



Durability: Will These Gloves Still Protect Me Over Time?

Better Definitions, Tests and Standards Needed to Quantify Durability

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When is the last time you changed your gloves? How long did you wear them? Now ask a coworker the same questions. Chances are you may each have different answers. The reason: glove durability.

Glove durability has been a long standing concern within the glove industry. During a recent study conducted by Ansell, respondents ranked durability as the third most important factor influencing glove choice. Quality was the highest rated factor. Respondents were then asked, "What do you mean by quality?" Durability was the number one answer.

Can you define durability?

Glove durability generally relates to a glove's longevity - its wear life based on worker expectations up to the point at which the worker considers the product no longer suitable for the tasks at hand or "worn out."

Unfortunately, glove durability is difficult to determine, since no tests or standards exist for measurement, and a product's wear life is often determined by the specific applications in which the glove product is used. This problem is exacerbated by the fact that safety directors and others who select gloves typically look at measurable performance characteristics - such as cut protection, abrasion or chemical resistance - and seldom consider durability and how it relates to injury prevention, overall productivity and costs.

Wear life is often subjective

For years, the glove manufacturing industry has relied on various tests, such as ASTM F1790, to establish product standards and determine the specific levels and types of protection that gloves provide. Unfortunately, such commonly recognized tests and standards do not exist to measure durability. In their absence, glove replacement decisions often fall upon the workers who wear the products. These individuals frequently determine when a product is no longer serviceable and

needs to be replaced so they can confidently perform tasks without fear of injury.

How do workers determine when a product has reached this point? Visual perceptions tend to play a major role in product replacement decisions. Workers, for example, often rely on color variations between the coating and liner, with some workers disposing of their gloves as soon as the coating wears through. Is this the right decision - does the glove product no longer "protect" when the coating wears out? Is this a safety or productivity issue at this point - or both?

Some workers may choose to discard their gloves when they are full of holes or the surface has abraded away. Again, product wear life will probably depend on the application. Without measurable characteristics, specific work standards or product training, workers are left to make product wear life decisions on their own.

The importance of training

Because durability is an unfamiliar topic for many, workers should be trained about glove serviceability features, the applications in which specific products will be used and their impact on job performance. Workers should learn to identify the signs of wear and when the gloves they are wearing no longer provide the right protection for the tasks they perform.

Training and education will be especially important as glove manufacturers develop new fabrics and technologies that increase product wear. Workers, for example, are likely to initially express skepticism about a glove that weighs half as much as the product they wore in the past yet offers a service life that is twice as long.

Studies confirm that workers are more likely to wear gloves when the gloves are comfortable and the worker understands the product's purpose and why the gloves are used for specific applications. Training should be offered for cross-plant education and best practices

implementation, and should be a continuous process administered to all new employees and those involved with product and process changes. Instituting an ongoing training program will help reduce operational risks for employees and the overall organization.

Technology that extends wear life

Fibers such as Kevlar[®], Spectra[®] and Dyneema[®] are very strong, a characteristic often associated with durability. Gloves were recently introduced to the marketplace, for example, that incorporate nylon and DuPont™ Kevlar[®] zonal plaiting on the palm and the back of the hand to protect workers against abrasion and ensure product durability. A black foam nitrile coating further enhances product wear life.

Another new glove product includes Intercept Technology[®] in the liner to provide a high level of cut protection, comfort and durability. Developed by Ansell and DuPont™, Intercept Technology is a yarn that incorporates Kevlar[®] Stretch Armor Technology for less frequent product replacement.

Gloves with unbound layers are sometimes considered more durable than gloves with layers that are bound together. Unbound layers allow energy to be absorbed and dissipated as the layers move, which contributes to longer glove life.

Materials with bound layers that are locked in position cannot move independently. This can be observed in gloves with a knit fabric and a polymer coating. If the components are securely bonded, they can no longer move freely of each other, which can diminish the product's durability. Conversely, a multi layer construction that incorporates a very flexible agent may exhibit greater durability. The key element is the structure's ability to resist (likely less durable) or absorb (likely more durable) the forces applied during use.

While researchers continue to develop new polymers and technologies that increase product durability, glove manufacturers are examining existing materials and current manufacturing techniques to determine how they might be altered to increase product serviceability. They are also considering how they can modify existing yarns, polymers and treatments to optimize product usefulness and longevity.

Testing for durability

Besides education, the glove manufacturing industry needs to develop tests and standards to measure and predict durability. Glove durability should be evaluated in terms of the applications in which specific products will be used.

Ansell, for example, uses common tools in a device that records and measures wear on swatches of glove materials to predict their durability. The test attempts to replicate the wear factors some workers experience when performing certain tasks.

Durability should also be considered in terms of workers' desire to continue wearing a glove after a period of time. Do they want to continue wearing a glove that appears intact but has lost or severely diminished one of its key performance characteristics? As an example, a well worn cut resistant glove may provide only 75 percent of its original CPPT. Will this level of protection be enough to keep the worker safe while performing specific tasks?

In the future, many glove manufacturers will likely rely on third parties such as universities and independent laboratories to validate product durability. Test results - along with customer feedback - will help verify that the methods employed replicate real life situations and applications, helping to ensure glove durability and worker safety, which can positively impact a company's bottom line.

For more information about glove wear life and possible signs of wear, call 800/800-0444.

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