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AVIS

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**MANUFACTURING DATA  
FOR  
GLOVES, LIGHTWEIGHT THERMAL/MORTAR, BROWN**

**1.0 SCOPE**

**1.1 Scope**

This specification covers the material, design and construction requirements for the Gloves, Lightweight Thermal/Mortar, Brown.

**1.2 Classification**

The Gloves covered by this Manufacturing Data are classified as follows: Gloves, Lightweight Thermal/Mortar, Brown.

**2.0 GENERAL**

**2.1 Intellectual Property**

The information, data, know-how, formulas, algorithms, software, processes, systems, methods, designs, text, works, figures, tables, sketches, photographs, plans, drawings, specifications, samples, reports, names, inventions and/or ideas contained herein (hereinafter "Intellectual Property") is the exclusive property of Her Majesty The Queen in Right of Canada as represented by the Minister of National Defence (hereinafter referred as "DND"). No one has the right to reproduce, disclose, disseminate, or utilize, in any manner or in any form, this Intellectual Property, or any part thereof, without the prior written consent of DND. For further information on the restrictions applicable to this Intellectual Property, or to request consent from DND, please contact the Contracting Authority.

**2.2 Applicable Documents**

The following documents form part of this Manufacturing Data to the extent specified, and are supportive of this Manufacturing Data when referenced; all other document references are to be considered supplemental information only. In the event of a conflict between the documents referenced and the contents of this Manufacturing Data, then the contents of this Manufacturing Data must take precedence:

*DND Specifications and Standards (provided upon request)*

- D-80-001-055/SF-001 Specification for Label, Clothing and Equipment

*CAN/CGSB Standards (email: [ncr.cgsb-ongc@pwgsc.gc.ca](mailto:ncr.cgsb-ongc@pwgsc.gc.ca))*

- CAN/CGSB 4.2-M Textile Test Methods
- CAN/CGSB-54.1-M Stitches and Seams, Parts I and II
- CAN/CGSB-86.1-2003 Care Labelling of Textiles
- CAN/CGSB-4.139 Polyester Staple Thread
- 4-GP-85Ma Nylon Thread

American Society for the Testing of Materials (www.astm.org)

- ASTM D 2594 Standard Test Method for Stretch Properties of Knitted Fabrics Having Low Power
- ASTM D 737 Standard Test Methods for Air Permeability of Textiles
- ASTM E 96 Standard Test Methods for Water Vapour Transmission of Materials

2.2.1 Order of Precedence

The order of preference is as follows:

- (a) In the event of inconsistency between contract documents, such as contract, Manufacturing Data, drawing and sealed pattern, the order of precedence must be contract, Manufacturing Data, drawing and sealed patterns;
- (b) In the event of a conflict between the text of this manufacturing data and the references cited herein, the text of this manufacturing data must take precedence;
- (c) In the event of inconsistency within this manufacturing data, the Contracting Authority must be contacted for clarification; and
- (d) Nothing in this document supersedes applicable laws and regulations, unless a specific exemption has been obtained.

2.3 Definitions

Earth Tone	By definition, earth tone is considered a color scheme that draws from a color palette of browns, tans, grays, greens, oranges, whites and some reds. The colors in an earth tone scheme are muted and flat in an emulation of the natural colors found in soils, moss, trees and rocks. For the purpose of this specification, the earth tone color (where specified) must be based on the predominantly brown, tan and gray color series (lusterless) within FED STD-595C, where those colors do not include any elements of orange, red and white.
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2.4 Layout Sketches

Schematic layout sketches for the Gloves are included as part of this Annex. The sketches are designed to provide a general layout of the Glove only. They are not to scale and are not representative of the style, fit, colour scheme or form of the final garment. The following sketches are included in Appendix 1:

- (a) Figure 1: Front and Back Views; and
- (b) Figure 2: Scale of Measurements.

2.5 Patterns

DND will provide patterns as follows:

- (a) Sealed pattern: DSSPM 392-05 - Gloves, Lightweight Thermal/Mortar (for glove design only); and
- (b) Paper patterns - Paper patterns for all sizes under Style Code MORGLV33 Lightweight Thermal/Mortar Glove.

Note: The patterns for the Lightweight Thermal/Mortar Glove are to be used for the construction of the Lightweight Thermal/Mortar Glove, Brown.

