

PRODUCT SPECIFICATION

Prepared for the

South African Army

Shoes, Cross Training



Document Number: 05181-100-259

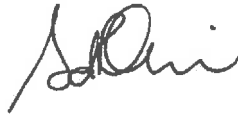
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Doc No	Date	Responsibility	Doc Issue	Page	No of pages
05181-100-259	December 2022	SA Army	001	2	18

AMENDMENT HISTORY

DOC ISSUE	DATE	AMENDMENTS	DOC CHANGE PROPOSAL NO.	CHECKED	
				NAME	INIT.
001	12-2022	First draft Format conversion (No technical changes from supplied source document required) Colours to upper materials to differ from source document Update Applicable documents Feedback incorporated from footwear specialist Delete reference to SANS 20344 and SANS 5636 (not relevant) Add SANS 13938-1 Add NSNs and additional size	27337	V Moodley	

Doc No	Date	Responsibility	Doc Issue	Page	No of pages
05181-100-259	December 2022	SA Army	001	3	18

1. Scope

This specification covers the material, design and construction of shoes, cross training, with plain fabric vamp, a shock absorbing middle-sole and wedge heel unit and a full outer sole of rubber and that are made in accordance with the Stuck-on principle, for use by personnel of the South African Army.

2. Definitions and Abbreviations

For the purpose of this specification, the following definition shall apply:

acceptable: acceptable to the SA Army and/or the Procurement Authority

batch: a quantity of shoes manufactured at one time, covered by one work ticket and recorded on the product for traceability

defective: a shoe that at inspection is judged to have a major fault that is likely to cause the shoes to fail in wear, or a shoe that is unsightly to the extent that it is unsuitable for issue or fail in one or more respects to comply with the requirements of this specification

FIFO: first in, first out (stock issuing approach)

lot: a consignment of finished shoes presented for inspection at one time, intended despatch to one destination

nominal: subject to the tolerances normal to good manufacturing practice

NSN: National Stock Number

SANS: South African National Standard

3. Applicable Documents

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

05181-100-209, *Corrugated Board Boxes for Clothing and Footwear.*

BS 5131-1-1.2, *Methods of test for footwear and footwear materials – Part 1: Adhesives – Section 1.2: Resistance of adhesive joints to peeling.*

BS 5131-3-3.1, *Methods of test for footwear and footwear materials – Part 3: Uppers, textiles and threads – Section 3.1: Strength of upper materials and lining materials at right angles to stitch perforations.*

DIN method 53353, *Determination of thickness.*

SANS 79, *Textiles, Mass per unit area of conditioned textile fabric.*

SANS 105-E04, *Textiles – test for Colour fastness to perspiration.*

SANS 641, *Flexible polyurethane (polyester) foam.*

SANS 770, *Footwear Laces.*

SANS 1362, *Sewing Threads.*

SANS 1437, *Footwear soling material and footwear sole and heel components of rubber and plastics.*

SANS 2062, *Textiles – Yarns from packages – Determination of single-end breaking force and elongation at break using constant rate of extension (CRE) tester.*

SANS 5640, *Determination of flex resistance (leather fibreboard and cellulose fibreboard inner soles.*

* Standards South Africa: Tel. +27 (0) 12 4287911

Doc No	Date	Responsibility	Doc Issue	Page	No of pages
05181-100-259	December 2022	SA Army	001	4	18

SANS 5633, *Determination of wet stitch tear strength (leather, leatherboard, fibreboard).*

SANS 5962, *Determination of wet split tear strength of inner sole and runner materials (other than leather).*

SANS 13938-1, *Textiles – Bursting properties of fabrics – Part 1: Hydraulic method for determination of bursting strength and bursting distension.*

SANS 17704, *Footwear - Test methods for uppers, linings and insoles - Abrasion resistance.*

SANS 20864, *Footwear - Test methods for stiffeners and toepuffs - Mechanical characteristics*

4. References

None.

5. Style

The style is as follows:

- ◆ Oxford laced-to-toe type
- ◆ vamp and quarter shall be integral (i.e. of one piece of upper fabric)
- ◆ toe-cap shall be wing cap (see figure 1)
- ◆ outside counter and facing
- ◆ contrast colour overlay above counter (see figure 1)
- ◆ contrast colour side flashes
- ◆ bagged tongue
- ◆ cold moulded EVA midsole with a rubber outer sole

Standard samples, where available, are held by, and may be viewed at the Procurement Authority.

