

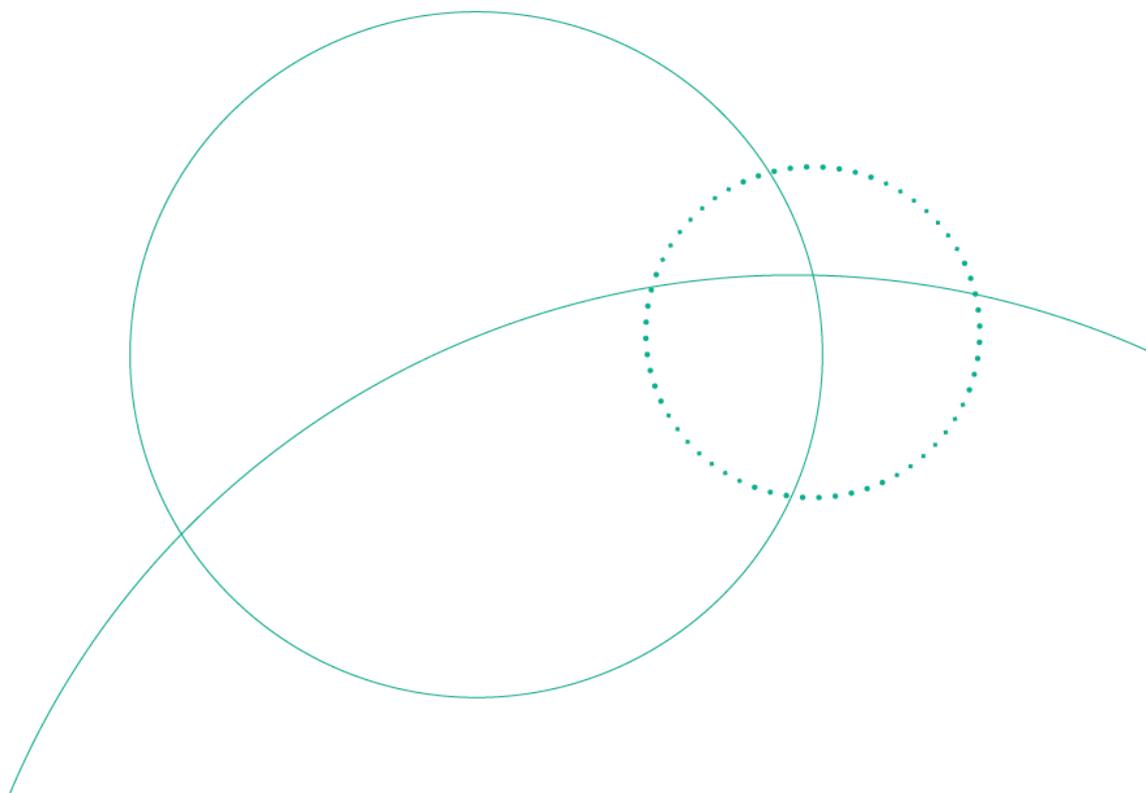
WHO Prequalification Programme / Vector Control Product Assessment

WHO Public Assessment Report: WHOPAR Part 3

Yorkool G1 Recycled LN
(Tianjin Yorkool International Trading Co., Ltd)

P-13409

Quality Assessment



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1 Chemical and physical data

1.1 Chemical and physical properties

Data on the chemical and physical properties of the active ingredient and the product Yorkool G1 Recycled LN were provided. These data were obtained from studies conducted according to established standards and/or Good Laboratory Practices (GLP) and are considered complete. Product specific properties are summarized in Table 1. Numerical results are presented as: mean (range). These summary results are based on the analysis of batches: YP231102, YP231018, YP230926, YP230905 and YP230812.

Complete results from the studies TE2023-039, TE2024-098 and TE2025-037 are available in Appendix 1.

