



MONTGOMERY COUNTY FIRE AND RESCUE SERVICE

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PROPOSAL FOR STRUCTURAL FIREFIGHTING GLOVES

June 3, 2016

Proposal: The Joint Health and Safety Committee (JHS) recommends the Fire-Dex, Dex-Pro 3D leather glove with gauntlet cuff as the structural firefighting glove for Montgomery County Fire and Rescue. The Fire-Dex, Dex-Pro glove is recommended based upon the evaluations of MCFRS personnel over the course of a 5 month wear trial where a total of 439 evaluations were completed. A final evaluation was conducted in the flashover simulator by fire instructors and several members of the Joint Health and Safety Committee where the dexterity and ability to protect from heat were proven to be far superior than the other gloves in the evaluation.

Purpose: The evaluation of structural firefighting gloves was conducted based upon the fact that many of our personnel were not wearing the issued glove due to a lack of dexterity with the issued glove which proved to increase fatigue, prevent fine motor skills, and delay critical operational tasks. By supplying a high quality structural firefighting glove to all MCFRS personnel we can have a high likelihood that all of our employees will be wearing a glove that provides a high level of protection from heat while allowing personnel the ability to quickly perform skills such as operating their portable radio and EB button, perform RIT skills that were previously much more difficult, such as donning a facepiece, connecting the UAC, and performing skills such as forcible entry and hooking more efficiently.

Evaluation: To evaluate the structural firefighting gloves both career and volunteer personnel with a diverse group of hand sizes were selected. All personnel attended a glove fitting to ensure they were wearing the proper glove. All personnel were issued a glove for approximately 30 days, at the end of the 30 days the gloves were returned to the Battalion office and a new test glove was issued. When the evaluator received their gloves they submitted an initial evaluation, during the month the evaluators submitted a daily evaluation of the glove and finally at the end of each month the evaluators submitted a final evaluation summarizing their experience with the glove. A copy of the daily and initial/final evaluations and the data collected is attached; the key components that we were evaluating were:

1. Proper sizing of gloves
2. Gloves that were able to fit all of our employees

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3. Gloves that gave the highest level of protection in severe heat conditions – the gloves needed to offer protection during room and content fires but also in extreme cases where firefighters were trapped in pre-flashover conditions
4. Gloves that would allow our personnel to quickly, safely, and efficiently perform tasks while reducing fatigue
5. Gloves that would withstand daily use
6. Gloves that interfaced well with our current PPE wristlet and coat

Findings:

Based upon the data collected from the initial/final evaluations we found the following for whether personnel would recommend the gloves:

- Fire Dex = 90% of the evaluators would recommend the glove
- ProTech Fusion = 90% of the evaluators would recommend the glove
- Innotex 785 = 70% of the evaluators would recommend the glove
- Innotex 755 = 56% of personnel would recommend the glove
- ProTech Evolution = 37% of the evaluators would recommend the glove
- Lion Defender = 2% of evaluators would recommend the glove

The gloves that evaluators did recommend performed with a high level of dexterity, integrated well with their coats, and allowed personnel to quickly don the glove. The gloves that received negative recommendations had poor dexterity, were not quick and easy to don, and did not integrate well with their coat.

After all daily evaluations were completed a final practical evaluation was completed by 7 fire instructors, 3 of which were members of the JHS committee. This evaluation was conducted inside of the flashover simulator where the gloves could be evaluated in high heat (temperatures reaching the upper 900's based upon the thermal imager) while performing essential firefighting tasks with dry and wet conditions. These tasks included use of the portable radio, EB activation, buddy breathing, placing a face piece on a downed firefighter (mannequin), UAC, hooking up the coupling for the regulator, use of nozzle, grabbing a steel halligan bar when hot (evaluate conduction and heat retention), starting and operating a chain saw and cut off saw. **Based upon the evaluations in the flashover simulator all 7 personnel had 100% agreement that the Fire Dex glove performed the best in terms of dexterity, heat tolerance, speed of cooling once hot, and performance while wet; in fact all 7 evaluators would not recommend any of the other gloves because of problems encountered – mainly excessive heat.**

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	Lion Defender	Inno-Tex 785	Inno-Tex 755	Pro-Tech 8 Fusion	Pro-Tech 8 Evolution	Fire-Dex
Don/Doff	65% satisfaction	100% satisfaction	94% satisfaction	80% satisfaction	24% satisfaction	96% satisfaction
Dexterity	Poor	Excellent	Moderate	Very Good	Moderate	Excellent
Heat Tolerance	Good	Poor	Poor	Moderate	Poor	Excellent
Recommend	No	No	No	No	No	Yes
Interface with current coat	No Issues	No Issues	Few issues	No Issues	Poor Interface	No Issues
Performance (RIT skills, tool handling, saw operation, forcible entry, nozzle operations, truck work)	Poor	Excellent	Some difficulty	Excellent	Some difficulty	Excellent

Cost: The contract price for the Fire-Dex, Dex-Pro leather glove with gauntlet cuff is \$71.79; the Lion Defender, our current glove is \$54.

The Fire-Dex glove will have an increased cost but is a glove that has shown to have greater dexterity allowing our personnel to complete fire ground tasks with greater efficiency and better dexterity. The Fire-Dex glove will also allow personnel to perform critical tasks, such as providing a downed firefighter air, easier use of hand tools, and improved ability to operate the radio. The benefits of the Fire-Dex glove greatly outweigh the increased cost of the gloves.

We tried to evaluate how all of the test gloves compared with sizing of the current issued glove but this was difficult to evaluate because MCFRS personnel have never been sized for the proper glove and some personnel wear smaller sized gloves so that they will have better dexterity.

Implementation: It is recommended that MCFRS begins purchasing the Fire-Dex gloves as soon as a new glove purchase is necessary. For the current supply of Lion Defender gloves it is recommended that they be issued to all new employees/members of MCFRS and be utilized during the fire academy and probationary year, at the end of the probationary year the employee/member is able to request a pair of the Fire-Dex glove. Supplying the stock of Lion gloves will allow us to not waste what we have and protect the Fire-Dex glove from early and unnecessary damage. The Fire Dex glove and most of the gloves that were tested, is made of a softer and different leather which allows for increased dexterity but will also be more susceptible to damage, especially

when used in the Academy where personnel are repeatedly performing skills on hard concrete and other abrasive materials.

The recommendation is for personnel to obtain only one set of gloves until all personnel are able to receive a set of gloves. When personnel receive their gloves from property they will be able to read an article posted on the wall that explains the proper fitting of the gloves as well as how to care for the gloves and some features of the glove that the end user should be aware of. Prior to distribution the personnel at the property section will be briefed on the glove, proper fitting and features of the glove.

If for some reason there are personnel that cannot find a properly fitting glove then they should receive a pair of the stocked Lion Defender glove and the Property section should document the issue. All issues will be brought to the attention of Fire Dex and they shall be requested to make a glove that will fit the employee; the only time this may be an issue is for abnormally short or long fingers or for personnel that have lost a portion of their digit.

Prior to distributing the new gloves the JHS will publish a summary of the gloves to include any specifics of the glove as well as a summary of how the gloves were chosen. The document will also specify how gloves should fit for proper sizing and how the gloves shall be maintained and cleaned. The JHS will also meet with the personnel assigned to property to ensure proper sizing is conducted when distributing the glove.

The Joint Health and Safety Committee would like to thank Chief Goldstein and former Chiefs Lohr and Chief Bowers as well as IAFF Local 1664 President Jeff Buddle for their support of this evaluation of structural firefighting gloves.

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