Asia-Pacific Economic Cooperation

FIELD SURVEY FOR MONITORING AND SAMPLING OF TOWEL AND BED SHEET PRODUCTS IN SELECTED CITIES IN INDONESIA

RESEARCH REPORT

APEC Sub-Committee on Standards and Conformance
February 2026

DISCLAIMER

This report has been prepared as part of the Field Survey activity under the implementation of the APEC Project SCSC 203 2024T, with the primary objective of providing a preliminary overview of product compliance levels for towels and bed sheets with respect to the requirements of Safety, Security, Health, and Environmental Protection (K3L), as well as assessing the effectiveness of the Self-Declaration of Conformity (SDoC) mechanism.

All data, findings, and analyses presented in this report are based on monitoring and sample testing conducted on a limited number of products collected from selected cities in Indonesia within a specific period. Therefore, the results should not be interpreted as a comprehensive or representative assessment of the overall market condition or the full performance of the textile and textile products industry.

The National Standardization Agency of Indonesia (BSN) and the project implementation team do not assume any liability for interpretations, policy decisions, or actions taken based on the information contained in this report without further verification or validation.

This report is intended solely for project purposes as part of the Project Implementation Outputs and does not constitute an official regulatory or enforcement document.

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EXECUTIVE SUMMARY

This field survey was conducted to evaluate the compliance of towel and bed sheet products with the domestic regulatory requirements on Safety, Security, Health, and Environmental Protection (HSE/K3L), as well as to assess the effectiveness of the Self-Declaration of Conformity (SDoC) mechanism applied to textile products in the Indonesian market. The survey combined label and traceability monitoring with field sampling of 10 bed sheet and 10 towel samples collected from five cities, followed by accredited laboratory testing. The tests covered critical K3L parameters, including formaldehyde, azo dyes capable of releasing aromatic amines, and heavy metals (cadmium, lead, copper, and nickel). Sampling methodology and testing parameters were based on the Regulation of the Minister of Trade and the corresponding Directorate General's technical decree (PKTN, 2023). Although the survey concentrated on towels and bed sheets, these items were selected as representative examples of home textile products explicitly covered under the Ministry of Trade's K3L Regulation, providing an indicative perspective on the broader compliance level of textile products within the domestic SDoC framework.

The findings revealed that all sampled products displayed valid K3L registration numbers on their labels, with traceability confirmed in the domestic registration system. Laboratory results showed that all 10 bed sheet samples complied with applicable limits, while 9 of 10 towel samples were compliant. One towel sample collected from Padang exceeded the permissible formaldehyde threshold (16.73 mg/kg > 16 mg/kg), as documented in the laboratory testing annex.

The results suggest that the overall level of market compliance is relatively high, though minor risks persist due to potential finishing agent residues, particularly formaldehyde, which may arise from inadequate washing or poor process control. Mitigation measures should therefore focus on improving manufacturing process management, strengthening internal quality control (QC) among producers, and enhancing risk-based post-market surveillance and enforcement by regulators. Policy support is recommended for integrating SDoC documentation, testing evidence, and surveillance data to ensure transparency and accountability. The proposed framework aligns with the principles of ISO/IEC 17050 on supplier's declaration of conformity and the findings of the APEC SDoC study (ISO/IEC, 2004)

CHAPTER 1. INTRODUCTION

1.1. Background

In recent years, regional and global trade in textile and textile products (TTPs) has expanded rapidly, driven by evolving consumer demand, cross-border e-commerce, and streamlined production chains. However, this growth has also heightened regulatory challenges, particularly concerning product safety, quality assurance, and labeling compliance. Within the Asia-Pacific Economic Cooperation (APEC) region, economies face increasing pressure to harmonize their conformity assessment procedures in order to reduce technical barriers to trade (TBT) while safeguarding consumer protection. The Self-Declaration of Conformity (SDoC) has emerged as a key strategy to achieve this balance by shifting compliance responsibility to suppliers and enabling faster market access for low- to medium-risk goods.

According to ISO/IEC 17000:2020, this is known as a first-party attestation, where the supplier is fully responsible for the conformity declaration. More specifically, the ISO/IEC 17050 series break down the SDoC process into two parts: the actual declaration (Part 1) and the supporting documentation (Part 2), both of which must be made available to regulators when requested. This system can be especially helpful in sectors such as textiles and textile products, where flexibility, speed, and cost-efficiency are essential for competitiveness.

The 2005 APEC report on SDoC reinforces this by recognizing its value in enabling smoother trade flows and reducing technical barriers among member economies. However, the success of this mechanism heavily depends on the presence of effective post-market surveillance, clear technical regulations, and strong enforcement systems to ensure ongoing compliance and maintain public trust. In essence, while SDoC offers efficiency and trade facilitation benefits, it also demands robust post-market monitoring to ensure declarations are credible, accurate, and traceable. Without effective surveillance, SDoC risks becoming a paper exercise that may be exploited by non-compliant or under-informed producers, especially in high-volume, low-margin product categories.

Against this backdrop, this field survey program is designed as part of APEC's initiative to strengthen market compliance mechanisms under SDoC, using Indonesia as a case study. It aims to evaluate how textile products that have entered the market under SDoC actually perform in terms of conformity to domestic standards and labeling rules.

Towels and bed sheets are selected as targeted products for the study due to several factors. First, these items are in frequent and prolonged contact with human skin, posing potential health risks if they contain hazardous substances such as azo dyes or formaldehyde. Continuous dermal exposure may lead to skin irritation or allergic contact dermatitis, and in the case of formaldehyde, even carry a carcinogenic risk under prolonged or high-level exposure. Scientific evidence supports these concerns: the International Agency for Research on Cancer (IARC) has classified formaldehyde as Group 1 – carcinogenic to humans, with epidemiological and clinical studies linking

textile exposure to irritation and allergic responses, particularly among infants and individuals with sensitive skin (IARC, 2006).

In addition, both towels and bed sheets are explicitly listed under Annex II-A of the Ministry of Trade Regulation No. 26 of 2021 as amended by Regulation No. 21 of 2023 as textile products subject to mandatory K3L (Safety, Security, Health, and Environmental Protection) compliance. These products are therefore under regular monitoring and supervision by the Directorate General of Consumer Protection and Trade Compliance (PKTN). This regulatory inclusion justifies their selection as representative textile subcategories for the field survey, as they exemplify products with measurable chemical safety parameters (formaldehyde, azo dyes, and heavy metals). The results derived from these subcategories are thus relevant for extrapolating broader insights on SDoC implementation across the textile sector.

Second, they are frequently sold with poor or non-compliant labeling, which hinders traceability and regulatory accountability. Third, both products are widely traded across APEC economies and form a core part of MSME-dominated supply chains, where awareness of SDoC obligations is often limited. With clearly defined and internationally recognized testing parameters, towels and bed sheets are ideal for harmonized post-market surveillance and serve as practical, low- to medium-risk case studies to assess the effectiveness of SDoC implementation and its supporting regulatory mechanisms across diverse economies.

By focusing on towels and bed sheets, this program seeks to generate credible, actionable data on compliance performance, support policy dialogue on risk-based surveillance strategies, and offer a replicable model for other APEC economies seeking to improve their post-market oversight within SDoC frameworks.