Table 1. Chemical and physical properties for Yorkool G1 Recycled LN

Data requirement	Test method ID	Result
Identification of deltamethrin	Deltamethrin CIPAC (M) 333/LN/(M)/2	The active ingredient complies with an identity test
Deltamethrin mean content	CIPAC (M) 333/LN/(M)/3	(1.36 -1.44 g/kg) * (1.31 - 1.44 g/kg) **
Accelerated storage deltamethrin retention		(98.6 - 102.9%)*
R-alpha deltamethrin mean content	CIPAC (M) 333/LN/(M)/3	-
Wash resistance index (Deltamethrin)	Adapted CIPAC (O) MT 195 - IG – Determination of wash resistance index test for ITN fabric	(92.5 - 93.4%)*
Wash resistance index (Deltamethrin)	CIPAC (O) MT 195	(92.3 - 93.4%)*
Accelerated storage deltamethrin WRI	CIPAC (O) MT 195	(90.2 - 94.7%)*
Accelerated storage deltamethrin WRI	Adapted CIPAC (O) MT 195 - IG – Determination of wash resistance index test for ITN fabric	(94.9 - 98.4%)*
Mesh size	See Appendix 2	(24 - 25) holes/cm ² *
Fabric weight	ISO 3801/EN 12127 EN 20139-1992	(40.16 - 40.98 g/m ²)*
Dimensional stability of netting to washing	ISO3759-2011 / ISO5077-2007 / ISO6330-2012	Length: (-0.4% to +0.4%)* Width: (-0.6% to -0.1%)*
Accelerated storage dimensional stability		Length: (-1.6% to -0.9%)* Width: (-1.1% to -0.1%)*
Bursting strength	ISO 13938-2-1999 (30mm Diaphragm Diameter)	(414.8- 426.4 kPa)*
Accelerated storage bursting strength		(394.5 - 436.6 kPa)*
Seam bursting strength	ISO 13938-2-1999 (30mm Diaphragm Diameter)	(446.9 - 489.3 kPa)*
Accelerated storage seam bursting strength		(454.9 - 493.6 kPa)*
Flammability	EN 1102:2016	No ignition or propagation. Maximum hole width 25 mm, length 132 mm.
Snag strength	ISO 13934-2:2014/ISO 139: 2005	Wale-Wise Direction:27.8N*,(27.4 - 28.0 N)** Course-Wise Direction:40.2N*,(39.5 - 40.7 N)**
Abrasion	ISO 12947-1: 1998/ISO 139: 2005	10 rubs (61% intact)
Resistance to hole formation	ISO 13938-2/ISO 139: 2005	12.7, laddering, 64 Secondary Failure: Laddering

* range of means

** range of individual measurements in samples

No significant differences were recorded among the properties of the product kept at ambient temperature and after accelerated storage stability test conditions.

1.2 Manufacturing, composition and formulant information

Data on the manufacturing process and product composition for Yorkool G1 Recycled LN have been provided and are adequate. A summary is presented in Table 2. Detailed information on the manufacturing process and product formulation is considered Confidential Business Information (CBI).

Table 2. Manufacturing process and product composition data submitted for Yorkool G1 Recycled LN	
Description of starting material	Deltamethrin TC formulated as part of the production process. 100% recycled polyester yarn. The sources of active ingredients are supported by a current evaluation report confirming compliance of the materials with the established WHO specification.
Declaration of product formulation	Included in the confidential business information.
Production / formulation process	The fabric is manufactured by mixing the AI with the binder formulation, coating the pre-knitted polyethylene terephthalate (PET) (common name polyester) and heat setting. The finished product is manufactured by cutting and sewing of the fabric, addition of label tag, folding prior to packaging, packing, and baling.
Packaging	Nets may be packed individually in 42 cm × 32 cm plastic bags with printed labels or tied into ten bundles of fifty loose nets prior to baling with one adhesive label per bale. The sizes of the bags and bales may vary depending on the customer requirements.
Discussion of impurities	The <i>R</i> -alpha-diastereomer of deltamethrin was analysed and reported as a percentage of the total deltamethrin concentration. There are no relevant impurities of toxicological concern.
Certification of limits	Deltamethrin: 1.4 g/kg, acceptable limits 1.05-1.75 g/kg