6. Interface

All PT garments.

Doc No	Date	Responsibility	Doc Issue	Page	No of pages
05181-100-259	December 2022	SA Army	001	5	18

7. Illustrations

Illustrations are not to scale and are for guidance only.

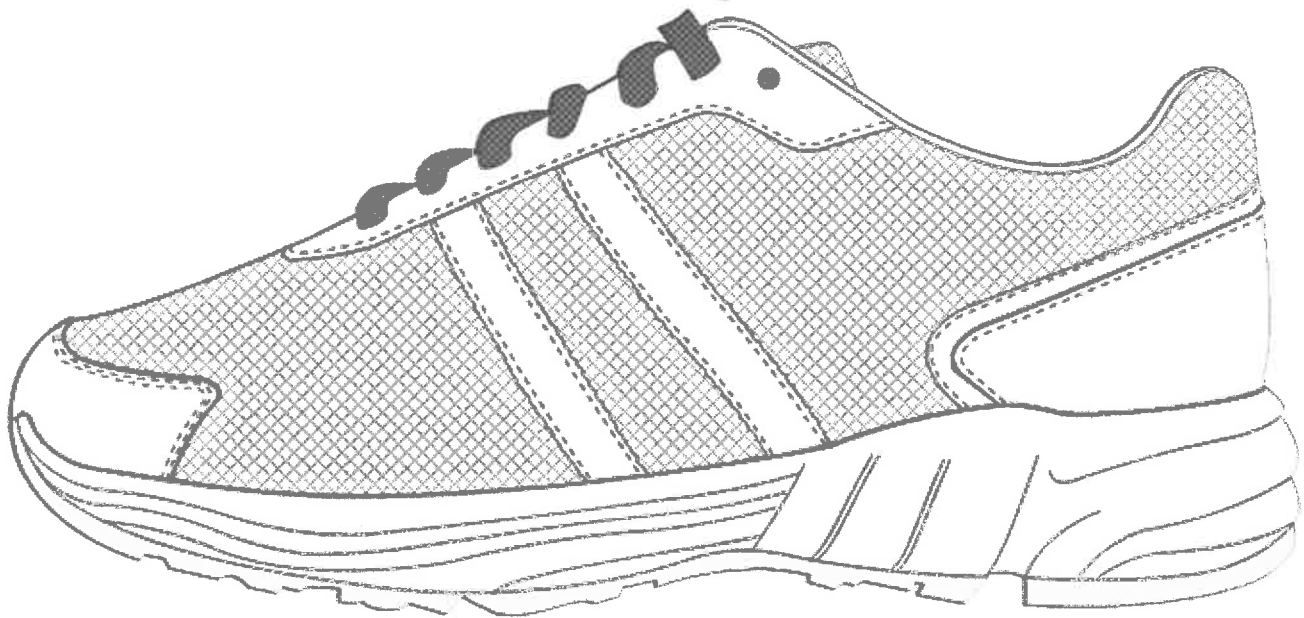


Figure 1(a) – Side view of shoe (without applied colour indications)



Figure 1(b) – Side view of shoe (with applied colour indications)

Doc No	Date	Responsibility	Doc Issue	Page	No of pages
05181-100-259	December 2022	SA Army	001	6	18



Figure 2 – Example of sole pattern

8. Client Furnished Materials

No materials will be supplied by the South African Army.

9. Component Materials

The following materials shall be supplied and used by the manufacturer. Trim charts shall also be submitted by the manufacturer (see Annex A).

9.1 Upper material

- ◆ the uppers shall be of polyester material
- ◆ laminate that consists of a face fabric and a backing fabric
- ◆ securely bond a sheet of plastics foam between them

9.2 Fabrics

- ◆ face fabric shall be a woven polyester fabric
- ◆ colour to be an acceptable match to Colour No. 400c Jet Black of CKS 129 "Colours for textiles"
- ◆ backing fabric shall be a black warp-knitted nylon or polyester fabric

9.3 Foam

- ◆ plastics foam
- ◆ thickness of at least 3 mm in the case of the upper material
- ◆ in the case of the tongue 9 mm thickness

