

**WET WEATHER (RAIN) TWO PIECE SUIT, UNISEX (TWO TONE)**

Reference item No. 35158502 Transnet logo

**1 Scope**

This specification covers the requirements for material & supply of unisex wet weather (rain) suits to Transnet.

**Notes**

1.1 The following requirements will be specified in tender invitations and in each order or contract:

a) The size(s) required (see 7)

1.2 Special conditions of tender (which cover the conditions of acceptance of the Wet weather suit) are given in annex A.

**2 Normative references**

The following standards contain provisions which, through reference in this text, constitute provisions of this specification. All standards are subject to revision and, since any reference to a standard is deemed to be a reference to the latest edition to a standard, parties to agreements based on this specification are encouraged to take steps to ensure the use of the most recent editions of the standards indicated below. Information on currently valid national and international standards may be obtained from the South African Bureau of Standards.

CSS 286.21, *Clothing — LAB/1: Labelling — PAC/1: Packing and marking.*

SANS 79, *Textiles – Mass per unit area of conditioned fabrics*

SANS 105-BO2, *Tests for colour fastness – Part Bo2: Colour fastness to artificial light: Xenon artificial lamp test.*

SANS 105-CO3, *Textiles- Tests for colour fastness – Part CO3: Colour fastness to washing: Test 3.*

SANS 105-X12, *Tests for colour fastness – Part X12: Colour fastness to rubbing.*

SANS 142, *Elastic webbing*

SANS 410, *Textiles – Tearing strength of fabrics: tongue tear test.*

SANS 1309, *Printed labels for textiles.*

SANS 1360-1, *Size designation of clothes — Part 1: Women's and girls' outerwear garments.*

SANS 1362, *Sewing threads*

SANS 1822, *Slide (zip) fasteners.*

SANS 1823, *Touch and close fastener*

SANS 5266, *Water resistance of textile: variable head test.*

SANS 5278 *Sewing stitches per unit length*

SANS 50471, *High-visibility warning clothing for professional use- test method and requirements*

SANS 7211-2, *Textiles-Woven fabrics – Construction – Method of analysis Part 2: Determination of number of threads per unit area.*

SANS 10076-6, *The assessment of defects in textile piece-goods and made-up articles-Part 6: Defects in woven Filament piece-goods (synthetics)*

SANS 10076 - 7, *The assessment of defects in textile piece-goods and made-up articles-Part 7: Defects in household articles*

SANS 13934 –1, *Textiles-Tensile properties of fabrics. Part 1. Determination of maximum force and elongation at maximum force using the strip method s Part 1*

SANS 10101, *Standard nomenclature for stitches, seams, and stitchings.*

SANS 10188, *Standard methods of garment measurements..*

SANS 100004, *Terms and definitions for textiles and textiles merchandise.*

SANS 10011, *Care-labelling of textiles piece goods, textiles articles and clothing.*

### **3 Definitions**

For the purposes of this specification, the following definitions apply:

**3.1 Acceptable:** acceptable to Transnet Limited.

**3.2 Nominal:** subject to the tolerances normal to good manufacturing practice.

### **4 Requirements**

#### **4.1 Style**

##### **Jacket:**

- ❖ Single breasted
- ❖ Slide fastener front fastening
- ❖ Double storm flap fastening with press-studs
- ❖ Hood with storage pouch
- ❖ Storm collar
- ❖ Sleeves to be integral part of jacket body
- ❖ Storm cuffs
- ❖ Screen sprinted or embroidered logo
- ❖ Front lower patch pockets with flaps
- ❖ Straight sides
- ❖ With reflective stripe at waist height
- ❖ Top section to be lime colour (above waist line / reflective strip)

##### **Trouser:**

- ❖ Pyjama-type/pull-on type
- ❖ Bottom adjustment straps
- ❖ Elastic webbing and draw cord in waist
- ❖ With a single reflective stripe at knee height
- ❖ Top section to be lime colour (above reflective strip)

##### **Separate bag:**

- ❖ Square flat bag
- ❖ Draw cord

### **5 Materials**

Note: No material will be supplied by Transnet Limited.

