead (added)
- Mercury
- Polychlorinated Biphenyls (PCBs)
- Perfluorinated Compounds (PFCs)
- Phthalates
- Polyvinyl Chloride (PVC)
- Polyvinylidene Chloride (PVDC)
- Short Chain Chlorinated Paraffins
- Wood treatments containing Creosote, Arsenic or Pentachlorophenol
- Volatile Organic Compounds (VOCs) in wet applied products \*

\* Wet applied products (coating, adhesives and sealants) must have VOC levels below the South Coast Air Quality Management District (SCAQMD) RULE 1168 for Adhesives and Sealants or the Carbon 2007 Suggested Control Measure (SCM) for Architectural Coatings as applicable. Containers of sealants and adhesives with capacity of 16 ounces or less must comply with applicable limits in the California Air Resources Board (CARB) Regulation for Reducing Emissions from Consumer products.



There are temporary exceptions for specific Red List items due to current limitations in the materials economy. More information about the health and environmental effects of specific Red List chemicals, as well as a full list of temporary exceptions, is available in the appendix to this document.

The full list of CAS Registry numbers that correspond with each Red List item is available on the Declare website.

## HOW TO DECLARE

### 3 SIMPLE STEPS

1. Submit the fully completed Product Declaration Form to [info@declareproducts.com](mailto:info@declareproducts.com)
2. Submit the Terms and Conditions agreement signed by a CEO or other executive responsible for the product to [info@declareproducts.com](mailto:info@declareproducts.com)
3. Pay the label fee.

### FEES

The Declare license is valid for a 12-month period. After this period manufacturers pay a renewal fee and either confirm that the information contained within the Product Declaration Form has not changed or submit a new form.

#### FEE Schedule

	1 product	2 to 10	10 or more
Cost per product	\$850	\$700	\$600

Renewal Fee is 50% of the above fees if there are no changes to the product, or 100% if changes have been made. Changes to product formulation invalidate the Declare label and require the manufacturer to resubmit documentation and pay another product license fee. To encourage companies to develop non-toxic alternatives, the fee is waived if the change is to remove a Red List ingredient.

Fees are subject to change.

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## PROGRAM REFERENCE

Manufacturers that have received a Declare label have the right to refer to their products as the following:

If your product has been issued a Declare label: "Product X" is participating in Declare

If your product has been issued a Declare label and determined to be LBC Compliant due to a temporary Red List exception: "Product X" is Living Building Challenge Compliant.

If your product has been issued a Declare label and determined to be Red List Free: "Product X" is Red List Free.

## LABEL USAGE

Manufacturers that are provided a Declare label have the right to use the label on general marketing materials and registered product materials. The label cannot be used on or associated with any other product than the product designated on the label. The label cannot be modified, altered or otherwise tampered with in any way.

## PROGRAM EXPLANATION

Declare is a voluntary self-disclosure program aiming to transform the building materials industry towards healthier products through ingredient transparency.

**'Participating in Declare' or 'Declared'** means this product has voluntarily self-disclosed all ingredients in order to promote transparency.

**'Living Building Challenge Compliant'** means this product meets the requirements of the Red List Imperative of the LBC due to a temporary exception.

**'Red List Free'** means this product does not contain any ingredients on the LBC's Red List.

Manufacturers cannot make any environmental claims about their products in relationship to Declare and the Living Building Challenge other than those listed above. Manufacturers specifically cannot claim that their project has been certified by Declare or the Living Building Challenge or endorsed by Declare or the Living Building Challenge.

## APPENDIX

### LIVING BUILDING CHALLENGE: RED LIST SUMMARY STATEMENTS

#### ALKYLPHENOLS

Alkylphenols are a large family of organic compounds used in a wide variety of products, including cleaning products, beauty products, contraceptives, coatings, fragrances, thermoplastics, carbonless copy paper, and agrochemicals. Most concerns are focused on alkylphenol ethoxylates (APEs), which bioaccumulate and have been shown to cause endocrine disruption in fish. They are in cleaning products that end up in waterways from wastewater treatment effluent. Some alkylphenols, especially nonylphenol, are being phased out in Europe and more research into their impacts is needed. A few governments with environmentally preferable purchasing programs restrict or ban APEs.