Furthermore, while this study specifically focuses on towels and bed sheets, these products are considered part of the broader “textile” category as defined in the Indonesian Classification of Textile and Textile Products under the Ministry of Trade Regulation No. 26 of 2021 jo. No. 21 of 2023. The textile sector covers diverse subcategories, including apparel, fabrics, yarns, and home textiles. Within this structure, towels and bed sheets fall under the “home textile” subcategory, which represents a significant market share in both domestic and export trade. Data from the Ministry of Industry and BPS indicate that household textile products contribute over one-third of domestic textile production output. Therefore, the findings of this field survey can be regarded as an indicative representation of the compliance status of textile products under the SDoC mechanism, particularly for products directly in contact with human skin and regulated under the K3L framework.

1.2. Objectives

1. Verify market compliance of towels and bed sheets with relevant standard, labeling requirements and/or requirements stipulated in K3L regulations.
2. Evaluate the accuracy of supplier declarations made under the SDoC mechanism.
3. Identify potential nonconformities and root causes related to labeling, documentation, and product content
4. Provide recommendations for corrective actions and policy improvements for relevant stakeholders, including regulators and industries.

1.3. Benefits of the Field Survey

1. To increase awareness among business operators on regulatory compliance concerning K3L.
2. To serve as evidence-based input for the National Standardization Agency of Indonesia (BSN), the Ministry of Trade, and other APEC economies in strengthening quality infrastructure.

1.4. Scope of the Field Survey

The monitoring activity was conducted in Jakarta, Surabaya, Yogyakarta, Padang, and Manado, focusing on towel and bed sheet products from both domestic and imported sources. The scope of the survey included:

1. Review of product labeling and K3L registration information.
2. Verification of product traceability and documentation consistency.
3. Laboratory testing of selected samples based on minimum K3L parameters: Formaldehyde, Azo Dyes, and Heavy Metals (Lead, Cadmium, Nickel, and Copper).

CHAPTER 2. REGULATORY AND STANDARD FRAMEWORK

2.1. Standards Related to Textile and Textile Products

Textile and Textile Products (TTPs) are governed internationally through a comprehensive framework of standards developed by the International Organization for Standardization (ISO), primarily under ISO/TC 38 – Textiles and related technical committees. These standards encompass the entire textile life cycle from fiber and yarn production to fabric finishing, labeling, and performance testing ensuring global consistency in terminology, measurement, and product requirements. They provide the scientific foundation for safety, quality, and environmental protection within the textile sector.

The ISO textile standards establish harmonized definitions, testing methods, and performance criteria that allow comparability of results among laboratories, manufacturers, and regulators. Many of these standards have been adopted or referenced within Indonesia's SNI ISO framework to support the implementation of Safety, Security, Health, and Environmental Protection (K3L) requirements under the Regulation of the Minister of Trade No. 26 of 2021 jo. No. 21 of 2023.

ISO standards relevant to textile and textile products can generally be grouped into four main categories:

Chemical Safety and Restricted Substances

These standards define analytical methods and permissible limits for chemicals that may pose health or environmental risks.
Examples:
A. ISO 14184-1 – Determination of free and hydrolysed formaldehyde in textiles
B. ISO 24362-1 / 24362-3 – Detection of aromatic amines derived from azo colorants
C. ISO 105-E04 / E01 – Colour fastness to perspiration and water
D. ISO 105-X12 – Colour fastness to rubbing
E. ISO 105-B02 – Colour fastness to light

Mechanical and Physical Properties

These standards assess structural performance and durability to ensure that fabrics remain safe and functional throughout their intended use.
Examples:
1. ISO 13934 series – Determination of tensile strength and elongation
2. ISO 13936 series – Seam slippage of fabrics
3. ISO 5077 – Dimensional change in washing and drying
4. ISO 3801 – Mass per unit area of fabric

Labelling, Identification, and Traceability

Proper labelling and fibre identification are essential for consumer transparency and regulatory verification under the SDoC mechanism.
Examples:
1. ISO 3758 – Care labelling code using symbols
2. ISO 1833 series – Quantitative chemical analysis of fibre blends
3. ISO 2076 – Generic names for man-made fibres

Environmental and Eco-Design Considerations

Several ISO standards support sustainable textile production, covering life-cycle impacts and environmental labelling.
Examples:
A. ISO 14024 – Environmental labels and declarations (Type I eco-labelling)
B. ISO 14040 / ISO 14044 – Life-cycle assessment (LCA) of product

Collectively, these ISO standards form a coherent, science-based foundation that supports regulatory compliance and international market access. They provide credible technical evidence for Self-Declaration of Conformity (SDoC) documentation, ensuring that supplier declarations are verifiable through internationally recognized test methods.

The incorporation of ISO textile standards into Indonesia's domestic framework strengthens alignment with global best practices, enhances consumer protection, and reinforces the credibility of domestic conformity-assessment systems for textile products that come into direct and prolonged contact with human skin.

2.2. Categories of Textile and Textile Products in Indonesia

The classification of Textile and Textile Products (TTPs) in Indonesia is established through several official references that provide both regulatory and statistical perspectives on the sector. These classifications are important for defining the scope of product certification, conformity assessment schemes, and trade monitoring under the domestic quality infrastructure.

Classification According to KAN K-08.01 Rev.1

Based on Annex 1 of National Accreditation Committee (KAN) K-08.01 Rev.1 – Additional Accreditation Requirements for Product, Process, and Service Certification Bodies Based on SNI, the textile sector is categorized under Group No. 11 – Textile and Textile Products, consisting of seven subcategories:

1) Woven or knitted fabrics
2) Textile fabrics
3) Children's or baby garments
4) Adult garments
5) Towels
6) Fibers/yarns
7) Other textile products

This classification provides a standard reference for accreditation scope of certification bodies conducting product certification under SNI, ensuring consistency in evaluation, surveillance, and issuance of product conformity certificates across the textile industry.

Classification According to BPS (Statistics Agency of Indonesia)

According to Badan Pusat Statistik (BPS) industrial classification, the textile sector (ISIC code 13 Manufacture of Textiles) is divided into two major sub-sectors:

1. Manufacture of textiles (ISIC 131–139) – encompassing spinning, weaving, finishing, and other fabric processing.
2. Manufacture of wearing apparel (ISIC 14) – covering garment manufacturing for men, women, and children, including accessories.

BPS data highlight the textile industry as one of Indonesia's key manufacturing pillars, with significant contributions to employment, export earnings, and domestic consumption. The BPS classification provides the statistical backbone for domestic planning, while its structure also supports alignment between industrial production and conformity assessment categories.

Classification According to INSW (Indonesia National Single Window)

From a trade and customs perspective, the Indonesia National Single Window (INSW) system classifies textile and textile products under multiple Harmonized System (HS) Codes, primarily within Chapters 50–63 of the Customs Tariff Book (BTKI), covering:

1. Chapter 50–60: Textile fibers, yarns, and fabrics (e.g., cotton, synthetic, or blended fibers);
2. Chapter 61–63: Ready-made garments, apparel accessories, household textile articles (towels, bed sheets, curtains, etc.).