#### **5.1 MATERIAL:**

- ❖ Outer base fabric and the bag fabric to be a 100% polyester continuous filament breathable
- ❖ Shall comply with the requirements of table 1
- ❖ Cloth shall be assessed for defects , in accordance with SANS 10076-6 Part 6
- ❖ Colour shall be a close match to "Pantone Navy " No. 285 and "Pantone Lime" No. 374
- ❖ All trimming material to be supplied and used by the manufacturer and to be an acceptable match to that of outer material

Table 1 - Requirements for coated fabric

1	2	3
Property	Requirement	Method of test
Fibre composition .....	100 % Polyester continuous filament <sup>1)</sup>	Microscopical examination and chemical analysis
Weave.....	Oxford	Physical examination
Mass <sup>1)</sup> per unit area after coating, g/m <sup>2</sup>	150	SANS 79
Number of threads per cm. min	22	SANS 7211-2
Warp .....	18	
Weft .....		SANS 13934-1
Breaking strength, N, min		)
As received:	950	
Warp.....	710	
.....		SANS 410
Weft	55	
Tearing strength, N, mi <sup>2)</sup> .....	50	
Warp.....		
.....		
Weft.....		SANS 5266
...	4000	
	2000	
	2000	
	2000	
Water resistance (variable head) mm, min	4-5	SANS 105-BO2
As received.....		SANS 105-CO3
After weathering <sup>3)</sup> .....	4	
.....	4	
After dry-cleaning <sup>4)</sup> .....		SANS 105-X12
After accelerated ageing <sup>5)</sup> .....	4	
	4	
Colour fastness to light, rating, min. ....		
Colour fastness to washing, rating, min.		
Change in colour .....		
Staining of transfer cloths .....		
Colour fastness to rubbing, rating, min.		
Dry .....		
Wet .....		

- 1)  $\pm 5\%$
- 2) Except that the size of the test specimens shall be 180mm x 150mm and the width of tongue shall be 50 mm. Report the mean of the highest peak values.
- 3) After weathering in accordance with SABS method 481 for an exposure period of 200 h.
- 4) After dry-clean in accordance with SABS 1026 Procedure B, but using white spirit as the reagent and omitting steam pressing
- 5) After being subjected to accelerated aging in accordance with SABS method 415, the coated surface shall not show any appreciable change in pliability or separation of the coating from the fabric or become tacky or adversely affected in appearance or serviceability.

## 5.2 COMPONENT MATERIAL

### 5.2.1 SLIDE FASTENER

Front slide fastener class B

- One-way open-end
  - Spiral elements
- Slide fasteners for collar – class B
- One-way closed-end
  - Spiral elements

### 5.2.2 TOUCH AND CLOSE FASTENER

- Nominal width of 25mm

### 5.2.3 PRESS-STUDS

- male and female type with dome
- intrinsically corrosion resistant metal
- Gun metal colour
- Nominal outside diameter of dome of female part to be 15mm & inside of hole to be 7 mm

### 5.2.4 DRAW CORD

- Acceptable polyester or nylon
- Nominal diameter of 6 mm
- Each end shall be acceptable sealed and knotted with plastic "bell-end"

### 5.2.5 ADHESIVE TAPE

- Acceptable adhesive tape for sealing of all seams
- Width 20 mm

### 5.2.6 REFLECTIVE TAPE

- 50 mm
- Standard type ref.: 8910

### 5.2.7 THREADS

- To comply with relevant requirements of SANS 1362 "Sewing threads"
- Colour to be an acceptable match to colour of the outer material.

