

The Army's New Intermediate Cold Wet Glove

By Frank Masley

Think about how it feels to be out in the cold. The temperature drops to the freezing point. Your surroundings are wet and will soon ice over. There is no warm place for refuge. Added to the environmental stress, you have a mission to perform. You must operate equipment. You may need to defend yourself and your team with accurate firing of your weapon. And this mission may keep you far from the supply room for days, weeks and months.

If you know this feeling, then you may be an Infantry soldier, and you may have searched extensively for improved clothing items. In a physically small, yet important way, help is coming. One of the latest items to receive Army improvement for this environment is hand wear.

A new improved Intermediate Cold Wet Glove (ICWG) has been developed by the U.S. Army Soldier Center at Natick, Mass., in support of the Program Manager, Clothing and Individual Equipment (PM-CIE), PEO Soldier. In the fall of 2004, the Soldier Center awarded a contract to Masley Enterprises, Inc., to design the new glove with specific guidelines from Project Engineer Valerie Banville at the Natick Soldier Center.

Design Challenge

The design challenge for improving the existing ICWG was to balance the end user needs for warmth, durability and dexterity/tactility. The previous glove model provided warmth and durability; however it was limited by the materials and pattern design available in 1990. The goal for the new ICWG was to maintain the current warmth and durability, and then improve on flexibility, dexterity and the tactility necessary to handle equipment and fire a weapon accurately.

The typical material solutions for these needs are conflicting in nature. Warmth generally requires thick insulation, no compression and a separate waterproof layer. Durability requires relatively stiff and thick materials. Dexterity/Tactility, also referred to as flexibility of the hand and sense of touch, requires thin, pliable materials.

PM-CIE required the new design to have side panels (forchettes) on the fingers, pre-curved fingers and more flexible materials. The founder of Masley Enterprises used his experiences in cold wet environments as a member of the U.S. Olympic Luge team in 1980, 1984 and 1988 to design several concept gloves for Natick adhering to the requirements provided. Natick provided feedback and Masley developed an improved design that met their requirements.

Improvements to the new design include:

- Three-dimensional finger constructions, due to the side panel forchettes, minimizes compression of the insulation. Natick's test results of the new design show a whole glove insulation "Clo" value (units used for measuring insulation) improvement.
- Goatskin leather with water repellent treatment has been used on the palm surface. Goatskin has the natural properties of wet-dry stability and superior abrasion resistance compared

to similar weights of cowhide. Goatskin is the leather of choice for performance sports gloves; it will not stretch out after repeated wet cycles and will not dry hard.



- A stretch fabric is used on the back of the hand for improved flexibility, light weight and low water absorption.
- The pattern design minimizes seams on the trigger finger and in the thumb wear area. This improves the sense of touch, tactility and improves grip.
- A nose wipe pattern piece is added to the back of the hand for ... you guessed it! For those times when it is below freezing and the user is performing moderate exercise activity, it is almost impossible to keep the nose from running.

To complement these design features, the new ICWG will have seven sizes, compared to the previous five, to provide a more custom fit for the soldier.

Warm, flexible gloves are critical to soldiers in a cold climate. Immobility of the hands and fingers affects his skill as a warrior since almost every task involves using the hands. The new ICWG should provide soldiers with the mobility needed to accomplish the mission—and keep their hands warm while they do it.



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