This HS-based classification supports traceability and monitoring of imports and exports of textile products, facilitating regulatory enforcement related to SNI mandatory implementation, product labeling, and K3L requirements.

When these three references are combined KAN for conformity-assessment scope, BPS for industrial statistics, and INSW for trade identification, they provide a unified framework for understanding the textile and textile product sector in Indonesia.

This integrated classification ensures that product certification, statistical reporting, and trade supervision are harmonized under consistent definitions. It also facilitates the mapping of SNI-covered products within the TPT sector, guiding certification bodies accreditation, industrial policy, and market surveillance.

In aligning the product selection with the domestic classifications of textile and textile products under KAN, BPS, and INSW while also incorporating international principles reflected in ISO textile standards the field survey prioritizes items that represent both risk factors and market relevance. Towels and bed sheets were chosen as the primary samples because they fall within the category of household textile articles that come into direct, frequent, and prolonged contact with human skin, thereby presenting a

higher likelihood of exposure to hazardous chemical substances such as azo dyes, formaldehyde, and issues related to colour fastness, as addressed through relevant ISO test methods. These products also constitute a significant portion of textile goods circulating in the Indonesian market, both domestically produced and imported, as indicated in HS Chapters 61–63 within the INSW classification. Accordingly, the selection of towels and bed sheets ensures that the field survey applies a risk-based approach grounded in international standards while capturing product categories that are widely traded and critical for the implementation of K3L requirements and the Self-Declaration of Conformity (SDoC) mechanism in Indonesia.

Furthermore, this methodology aligns with APEC's broader objectives of promoting regulatory cooperation, transparency, and the use of international standards to facilitate trade. By systematically linking product classification, risk assessment, and conformity assessment requirements, the Indonesian approach offers a practical model that can be adopted or adapted by other APEC economies facing similar challenges in harmonizing standards and improving oversight of textile products. The use of common international based test methods and clearly defined risk criteria enhances comparability across borders, making this field survey framework a relevant best practice for strengthening safety assurance and supporting more consistent implementation of SDoC throughout the APEC region.

2.3 Regulatory Framework

The regulatory framework governing this field survey is built upon a combination of domestic legal instruments, technical standards, and internationally recognized conformity assessment principles. At the domestic level, the Regulation of the Minister of Trade No. 26 of 2021 on the Establishment of Business Activity and Product-Based Risk Standards, as amended by Regulation No. 21 of 2023, constitutes the primary legal foundation for implementing K3L (Safety, Security, Health, and Environmental Protection) requirements. Annex II-A of this regulation specifies the list of products subject to K3L compliance, the applicable quality parameters, and the designated testing methods. The regulation further outlines procedures for registration, labeling, issuance of registration numbers, and administrative sanctions applicable to products that fail to comply or are not duly registered. These provisions serve as a cornerstone for maintaining traceability and accountability across domestic and imported textile products (Ministry of Trade, 2021).

Table 1 provides list of goods, particularly towel and bed sheet, containing hazardous chemical substances subjected to be registered for Security, Safety, Healthy, and Environment Protection (K3L)

Table 1. K3L Requirement on Towel and Bed Sheet Products

Product Group	Product Description	Test Parameters	Chemical Substances	Safety Requirement	Test Method	Remark
Textile Product (Towel)	**Towel**, made from a blend of cotton and/or cotton and synthetic fibers, used for the body and/or face.	Extracted Heavy Metals	Cd (Cadmium)	Max 0,1 mg/kg	SNI 7334:2009	
			Cu (copper)	Max 25,0 mg/kg		
			Pb (Lead)	Max 0,2 mg/kg		
			Ni (Nickel)	Max 1,0 mg/kg		
		Formaldehyde	Formaldehyde	Not Detected (Max 16 mg/kg)	SNI ISO 14184-1:2015	The detection limit of the test method is a maximum of 16 mg/kg.
		Azo Compounds	22 Azo Compounds that Release Aromatic Amines upon Reduction	Max 20 mg/kg	SNI ISO 24362-1:2015/ SNI ISO 24362-3 : 2015	The detection limit of the test method is a maximum of 20 mg/kg. Test results below 20 mg/kg are reported as not detected
Textile Product (Bedsheet)	**Bedsheet** made of cotton, and/or a blend of cotton and synthetic fibers, and/or fully synthetic fiber materials.	Extracted Heavy Metals	Cd (Cadmium)	Max 0,1 mg/kg	SNI 7334:2009	
			Cu (copper)	Max 25,0 mg/kg		
			Pb (Lead)	Max 0,2 mg/kg		
			Ni (Nickel)	Max 1,0 mg/kg		
		Formaldehyde	Formaldehyde	Not Detected (Max 16 mg/kg)	SNI ISO 14184-1:2015	The detection limit of the test method is a maximum of 16 mg/kg.
		Azo Compounds	22 Azo Compounds that Release Aromatic Amines upon Reduction	Max 20 mg/kg	SNI ISO 24362-1:2015/ SNI ISO 24362-3 : 2015	The detection limit of the test method is a maximum of 20 mg/kg. Test results below 20 mg/kg are reported as not detected

Notes: SNI is the Indonesian domestic standard, which is formulated through domestic development or can be adopted from international standards, marked by the notation SNI ISO.

Complementing this, Decree of the Directorate General of Consumer Protection and Trade Compliance (PKTN) No. 36 of 2023 on technical procedures for product sampling and testing provides administrative guidance on import control and verification mechanisms for consumer goods entering the domestic market. Although not specific to textile testing, this regulation is relevant to K3L traceability, particularly in ensuring that imported textile products distributed in Indonesia undergo equivalent compliance verification prior to market entry.

Table 2. Technical Guidance on Sampling and Testing K3L Products (Towel and Bed Sheet)

Product Group	Color	Remarks on Testing Sample	
		Total Sample	Notes
Towel	Contains max 3 main colors (red, yellow, green, blue, orange, brown, black, purple)	Min. 2 pcs (with area of 1m^2), 2 pcs (big), or 3 pcs (small)	1. Products included in this product group category include hand towels, kimono towels, hair towels, bath towels, and washcloths. 2. Oven mitts are not included in the scope of this product group and therefore are not required to be registered for HSE (Health, Safety, and Environment) compliance.
Bedsheet	Contains max 3 main colors (red, yellow, green, blue, orange, brown, black, purple)	- 1 sheet with size of ≥90cm x 200cm - 3 sheets with size of <90cm x 200cm	1. Baby bedsheets are included within the scope of this product group and are therefore required to be registered for HSE (Health, Safety, and Environment) compliance. 2. If bedsheets, pillowcases, bolster cases, and bedcovers are sold as a set, the business operator must submit the complete set to the testing laboratory. One test report may be used to fulfill compliance requirements for Group 11 (Bedsheets) and Group 12 (Pillowcases and Bolster Cases).

