



# **Green Label Product Products Made from Cloth**

**(TGL-16-R2-11)**

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## TGL-16-R2-11

### Products Made from Cloth

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#### 1. Background

In general, cloth products are made from a variety of fibres comprising natural fibre, synthetic fibre or semi-synthetic fibre. Manufacturing processes of the products consume a large amount of chemical substances such as primary chemicals, auxiliaries, finishing chemicals and dyestuffs. Hazardous components contained in chemical substances may lead to negative effects on environment, for instance water pollution due to contamination of toxic compounds, improper levels of either acidity or alkalinity which affect ecosystems. In addition, such hazardous substances are harmful to human health, such as formaldehyde used as additive to prevent shrinkage, which can cause irritation of skin or respiratory system when swallowed or inhaled, pesticides, especially Aldrine, used in cotton cultivation, which are carcinogenic substances, heavy metals, and hazardous substances contaminated in cloth products.

Consequently, the Green Label Criteria for Products Made from Cloth are developed in order to reduce adverse effects to environment and human health.

#### 2. Scope

These criteria shall apply to textile fabrics, ready-made clothes, and household and home textile fabrics made from natural fibre, synthetic fibre or semi-synthetic fibre. These exclude asbestos fibres.

#### 3. Categories

Products made from cloth shall be divided into 3 categories as follows:

- 3.1 *made from natural fibre* such as cotton, hemp, linen, silk, wool (To apply for the Green Label certification, types of fibre used in products made from cloth shall be specified)
- 3.2 *made from synthetic fibres* such as acetate, viscose rayon, polyester, polyamide (nylon), polyacrylonitrile (acrylic) (To apply for the Green Label certification, types of fibre used in products made from cloth shall be specified)
- 3.3 *made from semi-synthetic fibre* such as blending of cotton and polyester, blending of cotton and silk (To apply for the Green Label certification, types of fibre used in products made from cloth shall be specified)

#### 4. Definitions

- 4.1 *Products made from cloth* refer to textile fabrics and products made from textile fabrics containing textile fibres of at least 90% by product weight.
- 4.2 *Textile fabrics* refer to woven fabrics, knitted fabrics and nonwoven fabrics intended to be used in productions of ready-made clothes, and household and home textile fabrics.
- 4.3 *Products made from textile fabrics* refer to ready-made clothes, and household and home textile fabrics.
- 4.4 *Ready-made clothes* refer to clothes and apparel products for men, women, children, and babies, which are finished products and ready for use, for example blouses, shirts, clothes and accessories made from textile fabrics for babies such as napkins, diapers. These include decorative accessories for ready-made clothes

- such as sewing threads, embroidery threads, lace trims, buttons, hooks and bars, zips, belts.
- 4.5 *Accessories made from textile fabrics for babies* refer to napkins, diapers, as well as decorative accessories such as sewing threads, embroidery threads, lace trims, buttons, hooks and bars, zips, belts.
- 4.6 *Household and home textile fabrics* refer to products intended to be applied in household and home such as curtains, bed sheets, pillowcases, blankets, towels, table covers.
- 4.7 *Direct skin-contact products* refer to ready-made clothes, and household and home textile fabrics which come in direct contact with skin such as men's undershirts, women's bras, shirts, blouses, men's underwear, women's underwear, shorts, pants, dress, socks, gloves, stockings, hats.
- 4.8 *Indirect skin-contact products* refer to ready-made clothes, and household and home textile fabrics which some product parts come in direct contact with skin such as suits, coats, jackets, sweaters, shawls, scarfs, bags
- 4.9 *Decorative accessories* refer to materials applied on clothes by sewing or gluing for decoration.
- 4.10 *Natural fibres* refer to fibres obtained from plants such as cotton, hemp, linen and from animals such as wool, silk.
- 4.11 *Organic fibres* refer to biodegradable natural fibres obtained from plants without synthetic fertilizers and pesticides used during cultivation, as well as genetic modification.
- 4.12 *Man-made fibres* refer to synthetic fibres such as polyester, nylon, acrylic, and regenerated fibres such as acetate, viscose rayon.
- 4.13 *Semi-synthetic fibres* refer to blended fibres consisting of at least two different fibre types such as blending of cotton and polyester, blending of cotton and silk, blending of polyester and rayon, blending of polyester and nylon.
- 4.14 *Natural dyestuffs* refer to dyestuffs produced by synthesizing or extracting natural raw materials, intended for application in fibre and fabric dyeing process to make apparels and household textile appliances. Natural dyestuffs are classified into 3 groups based on material source as follows: natural dyestuffs from minerals, animals and plants. Major natural colorants are derived from various parts of plants including roots, barks, wood stems, leaves, flowers, fruits and seeds.
- 4.15 *Baby* refers to a child from birth to 36 months of age.
- 4.16 *Child* refers to a child from 3-14 years of age.