Sewing, buttonhole and top-stitching threads

- polyester-and-cotton core-spun or staple polyester thread
- ticket no.80

Overlocking threads

- Crimp-textured polyester
- Ticket no. 140

## 6 Workmanship

The wet weather suit and storage bags shall be:

- Cut and made with first-class workmanship

### Shall be free from:

- Defects, as specified in SANS 10076-7
- Marks / Spots
- Stains, incurred in the making-up

### Seams and stitches shall be:

- Smooth and free from twists, pleats and puckers

### End of sewing shall be:

- Trimmed and loose threads removed
- Back-tacked if unsecured

## 7 Sizes

**Size chart –Jacket**

1	2	3	4	5
Size designation	Nominal finished garment measurements, cm			
	Chest	Back length	Sleeve length 1)	Cuff Circumference
77-82 (XS)	100	78	80	33
87-92(S)	110	80	81	34
97-102 (M)	120	82	82	35
107-112 (L)	130	84	83	36
117-122 (XL)	140	86	84	37
127-132 (2XL)	150	88	85	38
137-142(3XL)	160	90	86	39
147-152 (4XL)	170	92	87	39
157-162 (5XL)	180	94	88	40
167-172 (6XL)	190	94	88	40
1) Measured from the neck point to the bottom edge of cuff				

Size chart –Trousers

1	2	3	4	5	6	7
Size designation 1)	Nominal finished garment measurements, cm					
	Waist Relaxed	Waist Extended	Seat Circumf.	Outside leg	Inside Leg	Bottoms
77-82 (XS)	70	95	105	98	72	50
87-92(S)	80	105	115	103	73	52
97-102 (M)	90	115	125	108	77	54
107-112 (L)	100	125	135	113	78	56
117-122 (XL)	110	135	145	115	80	58
127-132 (2XL)	120	145	155	116	80	60
137-142(3XL)	130	155	165	117	81	62
147-152 (4XL)	140	165	175	117	81	62
157-162 (5XL)	150	175	185	117	81	62
167-172 (6XL)	160	185	195	118	81	62
1) Based on the waist girth of the intended wearer						

## 8 Make

Note: Unless inconsistent with the text, all measurements are nominal.

### 8.1 JACKET:

#### 8.1.1 Fronts, back and sleeves

- Consist of top and bottom section
  - ⇒ Top section to be integral with the sleeves to a point 40 mm below the base of the scye
- Seam joining the top and bottom section to be top-stitched 1 mm and 6 mm above the joint of the seam
- Front & back 25 mm reflective strip 80 mm below the scye (i.e. 40 mm below base point)
- 25 mm sleeve reflective strip 19 cm below the scye.
- Foreparts fasten with slide fastener
  - ⇒ Visible when closed
  - ⇒ Inserted into the front edges
  - ⇒ Extended from top edge of collar to approximately 11 cm above bottom edge of jacket for size large other sizes to be graded proportionally.
- Foreparts to each have a storm flap
  - ⇒ Which conceals the slide fastener
  - ⇒ Fastens with press-stud fasteners
- Top and bottom section of the back shall each be cut in one piece
  - No centre back seam
- Straight side seam & hem

#### 8.1.2 Storm Flap

- each flap to be of folded outer material.
  - ⇒ Of finished width 70 mm
  - ⇒ Shall extend from the top edge of collar to bottom hem
- Top and front edges shall have an edge-stitching of 7 mm
- Left storm flap to have five female press-stud sections
  - ⇒ Positioned 10mm from the front edge
  - ⇒ Topmost fastener shall be centred 20 mm from top edge of flap
  - ⇒ Section fastener to be 60mm below the topmost one
  - ⇒ Bottom press-stud section to be centred 30 mm from bottom edge of flap
  - ⇒ Other two fasteners shall be spaced equidistantly between second and bottom fastener section.

- Right side storm flap to have the male fastener sections.  
⇒ To correspond to the female sections.

### 8.1.3 Two side pockets

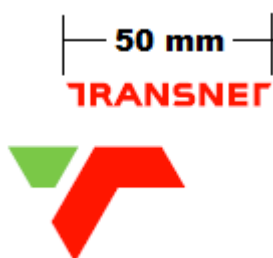
- To be of outer material
- To be patch pockets
- Square corners
- To be of finished width and depth 18 cm and 21 cm respectively
- Centrally positioned on the front sections
- Side of each pocket parallel to the front edge of jacket
- Bottom edge of pocket shall be positioned 40 mm above the hem on size large (to be graded proportionally)
- Pocket mouth edge to be turned in 5 mm  
⇒ Turned over 10 mm  
⇒ Top-stitched 1 mm from the turned-in edge
- Sides and bottom edges of pockets shall be turned in 8 mm  
⇒ Top-stitched 1 mm from the turned-in edge

### 8.1.4 Pockets flaps

- To be of folded outer material
- Square corners
- Of finished width and depth 18 cm and 55 mm.
- Stitched down 15 mm above the mouth openings of side pockets

### 8.1.5 Logo

- Have the Transnet Logo embroidered in white.
- Position in the top section of the left front
- To be positioned 140 mm above the base point (40 mm below the scye)
- 60 mm from storm flap edge
- The name TRANSNET to be 60 mm
- Embroidery to be covered on the inside with sealing tape.