2.4 Technical Standards and Testing Methods

The implementation of K3L requirements for towels and bed sheets is further reinforced by the application of Indonesian National Standards (SNI) that define the recognized laboratory testing procedures and permissible thresholds for hazardous substances in textiles:

1. **Formaldehyde:** Testing follows SNI ISO 14184-1:2015, which specifies the water extraction and quantification method for formaldehyde residues in textiles. The maximum allowable concentration, as referenced in the annex of the Ministry of Trade regulation, is 16 mg/kg, or “not detected” under routine conditions. Although international eco-labeling schemes such as Oeko-Tex Standard 100 or the EU Ecolabel may stipulate different threshold values, this survey adheres strictly to the domestic regulatory limit to maintain alignment with the K3L requirements.
2. **Azo Dyes (Aromatic Amines):** Testing is conducted in accordance with SNI ISO 24362-1:2015 and SNI ISO 24362-3:2015, which provide procedures for detecting azo dyes capable of releasing carcinogenic aromatic amines. The permissible concentration for such amines is generally 20 mg/kg, consistent with ISO-based reference frameworks and as reflected in domestic regulatory attachments.
3. **Heavy Metals (Cd, Pb, Cu, Ni):** The testing standard SNI 7334:2009 or its equivalent methods outlines both extraction procedures and threshold limits for cadmium, lead, copper, and nickel. The allowable maximum levels under Indonesian regulation are approximately Cd ≤ 0.1 mg/kg, Pb ≤ 0.2 mg/kg, Ni ≤ 1.0 mg/kg, and Cu ≤ 25 mg/kg, ensuring that textile products do not pose toxicological risks associated with chronic heavy metal exposure (PKTN, 2023).

These standards ensure harmonization of laboratory practices across accredited testing facilities and provide the scientific foundation for verifying K3L compliance under the field survey program.

2.5 SDoC Mechanism and the Role of Post-Market Surveillance

The Self-Declaration of Conformity (SDoC) mechanism applied in this project is based on the principles outlined in ISO/IEC 17050-1:2004 and ISO/IEC 17050-2:2004, which define the requirements for supplier declarations, supporting documentation, and validation processes. Under the SDoC approach, manufacturers or importers assume direct responsibility for ensuring product conformity through internal quality control systems, supported by technical evidence such as laboratory test reports and compliance documentation.

While the SDoC mechanism facilitates trade liberalization and cost efficiency, its credibility and sustainability depend on the strength of risk-based post-market surveillance (PMS). International literature, including APEC and ISO CASCO guidance, emphasizes that effective SDoC implementation must be complemented by random sampling, laboratory verification, and documentation audits conducted by regulatory authorities to maintain market trust and consumer protection.

In alignment with these principles, the APEC SCSC_203_2024T Project Proposal explicitly identifies market surveys and laboratory verification as integral components of pilot implementation. The project thereby reinforces APEC's commitment to advancing regulatory cooperation, improving cross-border trust in SDoC systems, and enhancing product safety governance across member economies (ISO/IEC, 2004).

CHAPTER 3. METHODOLOGY

3.1. Sampling Design and Statistical Justification

The sampling design for this field survey was structured to achieve both representativeness and operational feasibility. The sampling was conducted on last week of July until early of August 2025 from retail or market. A geographical stratification approach was adopted, encompassing five selected cities such as Jakarta, Surabaya, Yogyakarta, Padang, and Manado, to capture different characteristics of the textile product supply chain.

a. Jakarta and Surabaya represent major import and distribution hubs, where a high concentration of retail and imported products is found.
b. Yogyakarta reflects small-medium scale domestic textile production, including craft-based and local brand manufacturers.
c. Padang and Manado were selected to represent outer-island markets, offering insights into product traceability and regulatory compliance outside Java's primary economic centers.

Sampling followed a stratified random and purposive combination method, aligned with the technical guidelines of the Ministry of Trade No. 26/2021 jo. No. 21/2023 and the Directorate General of Consumer Protection and Trade Compliance (PKTN) Decree No. 36/2023. Sampling targeted approximately two brands per product category for each city, with two to three product units per brand (depending on product size and market availability), yielding an initial target of around nine samples per product per city. The final sample count was adjusted based on field availability and budget allocation. This design ensured that both domestic and imported brands were proportionally represented in the sample pool, providing a balanced perspective of compliance patterns across markets.

3.2. Sampling Procedure

Sampling activities were conducted using a standardized documentation and packaging protocol to maintain data integrity and traceability. Each collected sample was accompanied by a Field Sampling Form that recorded essential information, including:

a. Product identity (brand, model, material, and size),
b. Label and packaging photographs,
c. Barcode or serial number (if available),
d. Retail source and purchase date,
e. Condition of packaging and labeling upon collection.

All samples were individually sealed in sterile new polyethylene bags, labeled with a unique alphanumeric sample code, and recorded in form. In addition, photographic documentation of product labels, particularly the K3L registration number and origin information, was archived as part of the survey evidence to ensure full traceability throughout the testing and reporting process.

Note:
Monitoring was conducted by Visual Inspection for Product label, markings, Registration Number, and/or packaging compliance. Registration Number can be checked from trade ministry information system https://lamansitu.kemendag.go.id/domestic-k3l and if product has certified in compliance with SNI, the surveillance team can check from BSN information system, https://bangbeni.bsn.go.id

3.3. Conformity Assessment Body (Laboratory Testing)

All laboratory analyses were performed by testing facilities accredited by the National Accreditation Body of Indonesia (KAN) under ISO/IEC 17025. This accreditation ensures that testing is conducted in accordance with recognized international standards for competence, traceability, and reliability.

The testing covered three key parameters representing the minimum K3L requirements for textile products:

a. Formaldehyde content, measured using the SNI ISO 14184-1:2015 method (Water Extraction Method).
b. Azo dyes and aromatic amines, tested in accordance with SNI ISO 24362-1:2015 and SNI ISO 24362-3:2015, to detect the presence of azo compounds capable of releasing restricted aromatic amines.
c. Heavy metals (Cd, Pb, Cu, Ni), analyzed based on SNI 7334:2009, employing extraction and quantification procedures consistent with international best practices.

Each laboratory test report included quantitative results along with critical analytical parameters such as the Limit of Detection (LOD), Limit of Quantification (LOQ), and measurement uncertainty, ensuring comparability and transparency of data interpretation. All testing records were verified to comply with the reporting format stipulated by the Ministry of Trade's technical directives.

3.4. Data Validation and SDoC Document Verification

Data validation was performed through a two-layer verification process encompassing both document review and regulatory cross-checking. The evaluation of SDoC (Self-Declaration of Conformity) documentation focused on the completeness and consistency of Identification of K3L registration number, Name and address of the issuing manufacturer or importer, and information of implemented SNI.

Subsequently, each K3L registration number indicated on the product label was cross-referenced with the official registration database of the Ministry of Trade (lamansitu.kemendag.go.id). For products also claiming SNI certification, verification was conducted through the BSN product certification registry (bangbeni.bsn.go.id).

Where SDoC documents indicated by number of K3L registration to confirm the authenticity, alignment and consistency with the regulation. This validation ensured that each SDoC declaration was substantiated by verifiable and traceable technical evidence, consistent with the integrity principles of ISO/IEC 17050.

CHAPTER 4. FIELD SURVEY RESULT

4.1. Field Survey Findings

A. Field Survey Sampling and Testing Result

During the field survey, 10 (ten) samples of bed sheets and towels that comply with the Ministry of Trade's K3L Regulation and SNI were collected. Compliance with the regulation is indicated by the inclusion of the K3L registration mark on the product and the issuance of a K3L registration number. The towel and bed sheet samples were taken from 5 (five) cities. The bed sheet and towel product samples are described in Figures 1 and 2. Both towel and bed sheet samples are 70% Made in Indonesia while 30% imported from China.

