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# Foreword

Rwanda Standards are prepared by Technical Committees and approved by Rwanda Standards Board (RSB) Board of Directors in accordance with the procedures of RSB, in compliance with Annex 3 of the WTO/TBT agreement on the preparation, adoption and application of standards.

The main task of technical committees is to prepare national standards. Final Draft Rwanda Standards adopted by Technical committees are ratified by members of RSB Board of Directors for publication and gazettment as Rwanda Standards.

DRS 309 was prepared by Technical Committee RSB/TC 029, Textile and leather technology.

#### **Committee membership**

The following organizations were represented on the Technical Committee on *Title of TC* (RSB/TC nnn) in the preparation of this standard.

Ministry of Trade and Industry (MINICOM)

University of Rwanda-College of Science and Technology (UR-CST)

National Agricultural Export Development Board (NAEB)

Rwanda Inspectorate, Competition and Consumer Protection Authority (RICA)

HeWorks Silk Rwanda Ltd

Dokmai Rwanda Ltd

GBF Leather and Art promoters Ltd

UTEXRWA Ltd

LIXIL/SATO

Rene Pharmacy

ABAHIZI RWANDA Ltd

Rwanda Standards Board (RSB) - Secretariat

# **Rwanda National Flag — Specification**

# 1 Scope

This Rwanda Standard covers the material, design and constructional requirements, methods of testing and sampling for all types of the National Flag of the Republic of Rwanda.

#### 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 105-B02, Textiles — Tests for colour fastness — Part B02: Colour fastness to artificial light: Xenon arc fading lamp test.

ISO 105-X16, Textiles — Tests for colour fastness — Part X16: Colour fastness to rubbing — Small areas.

ISO 2062, Textiles — Yarns from packages — Determination of single-end breaking force and elongation at break.

ISO 13934-1, Textiles — Tensile properties of fabrics — Part 1: Determination of maximum force and elongation at maximum force using the strip method.

RS ISO 15184, Paints and varnishes—Determination of film hardness by pencil test

RS ISO 2859-1, Sampling procedures for inspection by attributes -- Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection.

#### 3 Terms and definitions

For the purposes of this standard, the following terms and definitions apply:

#### 3.1

#### acceptable

acceptable to a competent authority or to the parties concluding the purchase contract, as relevant

# 3.2

base

pedestal for the pole of a desk flag and, when relevant, for the pole of a hand-held flag

#### 3.3

#### desk flag

flag complete with pole, finial and base

#### 3.4

#### external flag

flag that is intended for flying on a flagpole and that is subject to weathering

# 3.5

# finial

ornamental termination at the top of a flagpole

# 3.6

# fly

free end of a flag

# 3.7

#### halyard

continuous loop of cord for attaching a desk flag to a pole

# 3.8

#### hand-held flag

flag complete with a pole, and that may have a base or a finial (or both

#### 3.9

# heading/sleeve

sleeve attached to or formed at the pole end of a flag:

a) that carries the hoist cord or clip fasteners of external flags and the halyard or pole of a desk flag, and

b) into which the pole of a hand-held flag is inserted.

# 3.10

# width

dimension of the flag parallel to the flagpole

#### 3.11

hoist

pole end of the flag

# 3.12

# hoist cord

length of cord that is sewn into the heading/sleeve of a flag

#### 3.14

# nominal

subject to the tolerances normal to good manufacturing practice

nnente

## 3.15

#### toggle

pin that forms a cross-piece through the eye at the top of the hoist cord

#### 3.16

#### length

dimension of the flag perpendicular to the flagpole

#### 3.17

#### Acceptable Quality Level (AQL)

quality level that is the worst tolerable process average when a continuing series of lots is submitted for acceptance sampling

#### 3.18

#### defective

A flag, a component of a flag, a test sample, a test specimen or a set of test specimens whose property has been determined, that fails in one or more respects to comply with the relevant requirements of this standard

#### 3.19

#### lot

Not less than 26 and not more than 3 200 flags of the same type, size designation, material(s), and components, made by one manufacturer, and submitted at any one time for inspection and testing

#### 3.20

#### Hook

piece of fiber curved or bent back at an angle, for catching, holding or hanging a flag