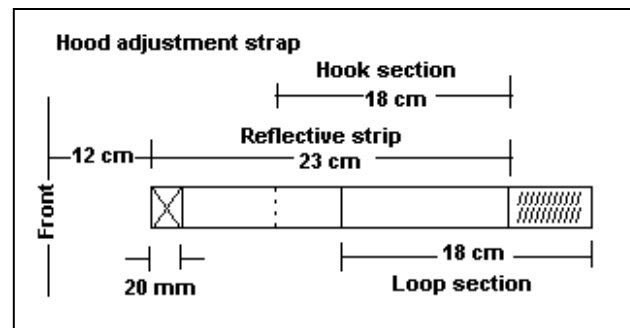
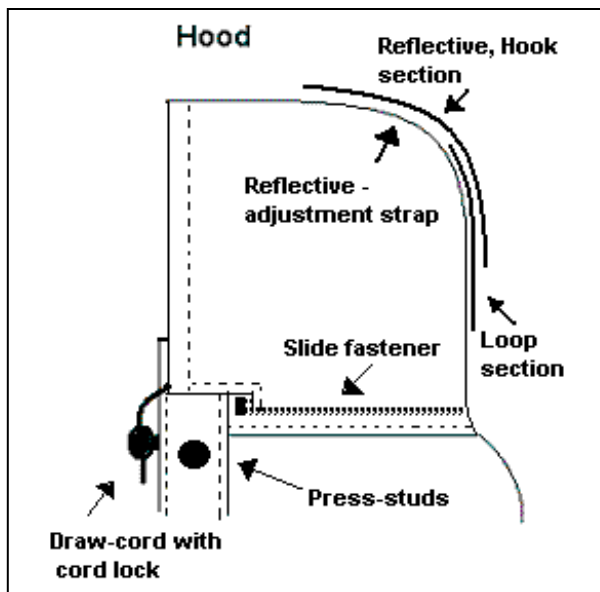


### 8.1.6 Collar

- be of two layers of outer material with the coated sides to the inside.
- be of finished width 80 mm.
- extend from the left side of the centre front to the right side of the centre front
- be sewn to the top of the jacket
- be fitted with a slide fastener  
⇒ Centred in the outer collar  
⇒ Visible when closed  
⇒ Commencing 40 mm within the front edges of the collar for size large (to be graded proportionally)  
⇒ edges of the slide fastener opening shall be stitched 1 mm from the edges.
- have a 1 mm top-stitching above the join of the neck-to-body seam.

**8.1.7 Hood**

- have a right and left section of outer material
- be seamed together from the forehead to the back of the neck.
- Have a face opening circumference of 60cm for size large (to be graded proportionally)
- Have a 25 mm reflective adjustment strap on the centre seam
- A section of touch and close fastener (loop section) to be stitched to the hood
  - ⇒ Of finished length 18cm 23 cm from front edge
- A 18 cm section of touch and close fastener (hook section) stitched to a 23cm reflective strip.
  - ⇒ 20mm box stitch to the hood 12cm from front edge
- Be turned in 5 mm at the front edge.
  - ⇒ Turned over 20 mm
  - ⇒ Stitched down 2 mm from the turned-in edge to form a tunnel for the draw-cord.
  - ⇒ End of the tunnel to be left open to provide openings for the draw-cord.
  - ⇒ Draw-cord shall be of sufficient length to protrude 15 mm within each front collar edge for size large. (to be graded proportionally)