Figure 1. Bed Sheet Product Sample

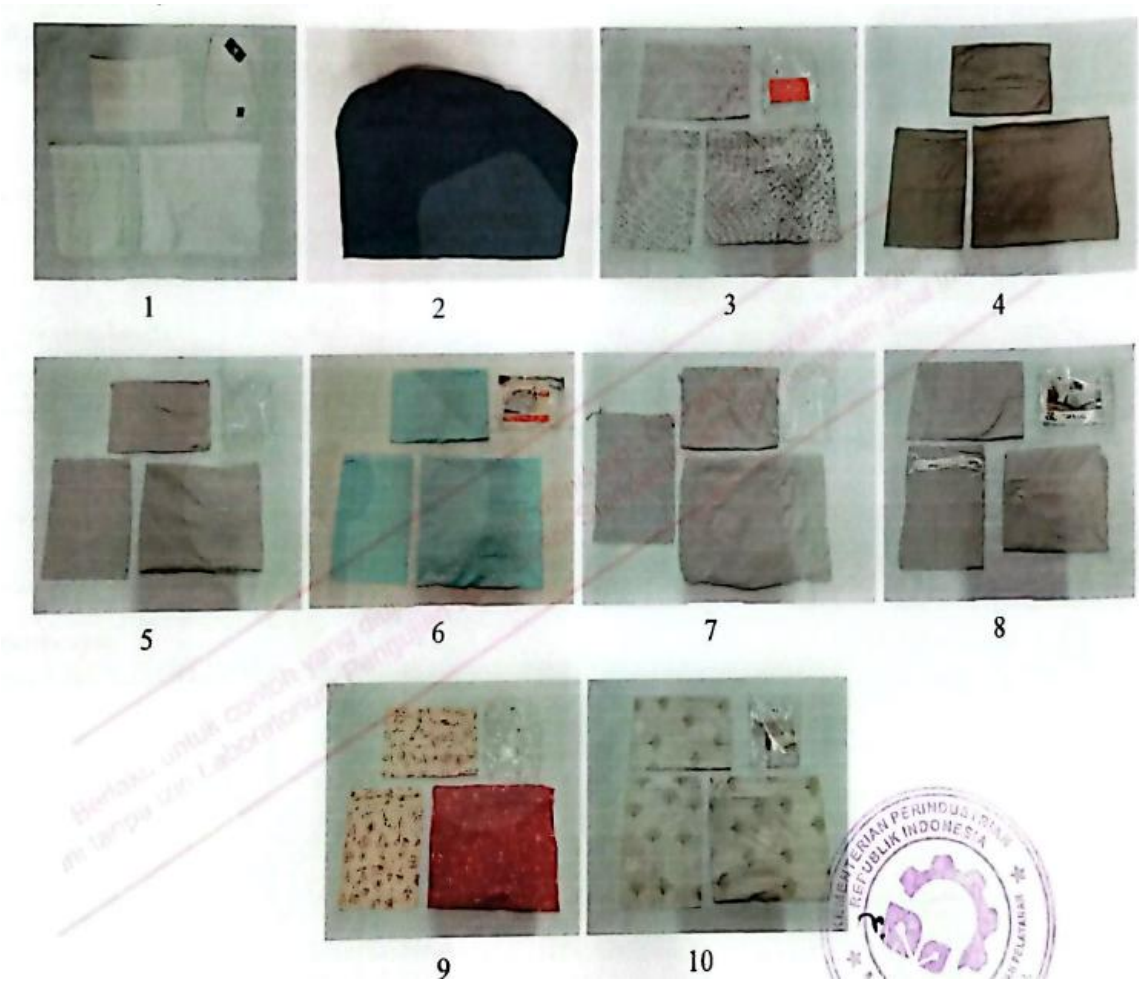

Figure 2. Towel Product Sample

Table 3. Testing Result of Bed Sheet Product Samples Based On Product Origin

Product	Quantity	Testing Result Based on Ministry of Trade Regulation No.21/2023		Remark
		Comply	Not Comply	
Jakarta	2 pcs sample	2 pcs sample (100%)	-	
Manado	4 pcs sample	4 pcs sample (100%)	-	
Padang	2 pcs sample	2 pcs sample (100%)	-	
Surabaya	2 pcs sample	2 pcs sample (100%)	-	
Yogyakarta	Not Found	2 pcs sample (100%)	-	

All ten bed sheet samples complied with the **chemical safety requirements** stipulated under the *Regulation of the Minister of Trade No. 26/2021 jo. No. 21/2023*. Laboratory analysis confirmed that levels of **formaldehyde**, **azo dyes (aromatic amines)**, and **heavy metals** (Cd, Pb, Ni, Cu) were all **below the specified thresholds**, indicating full conformity with K3L standards.

Table 4. Testing Result of Towel Product Samples Based on Product Origin

Product	Quantity	Testing Result Based on Ministry of Trade Regulation No.21/2023		Remark
		Comply	Not Comply	
Jakarta	2 pcs sample	2 pcs sample (100%)	-	
Manado	3 pcs sample	3 pcs sample (100%)	-	
Padang	2pcs sample	1 pc sample (50%)	1 pc sample (50%)	1 Sample did not meet the maximum formaldehyde content requirement in the sample
Surabaya	2 pcs sample	2 pcs sample (100%)	-	
Yogyakarta	1pcs sample	1 pcs sample (100%)	-	

Nine of the ten towel samples met all K3L criteria. However, one towel sample originating from Padang exhibited a formaldehyde concentration of 16.73 mg/kg, slightly exceeding the maximum allowable limit of 16 mg/kg as defined in the regulatory annex. The same sample met all requirements for azo dyes and heavy metal parameters. This isolated non-conformity suggests a finishing process issue likely related to excess use or incomplete removal of formaldehyde-based finishing agents during manufacturing.

Such findings highlight the importance of ongoing post-market surveillance and process control monitoring within the domestic textile sector to ensure sustained conformity with safety standards, especially for MSME producers who may have limited quality assurance systems.

Table 5. Summary Testing Result

Products	Quantity	Testing result based on Ministry of Trade Regulation No. 21/2023		Remark
		Comply	Not Comply	
Towel	10 pcs sample	9 pcs sample (90%)	1 pcs sample (10%)	
Bed Sheet	10 pcs sample	10 pcs sample (100%)	0 pcs sample (0%)	

Overall, all bed sheet samples complied with the K3L requirements. Among towel samples, one sample (from Padang) exceeded the formaldehyde limit with a concentration of **16.73 mg/kg**, indicating **non-compliance** with the threshold defined in SNI ISO 14184-1:2015.

Table 6. Proportion of Compliance per Parameter for towel and bed sheets

Parameter	% Compliance	% Non-Compliance
Formaldehyde	95%	5%
Azo Dyes	100%	0%
Heavy Metals (Cd, Pb, Ni, Cu)	100%	0%

All samples met heavy metal and azo dye requirements, confirming low contamination risks. A single non-compliant result for formaldehyde (5%) indicates the need for strengthened finishing process control among small-scale towel manufacturers.

