Ergonomic Package Handling Case Study – Glove Usage

Hand safety study shows reduced fatigue, improved efficiency from wearing Box Handler® silicone grip glove.

Background: Parcel delivery in the US has increased more than 50% over the past decade, due to the recovering economy and the rise of E-commerce. In North America, UPS, FedEx and DHL control over 95% of the industry. Despite the continuous use of their hands for grasping, holding and lifting operations, the majority of workers in this industry do not wear gloves. Ironclad Performance Wear felt that workplace safety was not being properly addressed, and conducted an ergonomic study to evaluate the benefits of a task-specific glove program.

Work Duties Evaluated: Manual handling of packages and boxes in a parcel sorting facility was evaluated. Packages and boxes varied widely in sizes and weights ranging up to 60 lbs. (28 kg.). Specific actions taken included: sorting, lifting, and carrying of smooth-sided items. A typical 8 hour work shift consisted of handling up to 800 boxes and packages.

Ergonomic Challenges: Repetitive hand and arm motions, poor grip on smooth surfaces, and heavy lifting situations, often result in forearm and hand fatigue. This contributes to an occasional dropped package. Repetitive stress and fatigue can also lead to long-term musculoskeletal and nerve damage to the forearm, wrist and hands.

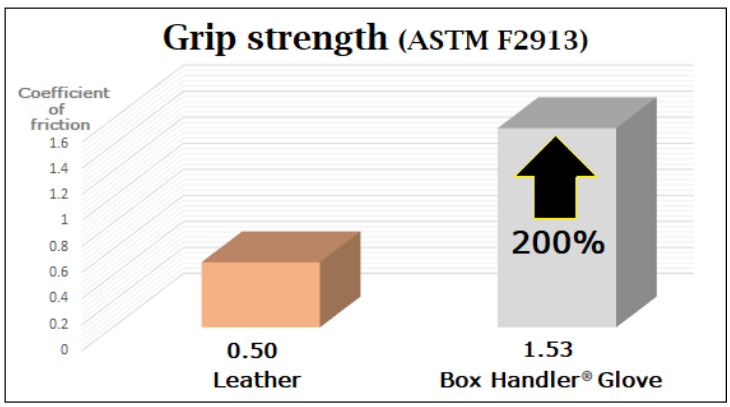
Test Parameters: A group of workers at a parcel sorting facility in Los Angeles, California were provided with task specific gloves, designed for the manual handling of packages and boxes. Workers were asked to use the Box Handler® glove, manufactured by Ironclad Performance Wear. The glove's main feature consists of a silicone grip pattern, printed in multiple layers onto a synthetic leather palm. After four weeks of using the Box Handler® glove they were asked to report any noticeable changes in fatigue, injuries, and/or dropped packages.

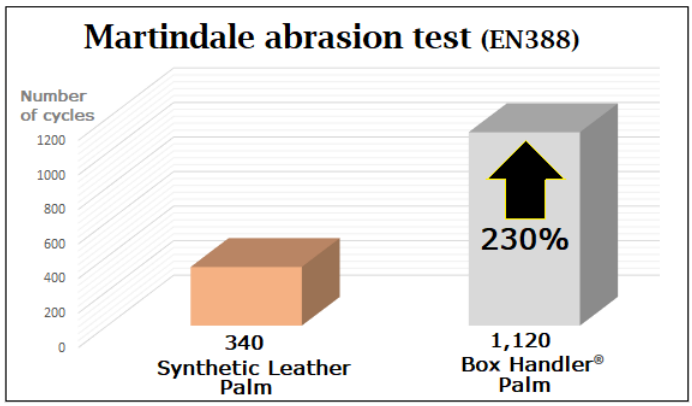
Test Results

- Participants reported that after each shift hand and forearm fatigue was eliminated or significantly reduced.
- Participants reported a reduction in knuckle bruising.
- Participants reported no dropped or mishandled packages.
- Additional input from the participants revealed an additional benefit: an increase in package handling efficiency. Packages handled per shift increased between 10 and 40%.

Physical Properties

Key physical properties of the Box Handler® glove demonstrated a dramatic increase in grip strength and palm durability:





Ergonomic Analysis

The significant increase in coefficient of friction on the glove palm is anticipated to reduce forearm muscle recruitment when lifting and sorting smooth-surfaced packages (EMG signal analysis study recommended). Reduced muscle recruitment will lead to lower levels in both fatigue and long term musculoskeletal issues. Additionally, the increase in palm durability will lead to longer lasting hand protection.

Summary

Wearing the Ironclad Box Handler® glove resulted in a reduction in hand and arm fatigue, hand bruising and dropped packages. Long term usage could lead to a reduced occurrence of chronic musculoskeletal pain and injuries. Additionally, workers reported an increase in task efficiency while wearing this glove. The increase in glove life, increase in efficiency, and reduction in physical trauma, presents an opportunity for safety professionals to reduce long term costs and enhance workplace safety.

About Ironclad

Ironclad Performance Wear's® extensive R&D platform has generated over 30 worldwide patents on hand safety and glove design. This advancement in glove technology drives Ironclad's commitment to creating hand safety solutions for companies around the world.

Want to jump start an improved material handling program with your customers? Contact us!

Northeast Regional Sales Manager Jodi Frank	717-805-2763	JodiF@Ironclad.com
Ken Rogus, National Training Manager – CSHO	972-996-5664	KenR@Ironclad.com
Ironclad Performance Wear Customer Service	972-996-5664	CustomerService@Ironclad.com