### 3.0 REQUIREMENTS

#### 3.1 Design

The design must be in accordance with Sealed Patterns DSSPM 392-05 and must incorporate the following features:

- (a) Water resistant black goatskin leather with enhanced surface gripping ability in the palm and finger reinforcement;
- (b) Woven, nylon/spandex face laminated to a polyester/spandex velour fleece back;
- (c) Glove is inseam sewn; and
- (d) Gauntlet style wrist.

#### 3.2 Materials

- (a) Glove Body and Fourchettes - The glove body and fourchettes material must be as follows:
- i. Conform to the requirements at Table 1;
  - ii. Nylon/spandex plain weave face laminated to a polyester/nylon/spandex velour knit back;
  - iii. Not show any visible signs of delamination or loss of film during the life of the glove where delamination is defined as separation, bubbling, cracking or holes between the layers of material; and
  - iv. Be a non-florescent earth tone colour (e.g., brown);

Table 1: Requirements for finished fabric - glove body and fourchettes.

Property	Test Method	Specified Requirement	Minimum Acceptable	Maximum Acceptable
Fiber Content	CAN/CGSB 4.2 Test Method 14	49% nylon 31% polyester 20% spandex	45% nylon 26% polyester 18% spandex	54% nylon 36% polyester 22% spandex
Mass (g/m <sup>2</sup> )	CAN/CGSB 4.2 Test Method 5.1	312	280	344
Water Resistance (as received)	CAN/CGSB 4.2 Test Method 26.2	90	80	
Colourfastness to Crocking Face (smooth side) only	CAN/CGSB 4.2 Test Method 22	Dry Staining: GS 5 Wet Staining: GS 5		Dry Staining: GS 4 Wet Staining: GS 3

Colour Fastness to Laundering (Colour Change Only)	CAN/CGSB 4.2 Test Method 19.1 Test No. 2	Colour change: GS 5		Colour change: GS 3-4
Dimensional Stability after 3 wash-dry cycles	CAN/CGSB 4.2 Test Method 58 III.E			Length: $\pm 5\%$ Width: $\pm 5\%$
Stretch Properties (% Stretch at 10lbf Load)	ASTM D 2594		Length: 15% Width: 15%	
Resistance to Pilling	CAN/CGSB 4.2 Test Method 51.2	After 30 minutes Face (smooth side): 5	After 30 minutes Face (smooth side): 3	
Resistance to Water Vapor Diffusion (g/m <sup>2</sup> /24hours)	ASTM E 96 (water method) 23°C, R.H. 50%		800	
Air Permeability (ft <sup>3</sup> /min)	ASTM D 737			12
Delamination	Visual	Note 1		

Note 1: All test samples must be visually examined for delamination before, during and after all test procedures.

- (b) Palm and Thumb Reinforcement - The palm and thumb reinforcement material must be as follows:
- i. Made from drum dyed, aniline goatskin;
  - ii. Thickness:  $0.8 \pm 0.1$  mm ( $0.03 \pm 0.003$  in);
  - iii. Dries soft; and
  - iv. Be black in colour;
- (c) Thread - The following applies:
- i. The thread for closing the cloth portions of the glove must:
    - a. Be polyester staple thread, size R-27 Tex;
    - b. Meet the requirements specified in CAN/CGSB-4.139 for breaking strength, shrinkage and colourfastness; and
    - c. Be a non-florescent earth tone colour to match the glove body and fourchettes material
  - ii. The thread for sewing the leather pieces together and for stitching the leather palm reinforcement to the cloth must:
    - a. Be Nylon (Continuous Filament) conforming to 4-GP-85Ma, 45 Tex, Type II Class A; and
    - b. Be black in colour.

### 3.3 Sizing

The Gloves must be available in the following sizes in accordance with the Scale of Measurements at Appendix 2:

Size	NSN
Extra Small	8415-20-011-8001
Extra Small Long	8415-20-011-8002
Small	8415-20-011-8003
Small Long	8415-20-011-8004

Medium	8415-20-011-8005
Medium Long	8415-20-011-8006
Large	8415-20-011-8007
Large Long	8415-20-011-8008

3.4 Tooling

The Government will not provide tooling.

3.5 Cutting

The following applies:

- (a) The Gloves must be cut using duplicates of Government supplied paper patterns as follows:
  - i. Paper patterns include seam allowance but do not include 'make-up' allowance; and
  - ii. The Contractor is responsible for adding 'make-up' allowance to suit their production methods without changing the design nor the dimensions specified herein for the Gloves;
- (b) The leather parts of the Gloves must:
  - i. Be cut using a tranking procedure from leather that has been fully and properly stretched lengthwise and crosswise; and
  - ii. Be free from imperfections and blemishes that affect appearance, quality or serviceability, in accordance with good commercial practice.