B. Labelling and Traceability Findings

All sampled towel and bed sheet products displayed complete and standardized labeling information, in accordance with the requirements of the Ministry of Trade's K3L registration system. Each product label included, at minimum, the brand name, fiber composition, care instructions, economy of origin, and a valid K3L registration number. The registration numbers were successfully verified through the Ministry of Trade's online K3L registry database, confirming that all surveyed products were duly registered and traceable within the regulatory system.

In addition to the mandatory K3L label, several products were also found to display additional conformity markings, including SNI (Indonesian National Standard) marks such as SNI ISO 9001 (Quality Management Systems) and SNI ISO 14001 (Environmental Management Systems), as well as international textile certification marks such as OEKO-TEX® and TEXPA. The presence of these voluntary marks indicates an awareness among manufacturers, particularly those engaged in export or large-scale production, of broader market compliance requirements and international consumer expectations for quality and safety.

Overall, these findings demonstrate a high level of administrative compliance and transparency, reflecting that most textile manufacturers and importers participating in the survey have adopted traceability mechanisms consistent with K3L registration requirements.

4.2. Non-Conformity Analysis

The single case of non-conformity identified during the field survey was attributed to excessive residual formaldehyde content detected in one towel sample. A review of potential root causes indicates that such non-compliance likely stems from a combination of material selection, process control weaknesses, and inadequate quality assurance practices within the finishing stage of textile production.

1. **Use of formaldehyde-based finishing agents**

In textile manufacturing, formaldehyde-containing resins such as melamine-formaldehyde and urea-formaldehyde are widely used to impart anti-wrinkle, anti-shrink, and durability-enhancing properties. When not properly controlled, these resins can leave residual formaldehyde bound to textile fibers. The quality and formulation of finishing agents, especially those produced by low-cost suppliers, greatly influence the potential for chemical residue accumulation.

2. **Ineffective washing or neutralization process**

Inadequate post-finishing washing or neutralization stages are another critical contributor to elevated formaldehyde residues. Insufficient rinsing prevents the removal of unreacted or loosely bound formaldehyde, allowing residues to remain on the fabric surface. This problem is often compounded when manufacturers attempt to reduce water usage or processing time for cost efficiency.

3. **Limited internal quality verification**

Many textile manufacturers conduct final quality checks focusing primarily on mechanical or physical parameters (e.g., tensile strength, colorfastness) but neglect specific chemical safety parameters unless explicitly required by regulation or customer contracts. The absence of chemical parameter testing, such as formaldehyde analysis, represents a gap in internal Quality Control (QC) systems, particularly among small and medium enterprises (SMEs). Good Manufacturing Practice (GMP) frameworks recommend that chemical testing be integrated into the final QC phase, especially for products intended for prolonged skin contact.

4. **Storage and packaging conditions**

Environmental factors, including humidity, temperature, and packaging material, can influence the release or accumulation of formaldehyde residues. Studies have shown that storage in sealed, moisture-retaining packaging or under high-temperature conditions can elevate surface formaldehyde concentration due to off-gassing and reabsorption processes.

From a theoretical standpoint, this case demonstrates insufficient application of process-based quality management systems, such as those aligned with ISO 9001 and ISO 14001. It also reflects limited supplier auditing and control over chemical input materials. Systematic implementation of supplier qualification programs, in-process monitoring, and final product chemical testing would significantly reduce the likelihood of such non-conformities recurring.

Health implications of excessive formaldehyde exposure are well documented. Formaldehyde is classified by the International Agency for Research on Cancer (IARC) as a Group 1 carcinogen (carcinogenic to humans). Even at lower concentrations, prolonged skin contact can cause irritation, allergic contact dermatitis, and other

sensitization reactions, particularly in infants and individuals with sensitive skin. These risks underscore the importance of ensuring compliance with regulatory thresholds and strengthening monitoring mechanisms in products intended for direct skin contact (IRAC,2006).

4.3. Follow-Up Actions and Recommendations

Based on the findings of this field survey including the high rate of labeling and administrative compliance, alongside the isolated non-conformity in formaldehyde content set of corrective and preventive recommendations are proposed for relevant stakeholders.

1. Regulatory and Policy-Level Actions

To maintain and strengthen the integrity of the Self-Declaration of Conformity (SDoC) mechanism under the K3L system, the following measures are recommended:

a. Integration of K3L and SDoC data systems:
   Establish an interconnected database linking the MoT's K3L registration platform with supporting evidence (test reports, supplier declarations, and laboratory accreditation data). This would ensure traceability and allow regulators to verify product conformity in real time.
b. Risk-based post-market surveillance:
   Implement a targeted sampling strategy prioritizing high-risk products (e.g., those with chemical finishes or imported from regions with variable quality control). Sampling frequency and testing scope should be aligned with compliance history, product risk category, and trade volume.
c. Harmonization of conformity assessment frameworks:
   Align Indonesia's SDoC mechanism more closely with APEC and ISO/IEC 17050 guidelines, enabling comparability and mutual recognition of declarations across economies. This will enhance trade facilitation while maintaining consumer protection.
d. Regulatory reinforcement for chemical parameters:
   Consider periodic revision of permissible limits and testing parameters to remain harmonized with global eco-labeling schemes and emerging international scientific evidence on chemical exposure risks.

2. Industry and MSME-Level Actions

At the manufacturer level, especially among small and medium-sized enterprises (SMEs), actions should focus on improving internal quality assurance capacity and supply chain control:

a. Strengthen process-based quality management systems:
   Encourage adoption or enhancement of ISO 9001 and ISO 14001aligned systems to systematically control chemical inputs, finishing processes, and waste management.
b. Improve chemical management and supplier qualification:
   Require suppliers of dyes, resins, and finishing agents to provide Material Safety Data Sheets (MSDS) and proof of conformity to relevant standards. Conduct regular supplier audits to ensure consistent quality of raw materials.
c. Enhance quality control and testing capability:

Integrate chemical safety testing (formaldehyde, azo dyes, heavy metals) into routine QC procedures. MSMEs without in-house testing capacity should be encouraged to collaborate with accredited laboratories for periodic verification.

d. Provide capacity building and awareness programs:
   BSN, in collaboration with local government and industry associations, should develop training modules and guidance materials for textile SMEs on chemical safety management, documentation of conformity, and traceability best practices. Awareness programs should also emphasize compliance with K3L regulatory obligations.

3. BSN's Strategic Role and Collaborative Initiatives

As the body responsible for standardization and conformity assessment policy coordination, BSN can take a proactive role in promoting cross-sectoral collaboration to improve compliance culture. Recommended follow-up initiatives include:

a. Joint programs with Ministry of Trade and Ministry of Industry
   Implement regular outreach and awareness campaigns targeting textile producers, importers, and laboratory networks to improve understanding of SDoC requirements and market surveillance processes.
b. Pilot implementation of a "digital traceability dashboard"
   Develop an integrated system combining SDoC data, K3L registration, and test results, aligned with APEC's commitment to enhance transparency and accountability in post-market monitoring.
c. Facilitation of international benchmarking and peer learning
   Promote exchange of experience and technical knowledge among APEC economies to strengthen the implementation of SDoC mechanisms for low- and medium-risk consumer products.