# 4 General requirements

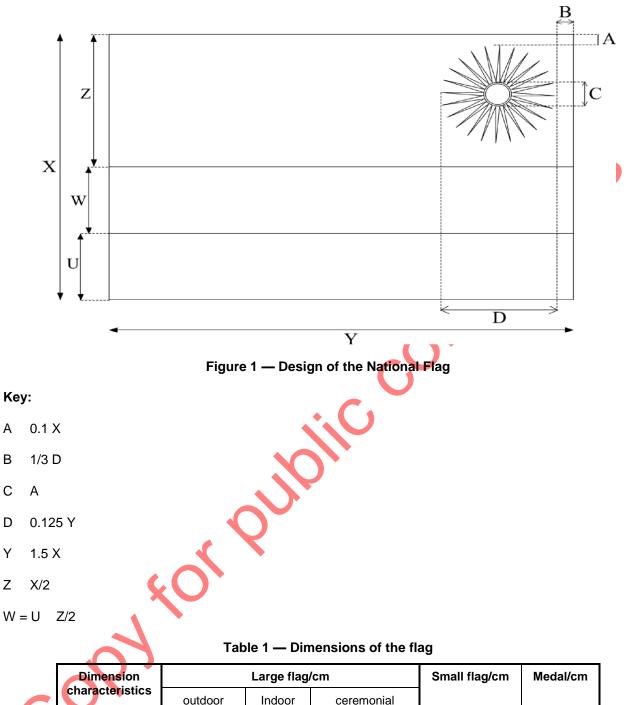
#### 4.1 Design

#### 4.1.1 Types

A flag shall be one of three types and the design of each type as illustrated in Figure 1 and the dimensions as per Table 1:

#### a) large flag;

- b) small flag; and
- c) medal flag.



				J	
characteristics	outdoor	Indoor	ceremonial		
A	13	13	15	2	-
В	14	14	16	2.2	-
С	13	13	15	2	-
D	42	42	48.5	6.5	-
Х	130	130	150	20	1.4
Y	195	195	225	30	2.1
Z	65	65	75	10	-
Y	195	195	225	30	

W	32.5	32.5	32.5	5	-
U	32.5	32.5	32.5	5	-
Strands	-	6	15	4	-
Blue ring thickness/mm	10	10	11.5	0.8	

#### 4.1.2 Proportions

The flags shall be made to the dimensions given in Table 1 and, for all types of flags, the ratio of the length to the width shall be 3:2. The National Flag shall be made up of three (3) colours: green, yellow and blue. The flag shall be as follows from the bottom to the top: a green strip, followed by a yellow strip both of which shall cover half the flag.

The upper half shall be blue and shall bear on its right hand side, the image of the sun with its rays of golden yellow. The rays shall be 24 and shall be separated from the sun by a blue band. The dimensions of the flags, of any type, shall be as given in Table 1 and the tolerances shall be as per Annex E.

#### 4.1.3 Colours

4.1.3.1 The colours of the National Flag shall be as follows:

- a) blue: Pantene 299 C 2x;
- b) green: RAL 6029;
- c) yellow: RAL 1023; and
- d) golden Yellow: RAL 1003

**4.1.3.2** The colours of the flag shall so conform to the appropriate colour standards that any difference between the colour of a dyed or printed fabric or other material and the corresponding required colour is not greater than 3-4 on the international grey scale for the assessment of change in colour.

**4.1.3.3** The colours of the screen printing shall be such that the outlines are clearly defined on the flag and, in the case of flags that will be subjected to weathering, have a colour fastness to water and to weathering not lower than 4-5. In addition, the colour fastness to rubbing, determined in accordance with ISO 105-X16, of the printing on bunting shall be not lower than 4 in the case of dry rubbing and not lower than 3 in the case of wet rubbing.

**4.1.3.4** In the case of printed flags intended for internal display, e.g. desk flags, the colour fastness of each colour to light, determined in accordance with ISO 105-B02, shall be not lower than 5.

# 4.2 Workmanship

Each flag shall be cut and made with first-class workmanship throughout and shall be free from defects that affect its appearance or might affect its serviceability (or both), and from marks, spots and stains incurred in the making up. All seams shall be smooth and all stitching uniform. Seams and stitching shall be free from twists, pleats and puckers, and shall be sufficiently extensible to obviate seam cracking and undue shrinkage in use. All ends of sewing shall have been trimmed and loose threads removed and all ends of sewing that are not secured in seams or in other stitching shall be adequately backtacked. The flags shall be of uniform and acceptable make, colours and finish.

