Green Label Product
Plastic Floor Covering

(TGL-71/2-12)

Revision Approved on
25 October 2011

Thailand Environment Institute (TEI)
16/151 Muang Thong Thani, Bond Street, Bangpood,
Pakkred, Nonthaburi 11120 Thailand
Phone: 0-2503-3333 ext. 303, 306, 315, 316, 329
Fax: 0-2504-4826-8

Website: http://www.tei.or.th/greenlabel/

Table of Contents

TGL-71/2 -12

Plastic Floor Covering

1 Background

Plastic floor coverings are widely used for decorations in office buildings and houses due to its various properties including colors, patterns, and depth. The product is easy to install and it can be used for many purposes. However, the manufacturing process of plastic floor covering often requires the use of harmful chemical substances such as stabilizers, plasticizers, heavy metals, and asbestos. Without proper handling of these chemical substances after end-use, these substances can eventually be hazardous to the environment. Moreover, during the use phase, the product can release volatile organic compounds (VOCs) and repeated exposure to VOCs can be harmful to human health.

Therefore, the Green Label for plastic floor covering was developed to reduce environmental impact from the use of chemical substances during the manufacturing process as well as limit the release of VOCs during use phase in order to ensure the safety of environment and human health.

2 Scope

Plastic floor covering product includes floor coverings for outdoor and indoor building.

3 Definitions

Homogeneous floor covering refers to multilayer or monolayer floor covering. Each layer is composed of the same colour, design and thickness.

Heterogeneous floor covering refers to floor coverings with wear layer and compact layers. The composition and/or design of the compact layers are different from the wear layer and can be better reinforced.

Polyvinyl chloride floor covering refers to materials used for covering the surface layer, which has polyvinyl chloride as the binder.

Volatile organic compound (VOCs) refers to organic compounds that have a vapor pressure greater than 1 mm Hg. It can evaporate into vapor at ordinary temperature and pressure. The vapor can be transformed into liquid or solid state by increasing temperature or reducing pressure. Most of the molecules contain carbon and hydrogen atom including oxygen or halogens such as chlroine or bromine.

4 General requirements

4.1 The product shall comply with one of the following requirements:

4.1.1 The product shall be certified with Thai Industrial Standard TIS 1482 for PVC floor covering.

Verification Method
If the applicant received a certificate for TIS 1482 for PVC floor covering, then the applicant shall declare the certificate.

4.1.2 The product shall pass the product quality specifications under Thai Industrial Standard TIS 1482.

Verification Method
If the applicant has not received a certificate for TIS 1482, then the manufacturer shall declare a test report that the product has passed the product quality specifications under TIS1482.

4.1.3 The product shall pass a test under one of the following standards in Table 1 **or** other equivalent standards to TIS 1482.

Table 1 Standards for Plastic floor covering

No.	Standard No.	Standard Name
1	ASTM F 1066	Standard Specification for Vinyl Composition Floor Tile
2	EN 649	Resilient floor covering. Homogenous and heterogeneous polyvinyl chloride floor coverings Specification
3	EN 654	Resilient floor covering. Semi-flexible polyvinyl chloride tiles Specification
4	JIS A 5705	Floor covering - PVC
Note: If any of the above standards has been terminated or modified, the newest version of the standard shall be the final authority.		

Verification Method
The manufacturer shall declare a test report to show compliance with the standards in Table 1 or other equivalent standards to TIS 1482.

4.2 The manufacturing, transportation and post-industrials waste disposal shall comply with the national laws and regulations.

Verification Method
The applicant shall declare relevant documents or evidence that manufacturing, transportation and waste disposal of the product comply with national laws and regulations.

5 Product environmental requirement

5.1 The emission of volatile organic compounds (VOCs) in product shall not exceed 0.4 $mg/m^2 \cdot h$.

Verification Method

The applicant shall declare a test report for VOCs emission according to the test method under ISO 16000-6 and ISO 16000-9 **or** other equivalent international or national standards.

If the applicant wishes to declare a test report under other equivalent standards not mentioned in this Green Label, then the applicant shall submit the following documents together with the test report:

1) Declaration letter from the laboratory verifying that the test methods are comparable to the methods defined in this document.

2) Method validation documents which enable unequivocal scientific verification that the testing methods and requirements defined in this document have been met.