4. APEC Economies: Strategic Initiatives and Recommendations

To sustain the outcomes of this project and reinforce regional harmonization, APEC economies are encouraged to undertake the following strategic actions:

a. Align policies with APEC objectives:
   Integrate project findings into standards and conformity assessment frameworks to advance regulatory coherence and support the APEC Good Regulatory Practices (GRP) agenda.
b. Promote mutual recognition and trust:
   Explore pilot Mutual Recognition Arrangements (MRAs) or equivalence mechanisms to facilitate acceptance of test results and SDoC documentation, reducing duplication and compliance costs.
c. Enhance information sharing and transparency:
   Develop mechanisms to exchange data on SDoC implementation, accredited laboratories, and product risk classifications to strengthen traceability and regulatory confidence.
d. Strengthen capacity building and collaboration:
   Implement joint training and expert exchanges to improve technical capacity in risk-based conformity assessment, market surveillance, and product safety management, particularly for developing economies.
e. Encourage continuous learning and innovation:

Share experiences, best practices, and research outcomes related to digital conformity systems, sustainability standards, and emerging regulatory models to foster continuous improvement and innovation across the region.

5. Long-Term Outlook

The results of this field survey reaffirm that Indonesia's SDoC-based K3L registration mechanism has been effective in promoting administrative compliance and market discipline. However, continued emphasis on technical verification, capacity building, and data integration remains crucial to achieving a mature and self-sustaining conformity ecosystem.
Strengthening collaboration between regulators, standardization bodies, and industry stakeholders will not only safeguard consumer safety but also enhance market competitiveness and international confidence in Indonesian textile products fully aligning with the APEC SCSC 203 2024T project objectives.

4.4. Lesson Learned

The results of this field survey reaffirm that the Self-Declaration of Conformity (SDoC) mechanism can indeed serve as a practical and efficient conformity assessment approach for low to medium risk consumer products, such as textile goods. Its principal advantages lie in its cost-effectiveness, administrative simplicity, and ability to facilitate market access, especially for small and medium-sized enterprises (SMEs) participating in cross-border trade within APEC economies.

However, the survey also demonstrated that SDoC alone cannot fully guarantee product safety or regulatory compliance without the support of robust post-market surveillance and enforcement mechanisms. Because SDoC relies fundamentally on manufacturer honesty, technical documentation accuracy, and self-responsibility, it remains vulnerable to risks such as false declarations, incomplete documentation, or insufficient internal testing. This underscores the need for regulatory systems to establish a balanced and integrated framework linking three critical components: declaration, surveillance, and enforcement.

The findings suggest that SDoC can be an appropriate and effective mechanism when it is complemented by:

(a) test result certificate from an accredited laboratory for SDoC compliance
(b) direct accessibility of laboratory test evidence through the K3L registration system;
(c) regular, risk-based market sampling and product testing programs; and
(d) a transparent and consistent enforcement regime to address detected non-conformities.

These elements ensure that SDoC declarations remain credible, traceable, and trustworthy to both regulators and consumers.

From an analytical standpoint, the survey confirmed that while all samples displayed valid registration and labeling, one case of chemical non-conformity demonstrated the limitations of administrative compliance when not reinforced by ongoing quality surveillance. In other words, SDoC mechanisms promote procedural compliance, but technical assurance still depends on systematic field verification. This finding is fully consistent with the ISO/IEC 17050, International Best Practices of SDoC and APEC

GRP, which emphasize that SDoC must always be accompanied by risk-based post-market supervision to maintain system integrity and consumer protection.

At the policy level, the field survey successfully met the objectives of the APEC SCSC 203 2024T project by generating empirical, data-driven evidence that supports regulatory cooperation among APEC member economies. The results illustrate how an effectively implemented SDoC model, supported by transparent data systems and coordinated surveillance, can enhance market discipline, regulatory efficiency, and consumer trust across borders. Moreover, the experience from Indonesia's textile sector provides a valuable reference model for developing risk-based SDoC oversight frameworks applicable to other product categories within the APEC region.

Building upon these lessons, the preliminary recommendations for APEC economies derived from this study will be further discussed and refined during the workshop, and are summarized as follows:

1. SDoC and Market Surveillance
    - Develop common SDoC guidelines for textiles and related products to promote harmonization and consistency.
    - Apply risk-based surveillance methods, including sampling, testing, and labeling checks, to ensure that administrative declarations are supported by technical verification.
2. Capacity Building
    - Provide targeted technical assistance and training for regulators and laboratories to strengthen implementation capacity.
    - Enhance laboratory competence and promote ISO/IEC 17025 accreditation to improve the reliability of conformity assessment results.
3. Public–Private Collaboration
    - Facilitate exchange of best practices and experiences among APEC economies to foster shared learning and policy coherence.
    - Engage industry, SMEs, and consumer groups in the design and continuous improvement of SDoC frameworks to ensure practicality, inclusiveness, and market acceptance.

These actions, if pursued collectively, will help economies maintain the credibility of the SDoC mechanism, enhance post-market integrity, and build greater mutual trust among regulators and industries across APEC. In the long term, they will also contribute to the development of a more transparent, risk-based, and innovation-friendly conformity assessment ecosystem in the Asia Pacific region.

CHAPTER 5. CONCLUSION

The field survey results indicate a high level of administrative and labeling compliance among manufacturers and distributors of towel and bed sheet products in Indonesia. Almost all sampled products were found to carry valid K3L registration numbers, with traceability successfully confirmed through the Ministry of Trade's online registry. This demonstrates that the majority of businesses are aware of and adhere to the administrative requirements for product registration and labeling, reflecting a positive trend in regulatory compliance across both domestic and imported goods.

From a chemical quality standpoint, the survey found that 100% of bed sheet samples and 90% of towel samples complied with the K3L chemical safety limits established under the applicable standards. The single case of non-compliance, in which one towel sample exceeded the maximum permissible level of formaldehyde (16.73 mg/kg > 16 mg/kg), underscores the importance of maintaining robust process control and finishing quality assurance within manufacturing operations. This deviation, though isolated, highlights the potential risk associated with residual finishing agents and reinforces the need for continuous monitoring and targeted post-market surveillance to prevent similar occurrences in the future.

The Self-Declaration of Conformity (SDoC) mechanism, as implemented under this regulatory framework, demonstrates strong potential as an effective self-regulatory conformity assessment approach for Textile and Textile Products (TPT). Its adoption facilitates administrative efficiency, reduces regulatory burdens, and aligns with APEC's broader agenda of trade facilitation and market openness. However, to ensure that SDoC maintains credibility and public confidence, it must be supported by a robust evidence-based system—linking the SDoC registry, laboratory testing reports, and verification mechanisms through a transparent and traceable digital platform.

Furthermore, risk-based Post-Market Surveillance (PMS) should be strengthened as a cornerstone of long-term compliance assurance. This entails a combination of random sampling, documentation audits, and laboratory verification focusing on high-risk product categories, market segments, or import channels. The integration of such surveillance efforts with economy-wide and regional information systems will improve the responsiveness and efficiency of regulatory oversight.