# 5 Specific requirements for large flags

#### 5.1 Materials

#### 5.1.1 Flag material

The material shall be 100 % polyester for an Ordinary National Flag.

#### 5.1.2 Heading/sleeve

The heading/sleeve fabrics shall be of the following:

a) made from the flag material;



b) a 100 % polyester multifilament webbing that has a finished width and thickness of 25 mm and 1.5 mm respectively, with a double plain weave binding, front and back. The number of weft threads shall be 232 per 10 cm and the number of warp threads in the full width shall be 110 for the ground warp, 10 for the binders and 44 for the stuffers. The webbing shall, when tested in accordance with ISO 13934-1, have a full-width breaking strength of at least 3 000 N and a mass of between 21 g and 30 g per metre length. The selvedge shall be such that it cannot become unravelled in use. Each end of the webbing shall be fitted with a snap hook that is injection-moulded directly onto the webbing. The hook shall be made from polyoxymethylene (POM) and designed with a feature to prevent the hook from accidentally disengaging.

#### 5.1.3 Toggles

Each toggle shall be made from a piece of hardwood or shall be of a plastics material and shall be free from defects. The surfaces shall be smooth and wooden toggles shall be free from splinters. The nominal finished length of a toggle shall be 60 mm.

#### 5.1.4 Snap hooks (secured by sewn-down loop)

A snap hook shall be made from nylon 66 material of nominal thickness 5 mm and shall be designed with a feature to prevent the tongue from accidentally disengaging.

#### 5.1.5 Hoist cords

The hoist cord for a flag shall be round braid made from cotton, or from nylon or other synthetic fibre. The cord shall have a nominal diameter of 5 mm and, when tested in accordance with ISO 2062, shall have a breaking strength of at least 1 250 N in the case of a cotton cord and at least 3 000 N in the case of a synthetic cord.

# 5.1.6 Threads

The sewing threads for the hems and heading/sleeve shall be an acceptable match to the blue bunting. The threads shall be as follows:

- a) sewing thread: a polyester-and-cotton core-spun thread, ticket No. 80, or a staple polyester thread, ticket No. 60, and
- b) cord-sewing thread and cord-whipping thread: a core-spun or staple polyester thread, ticket No. 20

#### 5.2 Size and dimensions

Unless otherwise required (see Annex A) as obtained from the Law, the flags shall be of one of the sizes given in Table 1 as specified in the order or contract, and the flag dimensions shall conform to the appropriate values given in columns 2, 3 and 4 of Table 1.

NOTE Unless inconsistent with the text, all measurements are nominal.

#### 5.3 Make

#### 5.3.1 General

NS.

The design of the flag shall be printed, using disperse dyes, with the design being clearly defined on both sides of the flag. The width shall be cut in the warp direction of the fabric. The fly and the top and bottom edges of the flag shall be hemmed and a tolerance of  $\pm 2$  % shall be allowed on the dimensions of the differently coloured sections of the flag.

#### 5.3.2 Hems

The fly and edges at the top and bottom of a flag, shall have been turned in 10 mm and turned over 10 mm (i.e. the finished width of a hem shall be 10 mm). Hems shall be securely stitched with two rows of stitches, one 3 mm and the other 9 mm from the outer edge of the flag, and the ends of each hem shall be securely box-stitched. The hem of the fly shall, in addition, have a row of zig-zag stitching as near to the inner edge of the hem as is practicable.

#### 5.3.3 Heading/sleeve and hoist cords

**5.3.3.1** The heading/sleeve shall be attached at the pole end of the flag and shall have a finished width of 50 mm. The heading/sleeve shall be formed by a strip of fabric folded double, with the hoist cord (see 5.1.5) inserted into and held against the fold by one row of stitching close to the cord.

**5.3.3.2** The cord shall be firmly secured to the heading/ sleeve at the top, centre and bottom by stitching that penetrates through the cord and fabric, with the top to be locked as well in the opposite direction.

**5.3.3.3** The centre and bottom stitching may be machine-tacked. A toggle (see 5.1.3) shall be secured in the eye at the top end of the hoist cord and the loop at the bottom end shall have a finished length of 50 mm and shall be secured with thread (see 5.1.6 b)) or spliced.