## 5. General criteria

- 5.1 The products shall be certified or pass the product quality requirements in accordance with Thai Industrial Standards as follows:
- 5.1.1 Textile fabrics, products made from textile fabrics (except ready-made clothes), and household and home textile fabrics shall be certified or passed the product quality requirements in accordance with Thai Industrial Standard for Fabrics: Safety from Harmful Dyestuffs and Chemical Substances, TIS 2231 or equivalent international or national standards such as ISO, EN, ASTM, JIS.
- 5.1.2 Clothes for babies and children shall be certified or passed the product quality requirements in accordance with Thai Industrial Standard for Children's Clothing, TIS 2435 or equivalent international or national standards such as ISO, EN, ASTM, JIS.

5.1.3 Ready-made clothes including accessories for babies and children shall be certified or passed the product quality requirements in accordance with Thai Industrial Standard for Garments: Safety from Harmful Dyestuffs and Chemical Substances, TIS 2346 or equivalent international or national standards such as ISO, EN, ASTM, JIS.

**Notes:**

1. The products certified to other recognized industrial standards for products made from cloth shall be required to pass the product quality requirements in accordance with Thai Industrial Standards as specified in General criteria 5.1.1-5.1.3. If the test reports do not meet the entire product quality requirements, additional testing shall be performed in accordance with General criteria 5.1.1-5.1.3.
2. The products dyed with natural dyestuffs shall be certified or passed the product quality requirements in accordance with relevant Thai Industrial Standards. Exception is made for colour fastness requirement which shall be as follows:

**Table 1** Colour fastness requirements for the products dyed with natural dyestuffs

No	Parameter	Unit	Requirement				Test Method
			Type 1 <sup>1</sup>	Type 2 <sup>2</sup>	Type 3 <sup>3</sup>	Type 4 <sup>4</sup>	
1	Colour resistance to saliva and perspiration in acidity and alkalinity conditions (except white products) Not less than - change in colour - staining	Gray scale level	3 3	- -	- -	- -	DIN 53160
2	Colour resistance to perspiration in acidity and alkalinity conditions (except white products) Not less than - change in colour - staining	Gray scale level	3 3	3 3	3 3	3 <sup>5</sup> 3 <sup>5</sup>	ISO 105 E04
3	Colour resistance to washing (except silks, wools, white products and denims ) Not less than - change in colour - staining	Gray scale level	3-4 3	3-4 3	3-4 3	3-4 3	ISO 105 C01 - C06 (select one of test methods as specified in label)
4	Colour resistance to rubbing in dry condition (except silks, wools, white products and denims ) Not less than - staining	Gray scale level	3-4	3-4	3-4	3-4	ISO 105 X12

*Note: In the event of any conflict arising, the original criteria in Thai are to be the final authority*

**Notes:**

- <sup>1</sup> Type 1 includes textile fabrics for baby products such as baby clothes, diapers
  - <sup>2</sup> Type 2 includes textile fabrics for direct skin-contact products such as clothes, underwear, undershirts, and textile fabrics for bedclothes
  - <sup>3</sup> Type 3 includes textile fabrics for indirect skin-contact products such as underlying fabrics
  - <sup>4</sup> Type 4 includes textile fabrics used for decoration or for decorative products such as curtains, wall coverings, and fabric furniture
  - <sup>5</sup> except curtains
- 5.2 Manufacturing process, transportation and post-industrial waste disposal shall comply with national laws and regulations, for instance Factory Act, B.E. 2535.