1.3 Enforcement analytical method

Table 3. Details of the analytical method used to determine Deltamethrin in Yorkool G1 Recycled LN	
Quantification of deltamethrin	Deltamethrin: CIPAC (M) 333/LN/(M)/3

These methods are appropriate for the determination of the active ingredient content of the product.

2 Chemical and entomological fabric characterisation

Laboratory studies that were previously submitted and assessed supporting the prequalified product Yorkool G1 LN (P-11664) were submitted to characterize the performance of Yorkool G1 Recycled LN. Laboratory studies to characterize the availability of the active ingredient and the insecticidal effect of the fabric of Yorkool G1 LN on Anopheline mosquito species were conducted by WHOPES under the WHOPES evaluation scheme. These data were not re-evaluated as part of this submission.

3 Overall quality conclusions

Based on the studies and information provided, all data requirements for the prequalification assessment of product quality have been satisfied. These data have been relied upon to assess the formulation, manufacturing process, and physical/chemical characteristics of the proposed product for the purpose of establishing the identity of the product and assuring that the product can be produced consistently.

The methods for assessing the physical/chemical properties of the product were CIPAC methods and/or validated methods.

The quality component of the dossier is considered complete, and the assessment of the submitted information on quality supports prequalification of the product.

Table 4. List of studies submitted to WHO as part of the prequalification dossier

Studies that were relied upon for decision making	
Study number	Study title
TE2023-039	Physical and Chemical Analysis of 5 batches of Yorkool G1 LN (Deltamethrin 1.4 g/Kg) Recycled Long-Lasting (Coated onto Filaments) Insecticidal Net
TE2024-098	Physical durability (Snag strength, Abrasion, Resistance to hole formation) and Wash resistance index Analysis of 5 batches of Yorkool G1 Recycled LN (100D, 1.4 g/Kg Deltamethrin) Long-Lasting (Coated onto Filaments) Insecticidal Net
TE2025-037	Accelerated storage stability studies for 3 batches of Yorkool G1 Recycled LN Deltamethrin (1.4 g/kg) Long-Lasting Coated on Polyester Filaments Insecticide Treated Net (ITN)
Studies that were not used to inform decision making	
	None

4 Manufacturing release specifications

4.1 Summary of manufacturing release specifications

Table 5. Summary of manufacturing release specifications

Description			
The material shall be in the form of netting*, consisting of 100 denier* multi-filament 100% recycled polyester yarn, treated with technical deltamethrin complying with the requirements of WHO specification 333/TC (current version) together with any necessary other formulants. The product shall appear clean and shall be free from visible extraneous matter,* visible damage (such as splitting or tearing) and visible manufacturing defects (such as poorly made seams or a weave that is either not uniform or too loose to remain uniform in use) and shall be suitable for use as an insecticidal net with long-lasting activity*.			
ID	Property	Method	Declared value
1*	Sampling Plan	See Appendix 2	
2*	Deltamethrin content	CIPAC (M) 333/LN/(M2)/3, p. 66 2009	1.4 g/kg ± 25%
3*	Deltamethrin wash resistance index	Adapted CIPAC (O) MT 195 - IG – Determination of wash resistance index test for ITN fabric	Within the range 90% to 102%
4	Fabric weight	ISO 3801 / EN 12127	40 g/m ² ± 10%
5*	Bursting strength – fabric	ISO 13938:2	Not less than 350kPa
6*	Bursting strength – seam	ISO 13938:2	Seam bursting strength average shall be not less than the average bursting strength for fabric
7*	Netting mesh size	See Appendix 2	Average ≥ 24 holes/cm ² Min. 24 holes/cm ²

* Indicates that additional information is available in Appendix 2.

