



On Your Mark is a monthly column written by Geoffrey Peckham, President of Clarion Safety Systems and chair of both the ANSI Z535 Committee and the U.S. Technical Advisory Group to ISO Technical Committee 145- Graphical Symbols. Over the past two decades he has played a pivotal role in the harmonization of U.S. and international standards dealing with safety signs, colors, formats and symbols.

From IEC to ISO

BY GEOFFREY PECKHAM

In this column, we'll explore how symbols migrate from IEC standards into ISO standards – and the importance of standardization.

To better specify the safety labels you use on your products, it's helpful to understand the history behind how the safety symbols came to look the way they do. Why does a symbol have a certain proportion, shape, and size and why are these important to achieving universal understanding?

To begin with, let's start with who is responsible for standardization. When it comes to the standardization of symbols, the two key global groups are the International Electrotechnical Commission (IEC) and the International Organization for Standardization (ISO). Breaking it down further, among these groups, there are two highly active technical committees: ISO/TC 145 and IEC SC3C.

IEC and ISO cooperate closely, and even develop standards jointly. But, where do their separate areas of responsibility lie? ISO/TC 145 covers the standardization of public information symbols, non-electrical function and control symbols and all safety symbols, each category of

symbols having its own standard. On the other side of the aisle, IEC SC3C standardizes function and control symbols for only electrotechnologies, collecting these symbols in a single standard titled, IEC 60417 *Graphical symbols for use on equipment*.

What has to be clearly understood is that the IEC does not have responsibility for the development of *safety* symbols – the symbols intended to communicate a safety message in graphic form. That area of responsibility lies with ISO and falls within the scope of ISO/TC 145's subcommittee 2.

Now to see how this works. The world needs a standardized, uniform safety symbol for people to easily recognize that an electrical hazard exists. So what happens? Is this a stalemate between standards because IEC is in charge of electrical symbols and ISO is in charge of safety symbols? No. Why? Because IEC and ISO can work together, allowing what is accomplished in one group to “migrate” to become something new in the other.

In the case of visually defining electrical hazards, the electrical hazard lightning bolt symbol was first standardized by IEC for use on function and controls, such as buttons, to indicate “dangerous voltage.” (See Figure 1). To create the definitive ISO electrical hazard safety symbol, ISO/TC 145, in its wisdom, picked up this IEC symbol verbatim and placed it inside the ISO standardized colored surround shape for a “warning” safety sign. The result, published in *ISO 7010 Graphical symbols, registered safety signs*, is the

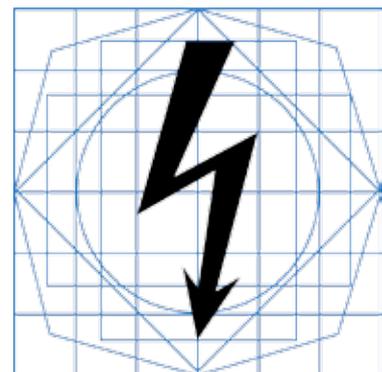


Figure 1: IEC 60417 symbol no. 5036 (shown on a drawing template) meaning “Dangerous voltage”.

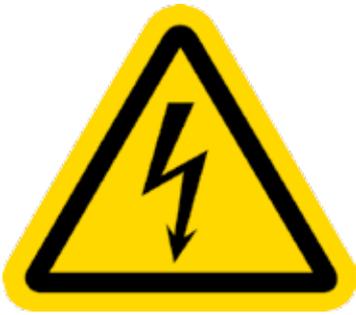


Figure 2: ISO 7010 symbol no. W012 meaning “Warning; electricity”.

world’s standardized safety symbol for “Warning; electricity.” (See Figure 2).

There’s a science to creating icons that are intended to communicate their message. Exactness is critical and it’s achieved by following prescribed drawing methods. IEC SC3C and

ISO/TC 145 both use carefully constructed design templates to ensure that standardized symbols are consistently drawn. Visual weight, placement within the template, and line widths are taken into account to ensure symbols have a high degree of legibility. And legibility is important because this is what allows people to see, differentiate and discern visual elements. Without it, the next step, comprehension, cannot occur.

Uniformly applying best practice design principles that yield perceivable graphical symbols is what this is all about. Figure 3 illustrates how four different symbols share a consistency in their design; the “weight” of the black graphical symbols inside their triangles is similar; the amount of referential color (yellow) that remains is close, and there is a balance to the

position of each of the symbols within their triangular frame.

Why is exactness in the development and use of internationally standardized symbols so important? Because when you, as a product design engineer, specify the use of these symbols on your products’ safety signs and labels, your goal is to achieve instant recognition. You don’t want people to have to “decipher” the sign (Figure 4). Uniformity in graphical symbol design brings clarity to communication. And when it comes to safety signs and labels, there is no more critical place where you need to achieve clear, concise communication. Anything less could cost lives.

For more information about safety signs and symbols, visit www.clarionsafety.com. 



Figure 3: Four examples of ISO safety symbols.



Figure 4: A typical product safety label, courtesy of Clarion Safety Systems © 2012, incorporating the ISO electrical hazard safety symbol.