**6. Environmental criteria**

- 6.1 The contents of heavy metals extracted from the products shall meet the following requirements:
- 6.1.1 Clothes and accessories for babies
    - (1) Arsenic not exceeding 0.2 mg/kg
    - (2) Cobalt not exceeding 1.0 mg/kg
    - (3) Mercury not exceeding 0.02 mg/kg
    - (4) Nickel not exceeding 1.0 mg/kg
    - (5) Antimony not exceeding 30.0 mg/kg
  - 6.1.2 Textile fabrics, ready-made clothes, and household and home textile fabrics
    - (1) Arsenic not exceeding 1.0 mg/kg
    - (2) Cobalt not exceeding 4.0 mg/kg
    - (3) Mercury not exceeding 0.02 mg/kg
    - (4) Nickel not exceeding 4.0 mg/kg
- 6.2 The contents of pesticide residues in the products made from natural fibres shall meet the following requirements:
- 6.2.1 For clothes and accessories for babies, the content of either individual or total pesticides specified in Table 2 shall not exceed 0.5 mg/kg.
  - 6.2.2 For textile fabrics, ready-made clothes, and household and home textile fabrics, the content of either individual or total pesticides specified in Table 2 shall not exceed 1.0 mg/kg.
- 6.3 The contents of chlorinated phenols in the products shall meet the following requirements:
- 6.3.1 For clothes and accessories for babies, the content of either individual or total substances shall not exceed 0.05 mg/kg.
    - (1) Pentachlorophenol (PCP)
    - (2) 2,3,5,6-Tetrachlorophenol
    - (3) 2,3,4,6-Tetrachlorophenol
    - (4) 2,3,4,5-Tetrachlorophenol
  - 6.3.2 For textile fabrics, ready-made clothes, and household and home textile fabrics, the content of either individual or total substances shall not exceed 0.5 mg/kg.
    - (1) Pentachlorophenol (PCP)
    - (2) 2,3,5,6-Tetrachlorophenol
    - (3) 2,3,4,6-Tetrachlorophenol
    - (4) 2,3,4,5-Tetrachlorophenol

- 6.4 For products manufactured with bleaching process, chlorine-based bleaching agents shall not be applied.
- 6.5 For products manufactured with dyeing process, halogenated carriers shall not be used in polyester dyeing process.
- 6.6 The contents of phthalates in the products shall meet the following requirements:
- 6.6.1 For children clothes made of printed fabrics, and decorative materials made of plastics and foams, the content of either individual or total phthalates shall not exceed 0.1% by weight of decorative materials or printed fabrics
- (1) Di(2-ethylhexyl)-phthalate : DEHP (CAS No. 117-81-7)
  - (2) Butylbenzyl phthalate : BBP (CAS No. 85-68-7)
  - (3) Dibutyl phthalate : DBP (CAS No. 84-72-2)
  - (4) Di-isobutyl phthalate : DIBP (CAS No. 84-69-5)
- 6.6.2 For clothes and accessories for babies made of printed fabrics, and decorative materials made of plastics and foams, the content of either individual or total phthalates shall not exceed 0.1% by weight of decorative materials or printed fabrics
- (1) Di-iso-nonylphthalate : DINP (CAS No. 28553-12-0)
  - (2) Di-n-octylphthalate : DNOP (CAS No. 117-84-0)
  - (3) Di(2-ethylhexyl)-phthalate : DEHP (CAS No. 117-81-7)
  - (4) Diisodecyl phthalate : DIDP (CAS No. 26761-40-0)
  - (5) Butylbenzyl phthalate : BBP (CAS No. 85-68-7)
  - (6) Dibutyl phthalate : DBP (CAS No. 84-72-2)
  - (7) Di-isobutyl phthalate : DIBP (CAS No. 84-69-5)
- 6.7 Decorative materials made of metals shall not contain nickel, whereas decorative materials made of non-metals shall not contain the following substances: arsenic, lead, cadmium, total chromium, hexavalent chromium, cobalt, copper and mercury.
- 6.8 Flame retardants used in the products shall not contain PBB (polybrominated biphenyl), PBDE (polybrominated diphenyl ether), TRIS, TEPA and chlorinated paraffins with average carbon chain length of 10–13 carbons and chlorine concentration of 50% or above.
- 6.9 Packaging
- 6.9.1 Paper packaging for transportation
- Except Individual packaging
- Kraft liner board for packaging shall be certified or passed the requirements in accordance with the Green Label for Papers.
  - Corrugating medium paper shall be certified or passed the requirements in accordance with the Green Label for Papers.
- 6.9.2 Plastic packaging shall be symbolized in accordance with Thai Industrial Standard for Recycling Plastics, TIS 1310 or ISO 1043 or ISO 11469.
- 6.9.3 Paints or pigments used for printing on the product packaging shall not contain heavy metals including mercury, lead, cadmium and hexavalent chromium. The sum of heavy metal contents in paints or pigments due to impurities and contamination shall not exceed 100 mg/kg.