Doc No	Date	Responsibility	Doc Issue	Page	No of pages
05181-100-259	December 2022	SA Army	001	7	18

9.4 Laminate

- ◆ when tested in accordance with the relevant methods given in column 3 of table 1
- ◆ laminate shall comply with the requirements given in column 2 of table 1

Table 1 – Requirements for laminated fabric upper material

1	2	3
Property	Requirement	Test method
Bursting strength, kPa, min.....	2 600	SANS 13938-1
Abrasion resistance, for both face and backing fabric		SANS 17704
After 51 200 cycles dry	No holes or piling shall occur on the face under test	
After 12 800 cycles wet		
Colourfastness to perspiration, face fabric, rating, min.		SANS 105-E04
a) Change in colour	4-5	
b) Staining of transfer cloths:		
Cotton	4-5	
Nylon	4	

9.5 Toe-cap, facing, outside counter

- ◆ shall be a plain jersey knitted fabric
- ◆ consists of expanded vinyl or expanded polyurethane coating with an acceptable embossed pattern
- ◆ colour to be an acceptable match to the colour of the face fabric (see 9.2)

9.6 Side flashes and outside counter overlay

- ◆ shall be a plain jersey knitted fabric
- ◆ consists of expanded vinyl or expanded polyurethane coating with an acceptable embossed pattern
- ◆ colour to be an acceptable grey colour as agreed upon between the supplier and the procurement authority

9.7 Toe-puffs and stiffeners

- ◆ shall be of thermoplastic material
- ◆ toe-puff thickness shall be at least 0.50 mm
- ◆ mass per unit area of at least 400 g/mm²
- ◆ stiffener shall be of a highly resilient thermoplastic material
- ◆ thickness at least 1.2 mm
- ◆ mass per unit area at least 1000g/mm²

Doc No	Date	Responsibility	Doc Issue	Page	No of pages
05181-100-259	December 2022	SA Army	001	8	18

9.8 Threads

- ◆ shall be a polyester/cotton core-spun
- ◆ shall comply with relevant requirements of SANS 1362 "Sewing threads"
- ◆ the colour of the threads shall match the colour with which it is used (unless otherwise agreed upon)

9.9 Slip-in innersole foot-bed

- ◆ shall be of a laminate
- ◆ thickness ± 6 mm in the seat area tapered down to ± 3.5 mm in the forepart area
- ◆ shall consist of a warp-knitted pile fabric, antifungal and antibacterial treated
- ◆ securely bonded to a PU (Polyurethane) inner sole
- ◆ PU inner sole composition – Elastopan 80%, ISO 20%
- ◆ the laminate shall be moulded to a dished foot form configuration in the waist and seat area
- ◆ the foot-bed shall when tested in accordance to the test methods listed in column 3 of table 2 comply with the relevant requirements of column 2 of table 2

Table 2 – Requirements for slip-in inner sole foot-bed

1 Property	2 Requirement		3 Test method
	Knitted pile fabric	PU	
Thickness, measured in the forepart, mm .	-	3.5 – 4.0	DIN method 53353
Mass per unit area, measured in the forepart, g/m ²	8		SANS 79
Colour fastness to perspiration, rating min. Staining of transfer cloths:			SANS 105-E04
Cotton.....	4 – 5		
Nylon.....	4		
Resistance to rubbing after 400 rubs wet: Permissible colour transfer, rating, min:	4		SANS 17704
Abrasion resistance After 25 000 cycles dry After 12 800 cycles wet	No piling or holes shall occur in the fabric		

9.10 Inner soles

- ◆ inner soles shall be laminated inner soles made of non-woven insole board
- ◆ of thickness not less than 1.5 mm
- ◆ inner sole material when tested in accordance with the relevant methods given in column 3 of table 3 shall comply with the relevant requirements of column 2 of table 3

Doc No	Date	Responsibility	Doc Issue	Page	No of pages
05181-100-259	December 2022	SA Army	001	9	18

Table 3 – Requirements for inner sole material

1	2	3
Property	Requirement	Test method
Flex endurance, cycles, min With machine direction At 90° to machine direction	5 000	SANS 5640
Wet split tear strength, N per mm of width, min.	0.3	SANS 5962
Water stitch tear strength, N per mm of width, mm	50	SANS 5633