Manufacturers are expected to rely on the information above as part of a QC management plan and for validation of product quality when released. To the extent required, Certificates of Analysis to support the release of products should present results for the attributes identified in the above table.

4.2 Storage

Accelerated storage stability data were generated as per CIPAC MT 46.3. Test samples were stored for 8 weeks at 40°C. No significant differences were recorded among the properties of the product kept at ambient temperature and after accelerated storage stability test conditions.

Products should be stored and transported in appropriate conditions in accordance with the recommendations of the manufacturer.

Where products have been subjected to prolonged storage or adverse conditions during storage, analysis and testing are recommended to assess changes in characteristics and their suitability for use.

Appendix 1. Summary of available data considered in Module 3

Batches used to generate the physical/chemical data

Batch Number	Date	Formulation	Uses
YP231102	27.08.2024	100 D white	5 batch analysis/storage stability
YP231018	27.08.2024	100 D white	5 batch analysis/storage stability
YP230926	27.08.2024	100 D white	5 batch analysis/storage stability
YP230905	27.08.2024	100 D white	5 batch analysis/storage stability
YP230812	27.08.2024	100 D white	5 batch analysis/storage stability

Product characteristics

Studies TE2023-039 and TE2024-098

Study TE2023-039:

Property	Batch ID	Test method	Results
Mean Deltamethrin content (Numbers in parenthesis indicate percentage of target dose)	YP231102 YP231018 YP230926 YP230905 YP230812	CIPAC 333/LN/(M)/3	1.39 g/kg (99.3%) 1.41 g/kg (100.7%) 1.41 g/kg (100.7%) 1.44 g/kg (103%) 1.38 (98.6%)
	Mean RSD		1.41 g/kg 1.47%
Deltamethrin distribution (Numbers in parenthesis indicate percentage of target dose)	YP231102 YP231018 YP230926 YP230905 YP230812		1.33-1.42 g/kg (95.0-101.4%) 1.37-1.41 g/kg (97.6-110.7%) 1.31-1.41 g/kg (93.6-100.7%) 1.38-1.43 g/kg (98.6-102.1%) 1.33-1.38 g/kg (95.0-98.6%)
	Mean RSD		1.37 g/kg (98.2%) 2.29%
Mean <i>R</i> -alpha Deltamethrin content (Numbers in parenthesis indicate percentage of target dose)	YP231102 YP231018 YP230926 YP230905 YP230812		Impurity < detection threshold Impurity < detection threshold Impurity < detection threshold Impurity < detection threshold Impurity < detection threshold
	Mean RSD		N/A N/A
Mean <i>R</i> -alpha Deltamethrin distribution (Numbers in parenthesis indicate percentage of target dose)	YP231102 YP231018 YP230926 YP230905 YP230812	Impurity < detection threshold Impurity < detection threshold Impurity < detection threshold Impurity < detection threshold Impurity < detection threshold	
	Mean RSD	N/A N/A	
Wash resistance index (Deltamethrin)	YP231102 YP231018 YP230926 YP230905 YP230812	CIPAC (O) MT 195	92.0-95.0% 91.8-93.1% 92.2-93.1% 92.2-92.7% 92.0-93.6%

