Green Label Product
Surface Cleaners
(TGL–25–R2-15)

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1. Background

In general, surface cleaners can be characterized into many types due to their different substances. Some have strong acid or alkaline properties and some are corrosive and harmful to human health. Ultimately, some are nonbiodegradable and toxic which could contaminate the soil and water sources when leaked into the environment.

Therefore, the Green Label Criteria for Surface Cleaners had been developed aim to minimize environmental impact and ensure users' safety. The criteria focus on promoting products' biodegradability, restricting hazardous substances, and limiting the use heavy metal contents. In addition, the criteria advise the applicants to insert plastic symbol to inform and encourage waste separation and recycling as well as increasing producers and consumers participation and raising awareness.

2. Scope

These criteria cover all surface cleaners intended for application in cleaning of hard surfaces, such as floors, ceilings, walls, sanitary wares and hard surfaces of kitchen equipment.

3. Definitions

3.1 **Surface cleaner** refers to a product used for surface cleaning, which contains one or more of the following substances: surfactants, solvents, alkaline or acidic agents.

3.2 **Volatile organic compounds: VOCs** refers to organic compounds having carbon atoms, with vapor pressure of above 0.01 kPa at 1 atm and 20^{o}C[1]

3.3 **Letter for declaration of compliance** refers to the certified document issued by the applicant or manufacturer to verify the compliance of the product with relevant environmental criteria.

3.4 **Certificate** refers to the certified document issued by recognized certification body which is accredited by Nation Accreditation Council, NAC or national accreditation body under IAF (International Accreditation Forum).

3.5 **Authorized personnel** refer to the person with the authority to sign according to the Civil and Commercial Code.

[1] Good Environmental Choice Australia: Cleaning products.

4. General requirements

4.1 The product shall be certified or passed the product quality requirements in accordance with relevant Thai Industrial Standards for surface cleaning products or equivalent international or national standards.
Note: If hydrochloric acid is not added in the product, prohibited substances or any substance that can dissolve into prohibited substances shall not be used in the manufacturing process. Moreover, the product shall pass the quality requirements in accordance with relevant Thai Industrial Standards as defined in Table 1.

Table 1 Relevant Thai Industrial Standards for surface cleaning products

No.	TIS No.	Description
1	TIS 329	Cleaning product for ceramic tile and sanitary wares, acid type.
2	TIS 578	Methods of analysis and test for laundry detergent powder
3	TIS 605	Washing products
4	TIS 2083	Cleaning product for ceramic tile and sanitary wares, surfactant type
5	TIS 2116	Floor cleaning product
6	TIS 2117	Kitchen appliance and utensil cleaning product
7	TIS 2339	Ceramic tile and sanitary ware cleaning product, hypochlorite type

Verification Method
The applicant shall submit the relevant Thai Industrial Standard certificate or test reports stating the compliance with the product quality requirements according to Thai Industrial Standard or equivalent international or national standards.
Note: If hydrochloric acid is not added in the product, the applicant shall concurrently submit the Safety Data Sheet (SDS) of acid compounds used in the manufacturing process.

4.2 Manufacturing process, transportation and post-industrial waste disposal shall comply with national laws and regulations or shall be certified to ISO 14001[2]

Verification Method
The applicant shall submit one of the following documents:
1. License or evidence to prove that manufacturing process, transportation, and post-industrial waste disposal comply with national laws and regulations.
2. Certificate of ISO14001

5. Environmental requirements

5.1 The product shall be at least 70% readily biodegradable when tested by test methods according to OECD 301 B[3], OECD 301 C[4], OECD 301 D[5] or OECD 301 F[6]. The product with surfactants shall be at least 90% readily biodegradable when tested by test methods according to Thai Industrial Standard for Methods of analysis and test for laundry detergent powder, TIS 578 or equivalent standards.

[2] ISO 14001: Environmental management system.
[3] OECD Guideline for Testing of Chemicals :CO_2 Evolution Test.
[4] OECD Guideline for Testing of Chemicals :Modified Miti Test (I).
[5] OECD Guideline for Testing of Chemicals :Closed Bottle Test.
[6] OECD Guideline for Testing of Chemicals :ManometricRespirometry Test.

Verification Method
The applicant shall submit test reports for product's ready biodegradability by using test methods according to OECD 301 B, OECD 301 C, OECD 301 D or OECD 301 F or Thai Industrial Standard for Methods of analysis and test for laundry detergent powder, TIS 578 or equivalent standards.

5.2 Prohibited substances

5.2.1 Sequestering builders
1) Phosphonates
2) Nitrilotriacetic acid (NTA)

5.2.2 Solvents
1) Cyclohexanone
2) Hexane
3) Methanol
4) *i*-Butanol
5) *n*-Butanol
6) *t*- Butanol
7) Dearomatised white spirit, D 100
8) Dearomatised white spirit, D 70
9) Cyclohexanol
10) Decane
11) Heptane
12) *i*-Paraffins
13) Methyl isobutyl ketone, MIBK
14) Higher aromates such as mesitylene
15) Chlorinated hydrocarbons
16) Toluene
17) Halogenated organic solvents

5.2.3 Emulsifying agents
1) Alkylphenol
2) Dimethylsilicon copolymers
3) Fatty acid salts of di/triethanolamine
4) Branched carboxylic acids and alcohols
5) Quaternary protein hydrolysate
6) PEG esters of branched carboxylic acids

