



Employee Safety

How to Exceed Flame-Resistant Clothing Requirements While Staying Comfortable

Roland Jones | Jun 04, 2020

There are numerous burn hazards facing workers in the manufacturing industry today—combustible dust, arc flashes and flash fires, to name just a few. We speak with personal protective equipment maker MCR Safety about the importance of flame-resistant clothing.

As thousands of Americans return to work in the wake of the COVID-19 outbreak, the focus is inevitably on whether workers across a range of industrial sectors can take up their tools again without spurring a revival of infection rates.

Many companies are busy adapting their operations with safety measures to protect workers from the virus, such as using temperature monitors or providing workers with face masks and shields.

But while the virus is certainly a major problem, returning manufacturing workers still face age-old threats to their safety.

“If you’re having to wear flame-resistant clothing in the summer, you will want a high degree of comfort, and you’ve got that with FR clothing featuring patented Summit Breeze technology because it allows for airflow through the mesh venting.”

Anthony Webb
MCR Safety analyst

The flammable liquids and gases, electrical hazards and potential for malfunctioning machinery make facilities highly vulnerable to fires.

What Is Flame-Resistant (FR) Clothing?

FR garments are made of a *fabric* designed to protect workers from flames and thermal exposure.

Clothing made from everyday synthetic fibers will continue to burn long after the flame source has been extinguished and can result in a severe burn injury.

With FR clothing, by contrast, a worker's garment will self-extinguish once the fire source is removed.

FR material does not ignite, melt, drip or continue burning once the initial flame has subsided, ensuring that the burn danger does not spread.

As a result, FR garments limit burn injuries, provide additional escape time and increase a worker's overall chance of survival in flame hazard situations.

You can learn more about FR clothing at MCR Safety's *FR Clothing Knowledge Center*.

Source: MCR Safety

An *arc flash*, for example, is an electrical explosion causing severe burns, injuries, and even death, depending on the severity of the incident, and it can involve temperatures hotter than the sun's surface. Other burn risks include flash fires or hot spatter from industrial processes.

Work-related fires and explosions—which tend to occur in industries such as chemical manufacturing, utilities, and oil and gas extraction—led to **1,480 workplace injuries** and **115 fatalities** in 2018.

For workers in these environments, it's vital to have the right gear to protect you from severe burns and injury.

"With so much attention being paid to COVID-19, employees may forget just how hazardous of a situation that they're in," says MCR Safety analyst Anthony Webb.

How Vented FR Shirts Can Lower Body Burn Percentage

MCR Safety's latest innovation in flame-resistance protection is *Summit Breeze technology*, which is patented and used exclusively on the company's flame-resistant (FR) apparel.

It incorporates mesh venting on the back of the shirt and under the arms, ensuring the regulation of body heat and allowing for the expelling of dangerous gases. It also provides better heat stress management for those working in a hot environment or doing labor-intensive tasks.

"Nobody loves wearing FR gear," says Gina Shaw, national account manager at MCR Safety. "It's typically hot and heavy, and wearers have to have long sleeves and pants. That's why we came up with the patented shirt design with the mesh back and underarm vents, which have been shown in testing to reduce burn rates and heat stress."

Shaw adds that MCR Safety has developed the clothing so that it doesn't require the use of *formaldehyde*—a harmful irritant—during the manufacturing process, and that the venting of

dangerous gases improves the survivability of the person wearing the gear.

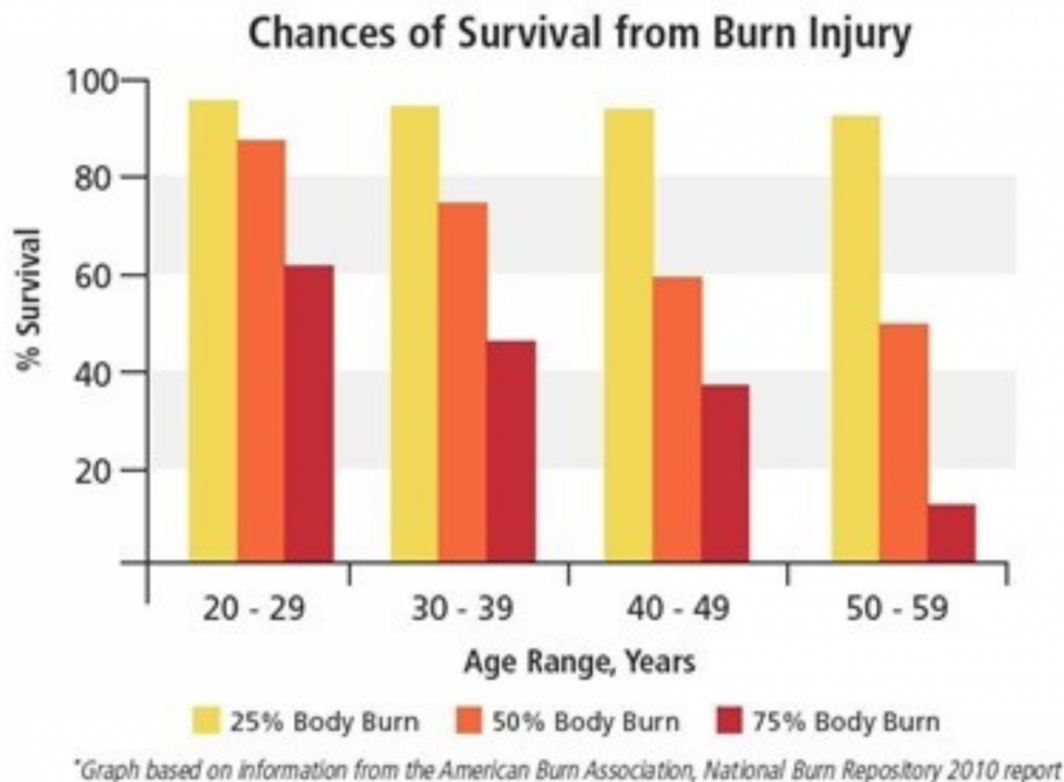
“In the instances of a flash fire or an arc flash, gases need a way to escape one’s clothing, otherwise they move directly up to the closest exit point, which is typically close to the face,” she says.

Indeed, respiratory failure due to gas inhalation is a significant danger in fires. According to the American Burn Institute, inhalation injury increases the mortality rate from a fire injury by 16 times. So directing gases away from the face can help to minimize inhalation injury significantly.

Most striking of all, notes MCR’s Webb, is the apparel’s performance in burn tests.

According to the American Burn Association, survival rates for burn victims decrease dramatically as the body burn percentage increases. The age of the burn victim is also a determining factor.

Given this, official standards require that garments have a body burn rate of less than 50 percent. MCR Safety’s Summit Breeze inherent blended FR garments achieve a 7.9 percent score, which is 84 percent below the minimum 50 percent required performance threshold.



Source: MCR Safety

“To have a product that you’re wearing perform some 80 percent below the standard’s threshold is going to help get you out of hazardous flame situations with fewer injuries, due to better performing FR clothing,” Webb notes.

Choosing the Best FR Clothing for Summer and High-heat Environments

Webb says the new FR clothing can help avoid another potentially deadly threat to workers: heat stress and other heat-related injuries, which are a particular menace during the hotter summer months.

Millions of U.S. workers are exposed to heat in their workplaces, **according to OSHA**, with thousands becoming sick and some dying.

Between 50 percent and 70 percent of outdoor fatalities occur in warm or hot environments within the first few days of working because the body has yet to acclimate to the heat and build up a tolerance.

Heat stress happens when the body cannot get rid of excess heat to cool down. Physical labor, environmental factors and clothing can contribute to this, making you feel sick or disoriented, and in extreme cases, can eventually lead to death.

"If you're having to wear flame-resistant clothing in the summer, you will want a high degree of comfort, and you've got that with FR clothing featuring patented Summit Breeze technology because it allows for airflow through the mesh venting," Webb says.

While the use of well-ventilated PPE can help prevent heat stress, MCR Safety offers a few key recommendations for daily actions to take to avoid heat-related injuries:

- Use fans for ventilation and cooling, especially when wearing PPE.
- Wear a hat in direct sunshine.
- Wear loose-fitting clothing; if you operate machinery or work around equipment that is in movement, make sure that your clothing is not so loose that it could get caught in the machine and cause injury.
- Plan strenuous work for cooler parts of the day, like early in the morning or later in the afternoon, if possible.
- Locate the closest shady place and schedule breaks throughout the day.
- Drink lots of water.

How do you deal with fire safety in your shop? How does your company keep its workers protected from burns and other injuries?

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