9.11 Through-middle-sole-and-wedge-heel

- ◆ shall have a dished configuration with a wall that extends from the forepart to the heel
- ◆ material shall be white expanded ethyl vinyl acetate (EVA)
- ◆ shall be cold moulded
- ◆ conform to the bottom contour of the last
- ◆ provide a heel height that is in accordance with the pitch of the last

9.12 Outer soles

- ◆ outer soles shall be pre-moulded sole units consisting of an outer layer of black rubber
- ◆ shall comply with the requirements for type R4 of SANS 1437
- ◆ a suitable example of a pattern of the outer sole are given in figure 2
- ◆ abrasion resistance of the relative volume loss shall not exceed 150 mm²
- ◆ outer sole shall have a lip in the toe area

9.13 Lasts

- ◆ lasts shall be an acceptable shape
- ◆ shoe sizes shall range from 2 – 14 ½ as given in table 4

Doc No	Date	Responsibility	Doc Issue	Page	No of pages
05181-100-259	December 2022	SA Army	001	10	18

10. Workmanship

The shoes shall be:

- ♦ cut and made with first-class workmanship throughout
- ♦ of uniform and acceptable make, colour and finish
- ♦ be of a standard at least equal to that of the pre-production samples
- ♦ in accordance with sound and accepted trade practice

Shall be free from:

- ♦ defects, that affect their appearance or may affect their serviceability (or both)
- ♦ marks and spots
- ♦ stains, incurred in the making-up

Seams and stitches shall be:

- ♦ smooth and uniform
- ♦ free from twists, pleats and puckers
- ♦ sufficiently extensible to avoid seam cracking and undue shrinkage in use

Ends of sewing shall be:

- ♦ trimmed and loose threads removed
- ♦ back-tacked if unsecured (at least 15 mm)

Seam allowances on lining to be:

- ♦ wide enough to prevent seam failure caused by fraying

Freedom from defects:

- ♦ inner soles and lining shall be free from protruding grindery, roughness and pleats

Doc No	Date	Responsibility	Doc Issue	Page	No of pages
05181-100-259	December 2022	SA Army	001	11	18

11. Sizes

The shoes shall:

- ♦ be supplied in the following UK sizes with correlating National Stock Numbers

Table 4 – Sizes and National Stock Numbers

1	2
NSN	Size
18-197-7165	2
18-197-7181	2 ½
18-197-7185	3
18-197-7186	3 ½
18-197-7187	4
18-197-7169	4 ½
18-197-7171	5
18-197-7172	5 ½
18-197-7173	6
18-197-7175	6 ½
18-197-7166	7
18-197-7167	7 ½
18-197-7168	8
18-197-7170	8 ½
18-197-7174	9
18-197-7176	9 ½
18-197-7177	10
18-197-7179	10 ½
18-197-7182	11
18-197-7184	11 ½
18-197-7178	12
18-197-7180	12 ½
18-197-7183	13
18-197-7101	13 ½
18-197-7163	14
18-197-7164	14 ½

12. Constructional requirements

12.1 Method of construction

- ♦ shall be in accordance with the stuck-on, false lasted principle
- ♦ shall be such that an inner sole is Strobel stitched to the upper
- ♦ the toe of the sole shall be securely attached to the toe of the upper

12.1.1 Style

- ♦ shall be an Oxford, laced-to-toe style

Doc No	Date	Responsibility	Doc Issue	Page	No of pages
05181-100-259	December 2022	SA Army	001	12	18

12.1.2 Vamp and quarters

- ◆ vamps and quarters shall be integral
- ◆ quarters shall be joined at the back by means of a zig-zag seam
- ◆ tops of the quarters shall have bagged edges

12.1.3 Toe caps

- ◆ toe caps shall be cut in one piece

12.1.4 Facings

- ◆ facings shall be cut in one piece
- ◆ shall extend right around the throat to the top of the quarters

12.1.5 Outside counters

- ◆ outside counters shall be cut in one piece
- ◆ shall have a nominal height, measured at the center back of 35 mm

12.1.6 Outside counter overlay

- ◆ outside counters overlay shall extend 5 mm above the counter

12.1.7 Side flashes

- ◆ shall have a nominal width of 10 mm
- ◆ shall be positioned as shown in Figure 1

12.1.8 Tongues

- ◆ shall be joined to the tongue lining using a bagged seam around the top
- ◆ tongue and tongue lining shall be turned back to back and overlapped from point to point right around the bottom of the tongue

