

## Choosing Environmentally Friendly Wire and Cable

Environmental awareness is a driving force in our daily lives. Tough regulations already abound, and there is no sign of them lessening. Efficiency dominates the decisions made by customers and designers because of its environmental impact and the impact it has on the bottom line. Consequently, being “green” is becoming more important and more common. Below you will find some simple suggestions to help make your decisions and actions a little more green.

### What regulations affect you?

You don’t have to look far to find regulations that impact wire and cable products. Most of the regulations currently govern material content, or chemicals, that when touched, disposed of, or consumed can be harmful to humans. Here is a partial list of regulations, the names of the organizations that are responsible for them and the market they act in.

Regulation	Organization	Market
RoHS	European Union	Europe
REACH	European Chemicals Agency	Europe
Proposition 65	California Government	California (US)
China RoHS	China’s Ministry of Information Industry <sup>1</sup>	China
WEEE	European Union	Europe
DEHP and BPA restrictions	Health Canada	Canada

These regulations are already in place. Their scope of impact is under constant review by the organizations that govern the regulation as well as the suppliers manufacturing the products that are affected. Familiarize yourself with the legislation that applies to you and establish communications with your suppliers to better understand how the products you use are affected by the regulations.

### There are other steps you can take

Newly enacted regulations are just one way the industry is making a positive environmental impact. There are things that can be done to go above and beyond compliance with regulations. As a user of wire and cable products, you have the option of choosing products based on a variety of criteria. There are many aspects of getting a product that are often not considered when choosing a wire or cable. Thinking about the embodied energy and raw materials necessary to produce and deliver the products are just a few things that affect a product’s net impact on the environment. Rethinking the design of the system and the wire’s or cable’s role is another way to address the system’s environmental impact. The good news is that some of these techniques also have a positive impact on your bottom line.

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### **Elective environmental considerations**

If you or your organization uses environmental impact as a product selection criterion, the following list is a good starting point of things to consider when evaluating products.

- Is the product made from recycled materials?
- Is the product easy to recycle?
- Does the product contain substances that are harmful?
- Does the product's use create little or no waste?
- Is the product's packaging reusable or recyclable?
- Does handling, transporting and storage of the product require significant energy use?
- Does the package's size or quantity create excess or waste?
- Does the product provide a long service life (require fewer replacement cycles)?
- Is the product safe and clean when it fails (doesn't emit harmful materials)?
- Does the product require high levels of service or maintenance?
- Is the product made in a way that is environmentally friendly?

### **Financially and environmentally sound designs**

Another approach to choosing a wire or cable that is both environmentally and fiscally responsible is to optimize the conductor size. Sizing a conductor for the amount of current that it will see during operation is critical to safety. Conductor sizing also greatly affects the efficiency and longevity of a wire or cable. If the conductor is too small, the product will operate at elevated temperatures. A simple thing to remember is that hot conductors cost money.<sup>ii</sup> This is because resistance to the flow of electricity increases as the conductor temperature increases and the insulation and jacketing materials degrade and fail sooner when operated at elevated temperatures.

As the conductor temperature rises and resistance increases, more energy is lost in the form of heat. This electrical energy could be put to use performing an important operation. The hotter the conductor runs, the more energy that is lost in heat and the less efficient the electrical equipment will be. In continuous-use applications, the loss is so great that the cost of using a larger conductor is less than the cost of a year of the electrical energy that is lost. In that respect, conservative conductor sizing is just one way that going green can keep you in the black.

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<sup>i</sup> "China 'RoHS'" *Anixter Wire Wisdom R-2*, 2/12/07

<sup>ii</sup> "Hot Conductor Costs Money" *Cable Lore, Anaconda, Issue No. 1*, 1965