## 7. Verification methods

- 7.1 The applicant shall submit the certificate of relevant Thai Industrial Standard as described in General criteria 5.1 or submit test reports stating compliance with the product quality requirements in accordance with relevant Thai Industrial Standard or equivalent international or national standards.
- 7.2 The applicant shall submit test reports to ensure compliance with Environmental criteria 6.1-6.3, using test methods as described in Table 2.

**Table 2** Test methods for product quality analysis

Parameter	Test method
Heavy metals	
<ul style="list-style-type: none"> <li>• Arsenic</li> <li>• Cobalt</li> <li>• Mercury</li> <li>• Antimony</li> <li>• Nickel</li> </ul>	extracted with synthetic sweat solution according to ISO 105-E04 Test solution II at 40°C for 1 hour, then measure the quantity with AAS/ICP or UV-VIS Spectrometer
Pesticides	
Organochlorine compounds <ul style="list-style-type: none"> <li>• Aldrine (CAS number: 309-00-2)</li> <li>• Captafol (CAS number 2425-06-1)</li> <li>• Chlordane (CAS number 5103-71-9)</li> <li>• DDT (CAS number 50-29-3)</li> <li>• Dieldrine (CAS number 60-57-1)</li> <li>• Endrine (CAS number 72-20-8)</li> <li>• Heptachlor (CAS number 77-44-8)</li> <li>• Hexachlorobenzene (CAS number 118-74-1)</li> <li>• Hexachlorocyclohexane (total isomeres) (CAS number 608-73-1)</li> <li>• 2,4,5-T (CAS number 96-76-5)</li> <li>• Chlordimeform (CAS number 6164-98-3)</li> <li>• Chlordibezilate (CAS number 510-15-6)</li> <li>• Dinoseb and its salts (CAS number 88-85-7)</li> <li>• Pentachlorophenol (CAS number 87-86-5)</li> <li>• Toxaphene (CAS number 8001-35-2)</li> </ul> Organophosphorus compounds <ul style="list-style-type: none"> <li>• Monochrotophos (CAS number 6923-22-4)</li> <li>• Methamidophos (CAS number 10265-92-6)</li> <li>• Methylparathion (CAS number 298-00-0)</li> <li>• Parathion (CAS number 56-38-2)</li> <li>• Phosphamidon (CAS number 13171-21-6; 23783-98-4; 297-99-4)</li> </ul>	-US EPA 8081 A (extract organochlorine pesticides with apolar solvent (iso-octane or hexane) using ultrasonic or Soxhlet extraction) -US EPA 8151 A (extract chlorinated herbicides with methanol) -US EPA 8141 A (for organophosphorus compounds) -US EPA 8270 C (for Semi-volatile organic compounds)  <b>Note:</b> applied to the products made from natural fibres
Chlorinated phenols	
<ul style="list-style-type: none"> <li>• Pentachlorophenol (PCP)</li> <li>• 2,3,5,6-Tetrachlorophenol (2,3,5,6-TeCP)</li> <li>• 2,3,4,6-Tetrachlorophenol (2,3,4,6-TeCP)</li> <li>• 2,3,4,5-Tetrachlorophenol (2,3,4,5-TeCP)</li> </ul>	conduct extraction according to DIN 53313 or DIN EN ISO 17070 or equivalent international or national standards or submit certificates of chemicals used in finishing process  <b>Note:</b> applied to the products made from natural fibres

