



Understanding the Impact of Data Communication Cables on LEED 2009 NC

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D A T A C O M M U N I C A T I O N S C O M P E T E N C E C E N T E R



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Executive Summary

There is often confusion about the relationship between data communication cables and the earning of LEED points for new construction and major renovations. The impact of data communication cables on the awarding of LEED points is minor in comparison to other building components and is far more dependent on the **application** of the cables than the **composition** of the cables. This White Paper will present an overview of LEED 2009 for New Construction and Major Renovations (LEED 2009 NC) and describe in detail the impact that data communication cables have on the awarding of LEED points for these types of projects.

Introduction to the LEED 2009 NC Rating System

Leadership in Energy and Environmental Design (LEED) is a rating system developed by the U.S. Green Building Council (USGBC) to assess the impact of construction projects on the environment. The rating system evaluates the environmental impact of construction projects in terms of energy consumption, water consumption, CO₂ emissions, indoor environmental quality, and stewardship of natural resources.

The LEED rating system provides building owners and operators with a defined framework for identifying and implementing measurable green building design, construction, operations and maintenance solutions. Since its inception in 1998, more than 35,000 projects have been scored by this rating system in the United States and 30 countries.

The LEED rating system has had several incarnations. LEED NCv1.0, implemented in 1998, served as a pilot program. As end users assessed their construction projects through LEED NCv1.0, the information collected helped the USGBC to refine their requirements and this knowledge was incorporated into LEED NCv2.0. LEED NCv2.2 was released in 2005, and v3 in 2009. LEED 2012 exists in proposed draft form and is being refined prior to its introduction.

Different types of LEED certifications are conferred to buildings based on points awarded for various design, construction, and materials choices. In the LEED 2009 NC Rating System for New Construction and Major Renovations there are 100 possible base points that can be earned. There are up to 6 additional points that can be earned for Innovation in Design and up to 4 additional points for Regional Priority. Buildings can qualify for four levels of certification:



- **Certified** - 40 - 49 points
- **Silver** - 50 - 59 points
- **Gold** - 60 - 79 points
- **Platinum** - 80 points and above

Points are distributed across major credit categories such as Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, and Indoor Environmental Quality.

LEED certification for new construction or major renovations is obtained after those requesting certification submit an application documenting the steps taken to obtain LEED points to the Green Building Certification Institute (GBCI). The GBCI, a third party organization, reviews the application, verifies compliance to the LEED rating system, and grants the certification.

The Impact of LAN Cables on LEED 2009 NC Base Points

The LEED 2009 NC rating system is broken down into five major categories that can award a total of 100 base points to new construction and major renovation projects. Listed below is the USGBC description for each category and the impact data communication cable selection has on achieving LEED points for each category.

Category	Impact
<p>Sustainable Sites 26 points</p> <p>Choosing a building's site and managing that site during construction are important considerations for a project's sustainability. The Sustainable Sites category discourages development on previously undeveloped land; minimizes a building's impact on ecosystems and waterways; encourages regionally appropriate landscaping; rewards smart transportation choices; controls storm water runoff; and reduces erosion, light pollution, heat island effect and construction-related pollution.</p>	<p>Neither the use of data communication cables nor their material composition impacts LEED base points in this area.</p>
<p>Water Efficiency 10 points</p> <p>Buildings are major users of our potable water supply. The goal of the Water Efficiency credit category is to encourage smarter use of water, inside and out. Water reduction is typically achieved through more efficient appliances, fixtures and fittings inside and water-wise landscaping outside.</p>	<p>Use of data communication cables does not impact LEED base points in this area unless they are part of a system which monitors and/or improves water usage efficiency. It is the cable's application as a system component which impacts LEED in this category, not its composition.</p>



Category	Impact
<p>Energy and Atmosphere 35 points</p> <p>According to the U.S. Department of Energy, buildings use 39% of the energy and 74% of the electricity produced each year in the United States. The Energy & Atmosphere category encourages a wide variety of energy strategies: commissioning; energy use monitoring; efficient design and construction; efficient appliances, systems and lighting; the use of renewable and clean sources of energy, generated on-site or off-site; and other innovative strategies</p>	<p>Use of data communication cables does not impact LEED points in this area unless they are part of a system which monitors and/or controls energy and atmosphere. It is the cable's application as a system component which impacts LEED in this category, not its composition.</p>
<p>Materials and Resources 14 points</p> <p>During both the construction and operations phases, buildings generate a lot of waste and use a lot of materials and resources. This credit category encourages the selection of sustainably grown, harvested, produced and transported products and materials. It promotes the reduction of waste as well as reuse and recycling, and it takes into account the reduction of waste at a product's source.</p>	<p>LEED 2009 limits most of the base points available under the Materials and Resources category to specific materials. These materials are found in the CSI (Construction Specifications Institute) MasterFormat Divisions 3 through 10, 12, 31, and 32. These divisions focus on construction items like concrete, masonry, metal, and wood.</p> <p>Unfortunately, data communication cables are part of Division 27 and therefore are not eligible for the majority of points available in this category.</p> <p>However, data communication cable packaging may contribute to the awarding of LEED base points for Materials and Resources Credit 2, Construction Waste Management. This credit encourages the recycling of construction site waste. The recyclability of the cable's packaging could have a minor role in achieving this credit.</p>
<p>Indoor Environmental Quality 15 points</p> <p>The U.S. Environmental Protection Agency estimates that Americans spend about 90% of their day indoors, where the air quality can be significantly worse than outside. The Indoor Environmental Quality credit category promotes strategies that can improve indoor air as well as providing access to natural daylight and views and improving acoustics.</p>	<p>Use of data communication cables does not impact LEED base points in this area unless they are part of a system which monitors and/or controls indoor environmental quality. Again, it is the cable's application as a system component which impacts LEED in this category, not its composition.</p>



In these five categories, the use of data communication cables as a system component can contribute to the awarding of LEED points in the Water Efficiency, Energy and Atmosphere, and the Indoor Environmental Quality categories. The packaging of data communication cables may also play a minor role in the awarding of LEED points for Materials and Resources Credit 2, Construction Waste Management. However, the selection of data communication cables based solely on materials composition does not have an impact on the awarding of LEED base points.