REF: <http://www2.mst.dk/Udgiv/publications/2013/04/978-87-92903-99-0.pdf>

#### ASBESTOS

Asbestos is a mineral fiber that is used in a variety of construction materials for its strength and heat resisting capabilities. It is often found in wall insulation, vinyl floor coverings, paint compounds, roofing, heat resistant fabrics, and automobile brakes. Exposure occurs as asbestos fibers are released into the air during use, demolition, work, building, or repairing asbestos-containing materials. Asbestos is a known human carcinogen, increasing risks of lung cancer, mesothelioma, and asbestosis.

REF: <http://www2.epa.gov/asbestos/learn-about-asbestos#asbestos>

#### BISPHENOL A (BPA)

Bisphenol A (BPA) is used to manufacture polycarbonate (clear, hard) plastics and epoxy resins. The plastics are used in many consumer products, such as drink bottles, DVDs, eyeglass lenses, electronics, car parts, and other products that must not break easily. Epoxy resins are used for lining food cans and water pipes, and for many sales receipts. Most recent testing has shown the largest health-related concern to be potential impacts on the brains, behavior, and prostate glands of fetuses, infants, and small children so most health organizations advise against the use of BPA for baby bottles and related products. BPA has also been found in breast milk.

REF: <http://www.fda.gov/newsevents/publichealthfocus/ucm064437.htm>

#### CADMIUM

The US Department of Health and Human Services and the International Agency for Research on Cancer have determined that cadmium is a known human carcinogen, associated with lung cancer. Additionally, acute and long-term exposures can lead to lung and kidney damage, bone loss, hypertension. In sufficient quantities, cadmium is lethal. Cadmium's extreme toxicity means that overexposure can occur even when only trace amounts are present, such as during smelting and electroplating activities.

REF: <http://www.inchem.org/documents/iarc/vol58/mono58-2.html>

## CHLORINATED POLYETHYLENE AND CHLOROSULFONATED POLYETHYLENE

Chlorinated Polyethylene (CPE) and Chlorosulfonated Polyethylene (CSPE) are Persistent Organic Pollutant Source Materials: due to their carbon-chlorine bases, these products contribute to the creation of dioxins and furans at different points in their life cycle (often manufacturing and/or disposal). According to the World Health Organization, dioxins are some of the most potent toxins known to humans, with no known safe limit for exposure and a strong propensity for bioaccumulation. In addition, dioxins are highly persistent in the environment. Similarly, furans accumulate in animal fat, concentrating as they travel up the food chain. Non-chlorinated polyethylene products are readily available in many product categories.

REF (dioxins): <http://www.who.int/mediacentre/factsheets/fs225/en/index.html>

## CHLOROBENZENES

Chlorobenzene is used primarily as a solvent, a degreaser for auto parts, and a chemical intermediary for making other chemicals, so exposure is primarily a risk to workers making or using it. Most exposures are through inhalation of fumes. Short-term exposure can cause headaches, sleepiness, nausea, numbness, muscle spasms, and in extreme cases, unconsciousness. Chronic (long-term) exposure can cause increased signs of neurotoxicity (numbness, etc.) and irritation of the upper respiratory tract. In animals, chronic exposure has also caused kidney and liver damage. Chlorobenzene is broken down by sun and bacteria in the environment and does not accumulate in the food chain.

REF: <http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=488&tid=87>

REF: <http://www.epa.gov/ttn/atw/hlthef/chlorobe.html>

## CHLOROFLUOROCARBONS (CFCS) AND HYDROCHLOROFLUOROCARBONS

According to USEPA, the depletion of the Earth's protective ozone layer by chlorofluorocarbons (or CFCs) is responsible for an increased incidence of skin cancer, cataracts, impairment of human immune systems, and damage to wildlife. CFCs have been banned from production in the United States since 1995.

REF (CFC effects on ozone): [http://www.epa.gov/ozone/science/sc\\_fact.html](http://www.epa.gov/ozone/science/sc_fact.html)

REF (ozone depletion and human health):

<http://www.who.int/globalchange/climate/summary/en/index7.html>

Hydrochlorofluorocarbons (HCFCs) are potent ozone-depleting compounds. While less destructive than the now-banned chlorofluorocarbons, HCFCs are targeted for gradual phase-out by the US EPA with a total ban going into effect in the year 2030. According to USEPA, the depletion of the Earth's protective ozone layer is responsible for an increased incidence of skin cancer, cataracts, impairment of human immune systems, and damage to wildlife.

REF: <http://www.environment-agency.gov.uk/business/topics/pollution/684.aspx>

## CHLOROPRENE (NEOPRENE)

Chloroprene is a Persistent Organic Pollutant Source Material. Due to its carbon-chlorine base, it contributes to the creation of dioxins at different points in its life cycle (often manufacturing and/or disposal). According to the World Health Organization, dioxins are some of the most potent toxins known to humans, with no known safe limit for exposure and a strong propensity for bioaccumulation. In addition, dioxins are highly persistent in the environment.

REF (dioxins): REF: (dioxins):

<http://www.who.int/mediacentre/factsheets/fs225/en/index.html>

## **CHROMIUM VI**

Although chromium is a naturally occurring element and chromium III (trivalent chrome) is an essential nutrient, chromium VI (hexavalent chrome) can cause serious health issues, especially for factory workers who can inhale or ingest it during manufacturing. There has been concern about it in drinking water and, lacking EPA maximum allowable levels, the State of California set a public health goal for it. Chromium VI is used primarily for chrome plating of metals for decorative or protective finishes, making stainless steel, leather tanning, anti-corrosive agents for paints, and in textile dyes and pigments. Long-term or high-level exposure through inhalation can cause nasal irritation and ulcers, breathing problems, and nasal and lung cancer in unprotected workers. Ingestion can cause anemia and/or stomach tumors. Skin contact can cause skin ulcers and allergic reactions.

REF: <http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=61&tid=17>

## **FORMALDEHYDE (ADDED)**

Formaldehyde is classified by the International Agency for Research on Cancer and the State of California as a known human carcinogen. Common health effects at low levels of exposure to this volatile organic compound include irritation and sensitization as well as acting as an asthma trigger. Long-term exposure is associated with nasal cancers and leukemia.

REF: <http://www.cancer.gov/cancertopics/factsheet/risk/formaldehyde>

## **HALOGENATED FLAME RETARDANTS (HFRS)**

Halogenated Fire Retardants (HFRs) are a broad class of flame retardants containing chlorine or bromine that have aroused concern due to their exponential accumulation in human beings in recent years. HFRs are persistent bioaccumulative toxins, meaning that they accumulate in organisms and the broader environment, often reaching alarmingly high concentrations as they travel up the food chain. In addition, certain halogenated products have shown evidence of harm to humans and other animal species. According to the Washington State Department of Ecology, for example, the toxicity endpoints of concern for Penta-PBDE include adverse effects on neurological development, reproduction, thyroid hormone disruption and possible liver toxicity.

REF: <http://www.ecy.wa.gov/biblio/0507048.html>

## **LEAD (ADDED)**

According to the Agency for Toxic Substances and Disease Registry, the environmental levels of lead have increased more than 1000-fold over the last three centuries, due almost exclusively to human activities. Lead exposure is damaging to virtually every organ and system in the human body, but is particularly damaging to the brain and central nervous system—profoundly so for young children and developing fetuses. Lead exposure is correlated with decreased IQ and delayed learning in children; scientific research has identified no safe level of lead exposure, and effects are irreversible.

REF: <http://www.atsdr.cdc.gov/tfacts13.html>

## **MERCURY**

According to the World Health Organization, mercury produces a suite of ill effects, including harm to the nervous, digestive and immune systems, and even death. WHO lists children and developing fetuses as especially vulnerable to damage from mercury. Mercury bioaccumulates in the environment, eventually reaching concentrations thousands of times more intense than ambient levels.

REF: <http://www.epa.gov/hg/effects.htm>

## **POLYCHLORINATED BIPHENYLS (PCBS)**

PCB manufacturing in the US stopped in 1977 but the compound is long-lasting in the environment (mostly in soils) around old manufacturing and disposal sites, in old electrical transformers and electrical devices, and in fish and their predators. PCBs make good coolants, lubricants, and insulators for electrical equipment of all kinds. They are known to cause cancer in animals and are probable human carcinogens, but exposure tends to be limited to people who worked in the electrical industry many years ago, lived close to manufacturing sites, and/or ate contaminated fish. Health effects also include acne-like skin conditions and neurobehavioral and immunological changes in children.

REF: <http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=140&tid=26>

## **PERFLUORINATED COMPOUNDS (PFCs)**

PFCs are chemical compounds in many variations with many uses, such as surface treatments to repel water and stains, acids used in chemistry and research, in the semiconductor industry, and in some medical imaging devices. Many of them are greenhouse gases and bioaccumulate in the environment, but are not stored in human body fat. Most exposure is from contaminated food or products that contain PFCs. Animal studies show endocrine disruption, immune function issues, liver and pancreas damage, and developmental problems.

REF: [http://www.niehs.nih.gov/health/materials/perflourinated\\_chemicals\\_508.pdf](http://www.niehs.nih.gov/health/materials/perflourinated_chemicals_508.pdf)

## **PHTHALATES**

Mounting evidence from animal studies show the hormone-disrupting potential of phthalates, prompting the National Research Council to urge the US Environmental Protection Agency to pursue a “cumulative risk assessment” of this class of chemicals to determine their interactivity. Testing by the Centers for Disease Control and

Prevention shows that phthalates are nearly ubiquitous in the US population, with highest concentrations in women and in children aged 6 to 11 years. The endocrine disrupting nature of phthalates has implications for childhood and reproductive development, as well as cancer incidence. The European Union and over a dozen countries have banned the use of phthalates in children's products, as has the State of California.

REF (ATSDR info specifically on DEHP, one of the more common phthalates):

<http://www.atsdr.cdc.gov/tfacts9.html>

REF (phthalates—Environmental Working Group perspective):

<http://www.ewg.org/node/25808>

REF (cumulative risk assessment):

<http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=12528>

### **POLYVINYL CHLORIDE (PVC), CHLORINATED POLYVINYL CHLORIDE (CPVC), POLYVINYLIDENE CHLORIDE (PVDC)**

PVC's vinyl chloride monomer building block is a known human carcinogen, according to the US Department of Health and Human Services. In addition, PVC is a Persistent Organic Pollutant Source Material. Due to its chlorine content, PVC often contains other Red List ingredients, such as cadmium, lead, and phthalates. The manufacture and disposal of PVC can result in the production of dioxins and disposal phases. Dioxins, specifically TCDD, accumulate in human and animal tissue and are associated with immune system impairment, damage to developing nervous systems, and damage to the endocrine and reproductive systems. TCDD is listed as a "known human carcinogen" by the International Agency for Research on Cancer.

REF: (dioxins): <http://www.who.int/mediacentre/factsheets/fs225/en/index.html>

REF: (vinyl chloride): <http://www.atsdr.cdc.gov/tfacts20.html>

### **SHORT CHAIN CHLORINATED PARAFFINS (SCCPS)**

SCCPS are most commonly used as lubricants and coolants in metal cutting and forming operations and are also used as secondary plasticizers and flame retardants in plastics, such as PVC. Human exposure can be occupational, via inhalation of metalworking mists, or through contaminated food and dermal contact. Environmental exposure is usually from manufacturing activities, such as production, disposal, incineration, spills into waterways, and sewage effluent. SCCPs are persistent and very bioaccumulative in sediment. They have been found in marine mammals, other biota, and human breast milk in both industrial and remote areas. Toxic effects on mammals can include liver, hormone, and kidney damage that over a long term could lead to cancer in those organs.

REF: <http://echa.europa.eu/documents/10162/414fa327-56a1-4b0c-bb0f-a6c40e74ece2>

### **WOOD TREATMENTS CONTAINING CREOSOTE, ARSENIC OR PENTACHLOROPHENOL**

Many conventional wood treatments introduce a litany of human health and environmental problems. The traits that make wood treatments effective at retarding rot and insect damage are also effective at damaging many other forms of life.

According to the US Department of Health and Human Services, creosote exposure is associated with skin and scrotum cancer in humans, and liver, kidney, and gestational problems in laboratory animals.

According to the US Department of Health and Human Services, inorganic arsenic is not only an acute toxin; it is a known human carcinogen.

According to the US Department of Health and Human Services, pentachlorophenol is linked to liver and immune system damage in humans, and reproductive and thyroid damage in laboratory animals.

REF: (creosote): <http://www.atsdr.cdc.gov/tfacts85.html>

REF: (arsenic): <http://www.atsdr.cdc.gov/tfacts2.html>

REF (pentachlorophenol): <http://www.atsdr.cdc.gov/tfacts51.html>

### **VOLATILE ORGANIC COMPOUNDS (VOCS) IN WET APPLIED PRODUCTS**

VOCs are members of a large group of organic chemicals that can evaporate into the indoor air under normal temperature conditions and into the outdoor air, causing environmental impacts such as photochemical smog. Their health effects vary widely, from respiratory irritants to human carcinogens (such as formaldehyde), which is a concern since they are ingredients in many products in the built environment. On-site wet applied products (paints, adhesives, and sealants) are of particular concern because they can directly impact the health of installers who may not be using breathing or dermal protection, unlike in-factory wet applied materials that are (usually) applied with worker and environmental protections in place.

REF: <http://www.epa.gov/iaq/voc2.html>

## RED LIST EXCEPTIONS

Although the aim of Declare and the Living Building Challenge is to move the building industry towards the complete phase-out of all ingredients on the Red List, the Living Building Challenge recognizes that there are current limitations in the building materials marketplace. The following temporary exceptions have been granted by the Living Building Challenge to reflect current failures in the industry to develop alternatives. Exceptions are temporary and will be removed if new products and formulations become available. If a material contains a Red List item but has been granted a temporary exception, the Red List ingredient will still be listed on the ingredient label in red lettering. A note will be added identifying the specific exception and stating that the product is LBC Red List Compliant. Exceptions listed on the label are valid for one year.

### **I10-E2 5/2013**

#### **SMALL ELECTRICAL COMPONENTS**

Complex electrical or data products that are made up entirely of small electrical components, such as fire alarms, meters, sensors, thermostats and load break switches, do not need to be tracked for Red List. Instead, these products must meet the European Union's Restriction on the Use of Certain Hazardous Substances (RoHS) Directive, which establishes the following maximum concentration values for toxic chemicals tolerated by weight in homogeneous materials:

- Lead (0.1 %)
- Mercury (0.1%)
- Cadmium (0.01%)
- Hexavalent Chromium (0.1%)
- Polybrominated biphenyls (PBB) (0.1%)
- Polybrominated diphenyl ethers (PBDE) (0.1%)

Large electrical equipment, such as a PV panel, is not considered a small electrical component, but may be partially comprised of small electrical components. Project teams must still gather supporting data for the equipment housing and other major components, such as glass.

### **I10-E3 4/2010**

#### **SMALL MECHANICAL COMPONENTS**

Small components within complex mechanical equipment do not need to be tracked for Imperative 10, Red List. A small mechanical component must be part of a complex mechanical product with at least 10 parts, and comprise no more than 10% of the total assembly by weight and volume. Examples include small gaskets or valves within mechanical products such as HVAC equipment, pumps or composting toilet systems. Large mechanical equipment, such as HRVs, heat pumps, water treatment systems, etc., are not considered small components but may have small components in them. Project teams must still gather supporting data for the mechanical equipment housing and other major components.

### **I10-E4 9/2012**

#### **PROPRIETARY INGREDIENTS**

Due to market realities, manufacturers are typically allowed to withhold either:

One proprietary or second-tier supplied ingredient in any percentage; or Multiple ingredients if they add up to less than 1% of the product by both weight and volume. If the percentage of ingredients that a manufacturer is withholding as proprietary exceeds those allowances and the product cannot be avoided in the project, the manufacturer must confirm in writing that the product is Red List-compliant, and state the total percentage being withheld. An ingredients list of non-proprietary ingredients is still required for I10-2 Supporting Data. HPDs with Full Disclosure of Known Hazards can be used as documentation for this Exception only if none of the proprietary ingredients are assessed as GreenScreen V1.2 Benchmark 1 Hazards. HPDs with Full Disclosure of Known Hazards are not acceptable as Basic Documentation.

**I10-E6 (9/2013)**  
**GLASS-MAT GYPSUM SHEATHING**

A small amount of formaldehyde is allowed in glass-mat gypsum sheathing products. Glass- mat decking is not included in this Exception since it is available without formaldehyde.

**I10-E7 2/2009**  
**SOLAR BATTERY SYSTEMS**

Some lead is allowed in solar battery systems.

**I10-E8 1/2009**  
**DOOR HARDWARE**

Some lead is allowed in door hardware. Steel hardware and salvaged materials should be given preference when possible. Note that lead is added to brass to assist with the ease of casting/ machining. Lead-free and low-lead grade brass alloys are available, but are not yet typically used in architectural hardware applications.

**I10-E9 (3/2013)**  
**PHENOL FORMALDEHYDE IN MINERAL WOOL INSULATION**

Phenol formaldehyde is allowed in rigid mineral wool insulation for exterior applications (such as rain screen assemblies or foundation insulation). While rigid mineral wool insulation does contain some formaldehyde, most of the formaldehyde is eliminated in the production process through a chemical reaction and high heat. Rigid mineral wool insulation installed on the exterior of the building possess less risk to humans and ecosystem than rigid foam insulation products, which almost always contain HFRs and use blowing agents with high global warming potential.

**I10-E10 8/2008**  
**STRUCTURAL COMPOSITE WOOD MEMBERS**

Added phenol formaldehyde is allowed in composite structural members, such as glulam beams.

**I10-E11 1/2009**  
**COMPOSITE WOOD SHEET GOODS**

Structural composite wood sheet goods and substrates for systems furniture may have added phenol formaldehyde (no urea formaldehyde). Door-rail joints may contain urea formaldehyde

Composite wood sheet goods used for non-structural purposes, such as for casework, trim, and door cores, are not included in this Exception and may not have any added formaldehyde.

#### **I10-E12 9/2010 HFRS IN FOAM INSULATION**

Foam insulation with HFRs are allowed in the following applications where space is limited and alternative products either cannot provide the required R-value performance and/or are required by code.

- Structural Insulated Panels (SIPS)
- Insulation in hollow metal doors
- Spray insulation for renovation projects
- Under slab insulation
- Roof and exterior insulation

Foam insulation in these cases must still meet all other Red List requirements.

Foam insulation is not allowed in cavity-fill applications where many alternative Red List-compliant options are on the market without HFRs.

#### **I10-E13 6/2012 MERCURY IN UV DISINFECTION LAMPS**

Mercury is allowed in UV filtration lamps for projects that pursue the Water Petal if no other acceptable non-chemical filtration methods can be identified.

#### **I10-E15 10/2013 PVC WIRE IN RESIDENTIAL PROJECTS**

PVC electrical wire, such as Romex, is allowed in residential applications since this is the only wire currently allowed by the National Electrical Code (NEC) to be installed without conduit. Teams are encouraged but not required to use PVC-free wires in conduit, such as XHHW, or HFR-free alternatives, like Low Smoke Zero Halogen (LSZH) wire.

#### **I10-E16 10/2013 HFRS IN NON-PVC WIRING (NON-RESIDENTIAL PROJECTS)**

Halogenated Flame Retardants (HFRs) are allowed in non-PVC electrical wiring, such as XHHW cables, due to National Electrical Code (NEC) requirements. Teams are encouraged but not required to use HFR-free alternatives, like Low Smoke Zero Halogen (LSZH) wire. Commercial buildings are not allowed to use PVC wire unless the team can document that it is a specific requirement in the project's jurisdiction. Non-PVC LSZH cables are required for all data cable applications since these products are currently readily available on the market.

#### **I10-E17 8/2011**

## **PLUMBING**

Low levels of lead are allowed in plumbing pipes and fixtures provided they meet the Federal Definition of “Lead-Free” as defined in S. 3874 (111th): Reduction of Lead in Drinking Water Act, effective January 1, 2014.

### **I10-E18 8/2011**

#### **COMMERCIAL WATER SYSTEMS**

Commercial water systems that don't connect to potable water (i.e., sprinklers, roof drains, backflow preventers), are allowed to meet a higher lead content than potable water systems, if alternatives are not found or not allowed by code.

## OTHER NOTES

### NATURAL OCCURRENCE

The Institute acknowledges that there will be instances when a Red List item is present in products because of its natural occurrence in the products' raw materials. Products such as clays, raw minerals and wood may have some naturally occurring trace Red List ingredients with little risk to human health. Therefore, as a general rule, products should have “no intentionally added” Red List ingredients. Intentionally added ingredients are defined as each discrete chemical, polymer, metal, bio-based material or other substance added to the product by the manufacturer or suppliers that exists in the product as delivered for final use.

### Unintentional Trace Amounts

The following materials have trace amounts of Red List materials that occur during certain manufacturing or reclamation processes but have not been intentionally added. Those trace amounts are therefore allowed, but a full list of all intentionally added ingredients is still required.

- Recycled steel
- Galvanized metal
- Portland cement
- Fly ash
- Gypsum wall board
- Magnesium oxide board
- Paint

### HALOGENATED FLAME RETARDANTS (HFRS)

HFRs include PBDE, TBBPA, HBCD, Deca-BDE, TCPP, TCEP, Dechlorane Plus and other retardants with bromine or chlorine. Boron is not an HFR and is allowed. Many products, including virtually all foam insulations, contain HFRs.

## RESOURCES

### CAS REGISTRY NUMBERS LIST

A list of specific Chemical Abstracts Service Registry Numbers for the general chemical groups on the Red List is posted on the Declare website.

### PROJECT TEAM RESOURCES PAGE

Resources for all registered project teams including publicly available materials lists.

[living-future.org/lbc/project-team-resources](http://living-future.org/lbc/project-team-resources)