*Note: In the event of any conflict arising, the original criteria in Thai are to be the final authority*



- 7.3 The applicant shall submit a declaration letter to ensure non-existence of chlorine-based bleaching agents together with list of bleaching agents used in polyester dyeing process. The declaration letter shall be signed by authorized personnel of the manufacturer and affixed by the company seal.
- 7.4 The applicant shall submit a declaration letter to ensure that halogenated carriers are not used in polyester dyeing process. The declaration letter shall be signed by authorized personnel of the manufacturer and affixed by the company seal.
- 7.5 The applicant shall submit test reports for phthalates in baby and children clothes made of printed fabrics to ensure compliance with Environmental criteria 6.6, using test method in accordance with BS EN 15777.
- 7.6 The applicant shall submit test reports for nickel in metal decorative materials, and test reports for arsenic, lead, cadmium, total chromium, hexavalent chromium, cobalt, copper and mercury in non-metal decorative materials to ensure compliance with Environmental criteria 6.7. The analysis shall be carried out by extracting the specimens in accordance with ISO 105-E04 or DIN 53160, and measuring heavy metal concentrations with AAS or ICP or UV-VIS spectrophotometer or other equivalent standards.
- 7.7 The applicant shall submit a declaration letter to ensure non-existence of prohibited flame retardants as specified in Environmental criteria 6.8 together with list of flame retardants used in the products. The declaration letter shall be signed by authorized personnel of the manufacturer and affixed by the company seal.
- 7.8 The applicant shall submit evidences involving packaging as follows:
- 7.8.1 For kraft liner board, the applicant shall submit the certificate of the Green Label for Papers, under the scope of kraft liner board or submit test reports stating compliance with the product requirements in accordance with the Green Label for Papers, under requirements for kraft liner board.
- 7.8.2 For corrugating medium paper, the applicant shall submit the certificate of the Green Label for Papers, under the scope of corrugating medium paper or submit test reports stating compliance with the product requirements in accordance with the Green Label for Papers, under requirements for corrugating medium paper.
- 7.8.3 The applicant shall submit samples of the plastic packaging to declare plastic markings in accordance with Thai Industrial Standard for Recycling Plastics, TIS 1310 or ISO 1043 or ISO 11469.
- 7.8.4 The applicant shall submit test reports for heavy metals in paints or pigments, using test method ISO 3856-1 or ASTM D 3335 for lead, ISO 3856-4 or ASTM D 3335 for cadmium, ISO 3856-5 for hexavalent chromium and ISO 3856-7 or ASTM D 3624 for mercury or other equivalent standards.

**Notes:** Testing and certification

- 1) The tests shall be performed in laboratories as follows;
- 1.1 Governmental laboratories or laboratories supervised by the governments in accordance with Industrial Products Standards Act, B.E. 2511 or
- 1.2 Private laboratories accredited to the Thai Industrial Standard on General Requirements for the Competence of Testing and Calibration Laboratories,

TIS 17025<sup>1</sup> (ISO/IEC 17025<sup>2</sup>) with relevant scope of accreditation in testing.

- 2) Test reports used to apply for the Green Label shall not exceed 1 year duration following the application date.

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<sup>1</sup>TIS 17025 General Requirements for the Competence of Testing and Calibration Laboratories.

<sup>2</sup>ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories.