Regulatory Compliance

Navigating the New ANSI/ISEA 138 Impact Protection Standard

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If you work in the oil and gas industry, you know the dangers workers face on a daily basis; dangers that can turn deadly. One of the dangers workers face is back-of-hand injury.

The U.S. Bureau of Labor Statistics concluded that in 2015, workers sustained 143,000 injuries to their hands. When you peel back the onion even further, 76% of on-the-job hand injuries are the result of cuts and crushes. Yet, it's only been within the last decade that PPE manufacturers have turned their attention to developing a wider range of gloves, including those designed with back-of-hand impact protection.

While there is a hand-protection standard in ***North America, ANSI/ISEA 105: 2016, American national standard*** for hand protection classification, it addresses the ***cut, abrasion, tear, and puncture*** performance of gloves, not ***impact protection***.

The new ANSI/ISEA 138 Impact Standard will go live 1st quarter 2019, around early March. Are you ready? The information below provides key insights into everything you need to know when it comes to the new back-of-hand standard for gloves.

Why is there a need for impact protection?

The bones and soft tissues located on the back of a worker's hands are exposed to impact injuries, ranging from bumps and bruises to severe bone fractures.

MCR Safety's blog post on ***common crush and pinchpoint hazards*** details the value of impact protection gloves, and highlights the need for this type of protection within the construction industry. In this blog, MCR focuses on why impact protection is needed also across the Oil and Gas industry.

Common sources for oil and gas impact and pinch point injuries:

- Struck by tongs or spinning chain
- Working around heavy pipes, cables, hoses, and ropes
- Everyday activities

As one worker stated at the recent OSHA Oil & Gas Safety and Health conference, "It is not the worker swinging a large sledgehammer you have to be concerned about. It is the everyday work of handling pipes and valves that will quickly bang up someone's hands."

Impact protection can mitigate a variety of on-the-job hazards including:

- Being struck by objects in motion, whether moving, swinging, flying, or falling
- Rig site clearing
- Heavy material handling and moving heavy loads
- Connections breaking free from high-pressure lines
- Improper use of tools that are loose and cracked, eventually breaking apart
- Working in close quarters, where pinch points are common

One oil and gas worker puts it this way, "You need padding all around due to working around and holding iron that weighs anywhere from 500 to 1,000 pounds." There is really no better way of expressing the need for impact protection.

Why a new impact standard?

Despite everyone's best intentions in developing new impact gloves, there has been ***a lack of standardization for impact protection***. This has resulted in claims about the quality and impact protection performance of various gloves that have been hard to verify.

It has been extremely difficult for oil and gas companies to determine which impact gloves are best for their workers—which ones will keep workers' hands safe while allowing them the full range of motion to get their jobs done. As a result, companies have begun focusing more on cost—a known quantity—and purchase gloves that are not always best suited to protect their workers.

The new ANSI/ISEA 138 impact standard for performance and classification for impact-resistant hand protection changes that.

The New Impact Protection Standard

A subgroup of the International Safety Equipment Association's (ISEA) hand protection group has been working together since 2016 to voluntarily develop a new protection standard with the ISEA. From the outset, this subgroup was intent on creating clear standardization across the industry, ensuring everyone knows what impact protection is offered by what product. The new standard will ultimately make it easier to find the right gloves, for the right task, with the right level of protection.

The subgroup is comprised of representatives from seven leading glove manufacturers, along with impact protection materials experts from D3O. The subgroup has also solicited the input of a physician who specializes in plastic and reconstructive hand surgery.

Thanks to the publication of the new standard (and its adoption by manufacturers), employers can be assured they will be able to purchase gloves that offer their valued workers exactly the protection that they need. Workers can do their jobs confidently, focusing on their tasks, and worry less about the safety of their hands.

What does the standard do?

The new impact standard mandates four key requirements. Here are the ***four mandates of ISEA 138***:

- Defines an agreed-upon testing method for gloves' impact protection
- Includes three clearly-defined performance levels
- Specifies a pictogram mark for each of the levels of compliant gloves
- Requires that products be tested in a laboratory with a certificate of accreditation meeting the requirements of ISO/IEC 17025:2017, general requirements for the competence of testing and calibration laboratories.

More specifically, the ***standard establishes*** the "minimum performance, classification and labelling requirements for hand protection products designed to protect the knuckles and fingers from impact forces, while performing occupational tasks."

A Classification System That You Can Trust

Rodney Taylor, Global Sales and Marketing Manager for Industrial PPE at D3O, notes two "standout features" of the new standard:

- It requires testing in a laboratory that meets the requirements of ISO/IEC 17025:2017, and
- The standard requires the use of pictogram markings, a product feature that is more common in Europe and less in North America.

The testing that the gloves must undergo is rigorous, and the standard defines the testing requirements, equipment, and method to be used. This includes the preparation of samples and conditioning of the gloves. The standard also defines specific test sites for the knuckles, fingers, and thumbs, and requires that the sites be marked on the outside and back side of the glove.

New Standard's Performance Levels

ANSI/ISEA 138 is used to "evaluate compliant gloves 'for their capability to dissipate impact forces on the knuckles and fingers and to classify them accordingly." Gloves are rated on an impact-protection scale from 1-3.

A classification of 3 means that a glove offers the most protection, while a classification of 1 means that a glove offers the least: a higher performance-level rating indicates a greater degree of protection, meaning that less force is transmitted to the wearer's hand.

It is important to note that, according to the standard, "the overall performance level of a glove reflects the lowest performance level recorded, so that if the fingers and thumb meet level one but the knuckles level two, the glove will still be rated as performance level one." This last point is underlined for good reason.

A manufacturer can't just ramp up protection on the knuckles and forget about the fingers. It is a complete well-rounded glove that achieves the higher test scores.

The two most important performance areas

As with any standard measuring performance, there are crucial elements that distinguish gloves with a higher number from lower numbers. Here are the two most important elements for the impact standard:

1. Assessment of the fingers and thumbs – finger and thumb impact performance is assessed at two distances from the fingertip.
2. Knuckle protection – knuckles are located by having a test subject don the test glove, and then locate the exact knuckle locations while grasping a tube. There are some gloves where the knuckle bumper does not actually cover the wearer's knuckles and, as a result, protection is compromised.

Specifications of the Test Methodology

During testing, a 2.5kg mass is dropped with an impact energy of 5J onto each glove. The impact test is performed on knuckles and fingers separately.

The resulting classification of each rating is as follows, with protection increasing as one moves to the next performance level:

Performance Level	Mean Transmitted Force
1	≤ 9 kN
2	≤ 6.5 kN
3	≤ 4 kN

As stated above, the higher performance level means there is better overall impact protection. However, when you examine the transmitted force, the lower number is better. Why? A lower recorded Peak Transmitted Force (PTF) means more energy is absorbed by the glove's back-of- hand material. Better material and protection equates to more energy absorbed, which equates to a higher performing glove overall.

The FF2930 incorporates ***D3O®*** technology, demonstrated in the above video, which provides wearers with advanced protection. Examples include:

- Back-of-hand impact dissipation is up to 54% better, while glove is 57% thinner
- Impact dissipation on fingers is up to 46% better, while glove is 37% thinner

Previously Featured on MCR Safety's blog.