ON Your Mark

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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. This article is courtesy of Clarion Safety Systems © 2012. All rights reserved. Clarion strongly protects its intellectual property rights, including sign designs.

Hot Stuff (and Warnings)

BY GEOFFREY PECKHAM

Given that this column is principally about graphical symbols and how they're used to convey safety messages, it's time we focus attention on one of the more common forms of energy warned about on equipment: heat.

"CAUTION - HOT" is a commonly posted message. The sign typically consists of one or two words, "HOT" or "HOT SURFACE" below the signal word CAUTION as shown in Figure 1. This sign does not meet the latest ANSI or ISO standards in its formatting and it doesn't use symbols. Visual literacy is on the rise; people (especially the younger generations) better understand and process images than they do words. As we have seen in past articles in this periodical, the use of graphical symbols is now key to communicating safety effectively. Not only can they convey messages quickly, but symbols also have the capacity to transcend language barriers.

Figure 1: Typical word message-only sign failing to fully indicate the nature of the hazard, the consequences of interaction, and how to avoid the hazard.

When it comes to communicating safety messages about heat and hot surfaces there are really two types of symbols in use. First is the fairly abstract ISO symbol for hot surfaces shown in Figure 2. All graphical symbols are abstract to a degree, some more than others. The ISO symbol for heat using three wavy lines coming off a flat surface was originally derived off of an IEC symbol used for indicating heat on function and control buttons (see Figure 2). When it came time to create the ISO warning sign for hot surfaces, the IEC image was placed inside the standardized ISO warning sign template of a black-banded yellow triangle. Thus, the symbol for "warning,

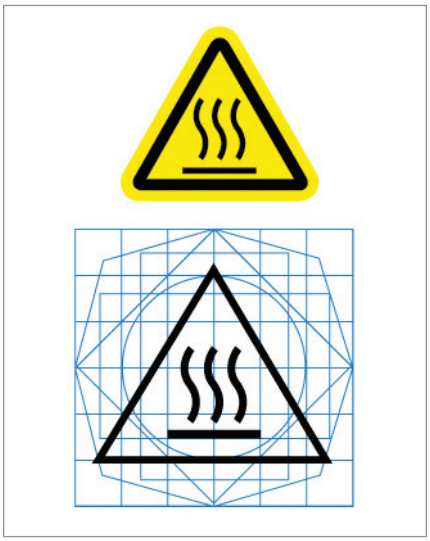

Figure 2: The standardized ISO symbol for "Warning Hot Surface" and the IEC "Caution - hot surface" function and control symbol #5041, respectively.

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Figure 3: The combination of the ISO "Hot Surface" symbol and the "Do Not Touch" symbol communicates both the nature of the hazard and how to avoid it. (Image courtesy of Clarion Safety Systems © 2012).

Figure 4: Safety label with alternative word message and "Do Not Touch" symbol. (Image courtesy of Clarion Safety Systems © 2012).

hot surfaces" was born. Although the symbol is initially abstract, it is learnable given some training.

Alternative symbols exist and as the engineer responsible for your products' safety labeling, you are able to choose which symbols you would prefer. You could choose to add a "do not touch" symbol to a label that already contains the ISO "hot surface" symbol, (see Figure 3) thereby communicating both the nature of the hazard and how to avoid it with two distinct pictorial representations. Another alternative is to use a symbol that combines both messages into a single graphic image. The example in Figure 4 is one that Clarion developed to convey the message, "hot surface - do not touch." This symbol uses a hand in profile to display both human interaction with the hazard and add a measure of realism, dramatization, and understandability to the graphic. The use of the ISO red prohibition circle-with-slash surround shape communicates the "do not" portion of the message in the same way similar signs used for "no smoking," "no left turn," and "no pedestrian crossing" are meant to prohibit certain actions.

One of the things you must pay attention to when labeling your product for hot surfaces is the need to take label materials durability into account. Simply put, heat can destroy things. Adhesives dry out and lose their adhesion, causing labels to fall off. Label base materials and overlaminates shrivel up and crack. Inks discolor. So the first thing to consider is whether or not you can mount the label on a surface that does not get hot but is still close enough to the hot surface so the label will be associated with the hazardous location. If that is not possible, you can mount the label on a plate that is raised above the hot surface so air flows between the two, providing a cooler surface for the label to adhere to. You can also choose to make your safety label out of heat resistant materials. Clarion uses anodized aluminum labels and plates when a safety message must be placed directly on a hot surface (Figure 5).

An anodized safety sign or label's image is actually dyed into the surface of a specialized aluminum material and then put through a chemical process to seal the image into the pores of the aluminum. Although the colors are not as vibrant as an ink-printed label, the color will be protected from heat degradation. As for mounting the anodized sign or label, specialized adhesives can be used that withstand higher temperatures.

Hot surfaces are not always readily discernible. So if you know that a surface could become dangerously hot, then it is likely that you have a duty to warn people of the possibility of a burn hazard. Once again, graphical symbols can come to the rescue and save the day by assisting you with carrying out this responsibility.

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

Figure 5: A "CAUTION BURN HAZARD" anodized aluminum plate applied on a hot surface. (Image courtesy of Clarion Safety Systems © 2012).