3.6 Sewing

The following applies:

- (a) Seams and stitches must :
  - i. Be in accordance with CAN/CGSB-54.1-M;
  - ii. Have smooth and regular formed seams with even seam allowances;
  - iii. Have stitching that is accurately and evenly placed from seam edges as specified;
  - iv. Utilize a needle size that is the minimum size compatible with sewing thread;
  - v. Have thread ends trimmed and removed; and
  - vi. Have thread tension adjusted to ensure balanced and correctly formed stitches. Skips, puckers or stitching malfunctions are not acceptable;
- (b) Lock stitching must be as follows:
  - i. Stitch type 301 with 12.5-15 stitches per 2.54 cm (1 in); and
  - ii. Have the beginning and end of lock stitched seams and stitching, and any breaks in stitching, securely backstitched with 3-4 stitches if there is no other method used to secure the end of the seam;
- (c) When specified:
  - iii. Serging must be done using a one stitch zig-zag, stitch type 304, with 10-12.5 stitches per 2.54 cm (1 in);
  - iv. Zig-zag stitching must be done using Stitch Type 321 with 10-13 stitches per 2.54 cm (1 in); and
  - v. Lock chain stitching must be Type 401 with 12.5-15 stitches per 2.54 cm (1 in).

3.7 Marking and Care Label

The Gloves must include a Marking and Care Label in each glove as follows:

- (a) The label must be as follows:
  - i. Meet the specifications according to D-80-001-055/SF-001 Type I, with the exception of having no minimum weight;
  - ii. Have a base fabric that is single-face satin weave composed of polyester or nylon, with woven selvages, non-coated;
  - iii. Maximum width: 38 mm (1.5 in);
  - iv. Earthtone in colour (i.e., tan or brown); and
  - v. Single layer or folded in half with markings showing on the face and the flip side;
- (b) Positioned horizontally inside the fold of the cuff hem at the back of the hand and caught in the seam of the hem;
- (c) Care symbols in accordance with CAN/CGSB-86.1-2003 including the following:
  - i. Washing – Symbol 16 (Hand wash in warm water);
  - ii. Bleaching – Symbol 3 (Do not bleach);
  - iii. Drying – Symbol 10 (Hang to dry); and
  - iv. Ironing/Pressing – Symbol 5 (Do Not Iron);
- (b) Include the following information printed indelibly and legibly on the label in accordance with specification D-80-001-055/SF-001:
  - i. Nomenclature in English and French;
  - ii. Care instructions in English and French;
  - iii. NATO Stock Number (NSN) for each size;
  - iv. Size;
  - v. Contract Number;
  - vi. Name of Contractor;
  - vii. Month/Year of manufacture; and
  - viii. A line suitable for the user to write his name and/or service number;