**5.3.3.4** The ends of the cord shall be securely heat sealed, or whipped with thread (see 5.1.6 b)). The edges of the heading/sleeve shall be turned in 6 mm and the pole end of the flag shall be inserted to a depth of 20 mm and stitched down with two rows of stitching, one 1 mm and the other 7 mm from the turned-in edge of the heading/sleeve. The ends of the heading/sleeve shall be turned in 6 mm (in line with the top and bottom edges of the flag) and secured with one row of stitching 3 mm from the turned-in edge.

#### 5.4 Stitches, seams and stitchings

#### 5.4.1 General

Sewing shall be in accordance with Annex D.

#### 5.4.2 Stitches

The stitches used shall be as follows:

- a) seaming and hemming: stitch type 301;
- b) zig-zag on fly hem: stitch type 304; and
- c) top tack of heading/sleeve: stitch type 204.

#### 5.4.3 Seams

Seams shall be at least 8 mm wide and shall be as follows:

- a) attaching the flag to the heading/sleeve: seam type LSe-2 or type LScf-3;
- b) in the case of narrow woven fabric or webbing, type BSa-2. (see Annex D)

#### 5.4.4 Stitchings

Stitching of hems shall be stitching type EFb-2.

#### 5.4.5 Number of stitches

The number of stitches shall be as follows:

- a) for stitch type 301 and 204:  $40 \pm 4$  per 10 cm; and
- b) for cross-stitches through cord: 4 per 5 cm.

#### 5.5 Marking and labelling

**5.5.1** Each flag shall have a printed label that is securely attached on one side of the heading/sleeve and it shall bear the following information in legible letters:

- a) manufacturer's name or trademark (or both);
- b) size of the flag;
- c) fibre composition of the bunting fabric; and
- d) year of manufacture.

5.5.2 The marking shall be made with an acceptable black indelible ink.

#### 5.6 Care labeling

When so required (see Annex A), the printed label (see 5.5) shall provide correct and appropriate care instructions. All printed labels and their markings shall be such that they outlast the flags.

eni

# 5.7 Additional marking

When so required (see Annex A), the flags shall bear information additional to that specified in 5.5.and 5.6.

# 6 Specific requirements for small flags

#### 6.1 Materials

#### 6.1.1 Flag material

The flag shall be 100 % polyester and the printing shall be clear and well defined on both sides of the flag.

#### 6.1.2 Pole, base and finial

The pole, base and finial shall be of a wood that is free from defects and essentially straight grained, or of an acceptable metal, plastics or other suitable material. All materials shall have an acceptable finish.

#### 6.1.3 Fastening pins

The fastening pins shall be of a corrosion-resistant metal, have a smooth finish and be so designed as to permit the hoisting and lowering of the flag.

#### 6.1.4 Halyards

The halyards shall be of an acceptable two-ply or three-ply cotton or synthetic twine.

#### 6.1.5 Sewing threads

The sewing thread shall be a white polyester-and-cotton core-spun thread or staple polyester thread, ticket No. 120

#### 6.2 Make

#### 6.2.1 Flag

The National Flag shall be so printed on the material conforming to 6.1.1, that all details of the printing are acceptably clear on both sides of the flag. The pole end of a flag shall be so turned in and stitched down, or heat sealed, as appropriate, as to form a heading/sleeve that is large enough to allow the insertion of the halvard (see 6.1.4) or to fit tightly over the flagpole, or shall be folded round the pole and glued and stapled to it. All raw edges shall have been heat sealed or turned in and securely hemmed as appropriate.

# 6.2.2 Flagstaff

The flagstaff shall consist of a pole, base and finial (see 6.1.2). In the case of a flag with a halyard (if required, see Annex A), the pole shall have a pin (see 6.1.3), 5 mm below the finial, and a second pin, positioned approximately halfway down the pole, to secure the top and the bottom of the halyard. The finished height of the flagstaff shall be such as to be acceptable. The base shall be of such shape, mass and size that the flag is stable when placed on a flat horizontal surface.

#### 6.3 Stitches and stitchings

#### 6.3.1 Stitches

Stitches shall be type 301.

#### 6.3.2 Stitchings

Stitchings shall be type EFa or type EFb.

