



Green Label Product Adhesive (TGL-76-13)

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Table of Contents

1	Background	3
2	Scope	3
3	Definitions	3
4	General requirements	4
5	Environmental requirements	5
6	Testing and certification	8

TGL-76-13 Adhesive

1. Background

Adhesive and sealant are products used for repairing and adhering two objects together. Considering in the whole life cycle of the adhesive, manufacture using improper chemical materials may cause environmental pollution affecting to ecosystem and users. For example, accumulation caused by inhalation of volatile organic compounds (VOCs) and exposure to heavy metals into the body can be harmful to human.

Therefore, Green Label criteria for adhesive will focus on reducing VOCs emission and heavy metals.

2. Scope

Green Label criteria for adhesive and sealant cover all types of adhesive and sealant except joint filler for concrete (non extruding and resilient type): Asphalt

3. Definitions

- 3.1 **Adhesive** refers to materials used to repair or adhere two or more objects together.
- 3.2 **Sealant** refers to the substance used to seal joint between materials (whether they are the same type) together.
- 3.3 **Volatile organic compounds: VOCs** refers to liquid and solid state hydrocarbon or organic compounds which easily evaporate or sublimate into vapor. Its boiling point is less than 250 °C at normal pressure according to the test of ISO 11890-1 or ISO 11891-2 at constant temperature and pressure.
- 3.4 **Letter for declaration of compliance** refers to certified document issued by applicant or producer to clarify that the product is complied with Green Label requirements.
- 3.5 **Certificate** refers to the certified document issued by recognized certification body, which is accredited by national accreditation body under IAF (International Accreditation Forum).
- 3.6 **Authorized Signatory** refers to authorized signatory according to Civil and Commercial code

4. General requirements

4.1 Adhesive and sealant products shall comply with one of the following requirements:

4.1.1 The product shall be certified by Thai Industrial Standard for applying adhesive and sealant products.

Verification Method

The applicant shall submit a copy of license issued by Thai Industrial Standard for applying adhesive and sealant product.

4.1.2 The product shall pass all requirement tests of Thai Industrial Standard for applying adhesive and sealant products.

Verification method

The producer shall submit test results of compliance Thai Industrial Standard for applying adhesive and sealant product.

4.1.3 The product shall pass a test complying with requirements of Thai Industrial Standard for adhesive and sealant products by using equivalent test methods that are accepted international or national standard.

Verification method

The producer shall submit test results complying with requirements of Thai Industrial Standard for adhesive and sealant products by using equivalent test methods that are accepted international or regional standard or national standard.

Table 1 Examples of industrial standard for adhesive and sealant products

TIS no.	Name of industrial standard
181	Polyvinyl acetate emulsion adhesives
360	Synthetic resin adhesives (phenolic and aminoplastic) for wood
521	Rubber-based adhesive

4.2 In case, adhesive and sealant products do not comply with the scope of Thai Industrial Standard, Then the product shall instead comply with the requirements of international standard or regional standard or accepted national standard.

Table 2 Examples of standard for adhesive and sealant product

Standard	Name of standard
ISO 13007-1	Ceramic tiles - Grouts and adhesives - Part 1: Terms, definitions and specifications for adhesives
ISO 11600	Building construction - Jointing products - Classification and requirements for sealants
ISO 17087	Specifications for adhesives used for finger joints in non-structural lumber products
BS EN 12004	Adhesives for tiles. Requirements, evaluation of conformity, classification and designation

Verification method

The applicant shall submit test results comply with the international standard or regional standard or accepted national standard.

- 4.3 The manufacturer shall be accredited by Quality Management System such as ISO 9001³ standard.

Verification method

The applicant shall submit the evidence of certification of quality management system under ISO 9001.

In case, the manufacturer is certified under ISO 14001, applicant shall submit the evidence of certification of quality management system under ISO 14001

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

Verification method

The applicant shall submit documents or evidence ensuring that manufacturing, transportation and post-industrial waste disposal comply with national laws and regulations.

5. Environmental requirements

- 5.1 Volatile organic compounds: VOCs shall not exceed 5% of product's weight.