5.2 Heavy metals

5.2.1 Product shall not contain mercury, lead, cadmium, copper, arsenic and hexavalent chromium. Heavy metals (lead, mercury, and chromium hexavalent) due to impurities or traces deriving from raw materials shall follow these requirements:

1) Mercury and cadmium each shall not exceed 0.5 mg/kg in homogeneous materials

2) Lead shall not exceed 50 mg/kg in homogeneous materials

Verification Method

1.The applicant shall submit a declaration letter ensuring that the product does not contain mercury, lead, cadmium, copper, arsenic and hexavalent chromium. The declaration letter shall be signed by an authorized director of the product manufacturer or company of the applicant with company seal affixed.

2.The applicant shall declare a test report for mercury, cadmium, and lead in the product by using the test method under IEC 62321 **or** other national or international standard.

If the applicant wishes to declare a test report under other equivalent standards not mentioned in this Green Label, then the applicant shall submit the following documents together with the test report:

1) Declaration letter from the laboratory verifying that the test methods are comparable to the methods defined in this document.

2) Method validation documents which enable unequivocal scientific verification that the testing methods and requirements defined in this document have been met.

5.2.2 Product shall not use the following heavy metals as additive:
1) Tributyl tins: TBT
2) Triphenyl tins: TPT
3) Cadmium compound

Verification Method
The applicant shall submit a declaration letter to ensure that no heavy metals were used as additive: Tributyl tins, Triphenyl tins and cadmium compound. The declaration letter shall be signed by an authorized director of the product manufacturer or company of the applicant with company seal affixed.

5.3 Vinyl Chloride Monomer (VCM) in product shall not exceed 1 mg/kg.

Verification method
The manufacturer shall declare a test report for VCM in product according to test method under ISO 6401 **or** other equivalent national or international standards.

If the applicant wishes to declare a test report under other equivalent standards not mentioned in this Green Label, then the applicant shall submit the following documents together with the test report:
1) Declaration letter from the laboratory verifying that the test methods are comparable to the methods defined in this document.
2) Method validation documents which enable unequivocal scientific verification that the testing methods and requirements defined in this document have been met.

5.4 If the product is made from PVC, then it shall display a logo “Do not burn” on the product[1].

Verification Method
If the product is made from PVC, then the manufacturer shall declare evidence and submit a declaration letter ensuring the existence of a logo “Do not burn” on the product. The declaration letter shall be signed by an authorized director of the product manufacturer or company of the applicant with company seal affixed.

5.5 The product shall not contain the following flame retardants:
5.5.1 Polybrominated biphenyls (PBBs)
5.5.2 Polybrominated diphenylethrs (PBDEs)
5.5.3 Short – chain of Chloroparaffins between 10-13 carbon atoms and composes of more than 50% chlorine by weight

1 Under the review of the Green Label Sub-committee

Verification Method
The applicant shall submit a declaration letter ensuring that product contains no flame retardants in requirement 5.5.1, 5.5.2 and 5.5.3. The declaration letter shall be signed by an authorized director of the product manufacturer or company of the applicant with company seal affixed.

5.6 If blowing agent is used, then the following requirement applies:

5.6.1 Ozone depleting potential (ODP) shall be equal to 0 and Global Warming Potential (GWP) shall not exceed 3000.

5.6.2 Shall not contain CFE, HCFC, HFC and methylene chloride

Verification Method
The applicant shall submit a declaration letter ensuring that the product contains no blowing agent in requirement 5.6.1, 5.6.2. The declaration letter shall be signed by an authorized director of the product manufacturer or company of the applicant with company seal affixed.

5.7 The product shall not contain asbestos.

Verification Method
The applicant shall submit a declaration letter ensuring that the product contains no asbestos. The declaration letter shall be signed by an authorized director of the product manufacturer or company of the applicant with company seal affixed.

5.8 Color ink for additive used in product shall not be composed aromatic amines derived from azo-based dyes in Table 2.

Table 2 List of aromatic amines

No.	substances	CAS No.
1	4-aminobiphenyl	92-67-1
2	Benzedrine	92-87-5
3	4-chloro-o-toluidine	95-69-2
4	2-naphthylamine	91-59-8
5	o-aminoazotoluene	97-56-3
6	2-amino-4-nitrotoluene	99-55-8
7	p-chloroaniline	106-47-8
8	2,4-diaminoanisole	615-05-4
9	4,4’-diaminodiphenylmethane	101-77-9
10	3,3’-dichlorbenzidine	91-94-1
11	3,3’-dimethoxybenzidine	119-90-4
12	3,3’-dimethylbenzidine	119-93-7
13	4,4’-diamino-3,3’ - dimethyldiphenylmethane	838-88-0
14	p-cresidine	120-71-8
15	4,4’-Methylene-bis - (2-Chloroaniline)	101-14-4
16	4,4’-oxydianiline	101-80-4
17	4,4’-4-Aminophenyl Sulfide Bis	139-65-1
18	o-toluidine	95-53-4
19	2,4-diaminotoluene	95-80-7
20	2,4,5-trimethylaniline	137-17-7
21	o-anisidine	90-04-0
22	4-amino- azo- benzene	60-09-3
23	2,4-Xylidine	87-62-7
24	2,6-Xylidine	95-68-1

Verification Method

The applicant shall submit declaration letter that not use azo-based dyes it composes of aromatic amines in product.