**8.1.8 Cuffs**

- Be faced with outer material
  - ⇒ Of finished depth 13 cm
  - ⇒ Free edges shall be turned inwards and enclosed by a length of elastic webbing
    - Of width 5 mm to form a storm cuff
  - ⇒ Shall be secured to the sleeve with a bar-tack 50 mm from the edge of the cuff and across.
- Have an edge-stitching of 5 mm

**9 Trousers****9.1 Front & back:**

- be plain
- be cut without side seams
- have an elasticized waist
- have a 25 mm reflective strip 28 cm below the crutch for size 107-112 (L) (to be graded proportionally)



**The waistband ling shall:**

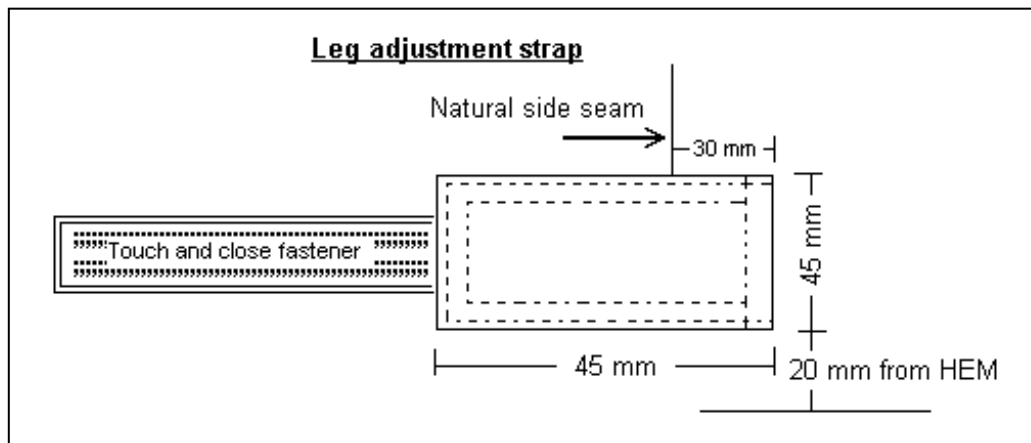
- be of finished width 30 mm
- be interlined with elastic outer material.
- Top-stitched 30 mm from the folded edge
- Raw edge to be overlocked.

**The waistband shall:**

- Be grown on
- Folded along the top to form a waistband lining
- Be fitted with one button hole
  - ⇒ Horizontal
  - ⇒ Shirt type
  - ⇒ Barred at each end
  - ⇒ Through the waistband lining only
  - ⇒ Centrally position over the centre front seam
- Be fitted with a draw-cord
  - ⇒ Threaded through the tunnel and button holes
  - ⇒ Long enough to protrude 10 cm at each end (before adjustment)
  - ⇒ Threaded through draw-cord cones at the ends
  - ⇒ Security knotted and heat sealed at the ends

**9.2 Leg adjustment straps**

- To be of outer material.
- Lined with outer material
- Top-stitched 1 mm & 7 mm from the free edges
- Each strap to have a square end
- Of finished width and length 45 mm and 10 cm respectively
- A section of touch and close fastener to be stitched to the lining only
  - ⇒ Of finished length 60 mm
  - ⇒ Centred
  - ⇒ 10 mm in from the free edges
- strap to be equal with the bottom hem of trousers
- positioned 30 mm backward from the actual side seam and facing forward to the front leg.
- A length of touch and close fastener sewn along the bottom hem.
  - ⇒ Starting from the actual side seam
  - ⇒ Of finished length 16 mm
  - ⇒ So positioned as to correspond with the touch and close fastener on strap.