#### 6.3.3 Number of stitches

The number of stitches shall be  $40 \pm 4$  per 10 cm.

#### 6.4 Marking and labelling

Each flag shall have a printed label that is securely attached on one side of the heading/sleeve and it shall bear the following information in legible letters

- e) manufacturer's name or trademark (or both);
- f) size of the flag;
- g) fibre composition of the bunting fabric; and
- h) year of manufacture.

#### 6.5 Care labeling

unless otherwise required, (see Annex A), each flag shall have a printed label that is securely attached and that provides correct and appropriate care instructions in addition to marking requirements (6.4). All care labels and their markings shall be such that they outlast the flags.

# 6.6 Additional marking

When so required (see Annex A), the flags shall bear information additional to that specified in 6.4.

# 7 Specific requirements for National Flag Medal Badge

# 7.1 Materials7.1.1 Flag material

The flag shall be of an acceptable non corrosive metal or metal alloy.

#### 7.1.2 Fastening pins

The fastening pins shall be of a corrosion-resistant metal, have a smooth finish and shall be so designed as to permit the fastening of the flag to the cloth.

#### 7.1.3 Coat adherence

The colour coating shall so adhere to the medal material that it shall outlast the medal and shall not be removed due to scratches. It shall comply with the minimum class of durability when tested in accordance with RS ISO 15184.

#### 7.2 Make

#### 7.2.1 General

The design of a medal National Flag shall be of a wave form. The dimensions shall be as indicated (see Table 1) and the finished length of the pole shall be such as to be acceptable. It shall have a thickness of 0.5 mm.

#### 7.2.2 Flag

The National Flag shall be so printed on the material that all details of the printing are acceptably clear. The ends of the medal shall be surrounded by an appropriate metal pleating

#### 8 Sampling

- Ò

Sampling and inspection of the flags shall be as per Annex C 

# Annex A (normative)

# Notes to purchasers and users

A.1 Prospective suppliers are reminded that, permission to manufacture or supply the National Flag, or any representation thereof, shall be obtained from the Government of Rwanda, and that a sample thereof shall be submitted to that Office for final approval.

A.2 The following requirements shall be specified in tender invitations and in each order or contract:

- a) type(s) of flag,
- b) size(s) of flag(s),
- c) in the case of external flags, the type of fastening,

- d) in the case of external flags, the width of seams if other than as specified, and
- e) whether care instructions are required
- f) additional markings, if required in the case of desk flags, whether a halyard is required

# Annex B (informative)

# The flying and use of the flag

etina i etina Users of the National Flag are reminded that instructions on the flying and displaying of the flag are published in Government Gazette No. law nº 34/2008 of 08/08/2008. Unauthorized use of the National Flag is covered

# Annex C (normative)

# **Quality verification of National Flags**

# C.1 Quality verification

**C.1.1** When a purchaser requires ongoing verification of the quality of National Flags produced in accordance with this standard, instead of concentrating solely on evaluation of the final product, the attention should be brought to the manufacturer's quality system. In this connection it should be noted that RS ISO 9001 covers the provision of an integrated quality system.

**C.1.2** When inspection and testing of samples of the final product, whether a lot (as defined in C.2.1) of the National Flags produced to this standard complies with its requirements, the sampling plan given in C.2 and based on the stated AQLs can be applied. (If a different AQL is required, reference should be made to applicable statistical sampling tables.) It should be noted that:

- a) such a sampling plan applies to fully manufactured flags only, and
- b) a lot that, in terms of the sampling plan, is deemed to comply with this standard, could contain defective flags to an extent which may be derived from the tabulated values for the Operating Characteristic (OC) curves proportional to those curves permitted by the relevant acceptance numbers given in table.C.1

# C.2 Assessment of compliance with this standard

#### C.2.1 Sampling procedure

Use the following sampling procedure to determine whether a lot complies with the standard, and deem the samples so taken to represent the lot for the respective properties:

- a) sample for inspection: from the lot, take at random the number of flags given in column 2 of Table C.1, relative to the appropriate lot size shown in column 1; and
- b) sample for testing: after inspection of the sample that was taken in accordance with C.2.2(a), take from it at random the appropriate number of flags given in column 4 of Table C.1.

1	2	3	4	5		
Lot size, flags	Sample for in	spection <sup>1)</sup>	Sample fo	Sample for testing <sup>2)</sup>		
	Sample size, flags	Acceptance No. (AQL=1.5)	Sample size, flags	Acceptance No. (AQL=1.5)		
26-50	8	0	8	0		
51-90	8	0	8	0		
91-150	32	1	8	0		
151-280	32	1	8	0		
281-500	50	2	8	0		
5001-1200	50	3	8	0		
1201-3200	125	5	8	0		

Table C.1 — Sample sizes

C.2.2 Criteria of compliance

Deem the lot to comply with the applicable requirements of the standard if:

- c) on inspection of the sample taken in accordance with C.2.2(a), the number of defectives found does not exceed the relevant acceptance number given in column 3 of table C.1, and
- d) on testing of the sample taken in accordance with C.2.2(b), the number of defectives found does not exceed the relevant acceptance number given in column 5 of table C.1.

# Annex D (normative)

# Details of types of Stitches, Seams and Stitching

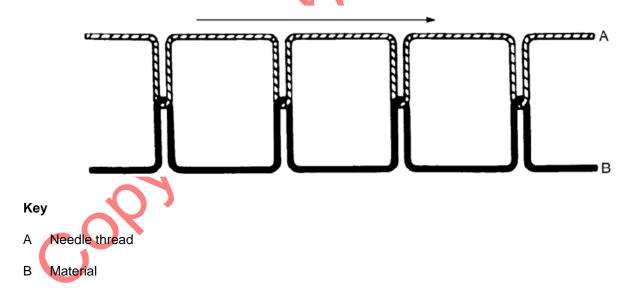
# **D.1 General**

The various types of stitches, seams, and stitchings are described in detail and illustrated diagrammatically in this section. The presence of an arrow on the stitch type diagram indicates the direction of the successive stitch formation. The diagrams for the seams and stitchings illustrate the fundamental types and the descriptive procedure covers the general formation of the types. Most seam types may be produced by using multiple rows of stitches.

# **D.2 Stiches**

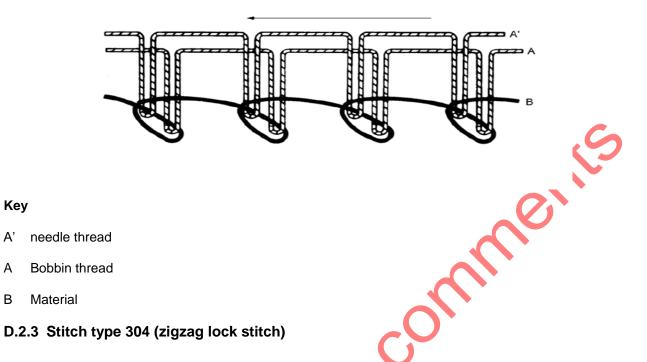
#### D.2.1 Stitch type 204 (hand felling stitch)

Formed with one needle thread which is passed through the material, brought back one stitch length and then passed back up through the material. The needle is then moved diagonally across the material and forward at least two stitch lengths, passed through the material, brought back one stitch length, and again passed to the surface of the material. This process is repeated to form a crisscross pattern of stitches on the surface and parallel rows of separated and offset stitches on the underside of the material.

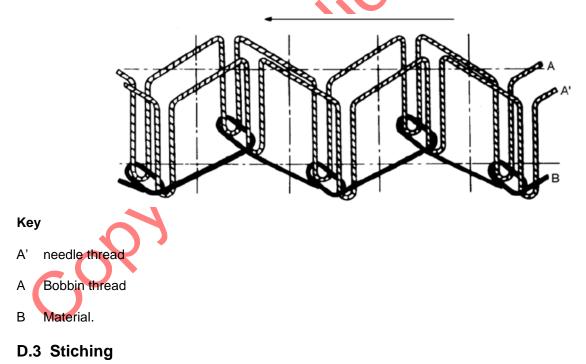


#### D.2.2 Stitch type 301 (single needle lock stitch)

Formed with two threads: one needle thread, A, and one bobbin thread, B. A loop of thread A is passed through the material and interlaced with thread B. Thread A is pulled up so that the interlacing is between the surfaces of the material or materials being sewn.



Formed with two threads: one needle thread, A, and one bobbin thread, B. This stitch type is the same as stitch type 301 except that successive stitches form a symmetrical zigzag pattern.