The findings from this study provide valuable policy input for advancing regulatory harmonization and consumer protection in the textile sector. They highlight the need for closer collaboration between regulatory authorities, national standardization bodies, and accredited laboratories to create a seamless quality infrastructure. By leveraging the outcomes of this pilot project, Indonesia and other APEC economies can strengthen confidence in the SDoC mechanism as a credible conformity tool while ensuring that trade facilitation continues to align with health, safety, and environmental protection objectives.

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APPENDIX I. IDENTIFICATION AND RESULT OF SAMPLES

Table 7. Test Results of Towels

No.	Quality Requirements based on SNI (Minister of Trade Regulation No. 21 of 2023)				Detection Limit/Notes	Test Results of Towels for Each Sample Code										
	Parameters	Unit	requirement	Testing Methods		1	2	3	4	5	6-A	6-B	7	8	9	10
1	Formaldehyde	mg/kg	Max 16	SNI ISO 14184-1:2015	Not Detected (ND) < 16mg/kg	ND	ND	ND	ND	ND	**16,73**		ND	ND	ND	ND
2	Azo compounds (22 Amina Aromatic)	mg/kg	Max 20	SNI ISO 24362-1:2015	Not Detected (<MDL); MDL = Method Detection Limit (8mg/kg); 6-A = Grey synthetic fiber–cellulose composite 6-B = Black cellulose fiber composite	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4-aminobiphenyl					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Benzidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4-chloro-o-toluidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2-naphthylamine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	o-aminoazotoluene					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2-amino-4-nitrotoluene					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4-chloroaniline					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2,4-diaminoanisole					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4,4'-diaminodiphenylmethane					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3,3'-dichlorobenzidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3,3'-dimethoxybenzidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3,3'-dimethylbenzidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4,4'-methylene-bis-o-toluidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	p-cresidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

No.	Quality Requirements based on SNI (Minister of Trade Regulation No. 21 of 2023)				Detection Limit/Notes	Test Results of Towels for Each Sample Code										
	Parameters	Unit	requirement	Testing Methods		1	2	3	4	5	6-A	6-B	7	8	9	10
	4,4'-methylenebis(2-chloroaniline)					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4,4'-oxydianiline					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4,4'-thiodianiline					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	o-toluidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2,4-toluenediamine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2,4,5-trimethylaniline					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	o-anisidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4-aminoazobenzene					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3	Extractable Heavy Metals : Not Detected (ND) (<Detection Limit);															
	Cd (Cadmium)	mg/kg	Max 0,1	SNI 7334:2009	0,04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Cu (Copper)		Max 25		0,28	ND	0,89	1,55	0,34	2,30	5,44	ND	0,96	2,17	2,64	ND
	Pb (Lead)		Max 0,2		0,07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Ni (Nickel)		Max 1		0,31	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 8. Summary of Towel Testing Results

Sample Product Code	Type/Varian of Sample	City	Quality Results (Pass/Fail)	Marking K3L Regulation (Yes/No)	Origin	Fail Parameter
1	Cotton/Red (70x135cm)	Jakarta	P	v	Domestic	-
2	polyester/Green (70x140cm)	Jakarta	P	v	Import	-
3	Cotton/Brown(70x140cm)	Surabaya	P	v	Domestic	-
4	Cotton/Balck (70x140cm)	Surabaya	P	v	Domestic	-
5	Cotton/Red (70x140cm)	Padang	P	v	Domestic	-
6-A	Cotton/Gray (70x140 cm)	Padang	F	v	Import	Formaldehyde
6-B	Cotton/Gray (70x140 cm)	Padang	F	v	Import	Formaldehyde
7	Cotton/White (70x140 cm)	Jogjakarta	P	v	Import	-
8	Cotton/White (70x135cm)	Manado	P	v	Domestic	-
9	Cotton/Red (68x140cm)	Manado	P	v	Domestic	-
10	Fresh cotton/ Red (70x140cm)	Manado	P	v	Domestic	-

Table. 9 Test Results of Bed Sheet

No.	Quality Requirements based on SNI (Minister of Trade Regulation No. 21 of 2023)				Detection Limit/Notes	Test Results of Bed Sheet for Each Sample Code										
	Parameters	Unit	requirement	Testing Methods		1	2	3	4	5	6	7	8	9-A	9-B	10
1	Formaldehyde	mg/kg	Max 16	SNI ISO 14184-1:2015	Not Detected (ND) < 16mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2	Azo compounds (22 Amina Aromatic)	mg/kg	Max 20	SNI ISO 24362-1:2015	Not Detected (<MDL); MDL = Method Detection Limit (8mg/kg); 9-A = White synthetic fiber composite with red print 9-B = Cream synthetic	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4-aminobiphenyl					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Benzidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4-chloro-o-toluidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2-naphthylamine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	o-aminoazotoluene					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2-amino-4-nitrotoluene					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4-chloroaniline					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2,4-diaminoanisole					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4,4'-diaminodiphenylmethane					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3,3'-dichlorobenzidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3,3'-dimethoxybenzidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3,3'-dimethylbenzidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4,4'-methylene-bis-o-toluidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	p-cresidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

No.	Quality Requirements based on SNI (Minister of Trade Regulation No. 21 of 2023)				Detection Limit/Notes	Test Results of Bed Sheet for Each Sample Code										
	Parameters	Unit	requirement	Testing Methods		1	2	3	4	5	6	7	8	9-A	9-B	10
	4,4'-methylenebis(2-chloroaniline)				fiber composite with white string	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4,4'-oxydianiline					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4,4'-thiodianiline					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	o-toluidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2,4-toluenediamine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2,4,5-trimethylaniline					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	o-anisidine					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4-aminoazobenzene					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3	Extractable Heavy Metals: Not Detected (ND) (<Detection Limit);															
	Cd (Cadmium)	mg/kg	Max 0,1	SNI 7334:2009	0,04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Cu (Copper)		Max 25		0,28	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Pb (Lead)		Max 0,2		0,07	ND	0,09	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Ni (Nickel)		Max 1		0,31	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,36

Table 10. Summary of Bed Sheets Testing Results

Sample Product Code	Type/Varian of Sample	City	Quality Results (Pass/Fail)	Marking K3L Regulation (Yes/No)	Origin	Fail Parameter
1	Silk micro tencel/White (120×200cm)	Jakarta	P	v	Domestic	-
2	Cotton/Blue (100x200cm)	Surabaya	P	v	Import	-
3	organic bamboo velvet/White Gray (120 x 200cm)	Jakarta	P	v	Domestic	-
4	Microtex/Gray (120x200cm)	Surabaya	P	v	Domestic	-
5	Polyester/Gray (180x200+30cm)	Padang	P	v	Import	-
6	Microtex/Blue(120x200cm)	Padang	P	v	Domestic	-
7	Microfiber/Gray (120x200cm)	Manado	P	v	Import	-
8	cotton/Light Gray (160x200)	Manado	P	v	Domestic	-
9-A	microtex/Red White (160×200)	Manado	P	v	Domestic	-
9-B	microtex/Red White (160×200)	Manado	P	v	Domestic	-
10	MicroFiber/Greenish cream (160×200)	Manado	P	v	Domestic	-