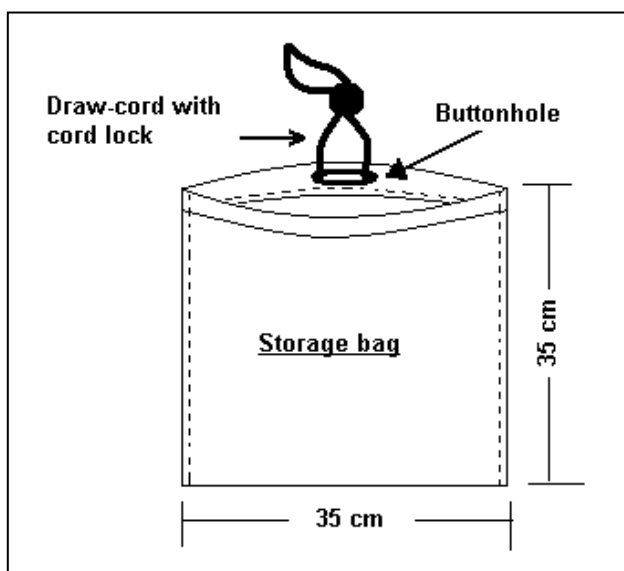


### 9.3 Bottom hem

- Be turned in 5 mm.
- Be turned over 20 mm
- Stitched 1 mm from the turned in edge.

### 9.4 Storage bag

- Of double folded outer material
- Sewn along each side
- Turned out and top-stitched 2 mm from the turned out edge.
- Of finished width and depth 35 cm
- Top edge to be turned in 5 mm
  - ⇒ Turned over 20 mm
  - ⇒ Stitched 2 mm from the turned-in edge to form a tunnel through which a draw-cord shall be threaded.
- Be fitted with a button hole
  - ⇒ Centrally position on the inside of the tunnel
  - ⇒ Of finished length 25 mm
  - ⇒ To provide an opening for the ends of the draw-cord.
    - To be of sufficient length to protrude 12 cm before adjustment
    - To be equipped with cord locks
    - End of cord to be knotted and heat sealed



## 10 Stitches, seams and stitchings

### 10.1 Stitches

- **Main seam:** single needle lock stitch
- **Overlocking:** three-thread overlocking stitch
- **Top-stitching:** single needle lock stitch

### 10.2 Seams

- At least 10mm wide
- Sealed at the inside with adhesive tape for water resistance

⇒ Shall be tested as specified in Annex B

**Jacket side and sleeve seams; trousers inside leg and seat seam:**

Seam type Ssa-1



Superimpose two or more plies of material and seam with the appropriate number of rows of stitches positioned at the specific distance(s) from the aligned edges.

**Pocket flaps and adjustment straps:** seam type Ssae-2



form seam type Ssa-1, using two plies of material. Then turn back each ply at the seam and seam through the turned edges with the appropriate number of rows of stitches.

**Side pockets & slide fasteners:** seam type LSd-1



Turn in the edge of one ply of material, lap it on the body of a second ply (at the specific distance from the edge of the second ply), and seam with the appropriate number of rows of stitches.

**Front and back cross panel seams:** seam type LSb-2



Turn in the edge of one ply of material, lap it on the edge of a second ply, and seam with the appropriate number of rows of stitches.

**Attaching pocket flaps and storm flaps adjustment straps on trousers:**

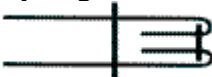
Seam type LSS-2



So super two superimpose two plies of material that their edges are the specified distance apart, and seam with one row of stitches

At the specified distance from the edge of the top ply. Then turn the top ply back at the seam with one row of stitches through the top and bottom plies.

**Top edges of collars and storage and storage bag:** seam type SSae-2



Form seam type Ssa-1, using two plies of material. Then turn back each ply at the seam and seam with the appropriate number of rows of stitches, ensuring that when more than one row of stitches is used, one row passes through the folded edges.

### 10.3 Stitchings

All exposed raw edges of trousers: stitching type Efd  
Stitch over the edge of ply of material with one row of stitces.



Hems: stitching type Efb-1



Turn in the specified width at the edge of a ply of material, fold back the turned edge, and stitch the turned-in and folded portion  
With the appropriate number of rows of stitches.