# D.3.1 EFb

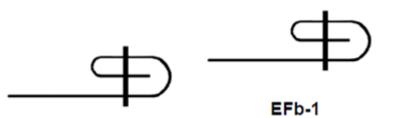
Key

A'

A

В

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 two rows of stitches.



# D.3.2 EFa

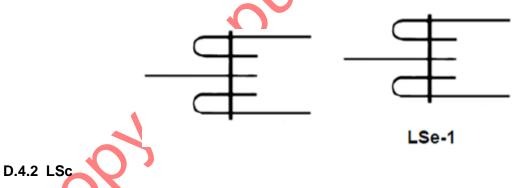
Turn in the specified width at the edge of a ply of material and stitch the turned edge with the appropriate number of rows of stitches.



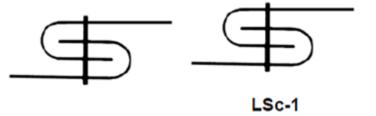
# D.4 Seams

D.4.1 LSe

Turn in the edge of each of two plies of material, superimpose them, then insert a third ply between the turned-in edges, and seam with the appropriate number of rows of stitches.



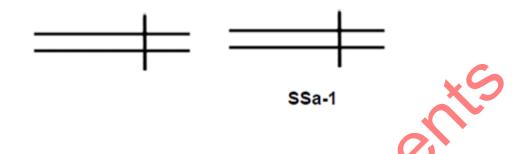
Turn in and inter lap the edges of two plies of material and seam with the appropriate number of rows of stitches.



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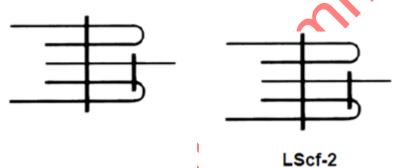
#### D.4.3 SSa

Superimpose two or more plies of material and seam with the appropriate number of rows of stitches positioned at the specified distances from the aligned edges.



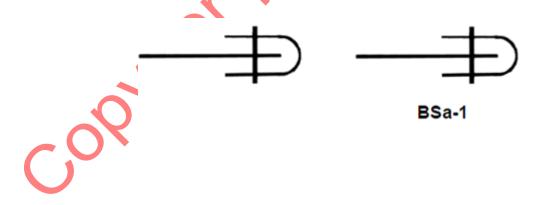
#### D.4.4 LScf

Form seam type SSa-1, using two plies of material. Then turn back the bottom ply at the seam, superimpose a third ply with its edge turned in, and seam with the appropriate number of rows of stitches.



#### D.4.5 BSa

Fold a binding strip round the edge of a ply or plies of material and seam with the appropriate number of rows of stitches.



# Annex E (normative)

# **Textile tolerances**

# Table E.1Textile tolerances for Woven cotton and similar piece goods (e.g polyester and cotton<br/>blends and polyester and rayon blends)

1		2	3		
Property		Tolerances			
		Average Property of a lot	Property of individual pieces in a lot		
width		+4	-1.2,+4		
Piece leng	th	No minus tolerance on stated value a	-1.0 (of stated value) a		
Number of	threads				
	a) Per cm2 (warp and weft combined)	-5	Not applicable		
	b) Per cm				
	Warp	Not applicable	-5, +10		
	Weft	Not applicable	-5, +10		
Mass per s material)	square metre(free of non-fibrous	-2.5,+7.5	-5, +10		
Breaking s	strength				
	Warp	-5, -10b	-10, -18 b		
	weft	-5, -10 b	-5C,-18 b		
Filling cont	tent	+1	+2.5		
	al changes on laundering mass less than 200g/m2				
	Warp	±0.5 c or d	±0.5		
	Weft	±0.5	±0.5		
Fabrics of	mass 200g/m2or more				
	Warp	±0.5 c	+1 (of stated values)c		
	Weft	±0.5 c	+1 (of stated values)c		
b applic	arked on the pieces cable only to fabrics for which a res mental reading tolerance	sin finish has been declared by	the manufacturer		

# **Bibliography**

- si conmente connente connente ISO 2859-1, Sampling procedures for inspection by attributes - Part 1: Sampling schemes indexed by [1] acceptance quality limit (AQL) for lot-by-lot inspection.

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