Property	Batch ID	Test method	Results
	Mean RSD		92.7% 0.91%
Mesh size	YP231102 YP231018 YP230926 YP230905 YP230812	ISO 139 (1973)	24-25 holes/cm ² 24-24 holes/cm ² 24 holes/cm ² 24-25 holes/cm ² 24-25 holes/cm ²
	Mean RSD		24.2 holes/cm ² 1.89%
Fabric weight	YP231102 YP231018 YP230926 YP230905 YP230812	ISO 3801/EN 12127 EN 20139-1992	40.2 g/m ² 41 g/m ² 40.5 g/m ² 40.7 g/m ² 40.3 g/m ²
	Mean RSD		40.5 g/m ² 1.94%
Dimensional stability	YP231102 YP231018 YP230926 YP230905 YP230812	ISO 3759:2011; ISO 5077:2007; ISO 6330:2012	-0.43%, -0.08% -0.08%, -0.1% -0.05%, -0.58% 0.03%, -0.3% 0.35%, -0.15%
	Mean RSD		-0.04%, -0.24% -
Bursting strength	YP231102 YP231018 YP230926 YP230905 YP230812	ISO 13938-2:2019	417 kPa 426 kPa 421 kPa 426 kPa 415 kPa
	Mean RSD		422 kPa 4.63%
Seam bursting strength (inner/outer)	YP231102 YP231018 YP230926 YP230905 YP230812		480 kPa 489 kPa 478 kPa 447 kPa 457 kPa
	Mean RSD		471 kPa 6.23%
Flammability	YP231102 YP231018 YP230926 YP230905 YP230812	EN 1102:2016	No ignition or propagation. Maximum hole dimension 132 mm (L) x 25 mm (W).

Deltamethrin mean content and *R*- alpha deltamethrin content are the means of duplicate analyses performed on five samples. Deltamethrin distribution is the minimum and maximum of the individual analyses. WRI is calculated from the means of duplicate analyses performed on three samples each before and after washing. Fabric weight and bursting strength are the means of five determinations. Mesh size is the minimum and maximum of five determinations. Dimensional stability is the means of duplicate determinations performed on four samples. Flammability was a single determination.

Study TE2024-098:

Property	Batch ID	Test Method	Results
Wash resistance index (Deltamethrin)	YP231102	Adapted CIPAC (O) MT 195 – IG – Determination of wash resistance index test for ITN fabric	92.9-100%
	YP231018		96.0-100%
	YP230926		94.3-96.5%
	YP230905		92.8-96.2%
	YP230812		97.5-101%
	Mean RSD		96.5% 2.34%
Snag Strength (wale/course)	YP231102	WHO PQT/VCP implementation Guidance - IG-Snag strength	39.5/28.0
	YP231018		40.6/27.6
	YP230926		39.8/28.0
	YP230905		40.7/27.9
	YP230812		40.5/27.4
	Mean RSD		40.2/27.8 5.36%/3.87%
Abrasion	YP231102	WHO PQT/VCP Implementation Guidance – IG-Abrasion	10 rubs (63% intact)
	YP231018		10 rubs (58% intact)
	YP230926		10 rubs (63% intact)
	YP230905		10 rubs (58% intact)
	YP230812		10 rubs (63% intact)
	Mean		10 rubs (61% intact)
Resistance to Hole Formation (average end hole size, secondary failure, Hole enlargement resistance score)	YP231102	WHO PQT/VCP Implementation Guidance – IG - Resistance to hole formation	12.4, laddering, 64
	YP231018		13.2, laddering, 64
	YP230926		13.3, laddering, 64
	YP230905		12.5, laddering, 64
	YP230812		12.0, laddering, 64
	Mean		12.7, laddering, 64

WRI is calculated from the means of duplicate analyses performed on three samples each before and after washing.

Storage stability

Studies TE2023-039 and TE2025-037

Study TE2023-039:

Property	Batch ID	Before Storage (Day 0)	After Storage (Day 56)	Change
Mean Deltamethrin content	YP231102	1.39	1.39	0
	YP231018	1.41	1.41	0
	YP230926	1.41	1.39	-0.02
	YP230905	1.44	1.42	-0.02
	YP230812	1.38	1.37	-0.01
	Mean	1.41	1.39	-0.01
	RSD	1.47%	1.39%	-
Wash resistance index (Deltamethrin) Method : CIPAC (O) MT 195	YP231102	93.4%	94.2%	0.8%
	YP231018	92.3%	94.6%	2.3%
	YP230926	92.6%	94.7%	2.1%
	YP230905	92.5%	93.3%	0.8%
	YP230812	92.6%	90.2%	2.4%
	Mean	92.7%	93.4%	0.7%
	RSD	0.91%	1.90%	-
Dimensional stability	YP231102	-0.43%, -0.08%	-1.6%,-0.4%	-1.17%, -0.32%
	YP231018	-0.08%, -0.1%	-1.1%, -1.1%	-1.02%,-1.00%
	YP230926	-0.05%, -0.58%	-1.6%, -0.1%	-1.55%, -0.48%
	YP230905	0.03%, -0.3%	-1.0%,-0.8%	-0.97%, -0.5%
	YP230812	0.35%, -0.15%	-0.9%,-0.5%	-0.55%, -0.25%
	Mean	-0.04%, -0.24%	-1.2%, -0.6%	-1.16%, -0.36%
	RSD	-	-	-
Bursting strength (fabric)	YP231102	417 kPa	425.3 kPa	-8.3 kPa
	YP231018	426 kPa	436.6 kPa	-10.6 kPa
	YP230926	421 kPa	407.3 kPa	13.7 kPa
	YP230905	426 kPa	394.5 kPa	31.5 kPa
	YP230812	415 kPa	405.9 kPa	9.1 kPa
	Mean	422 kPa	415 kPa	7 kPa
	RSD	4.63%	4.74%	-
Bursting strength (seam)	YP231102	480 kPa	485.3 kPa	-5.3 kPa
	YP231018	489 kPa	493.6 kPa	-4.6 kPa
	YP230926	478 kPa	456.6 kPa	21.4 kPa
	YP230905	447 kPa	454.9 kPa	-7.9 kPa
	YP230812	457 kPa	470.4 kPa	-13.4 kPa
	Mean	471 kPa	472 kPa	-1 kPa
	RSD	6.23%	6.77%	-

Study TE2025-037:

Property	Batch ID	Before Storage (Day 0)	After Storage (Day 56)	Change
Mean Deltamethrin content	YP231102	1.38	1.42	0.04
	YP230905	1.38	1.37	-0.01
	YP230812	1.36	1.38	0.02
	Mean	1.37	1.39	0.02
	RSD	0.72%	1.7%	-
Wash resistance index (Deltamethrin) Method Adapted CIPAC (O) MT 195 – IG – Determination of wash resistance index test for ITN fabric	YP231102	93.4%	98.4%	5%2.4%
	YP230905	92.5%	94.9%	4%
	YP230812	92.6%	96.6%	
	Mean	92.8%	96.7%	3.9%
	RSD	1.05%	1.66%	-
Mesh Size	YP231102	25	24	-1
	YP230905	25	24	-1
	YP230812	25	24	-1
	Mean	25	24	-1
Dimensional stability	YP231102	-0.43%, -0.08%	0.6%,1.4%	1.03%, 1.48%
	YP230905	0.03%, -0.3%	0.9%, -0.3%	0.87%,0%
	YP230812	0.35%, -0.15%	0.0%, -0.6%	-0.35%, -0.45%
	Mean	-0.02%, -0.18%	0.5%, 0.17%	0.52%, 0.35%
Bursting strength (fabric)	YP231102	417 kPa	396.4 kPa	-13.7 kPa
	YP230905	426 kPa	411.8 kPa	-14.2 kPa
	YP230812	415 kPa	402.1 kPa	-12.9 kPa
	Mean	419 kPa	403 kPa	-16 kPa
	RSD	1.1%	1.6%	-
Bursting strength (seam)	YP231102	480 kPa	433.7 kPa	-46.3 kPa
	YP230905	447 kPa	423.5 kPa	-23.5 kPa
	YP230812	457 kPa	423.7 kPa	-33.3 kPa
	Mean	461 kPa	427 kPa	-34 kPa
	RSD	3.0%	1.1%	-
Snag Strength (wale/course)	YP231102	43.1/29.4	38.8/27.8	-4.3/-1.6
	YP230905	42.8/28.9	39.1/27.8	-3.7/-1.1
	YP230812	43.2/28.8	44.2/28.6	1/-0.2
	Mean	43.0/29.0	40.7/28.1	0.5/0.3
	RSD	0.4%/0.9%	6.1%/1.3%	-
Abrasion	YP231102	10 rubs (63% intact)	10 rubs (50% intact)	-
	YP230905	10 rubs (58% intact)	10 rubs (50% intact)	-
	YP230812	10 rubs (63% intact)	10 rubs (100% intact)	-
	Mean	10 rubs (61.3% intact)	10 rubs (66.7% intact)	-
Hole Enlargement Resistance (mean hole size, secondary failure type, enlargement resistance score)	YP231102	12.4, laddering, 64	16, laddering, 64	-
	YP230905	12.5, laddering, 64	14, laddering, 64	-
	YP230812	12.0, laddering, 64	13, none, 80	-