The Impact of LAN Cables on Other LEED 2009 NC Points

Regional Priority

The Regional Priority category is worth a total of four points and is geared towards issues which are of interest to the region where the new construction or major renovation is occurring. The Regional Priority credits for which a project may qualify are determined by the zip code of the project. Depending on the location of the construction site, there may be projects where the use of data communication cables as part of a larger system could help earn Regional Priority credits.

For example, many areas qualify for Regional Priority credits based on renewable energy like solar or wind power. If data communication cables are used as part of a system to help control renewable power generation or help control the distribution of power generated by these renewable energy systems, they can assist in achieving points related to this credit. As we typically see with LEED, it is the application of the cable that helps to achieve this credit, not its composition. There are no Regional Priority credits at present where the composition of the data communication cable is a factor in achieving points toward this credit.

Innovation in Design

The Innovation in Design (ID) category can be worth up to six points. One of these points can be awarded for having a LEED accredited professional on the project team as a principal participant. Up to five additional points can be awarded through the “Innovation in Design” credit which has three possible paths in which points can be awarded. Below are the Innovation in Design paths outlined in LEED 2009 for New Construction and Major Renovations.



PATH 1 Innovation in Design (1-5 points)

Achieve significant, measurable environmental performance using a strategy not addressed in LEED 2009 for New Construction and Major Renovation Rating System.

PATH 2 Exemplary Performance (1-3 points)

Achieve exemplary performance in an existing LEED 2009 for New Construction and Major Renovations prerequisite or credit that allows for exemplary performance as specified in the LEED Reference Guide for Green Building Design & Construction

PATH 3 Pilot Credit (1 point)

Attempt a pilot credit available in the Pilot Credit Library at www.usgbc.org/pilotcreditlibrary

Data communications cables can contribute to the awarding of points if they are part of a system that enables achievement of the objectives noted in Path 1 and Path 2. Again it is the applications supported through the use of cabling infrastructure that leads to the awarding of points in these paths, not the composition of the cable itself.

Path 3 involves the use of Pilot Credits. Of the pilot credits being trialed at this time, Pilot Credit 2; PBT Source Reduction; Dioxins and Halogenated Organic Compounds is the only one where material selection choices can directly benefit the ability to meet credit requirements. The USGBC's stated intent for this Pilot Credit is to reduce the release of persistent bio accumulative toxic chemicals (PBT's) associated with the life cycle of building materials. More detailed information about this pilot credit can be found at the USGBC link given above.

Selecting halogen free data communication cables can assist in qualifying for this pilot credit. However, one cannot meet the requirements for this pilot credit by simply choosing halogen free data communication cables for their installation. This is because these cables are only a portion of the building materials addressed by this pilot credit. Stated differently, one cannot guarantee meeting the requirements for this credit merely by selecting halogen free data communication cables. In fact, it is possible to select traditional data communication cables that contain halogens and still comply with the requirements for this credit.



It also should be noted that it is possible to obtain this one point by merely **attempting** the pilot credit. The purpose of the pilot credit program is to test potential credits prior to introducing them into the LEED rating system. According to the USGBC, credit is earned by providing valuable feedback on the efficacy and achievability of the pilot credit(s) being tested. One final note; Pilot Credit 2 has not been included in the proposed LEED 2012 draft document. If Pilot Credit 2 does enter the LEED rating system as a base point, the earliest this could happen would be the middle of this decade.

The reason why the vast majority of data communication cables in the US are halogen based are due to fire safety concerns. The Underwriters Laboratories fire safety tests specified by the NEC for CMP and CMR rated data communication cables require that the cables have outstanding flame resistance. Most of the common fire safety tests for data communication cables used throughout the rest of the world are not as severe in this regard. The presence of halogen in data communication cables helps improve their fire resistance and halogen containing cables typically have better performance in US flame tests than halogen free cables.

Conclusion

An ever increasing number of construction projects are being built in accordance with the requirements set forth in the LEED 2009 for New Construction and Major Renovations rating system. After reviewing this document, it becomes apparent that materials in the CSI MasterFormat Facility Construction Subgroup like concrete, masonry, metal, and wood have far more impact on the awarding of LEED points than items in the Facility Services Subgroup like data communication cables. The role of data communication cables in the awarding of LEED points tends to focus on the **application** of the cables, not the **composition** of the cables. Since future revisions to the LEED rating system like the proposed LEED 2012 for New Construction and Major Renovations may change this relationship, Nexans will continue to monitor the evolution of LEED and issue updated versions of this white paper as required.



Data Communications Competence Center

Nexans' Data Communications Competence Center, located at the Berk-Tek Headquarters in New Holland, Pennsylvania, focuses on advanced product design, applications and materials development for networking and data communication cabling solutions. The Advanced Design and Applications team uses state-of-the-art, proprietary testing and modeling tools to translate emerging network requirements into new cabling solutions. The Advanced Materials Development and Advanced Manufacturing Processes teams utilize sophisticated analytical capabilities that facilitate the design of superior materials and processes. The Standardization and Technology group analyzes leading edge and emerging technologies and coordinates data communication standardization efforts to continuously refine Nexans' Technology Roadmap. An international team of experts in the fields of cable, connectors, materials, networking, standards, communications and testing supports the competence center. The competence center laboratories are a part of an extensive global R&D network.