### 3.8 Construction

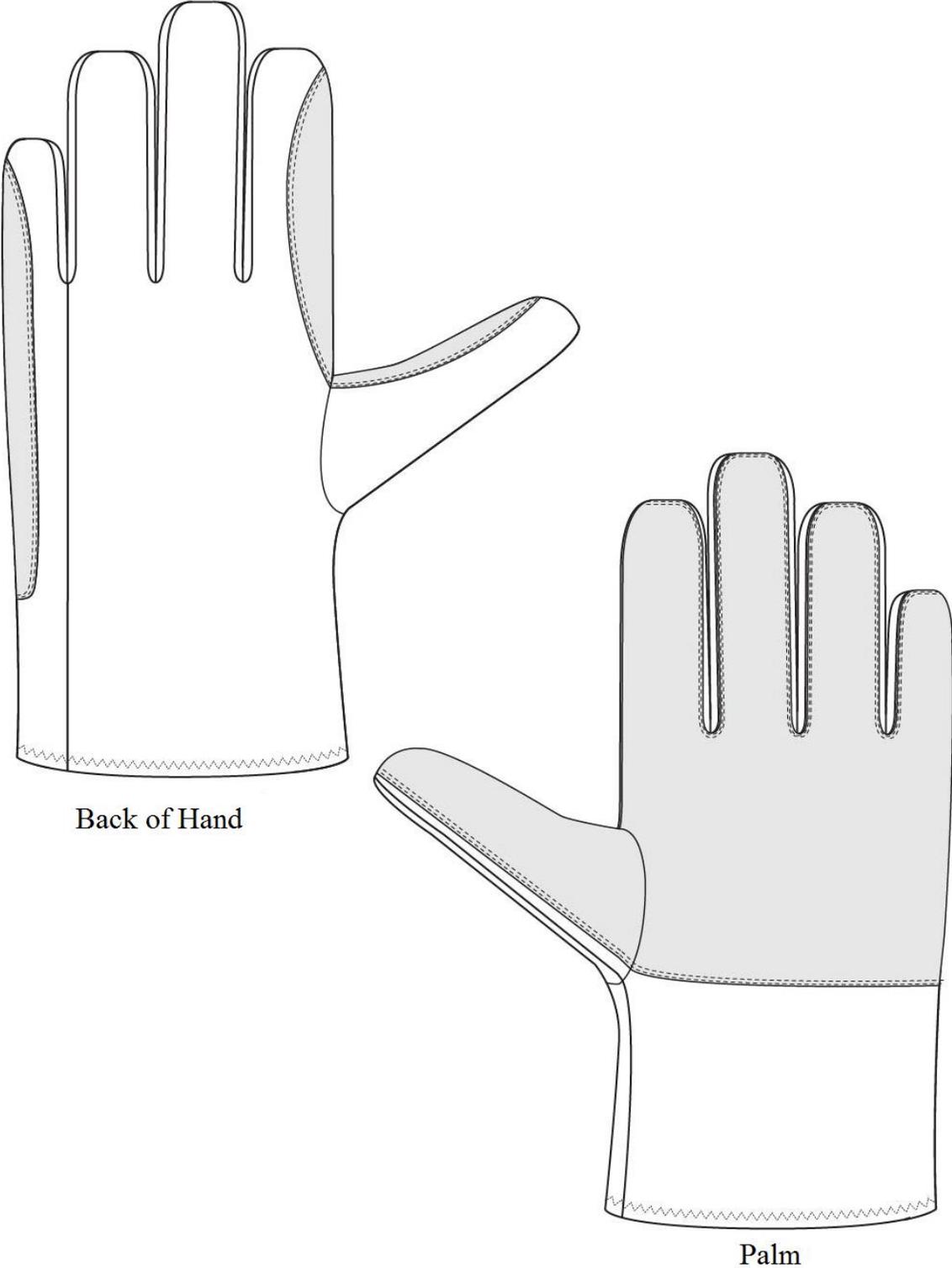
The Gloves must be manufactured in accordance with the following requirements (provided for guidance only):

- (a) Fourchettes as follows:
  - i. Lock chain stitched to the fingers on the palm of the hand using Seam Type 1.01.01 (inseam sewn); and
  - ii. Tapered at each fingertip, to meet the Scale of Measurement and to ensure satisfactory fit;
- (b) Thumb as follows:
  - i. Cloth thumb lock chain stitched cloth body of the hand using Seam Type 1.01.01;
  - ii. Include a leather thumb and palm reinforcement as follows:
    - a. The leather thumb reinforcement lock stitched to the palm reinforcement using Seam Type 1.01.01;
    - b. The completed palm reinforcement piece lock stitched onto the corresponding thumb and fingers of the cloth glove with a double row of Stitch Type 1.02.01 set 1.5 mm to 2 mm (0.059 in to 0.079 in); and
    - c. First row of stitching 1.5 to 2 mm (0.059 in to 0.079 in) from the edge;
  - iii. Thumb closed with a lock chain stitch and Seam Type 1.01.01 to approximately 19 mm (0.75 in) past the thumb and palm intersection;

- (c) The glove is lock chain stitched closed at the back using Seam Type 1.01.01;
- (d) The remaining finger seams of the glove are lock chain stitched closed using Seam Type 1.01.01;
- (e) The gauntlet portion of the thumb seam is serged using Seam Type 1.01.01 to approximately 25 mm (1 in) past the thumb and palm intersection;
- (f) The bottom edge of the Glove turned under to form a hem 7-9 mm (0.275-0.35 in) wide zig-zag stitched with Seam Type 6.02.0 ensuring to catch the label in the hem at the back of the hand; and
- (g) The gloves turned and properly worked out at fingertips.