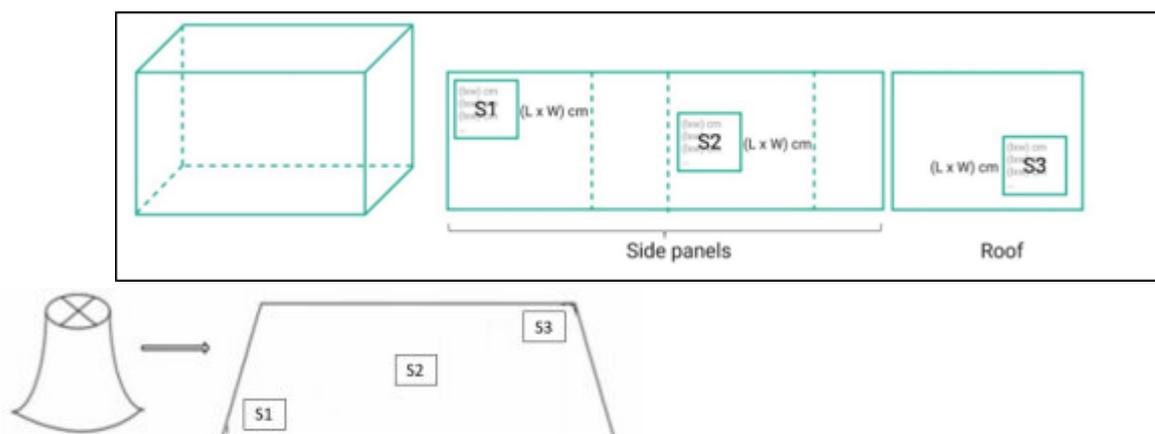
Appendix 2. Manufacturing release specifications: methods and notes

Description

- The specification applies to netting in bulk and manufactured nets. The netting may be white or coloured, for example, green or blue.
- The linear density (denier) of the yarn cannot be measured in the netting or the manufactured bed net but it should be identified on the packaging.
- Occasional short lengths of loose thread present in the netting are not considered to be extraneous matter.
- Long-lasting insecticidal netting is expected to retain its insecticidal activity during its life span and through a specified number of washes.

Sampling Plan – Applicable to all attributes for which samples are to be taken from various parts of the constructed ITN. Sampling should be noted as Figure 1.

Figure 1



- AI/ synergist content (S1,S2,S3, 25 cm × 25cm)
- Wash resistance index (S1,S2,S3, 25 cm × 25cm)
- Bursting strength (S1 and S3, 25 cm × 25 cm)
- Bursting strength -seam (two seams: one of the side seams and one of the roof seams)
- Netting mesh size (S1 and S3)
- Fabric Weight (S1,S2,S3, 15 cm × 15cm)

Samples should be taken according to Figure 1 or on a convenient diagonal across the width of bulk material. Samples must be sufficiently large to conduct all tests required and representative of the net or netting. Except where seams are to be tested, do not test material within 10 cm of seams or selvages.

