

**SPECIFICATION**

**FOR**

**CADPAT™ (WO)**

**[CANADIAN DISRUPTIVE PATTERN (WINTER OPERATIONS)]**

**1. SCOPE**

**1.1 Scope.** This specification covers the technical performance requirements for colour, ultra-violet (UV) and Infra-red Reflectance (IRR) for CADPAT™ (WO), Canadian Disruptive Pattern Winter Operations. It is intended for use, when specified, for all textiles used by the Canadian Forces for operational clothing and personal equipment. Any allowed deviations from the requirements stated herein shall be clearly defined in procurement documents.

**1.2** The information contained herein is Copyright to Her Majesty the Queen of Canada, as is its associated pattern. The term CADPAT™, with and without extensions, is a registered Trademark belonging to the Department of National Defence. Any of the data contained in this specification, and its associated pattern, may be used only for goods for Canada. The printed textile and any items made therefrom shall be for the sole end use of DND. There shall be no selling or offering for sale of goods incorporating the CADPAT™ pattern and colours to any person or entity other than Canada without the Minister's prior written authorization. Explicit in this is that any goods of not first quality produced shall not be released, sold, or offered for sale, directly or indirectly, to any person or corporation other than Canada without the Minister's prior written authorization.

**1.2.1** 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 Design Authority, Director Soldier Systems Programme Management, or the Director of Intellectual Property, Department of National Defence, 101 Colonel By Dr., Ottawa, K1A 0K2, Canada.

**2. APPLICABLE DOCUMENTS**

**2.1 Government Documents.** Copies of this specification may be obtained from the Department of National Defence, Ottawa, Ontario, Canada K1A 0K2, Attention: DSSPM 2-2.

**2.2 Other Publications.** The following documents form part of this Specification to the extent specified herein. Effective dates shall be those in effect on the date of manufacture. Sources are as shown.

**ISO**

**Standards Council of Canada**  
270 Albert Street, Suite 200  
Ottawa, ON  
K1P 6N7  
Telephone: 613-238-3222  
Email: [info@scc.ca](mailto:info@scc.ca)  
Website: [www.scc.ca](http://www.scc.ca)

**CIE**

**International Committee on Illumination (CIE)**  
CIE Central Bureau  
Kegelgasse 27, A-1030 Vienna, Austria

or **Information Handling Services**  
15 Inverness Way East, M/S B203  
Englewood, CO 80112-5776 USA

**ASTM International**

**P.O.Box C700**  
West Conshohocken, PA  
19428-2959, USA  
Tel: 610-832-9585  
Email: [service@astm.org](mailto:service@astm.org)  
Internet: <http://www.astm.org/>

**2.3 Sealed Patterns.** Sealed patterns are made available to the bidders and the contractor(s) as a guide to production. In the case of CADPAT™, the sealed pattern reflects the design, pattern, motifs, repeat, clarity that is required.

DSSPM 258-09P                      CADPAT™ (WO), independent of substrate. Sealed for colour guidance only.

**2.4 Order of Precedence.**

**2.4.1** In the event of any inconsistency in contract documents such as contract, specification and sealed patterns, the order of precedence shall be contract, specification, and sealed pattern.

**2.4.2** In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

**2.4.3** In the event of inconsistency within the specification, the Design Authority (DSSPM 2-2) shall be contacted for clarification.

**2.4.4** For any inconsistency in technical details between languages, the language of the original document, which in this case is English, shall take precedence.

**3. REQUIREMENTS**

**3.1 CADPAT™ (WO) Pattern.** The grey portion of the pattern is achieved by using the print screen for the Dark Brown colour in CADPAT™ (AR).

**3.2 Sealed Patterns.** Sealed patterns, when furnished, shall constitute the standard only in regard to any properties not defined in this specification, and in association with any notes which may be included on the reverse side of the sealed pattern tag. Under no circumstance are the Sealed Patterns to be mutilated or cut.

**3.3 Colour, Ultra-Violet (UV) Reflection and Near Infra-red Reflectance (IRR) Requirements.**

**3.3.1** Minimal flare when viewed under standard daylight, horizon, and fluorescent light for all colours is required.

**3.3.2 Print Quality.** Overall print quality must reflect good commercial standards, including factors such as uniformity of each colour, clarity, definition, evenness, sharpness, etc. Sealed Pattern DSSPM 258-09P reflects the minimum clarity, that is required.

**3.3.3 Colour, Ultra-Violet (UV) Reflection and Near Infra-red Reflectance** requirements are stated in the table below.

For Textiles Only

PROPERTY		TEST METHOD	SPECIFIED REQUIREMENT	MINIMUM ACCEPTABLE	MAXIMUM ACCEPTABLE
Ultra-Violet (UV) reflection <sup>note 1</sup> (at 350 nm)	White	CIE publication 15 and ASTM E308 specular component included	70% at 350 nm	62.5% at 350 nm	77.5% at 350nm
	Grey		NONE	NONE	NONE
Near Infra-red Reflectance (IRR) <sup>note 2</sup> (800 – 1200 nm)	White	CIE publication 15 and ASTM E308 specular component included	85% 800 - 1200 nm	75% 800 - 1200 nm	95% 800 - 1200nm
	Grey		25% 800 - 1200 nm	15% 800 - 1200 nm	35% 800 - 1200 nm
Specular Gloss (white and grey)	60°	ISO 2813			5 units
	85°				5 units
Chromaticity Coordinates and Luminance	White	ISO 7724/1,2,3 D65, 10° observer specular component included	L* = 93.88 (max) a* = -0.42 b* = -0.15		$\Delta E \leq 2$
	Grey		L* = 59.89 a* = 0.08 b* = 0.40		$\Delta E \leq 3$

**Note 1:** Use of optical brighteners to obtain the UV reflection is not recommended due to the adverse effect caused in the near infra-red region.