### 10.4 Number of stitches

**All seams and top-stitching:**  $32 \pm 2$  per 10 cm

**Overlocking:**  $32 \pm 4$  per 10 cm

**Buttonholes:**  $12 \pm 1$  per 1 cm

**Bar-tacks:**  $22 \pm 2$  per 1 cm

### 10.5 LABELING:

The garment shall be labeled and marked in accordance with the requirements of specification CSS 286.21 LAB/1

### 10.6 PACKING:

**Each rain suit shall be (in conjunction with specification CSS.286.21 PAC/1):**

- Each neatly packed Jacket & trouser shall be packed on top of the storage bag and then packed in a durable clear plastic envelope, with the label of the jacket visible
- Delivered in a commercially dry condition

### Annex A (normative)

#### Special conditions of tender

#### A-1 GENERAL

**A-1.1** Unless otherwise stated, The Chief Executive Transnet (or an officer or organization deputed by it), shall be the inspecting authority.

**A-1.2** Two pre-production sample garments shall have been inspected, tested and approved by the inspecting authority before bulk production is commenced, and it shall be the duty of the manufacturer to give adequate notice to the inspecting authority of the availability of these samples.

**A-1.3** The individual garments shall be subject to inspection during the course of the manufacture. The inspector shall, during normal working hours, be given all reasonable facilities for carrying out his duties and shall have the right of entry into the contractor's factory and the factory or works of any subcontractor where work on the individual garments supplied to this specification may be in progress.

**A-1.4** The contractor shall inspect the finished garment for compliance with the specification before submitting them to the inspecting authority for final inspection.

**A-1.5** Before acceptance, the garments shall have been inspected and tested by the inspecting authority and found to comply with the requirements of the specification.

**Annex B**  
(normative)

**Test method for water resistance (seam taping)**

**All test results and relevant documentation shall be stored, be traceable and available for inspection**

The efficiency of the seam taping process is essential to the required environmental protective properties of the garment. That efficiency is affected by the number of process variables including central positioning of the tape, time, speed, temperature and pressure profile. In order to provide assurance of the machine controls, the contractor is to prescribe speed settings for each seam and to demonstrate their effectiveness during production by implementing the procedures outlined below.

Method of test: SANS 5266 with static water head of 200 cm for 2 minutes.

Requirements: maximum of three growing drops.

1. Prior to the start of garment construction and before re-use of a machine after an idle period of longer than thirty minutes, all test of resistance to water penetration (waterproofness) of seams are to be carried out for 2 minutes at the specified pressure, with the outer material fabric face to water
  - a) Four pieces of fabric are to be seamed and taped to produce a flat test specimen with a right-angled cross-over.
  - b) The cross-over seam of the specimen is to be tested at 15kPa. If the test specimen fails,
  - c) The machine settings are to be adjusted, and the test shall be repeated until a pass is achieved.
2. The following areas shall be tested to exemplify the overall water resistance of the garment.
  - a) One straight seam either in a sleeve or at the side, is to be tested at 200kPa.
  - b) Crossover points in the underarm is to be tested at 15kPa
3. The following are the specified inspection intervals during garment production.
  - a) Each operator of a taping machine is to make a cross-over test specimen, as in Paragraph 1, and test the cross-over seam at 15kPa, every morning before production Commences
  - b) One out of every twenty garments being manufactured shall be tested.
  - c) Embroidery shall be heat sealed with an appropriately size patch to avoid water leaking through the embroidery stitches.
4. The final production inspection.
  - a) Two garments are to be selected at random from the packing department
  - b) Garments are to be tested in "as received" state. Straight seams at 20 kPa, at different areas from where they may have been tested previously

I / We the tenderer hereby declare that the garments offered are and will be fully compliant to the Transnet specification

Yes / No \_\_\_\_\_ Company Name: \_\_\_\_\_ Signature: \_\_\_\_\_



**REVISION HISTORY SHEET**

**Document Subject** Quality Assurance  
ADMINISTRATION, PREPARATION, MAINTENANCE AND  
DISTRIBUTION

**Effective date**  
21 January 2009

**Controlling Officer:** R. Steynberg

**Approving Officer:** C.J.V. du Plooy

Rev/No	Date approved	Nature of revision
1	September 2011	1) Rectify point of measurement of the sleeve length.
2	May 2013	1) Implement breathable cloth 2) Add two tone requirements
3	Nov. 2014	1) Implement new outside & inside leg length (Page 5)
4	Oct 2015	1) Amended packing requirements 10.6 (label visible)