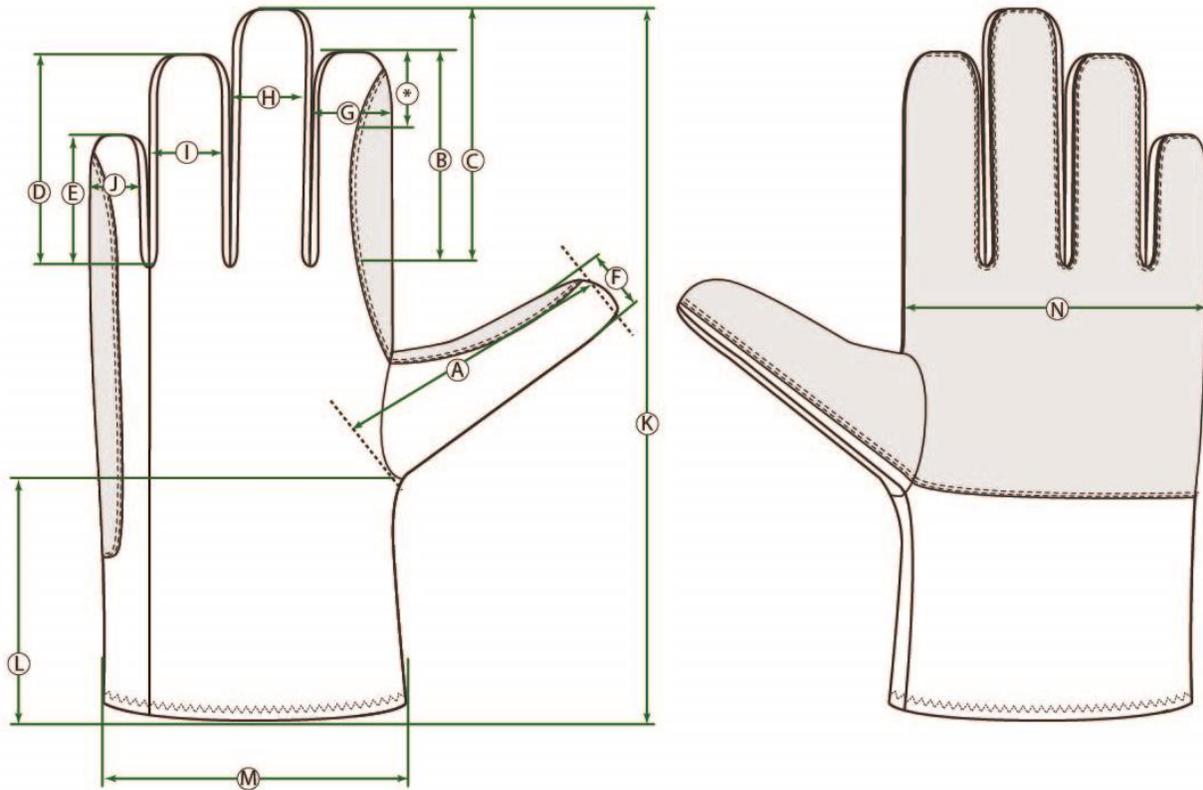
**APPENDIX 1 LAYOUT SKETCHES**

Figure 1: Front and Back Views



**APPENDIX 2 SCALE OF MEASUREMENTS**

Figure 2: Scale of Measurements



	Description	Extra Small	Extra Small Long	Small	Small Long	Medium	Medium Long	Large	Large Long	Tol +/-
A	Length of 1st Finger	116	121	124	127	130	134	138	140	3
B	Length of 2nd Finger	65	72	70	77	75	83	79	87	3
C	Length of 3rd Finger	75	81	81	87	87	93	93	99	3
D	Length of 4th Finger	75	81	81	87	87	93	93	99	3
E	Length of 5th Finger	53	58	57	62	61	66	65	70	3
F	Width of 1st Finger	29	29	32	32	33	33	35	35	3
G	Width of 2nd Finger	28	28	31	31	32	32	34	34	3
H	Width of 3rd Finger	30	30	33	33	34	34	35	35	3
I	Width of 4th Finger	27	27	29	29	31	31	33	33	3
J	Width of 5th Finger	26	26	28	28	30	30	32	32	3
K	Glove Length	254	266	266	277	278	288	290	299	3
L	Cuff Length	83	83	83	83	83	83	83	83	3
M	Cuff Width	109	109	116	116	123	123	127	127	3
N	Palm Width	103	102	110	110	117	117	124	124	3

\* Measurement for width of finger taken from 2 cm (0.8 in) below fingertip