12.1.9 Quarter linings

- ◆ shall be cut in one piece
- ◆ shall extend from the inside waist to the outside waist and from between the first and second eyelet holes on each facing
- ◆ shall be joined at the top line to the quarter and facing using a bagged seam and the front edges shall be stuck down

Doc No	Date	Responsibility	Doc Issue	Page	No of pages
05181-100-259	December 2022	SA Army	001	13	18

12.2 Closing

12.2.1 Seams

12.2.2.1 General

- ♦ upper closing shall be done in accordance with sound trade practice
- ♦ inside seams shall be free from ridges and roughness

12.2.2.2 Stitch type

- ♦ all seams shall be lock-stitch seams
- ♦ thread tensions and lock-stitched seams shall be so balanced that the lock is located in the centre of the materials being stitched
- ♦ nine to twelve stitches per 25 mm and a thread of ticket No. 36 shall be used
- ♦ minimum requirements for the stitching of the various upper components shall be given in table 5
- ♦ inside seams shall be free from ridges and roughness

Table 5 – Requirements for attachment of upper components

1	2
Seam	Number of rows and types of stitching
Toe cap to vamp	2 close rows along edges
Side flashes to quarters	1 row along edges
Facing and throat edge row	1 row along throat and facing edge
Tongue to vamp	Double stay row through facing
Back seam	1 row zig-zag
Back stay to quarter	1 row along edge of back stay
Quarter lining to quarter	1 row along edge to form a bagged top line
Outside counter	1 row along edge

12.2.2 Lace holes

- ♦ the facings shall be fitted with (six) 6 pairs of evenly spaced holes
- ♦ one (1) pair of holes shall be fitted at the top end of the facing (see figure 1)

12.2.3 Lacing of closed uppers

- ♦ after punching lace holes, the shoes shall be so laced as to provide the correct throat opening after lasting

Doc No	Date	Responsibility	Doc Issue	Page	No of pages
05181-100-259	December 2022	SA Army	001	14	18

12.3 Making

12.3.1 Stiffener insertion

- ◆ stiffener shall be treated as recommended by the manufacturer before insertion
- ◆ shall be correctly positioned in the upper before back-part moulding
- ◆ pressure and temperature of the back-part moulding machine shall be adequate to ensure that both sides of the stiffener are securely bonded to the upper and the lining

12.3.2 Inner sole attachment

- ◆ the inner sole shall be accurately stitched to the lasting edge of the upper
- ◆ either a lock stitch or a two-thread chain-stitch seam

12.3.3 Lasting

- ◆ uppers shall be force-lasting onto the last
- ◆ each shoe shall remain on the last long enough to allow the toe-puff and stiffener to set thoroughly

12.3.4 Preparation of upper

- ◆ bottom shall be prepared to ensure that it is compatible with the adhesive to be used for the attachment of the bottom unit

12.3.5 Attachment of bottom unit

- ◆ the prepared surfaces of the upper and the bottom unit shall each be coated with an acceptable adhesive that will produce an adequate bond and shall be stuck together using the time and temperature for activation of the adhesive and pressure recommended by the adhesive manufacturer

12.3.6 Sole toe lip

- ◆ sole toe lip shall be securely attached to the toe cap of the shoe

12.4 Laces

- ◆ each pair of shoes shall be provided with one pair of semi flat black nylon laces of acceptable length and shall comply with the requirements given in SANS 770

13. Care-labelling and Marking

13.1 Label properties

- ◆ each shoe shall be fitted with a label that shall outlast the service life of the shoes (applicable to both the label and the markings on the label)
- ◆ all printing shall be neat, indelible and legible

Doc No	Date	Responsibility	Doc Issue	Page	No of pages
05181-100-259	December 2022	SA Army	001	15	18

13.2 Care-labelling

- ◆ Each pair of shoes shall have a swing label that shall contain the substance of the wording as given below, which shall be attached through the eyelet of one shoe of each pair of shoes
 - these shoes are not intended for long distance running
 - the shoes must be fitted properly
 - the slip inner soles shall be regularly washed with soap in cold water and air dried
 - shoes should be washed when necessary with soap and cold water, either machine washed or with a soft brush
 - place the shoes in a cool, dry, airy space until dry. Do not leave near heat
 - do not spin dry (tumble dry)

13.3 Marking

- ◆ Each shoe to have, securely stitched to the upper, a label that provides the following information
 - the Item description, i.e. "Shoe, Cross Training, Female/Male"
 - the National Stock Number
 - the size designation
 - the manufacturer's name or trade mark or both
 - the year of manufacture
 - the words "SA ARMY"
 - space for the wearer's name with the following wording: "Name: _____"
 - VAT no of the contractor
 - Country of Origin
- ◆ to include the composition of the main fabric in accordance with the requirements of SANS 10235 "Fibre-content labelling of textiles and textile products"

14. Preparation, packaging and marking

14.1 Packaging

14.1.1 The shoes shall be:

- ◆ delivered in a commercially dry condition
- ◆ so packed that they will not be damaged in transit or in storage
- ◆ packed in pairs in individual shoe boxes
- ◆ unless otherwise specified in the order or contract, acceptably packed for transit in acceptable bulk containers that comply with the requirements of Specification 05181-100-209 "Corrugated board boxes for clothing and footwear"
- ◆ the number of pairs in each bulk container shall be as follows
 - sizes 2-8: 12 pairs
 - sizes 9-14: 10 pairs

14.1.2 Shoes:

- ◆ of the same size designation to be packed together in a bulk container (unless quantities ordered are such that packing together of the same size only is not justified)

Doc No	Date	Responsibility	Doc Issue	Page	No of pages
05181-100-259	December 2022	SA Army	001	16	18

- ♦ of different size designations may also be packed together to accommodate the last part of an order or contract

14.2 Marking of packaging

14.2.1 Individual shoe box:

A self-adhesive label bearing the following information printed in black, clearly and indelibly, shall be attached to each shoe box:

- ♦ the item description, i.e "Shoe, Cross Training, Female/Male"
- ♦ the size designation
- ♦ the fitting designation
- ♦ the manufacturer's name or trade mark
- ♦ the year of manufacture
- ♦ Ticket/batch no.
- ♦ the National Stock Number

14.2.2 Bulk containers:

In addition to the address for delivery, each bulk container shall be labelled with additional information on the four sides of the lids (outer component). The information shall be written or printed in legible and indelible block letters and the label shall be of minimum A4-paper size, and shall contain the following:

- ♦ the item description, i.e "Shoes, Cross Training, Female/Male"
- ♦ the quantity
- ♦ the order number
- ♦ the mass of the packed container
- ♦ the manufacturer's name or trade mark or both
- ♦ the year of manufacture
- ♦ the National Stock Number
- ♦ the size designation
- ♦ FIFO marking
- ♦ VAT no of Contractor
- ♦ Invoice number
- ♦ Number of bulk containers, eg "1 of 10"

14.3 Additional marking

When so required by the South African Army, shoes, shoe boxes or bulk containers (or any combination of these) to bear information additional to that specified above.

Doc No	Date	Responsibility	Doc Issue	Page	No of pages
05181-100-259	December 2022	SA Army	001	17	18

ANNEX A

(Normative)

Special conditions of bid

A-1 GENERAL

- A-1.1** Unless otherwise stated, the South African Army (or an organization appointed by it), shall be the inspecting authority.
- A-1.2** Pre-production sample shoes, shall have been inspected, tested and approved by the inspecting authority before bulk production is commenced. Each one of these samples shall be accompanied by a trim chart containing a sample of each component material (as given in 9) and the relevant certificates. 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 shoes shall be subject to inspection during the course of 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 shoes supplied to this specification may be in progress
- A-1.4** The contractor shall inspect the finished shoes for compliance with the specification before submitting them to the inspecting authority for final inspection.
- A-1.5** Before acceptance, the shoes shall have been inspected and tested by the inspecting authority and found to comply with the requirements of the specification.

A-2 DOCUMENTATION

One container of each consignment shall be marked "DOCUMENTS" and in addition to the shoes, shall contain the following:

- a) The packaging slip or delivery note;
- b) where applicable the inspection certificate(s);
- c) a copy of the invoice containing the following information:
 - the order number
 - the financial authority number
 - a full description of the consignment, i.e. National Stock Number, quantity, etc

Doc No	Date	Responsibility	Doc Issue	Page	No of pages
05181-100-259	December 2022	SA Army	001	18	18