

DEVELOPMENT OF IMPROVED GLOVES FOR HOIST RESCUE PERSONNEL

Helicopter search and rescue (SAR) operations search for and provide aid to people who are in distress or imminent danger. These rescues are commonly utilized in emergency situations such as floods, wildland fires, and wilderness rescues.

These emergency situations can be incredibly dangerous depending on the weather, terrain, timing, and many other factors. Rescue personnel need to be focused on their task and need to rely on quality equipment that will not fail them.

Helicopter rescue personnel are required to guide a steel hoist cable with their gloved hand. The thin steel hoist cable provides resistance to the operator's gloved hand and travels at a speed that abrades many glove materials. The rescue hoist glove cannot fail during their mission.

HIGH-PERFORMANCE MATERIALS FOR A HIGH-PERFORMANCE RESCUE GLOVE

Current hoist rescue gloves on the market for first responders have severe limitations. Existing gloves have limited durability to the abrasion of the rescue cable and may only last one to two rescues due to the resulting friction. The abraded glove material can be entangled in the rescue cable, causing it to prematurely fail. Other limitations include lack of comfort, flexibility, and dexterity for the user. Hoist rescue personnel have to rely on their equipment to perform well and not fail.

The Department of Homeland Security Science and Technology Directorate (S&T) has funded Higher Dimension Materials, Inc. (HDM), and the North Carolina State University Textile Protect and Comfort Center (TPACC) to identify, test, and select the most appropriate fabric and supporting materials to incorporate into an enhanced glove design for first responders. Numerous materials were lab tested by HDM and TPACC to identify the best performance fabrics that would result in a better performing glove.

The increased durability of the new glove will result in fewer gloves having to be purchased, which will provide an overall cost savings. The enhanced design and high-performance materials will allow for greater comfort, flexibility, and dexterity for the user – allowing them to focus on their mission.

Via multiple field-testing events, first responders have been able to provide detailed feedback on the glove design and requirements. Their input has been incorporated into the improved glove. The final glove prototypes will be completed by September 30, 2020. Distribution to SAR groups and commercialization of the glove will be accomplished in this timeline.



ENHANCED RESCUE HOIST GLOVE IMPACT

The design and performance of the enhanced rescue hoist glove will provide for a long lasting, better performing glove that will allow helicopter personnel and first responders to concentrate on their rescue missions and not be concerned about whether their protective gloves will last for the rescue. The result will be the ability to complete more successful missions, to be able to save more lives, and to save taxpayers money for the numerous SAR units throughout the nation.