**Note 2:** The grey portion of the pattern is achieved by using the print screens for the dark brown colour in CADPAT™ (AR).

**3.3.4 Finish.** No finish will be applied to obtain fabric stability or temporary colour and/or IRR compliance unless required in the applicable textile specification.

### **3.3.5 Measurement Requirements.**

**3.3.5.1** All measurements for **colour** are to be made in accordance with ISO 7724/1,2,3 using CIE Standard Illuminant D 65 and a 10 degree observer, specular component included. These conditions of measurement must be followed and included in all test reports. A standard waveband interval is 10nm.

**3.3.5.2** All measurements for **ultra-violet and infra-red reflectance** are to be made in accordance with CIE publication 15.2 and ASTM E308 using CIE Standard Illuminant D 65 and a 10 degree observer, specular component included. These conditions of measurement must be followed and included in all test reports. A standard waveband interval is 10nm.

**3.3.5.3** Sample preparation for all chromaticity and IRR measurements shall be in accordance with AATCC Instrumental Measurement Procedure #6, A1.3, non-opaque samples. It has been found that more than one layer of self fabric is usually required to provide consistent readings. A standard black backing is recommended. It is the responsibility of the operator to determine and follow a standard sample preparation which meets the stated conditions.

**3.6 Piece Marking.** Unless otherwise specified, each piece shall have a label attached to the selvedge at one end. The label shall be made of linen or heavy cardboard, with a reinforced eyelet for attaching a tying cord, and shall be legibly marked with the following information:

- (a) Contractor's identification (name or CA number)
- (b) Contract Number
- (c) Gross length in metres, including allowance
- (d) Net length in metres
- (e) Piece number
- (f) Number of lengths per piece
- (g) Nomenclature/Classification (textile specification)
- (h) Colour
- (j) NATO Stock Number
- (k) Date of manufacture

All of the above information is required when the goods are contracted for and being delivered directly to the Crown. When contracted by a third party with delivery not to the Crown, only (a), (e), (g), (h), (j), and (k) are mandatory. The other information must be readily available to the Crown and/or its contractor if required

## **4. QUALITY CONTROL/INSPECTION**

**4.1** Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspections and tests as specified herein and to demonstrate that the materiel and services conform to the requirements specified in this Specification. Contractors may utilize their own or any other inspection facility acceptable to the Crown or its designated representative. Contractors may also utilize their own test facilities so long as Crown approval has been obtained in advance and the conditions stated in ISO quality and manufacturing publications are followed.

**4.2** The Crown reserves the right to perform any of the inspections or tests specified herein, where such are deemed necessary to ensure the materiel and/or services submitted to the Crown for acceptance meet all requirements of the contract. This applies equally to materiel contracted for delivery directly to the Department of National Defence or as component parts to a supplier with a contract for products for Defence use.

**4.3** Any requirement for test data to be presented at pre-contract award or at pre-production will be stated in procurement documents. Unless otherwise specified, this data shall result from tests carried out on current production, at independent certified laboratories, in full accordance with all specified test methods and conditions, and these shall be included in the laboratory reports. Bidding and/or contractual documents shall include requirements for in-contract testing including: specific tests, their frequency, their source, and their reporting procedure. At a minimum, all shipments of CADPAT™ printed textile shall be accompanied by producer laboratory reports for colour and IRR measurements. These measurements shall have been carried out on the goods being shipped and shall have been carried out on each processed batch, and at least every 5,000 metres.

## **5. PACKAGING**

**5.1** Unless otherwise specified, packaging, packing, and marking of shipping containers shall be in accordance with the terms of the contract.

## **6. NOTES**

**6.1 Ordering data.** Procurement documents should specify the following:

- (a) title, number and date of this Specification and of the textile specification
- (b) NATO Stock number of required item
- (c) Nomenclature/Classification (textile specification)
- (d) Pre-production requirements
- (e) Packaging, packing, and marking of shipping containers
- (f) The Design Authority
- (g) The Quality Assurance Authority

## **6.2 Definition of terms**

**6.2.1 Design Authority.** The Design Authority is the Government agency responsible for the technical aspects of the design and for changes to the design. The Design Authority for this requirement is the Directorate of Soldier Systems Programme Management (DSSPM), Department of National Defence.

**6.2.2 Quality Assurance Authority.** The Quality Assurance Authority is the Government agency responsible for providing assurance the materiel and services supplied by the contractor are in accordance with the terms of the contract. The Quality Assurance Authority is the Directorate of Quality Assurance (DQA), Department of National Defence.

**6.2.3 Master sealed pattern.** A master sealed pattern is the authorized prototype of the item to be produced and is held only by the government.

**6.2.4 Sealed pattern.** The sealed pattern is a duplicate of the master sealed pattern which is the Department of National Defence's authorized prototype of the item to be produced. Sealed patterns are available for the contractor to use as a *conceptual example for production*. Contractors should note that sealed patterns may not incorporate all the details cited in this Specification and the order of precedence prevails (see para 2.4).

**6.2.5 Specification Copies.** Copies of this Specification are available from the Department of National Defence, Directorate of Soldier Systems Programme Management, Ottawa, Ontario, K1A 0K2, Attention: DSSPM 2-2.

**6.3** The production of a product to this specification, or the evaluation of a product to this specification, may require the use of materials and/or equipment that could be hazardous. This specification does not purport to address all safety, health and environmental concerns, if any associated with its use. It is the responsibility of the user of this specification to establish appropriate safety, health and environmental practices and to determine the applicability of regulatory limitations prior to use.