5.9 Packaging

5.9.1 Paper for packaging shall be certified with Thai Green Label for paper (TGL-8) or passed product environmental requirements of TGL-8.

Verification Method

The manufacturer shall declare certificate of Thai Green Label for paper (TGL-8) received for paper packaging, or declare test reports ensuring compliance with product environmental requirements for the respective type of paper. The test report shall be signed by an authorized director of the product manufacturer or company of the applicant with company seal affixed.

If the applicant wishes to declare a test report under other equivalent standards not mentioned in this Green Label, then the applicant shall submit the following documents together with the test report:

1) Declaration letter from the laboratory verifying that the test methods are comparable to the methods defined in this document.

2) Method validation documents which enable unequivocal scientific verification that the testing methods and requirements defined in this document have been met.

5.9.2 Plastic packaging shall be symbolized to indicate the type of plastic according to TIS 1310 for Recycling Plastic or an abbreviation to indicate the type of plastic according to ISO 1043 or 11469.

Verification Method

The applicant shall submit certifying document ensuring that the plastic type is displayed on plastic package according to TIS 1310 or ISO 1043 or 11469 and evidence such as figure of plastic package displaying an abbreviation indicating the plastic type on it.

5.9.3 If plastic packaging is made from PVC, then it shall display a logo as “Do not burn”[1].

Verification Method

The manufacturer shall declare evidence and submit a declaration letter ensuring the existence of a logo “Do not burn” on PVC plastic packaging. The declaration letter shall be signed by an authorized director of the product manufacturer or company of the applicant with company seal affixed.

5.9.4 Ink or pigments used for printing or labels on packaging are permitted to have total concentration of mercury, lead, cadmium, and hexavalent chromium (+6) due to impurities or traces deriving from raw materials in packaging not exceeding 100 mg/kg.

Verification Method

The applicant shall submit test reports for heavy metals in color ink or pigment for printing on package or label on package using the following test methods:

1) Mercury content by ISO 3856-7 or ASTM D 3624
2) Lead content by ISO 3856-1 or ASTM D 3335
3) Cadmium content by ISO 3856-4 or ASTM D 3335
4) Hexavalent chromium (+6) content by ISO 3856-5

or IEC 62321 **or** other equivalent method under international or national standards.

If the applicant wishes to declare a test report under other equivalent standards not mentioned in this Green Label, then the applicant shall submit the following documents together with the test report:

1) Declaration letter from the laboratory verifying that the test methods are comparable to the methods defined in this document.
2) Method validation documents which enable unequivocal scientific verification that the testing methods and requirements defined in this document have been met.

6. Testing and certification

6.1 Testing

6.1.1 The laboratory shall be operated by the government or under governmental control as defined by clause 5 of the Industrial Standard Act B.E. 2511 (and its addenda) or certified by TIS. 17025 or ISO/IEC 17025.

6.1.2 Test results

6.1.2.1 Test results shall comply with testing methods defined in this document. If "comparable test methods" are submitted, the following documents shall be submitted with the test results:

1) Declaration letter from the laboratory verifying that the test methods are comparable to the methods defined in this document.
2) Method validation documents which enable unequivocal scientific verification that the testing methods and requirements defined in this document have been met.

6.1.2.2 Test results shall have been issued no more than 1 years following the application date.

6.2 Declaration letter to verify compliance with Green Label requirements

6.2.1 Shall have been issued no more than 3 years following the Green Label application date.

6.2.2 Shall be signed by the authorized directors and have the company seal affixed (if relevant).

6.3 In the event that referenced test methods or standards in this document have been modified, the latest version of test method or standard will be considered.

7. Topics to be considered by sub-technical committee

7.1 Proportion of recycled content for plastic floor covering

Remarks: 1. Product testing shall be conducted in the following laboratories:

- Laboratories operated by the government or under governmental control as defined by Clause 5 of the Industrial Standard Act B.E. 2511 **or**
- Laboratories certified by TIS 17025[2] or ISO 17025[3]

2. Test results shall have been issued no more than 3 years following the application date.

[2] TIS 17025 General Requirements for the Competence of Testing and Calibration Laboratories.

[3] ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories.