28 July 2011

REQUEST FOR INFORMATION: USMC COLD WEATHER GLOVE

****THIS IS NOT A SOLICITATION****

1. BACKGROUND: United States Marine Corps (USMC) is conducting a market survey to determine the availability of commercial or modified commercial products with improved cold/wet weather protection when compared to the USMC's current 5-finger Cold Weather (CW) Glove (shell with removable insulated liner) NSN 8415-01-457-1557. The intent is to replace the USMC's current CW Glove with an improved version. During January 2011 a limited user evaluation (LUE) was conducted at Marine Corps Mountain Warfare Training Center to test an insulated shell and liner which could be used as individual items or together as a system. Based on the results/feedback of the LUE, Program Manager, Infantry Combat Equipment decided that a single glove should be tested instead of the original 2 glove (shell with liner) system concept. This change from a 2 glove (shell with liner) system to a 1 glove concept should offer the Marine improved dexterity, grip, and fit while also providing less bulk. The design should allow for maximum cold/wet weather protection and insulation while still allowing for an adequate level of tactility to complete missions. The samples submitted shall meet the requirements in the below description, and the materials used shall meet or exceed as many of the threshold and objective requirements as possible listed in Tables 1 & 2.

After review and evaluation of industry's submissions, the most promising candidates may be procured and used in an FY12 Marine Corps field test to determine if it warrants Marine Corps adoption.

2. DESCRIPTION/REQUIREMENTS: The Marine Corps seeks products that meet as many of the requirements as possible outlined below:

- Provide cold/wet weather protection and insulation
- Waterproof yet breathable with a water repellant outer shell fabric
- Durable palm material
- Fast drying
- Good overall durability
- Good dexterity & grip
- Will not freeze
- Clo value: 0.8 – 1.1

TABLE I: SHELL MATERIAL REQUIREMENTS (INCLUDING LAMINATES)

Characteristic	Threshold (requirement)	Objective (desired)	Test Method
Weight: ounces/square yard	6.2 minimum 8.2 maximum	6.2 maximum	ASTM D-3776, Option C
Water Vapor Transmission Rate: $g/m^2/day$			
Method B (hand-side to water)	550 minimum	750 minimum	ASTM E96, 1/
Method BW (hand-side to water)	4,500 minimum	6,000 minimum	ASTM E96, 2/
Puncture, Propagation, and Tear Resistance (PPT): lbf	Warp: 8.0 minimum Fill: 5.0 minimum	Warp: 12.0 minimum Fill: 8.0 minimum	ASTM D2582, 3/
Water Permeability after Cold Gelbo Flex: cycles (0^oF)	1,000, no leakage	1,500, no leakage	ASTM D751, 4/ ASTM F392, 5/
Mullen Hydrostatic Resistance: psi			ASTM D751, 6/
Initial	40 minimum	60 minimum	
Spray Rating			
Initial	100, 100, 90	100, 100, 100	AATCC-22
After 5 Launderings	80, 80, 80	90, 90, 90	AATCC-135

1/ The hand side of the fabric shall face the water. The free stream air velocity shall be 550 ± 50 fpm as measured two inches above the fabric specimen. The air flow shall be measured at least 2 inches from any other surface. The test shall be run for 24 hours and weight measurements shall be taken at only the start and completion of the test. At the start of the 24-hour test period, the air gap between the water surface and the back of the specimen shall be 3/4 ± 1/16 inch. Five specimens shall be tested.

2/ The hand side shall face the water. The free stream air velocity shall be 550 ± 50 fpm as measured 2 inches above the fabric specimen. The air flow shall be measured at least 2 inches from any other surface. The test shall run for 2 hours and weight measurements shall be taken at only the start and completion of the test. Five specimens shall be tested. The specimen shall be sealed in any manner which prevents wicking and/or leaking of water out of the cup.

3/ Five individual 6" x 8" specimens warp direction and five specimens 6" x 8" fill direction shall be tested and the average force shall be reported as the PPT resistance. Condition specimens 70^oF 65% RH prior to testing. Use the standard drop height of 20 inches. Read tear length to nearest 0.5 mm.

4/ The water permeability shall be measured as specified in ASTM D-751, Hydrostatic Resistance, Procedure B, with a fixed hydrostatic head of 0.7 lbs/in^2 minimum shall be held for 3 minutes minimum, the fabric face shall contact the water. Three

specimens minimum shall be tested. The report shall include only measurement of the appearance of the water droplets. Leakage is defined as the appearance of one or more droplets anywhere within the 3 ½ inch minimum diameter test area. The test may be performed using any device which tests the same specimen area at the equivalent pressure. Refer to AATCC 127 for test apparatus. Test the external side of the sample.