Use sharp scissors, or equivalent, to minimize damage to the fibres and fabric and thus avoid any consequential bias in the results of certain tests. Roll up the strips or squares and place them in labelled, new, clean aluminium foil prior to analysis. Samples should be kept cool, avoiding heat sources (including direct sunlight) or freezing, and analyzed/tested with minimum delay. Representative portions (sub-samples) for testing should be taken as described in each test method.

Attribute 2: Deltamethrin content

For complete identification and good quantification, deltamethrin which is a single pyrethroid stereoisomer consisting of [α S,1R,3R]-isomer (also known as the S-isomer) must be separated from the [α R,1R,3R]-isomer (otherwise known as the R-isomer), which is not part of the active ingredient and not a relevant impurity. These diastereomers may be separated by non-chiral techniques as provided in the CIPAC method for deltamethrin.

The deltamethrin content may be declared as both g/kg and mg/m² but, in case of dispute, g/kg values shall be used. If the active ingredient content is also specified as mg/m² of netting material, the actual content on this basis is calculated from the measured values for active ingredient content in g/kg and mass of net/m². Mass of net/m² should be determined according to ISO 3801 / EN 12127.

Attributes 3: Deltamethrin wash resistance index

The content of deltamethrin in the net pieces before and after washing should be determined as per the adapted CIPAC (O) MT 195 - [IG – Determination of wash resistance index test for ITN fabric](#), following the sampling plan specified in Figure 1.

Attributes 5 and 6: Bursting strength – fabric and bursting strength – seam

Test method: ISO 13938 part 2 with conditioning of the fabric as specified in the ISO standard. The declared bursting strength, and testing for compliance with it, should be based on tests of 7.3 cm² areas of fabric. Proposed specifications based on tests of 50 cm² area must be supported by data showing the suitability of the proposed value and its relationship to minimum of 350 kPa (which is based on 7.3 cm² area). Two replicate tests should be conducted on samples taken as per Figure 1 across the netting, taking no sample within 10 cm of a border or seam. The average of the 2 measurements is calculated.

The method to test seam bursting strength is identical to that used to test the fabric, except that 2 replicate tests should be made, with the seam centred on the test head. Two seams should be tested, one of the side seams and one of the roof seams.

Attribute 7: Mesh size

In the absence of a simple or standard method to determine the size of holes, which may have complex shapes, in highly flexible fabrics, mesh size is determined by counting the number of holes in a square of the fabric. Counting may be done directly on the fabric or indirectly by taking a picture/photocopy of the fabric. Indirect methods may ease counting and provide a permanent record. The number of holes per measured area is converted in holes/cm². Before counting, the fabric should be conditioned according to ISO 139 (4 h, 20°C, 65% relative humidity).

Use a template to define the square of netting, taking care not to stretch or distort the fabric. The template should be a 1-2 mm thick rigid sheet, in/on which an accurately calibrated ($\pm 1\%$ in each dimension) square (e.g., 1 x 1 in or 5 x 5 cm) has been cut/marked. If a template is not available and a ruler must be used, great care is required to ensure that the area counted is square. Where practicable, one edge of the square to be counted should be aligned with a row of complete holes in the fabric. Incomplete holes $\geq \frac{1}{2}$ are counted as complete holes, whereas those $< \frac{1}{2}$ are not counted. Count 5 replicate squares selected according to the sampling plan, calculate the average and note the lowest value.

Another suitable method is the use of a stereomicroscope with an image analyser software, where the number of holes in a defined area is counted. In case of discrepancy between the netting mesh size using stereomicroscopic method and direct or indirect counting method, the stereomicroscopic method shall be the referee method.