Verification method

The applicant shall submit test results of VOCs in adhesive and sealant product by using test methods stated in ISO 11890-1 or ISO 11890-2 or by other test methods that are equivalent to international standard or regional standard or accepted national standard.

- 5.2 Free formaldehyde content is not exceed the requirements as follow
- 1) Free formaldehyde content in water soluble structural adhesive shall not exceed 100 mg/kg.
 - 2) Free formaldehyde content in solvent structural adhesive shall not exceed 500 mg/kg.

Verification method

The applicant shall submit test results of free formaldehyde in adhesive and sealant product by using test methods stated in ISO 11402 or by other test methods that are equivalent to international standard or regional standard or accepted national standard.

- 5.3 Heavy metals shall not exceed the requirements in table 3.

Table 3 Heavy metals requirements

Substance	Requirement (mg/kg)	Note
Mercury	0.5	-
Lead	50	
Cadmium	0.5	
Hexavalent Chromium (Cr ⁶⁺)	2.0	If total Chromium is less than 2.0 mg/kg, Hexavalent Chromium (Cr ⁶⁺) should be assumed to be less than 2.0 mg/kg

Verification method

The applicant shall submit test result of heavy metals in adhesive and sealant product by using test methods under these standards.

- 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 (Cr⁶⁺) content by ISO 3856-5

or using other test methods that are equivalent to international standard or regional standard or accepted national standard.

5.4 Do not use following substances and substances that cause these substances in adhesive and sealant products.

5.4.1 alkylphenol ethoxylates

5.4.2 halogenated solvents

5.4.3 phthalates

5.4.4 organotin compounds

1) tributyltin (TBT)

2) triphenyltin (TPT)

Verification method

The applicant shall submit a declaration letter verifying that substances specified in requirement no. 5.4 were not used in adhesive and sealant products production.

5.5 Packaging

5.5.1 Paper packaging shall be certified with Thai Green Label criteria for paper (TGL-8) or passed the test complying with environmental requirements for the type of paper used under TGL-8 (except for packaging requirements).

Verification method

The applicant shall submit Thai Green Label certification for such paper or submit test result complying with environmental requirements of Thai Green Label for such packaging paper.

5.5.2 Plastic packaging must be symbolized according to the types of plastic stated in Thai Industrial Standard: *Symbols for Recycling Plastics* (TIS 1310) or identified the type of plastic used by abbreviated terms under ISO 1043 or ISO 11469.

Verification method

The applicant shall declare the evidence and submit a declaration letter to verify that the plastic packaging is symbolized by type of plastic used according to TIS 1310 for Recycling Plastics or existence of abbreviation by type of plastic used according to ISO 1043 or ISO 11469.

5.5.3 If plastic packaging is made from PVC, then it shall display a logo as “Do not burn”

Verification method

The applicant shall submit the evidence and a declaration letter ensuring the existence of a logo “Do not burn” on PVC plastic packaging.

5.5.4 Due to impurity and traces concern, Ink or pigments used for printing or labels on packaging are permitted to have total concentration of mercury, lead, cadmium and hexavalent chromium (+6) not exceeding 100 mg/kg.

Verification method

The applicant shall submit test reports for mercury, lead, cadmium and hexavalent chromium concentrations using test method as following;

- 1) Mercury concentration, test according to ISO 3856-7 or ASTM D 3624
- 2) Lead concentration, test according to ISO 3856-1 or ASTM D 3335
- 3) Cadmium concentration, test according to ISO 3856-4 or ASTM D 3335
- 4) Hexavalent chromium concentration, test according to ISO 3856-5

or IEC 62321 or international standards or recognized national standards.

5.5.5 Metal packaging are permitted to have total concentration of lead, mercury, cadmium and hexavalent chromium (Cr⁶⁺) not exceeding 100 ppm or 0.01 % by weight.

Verification method

The applicant shall submit report of test result under CEN/CR 13695-1.

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 17025¹ or ISO 17025².

6.1.2 Test results

6.1.2.1 Test results shall comply with testing methods defined in this document.

6.1.2.2 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.

6.1.2.3 Test results shall have been issued no more than 1 year 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 1 year following the application date.

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

¹TIS 17025 General Requirements for the Competence of Testing and Calibration Laboratories.

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