5/ One specimen, 8 inches by 12 inches, shall be cut from the sample unit with the eight inch side in warp direction and one specimen with the eight inch side in the fill direction. The specimen shall be conditioned at 0^{o}F for one hour and flexed as specified in ASTM F392 except the specimen shall not be aged, the short edges shall not be heat sealed or otherwise joined, and the specimen shall be flexed for the number of cycles required in Table 1. At the end of the flexing, the specimen shall be removed from the test chamber and conditioned prior to testing for water permeability. Test two sites for leakage at completion of flex using same conditions and inspection criteria as footnote above.

6/ Test five samples. ASTM D751 (Hydrostatic Resistance Procedure A1). No restraining or supporting fabrics are to be used during the testing. The exterior side of the fabric shall face the water.

PALM MATERIAL REQUIREMENTS (IF LEATHER):

Leather. The leather palm shall be constructed from water resistant full grain, chrome tanned goatskin, or equal. The color shall approximate the shade of the material and shall be drum dyed, struck through from grain to flesh. The finished leather shall conform to the following requirements:

TABLE II: LEATHER REQUIREMENTS

Characteristic	Threshold (requirement)	Objective (desired)	Test Method
Thickness: ounces	1.75 minimum 2.25 maximum	1.75 minimum 2.25 maximum	ASTM D-1814
Moisture Vapor Transmission Rate: grams/square meter/24 hours	0.005 minimum	0.01 minimum	ASTM D-5052
Oil and Stain Resistance: Grade	5 minimum	6 minimum	AATCC 118-2002
Abrasion Resistance at 1000 cycles with CS-10 wheel and 500g load: %	20 maximum	10 maximum	ASTM-D-7255
Stiffness: degrees	At least 80% of the specimens tested shall be 90 degrees maximum	At least 80% of the specimens tested shall be 60 degrees maximum	ASTM D-2821
Stitch Tear: pounds	At least 80% of the specimens tested shall be 16 pounds minimum	At least 80% of the specimens tested shall be 25 pounds minimum	ASTM D-4705
Elongation at 25 pound load: %, Incl 3 Grain Cracks	At least 80% of the specimens tested shall be 25% minimum, 60% maximum, at 25 pounds load	At least 80% of the specimens tested shall be 25% minimum, 60% maximum, at 25 pounds load	ASTM D-2209
Shrink Temp: degrees Celsius	0% at 92°C minimum	0% at 92°C minimum	ASTM D-6076
Perspiration Resistance: % area loss	10 maximum	5 maximum	ASTM D-2322
Area Stability to Laundering: %	10 maximum	5 maximum	ASTM D-2096
Static Water Absorption: %	40 maximum	25 maximum	ASTM D-6015
Dynamic Water Absorption: %	30 maximum	15 maximum	ASTM D-6014
pH: Grade	3.0 minimum	3.3 minimum	ASTM D-2810

NOTE: If a material other then leather is used for the palm, results should be comparable to requirements in Table II.

3. FIELDING: If testing supports adoption of a CW Glove, it would be issued as organizational equipment from the USMC Special Training Allowance Pool (STAP)/Unit Issue Facility (UIF) as required for unit training and deployment. Basis of issue (BOI) will be 1 per Marine. The USMC procurement quantity would depend upon the phase-in plan and availability of funding. The Approved Acquisition Objective (AAO) will be 35,000 pairs, and sustainment quantity is projected to be approximately 25% or 8,750 pair per year.

4. GLOVE CANDIDATES: The Government requests interested suppliers identify gloves that are within their existing product line production capabilities, or can be easily modified to meet the required salient characteristics.

To respond to this RFI, interested suppliers are REQUIRED to submit the following for their submission, enabling the Government to efficiently evaluate the viability and benefit of your proposed glove. Information will be handled as proprietary and samples will not be returned.

1. Material Description: The supplier must identify the specified requirements it meets. If a supplier submits multiple sample products to fulfill the outlined requirement, they must identify the advantage/disadvantage of the competing products submitted.
2. Test data for all materials used.
3. Information regarding if glove is or could be Berry compliant if adopted.
4. Provide estimated unit cost per pair.
4. Submit 5 pairs (in any color or print on hand) of various sizes including SM, MED and LRG.
5. Describe other attributes that may not be apparent from material description provided/visual inspection of gloves.

Initial samples submitted by interested suppliers are due NLT 15 Sep 11 for Marine Corps review. If the Marine Corps is interested in further evaluating a glove submission, the Government will procure additional samples and/or material for testing within 15 – 30 calendar days after initial submission. The Government expects to complete its detailed laboratory screening evaluation and select candidate gloves by 30 Oct 11. If the Marine Corps selects gloves for field evaluations, it is anticipated 200 CW Gloves will be procured in appropriate Marine Corps colors, either coyote or black.

5. CONTACT: Direct questions and samples to:

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