



TO: To Whom It May Concern
FROM: Codes & Standards
DATE: 04/19/2021
RE: Living Building Challenge (LBC) 3.0

Technical Document

Encore Wire is often asked to provide letters that state whether we conform or meet various environmental requirements associated with chemicals that have very hazardous substances. Encore Wire provides a very safe and environmentally friendly product with chemicals that meet many of the US and International requirements. In the next few editions, we will look at some of the more recent environmental standards related to buildings and cables, such as The Living Building Challenge.

This Technical Document will introduce a green building and infrastructure solution administered by The International Living Future Institute. The mission of the International Living Future Institute is to lead and support the transformation toward community that are socially just, culturally rich, and ecologically restorative. The program created by The International Living Future Institute is called the Living Building Challenge (LBC). The Living Building Challenge intends to eliminate the use of worst in class materials/chemicals with the greatest impact to human and ecosystem health, to ensure the most advanced measure of sustainability in the building environment.

The requirement for a product or project to meet the Living Building Challenge cannot contain any of the following Red List materials or chemicals:

- Alkylphenols
- Asbestos
- Bisphenol A (BPA)
- Cadmium
- Chlorinated Polyethylene and Chlorosulfonated Polyethylene
- Chlorobenzenes
- Chlorofluorocarbons (CFCs) and Hydrochlorofluorocarbons
- Chloroprene (Neoprene)
- Chromium VI
- Chlorinated Polyvinyl Chloride (CPVC)
- Formaldehyde
- Halogenated Flame Retardants (HFRs)
- Lead
- Mercury
- Perfluorinated Compounds (PFCs)
- Polychlorinated Biphenyls (PCB)
- 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

Although many of these compounds are not used in the wire and cable industry, it is important to state it, as well as provide a list of chemicals or compounds that are used in each project. The Living Building Challenge requires that each product must list the Chemical Abstracts Service (CAS) Registry Numbers. The CAS numbers are unique



numerical identifiers for nearly every know chemical, compound, or organic substance and an effective and transparent way to evaluate building product ingredients. Documentation must address 100% of ingredients.

One of the most recognized heavily used chemicals on the Red List is Polyvinyl Chloride (PVC), which is used in many of our wire and cable products. The Living Building Challenge has allowed exception for such products:

General Exception I10-E15 10/2013 for PVC Wire in Residential Projects states that PVC electrical wire, such as NM-B, is allowed in residential applications since this is the only wire currently allowed by the National Electrical Code (NEC) to be installed without conduit. Projects meeting LBC requirements are encouraged but not required to use PVC-free wires in conduits, such as XHHW, or HFR-free alternatives, like Low Smoke Zero Halogen (LSZH) wire.

Below is an example of two of Encore’s building wire products, the chemical breakdown of each ingredient, and the CAS number.

Type 10/2 NM-B

Component	CAS #	%
Copper	7440-50-8	74
PVC Resin	9002-86-2	12
Clay	92704-41-1	<1
Limestone	471-34-1	<1
Antimony flame retardant	1309-64-4	<1
Ca-Zn Stabilizer	1592-23-0, 557-05-1	<1
TINTM	53894-23-8	1
DTDP	68515-47-9	<1
DIDP-E	68515-49-1	4
Lubricant	Proprietary, not red list	<1
Color Concentrate	Depends on color, RoHS-compliant and heavy metal free	<1
SuperSlick Lubricant	Proprietary, not red list	<1
Nylon 6	25038-54-4	1
Paper	9004-34-6	2



Type THHN/THWN-2 CU Conductors

Component	Material % (by weight)	CAS #
Copper	84-86	7440-50-8
PVC Resin	4-5	9002-86-2
Clay	<1	92704-41-1
Limestone	<1	471-34-1
Antimony flame retardant	<1	1309-64-4
Ca-Zn Stabilizer	<1	1592-23-0, 557-05-1
TINTM	<1	53894-23-8
DTDP	<1	68515-47-9
Color Concentrate	<1	Depends on color, RoHS-compliant and heavy metal free
SuperSlick Elite		Proprietary, not red list
Nylon 6	2	25038-54-4

Type XHHW Cu Branch Wire #10-12

Component	Material % (by weight)	CAS #
Copper	80-84	7440-50-8
Vinyl Silane Polyethylene Copolymer	11-14	35312-82-4
Brominated flame retardant	1-2	84852-53-9
Antimony flame retardant	<1	N010
Color Concentrate	<1	Depends on color, RoHS-compliant and heavy metal free
Polyethylene	<1	9002-88-4
SuperSlick Lubricant	0.008 (80 ppm)	Proprietary, not red list

Encore Wire is an environmentally friendly company and we put safe chemicals in our products. We meet the requirements of the Living Building Challenge and our products do not have any highly hazardous chemicals. As our products are installed in residential, commercial, and industrial building across the country, we are confident our products will meet your requirements for a safe environment.