5.2.4 Acidic agents
1) Sulfuric acid
2) Sulphonic acid

5.2.5 Carcinogens listed in Group 1 (Carcinogenic to humans), Group 2A (Probably carcinogenic to humans) and Group 2B (Possibly carcinogenic to humans) of International Agency for Research on Cancer (IARC) and its amendments. Exception is made for Ethanol in alcoholic beverages

5.2.6 Carcinogenic, Mutagenic or Toxic for Reproduction: CMR-substances listed in Annex I of CMR substances from Annex VI of the CLP Regulation registered under REACH and/or notified under CLP of European Chemicals Agency (ECHA)

Verification Method
The applicant shall submit the list of chemical substances used in the product together with a declaration of compliance letter ensuring the absence of prohibited substances in the product according to Environmental criteria 5.2. The declaration letter shall be signed by authorized personnel of the manufacturer and affixed by the company seal.

5.3 Allowed substances

1) Total phosphorus (expressed as P_2O_5) of not exceeding 0.5% by product weight
2) Volatile Organic Compounds; VOCs of not exceeding 10% by product weight
3) Formaldehyde of not exceeding 0.2% by product weight
4) Arsenic of not exceeding 0.5 mg/kg
5) Lead of not exceeding 0.5 mg/kg
6) Cadmium of not exceeding 0.1 mg/kg
7) Chromium of not exceeding 0.5 mg/kg
8) Mercury of not exceeding 0.02 mg/kg
9) Selenium of not exceeding 0.5 mg/kg
10) Nickel of not exceeding 0.5 mg/kg

Verification Method
The applicant shall submit the following evidences:
1. The test report for total phosphorus (expressed as P_2O_5) by using the test methods according to Thai Industrial Standard for Methods of analysis and test for laundry detergent powder, TIS 578 or equivalent standards
2. The test report for volatile organic compounds; VOCs by using the test methods according to ISO 11890-2[7] or equivalent standards
3. The test report for formaldehyde by using the test methods according to ISO 14181-1[8] or equivalent standards or letter for declaration of compliance ensuring formaldehyde content of not exceeding 0.2% by product weight
4. Test reports for heavy metals including arsenic, lead, cadmium, chromium, mercury and nickel by atomic absorption spectroscopy technique or equivalent methods

5.4 Packaging

5.4.1 Paints or pigments used for printing or labeling on the product packaging shall not contain heavy metals. The sum of heavy metals including mercury, lead, cadmium and hexavalent chromium due to impurities or contaminations shall not exceed 0.01 % (≤ 100 mg/kg) by weight.

Verification method
The applicant shall submit one of the following evidences:
1. A declaration of compliance letter issued by the paint suppliers and test reports for mercury, lead, cadmium and hexavalent chromium or
2. Test reports for mercury, lead, cadmium and hexavalent chromium by using test methods as follows:
   2.1 Mercury (Hg) content by ISO 3856-7[9] or ASTM D 3624[10] or IEC 62321[11] or equivalent test methods

[7] ISO 11890-2: Paints and varnishes - Detrmination of volatile organic compound (VOC) content - Part 2: Gas-chromatographic method.
[8] ISO 14181-1: Animal feeding stuffs - Determination of residues of organochlorine pesticides - Gas chromatographic method.
[9] ISO 3856-7: Paints and varnishes - Determination of soluble metal content - Part 7: Determination of mercury content of the pigment portion of the paint and of the liquid portion of water-dilatable paints.
[10] ASTM D 3624: Standard Test Method for Low Concentrations of Mercury in Paint.

2.2 Lead (Pb) content by ISO 3856-1[12] or ISO 6503[13] or ASTM D 3335[14] or IEC 62321 or equivalent test methods
2.3 Cadmium (Cd) content by ISO 3856-4[15] or ASTM D 3335 or IEC 62321 or equivalent test methods
2.4 Hexavalent Chromium (Cr^{6+}) content by ISO 3856-5[16] or IEC 62321 or equivalent test methods

5.4.2 Plastic packaging

Plastic packaging shall be symbolized according to Thai Industrial Standard for recycling plastics, TIS 1310[17] or ISO 1043[18] or ISO 11469[19].

Verification method
The applicant shall submit the declaration of compliance letter to certify that the plastic packaging is symbolized according to TIS 1310 or ISO 1043 or ISO 11469. Packaging Samples and photos are also required for verification. The declaration letter shall be signed by authorized personnel of the packaging manufacturer and affixed by the company seal.

5.4.3 Paper packaging

Paper packaging shall contain recycled pulp of at least 80% by weight.

Verification method
The applicant shall submit the declaration of compliance letter to certify that the paper packaging contains recycled pulp of at least 80% by weight. The declaration letter shall be signed by authorized personnel of the packaging manufacturer and affixed by the company seal.

[11]IEC 62321: Electro technical products – Determination of levels of six regulated substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominateddiphenyl ethers).
[12] ISO 3856-1: Paints and varnishes - Determination of soluble metal content -Part 1: Determination of lead content.
[13]ISO 6503: Paints and varnishes -- Determination of total lead -- Flame atomic absorption spectrometric method.
[14] ASTM D 3335: Standard Test Method for Low Concentrations of Lead, Cadmium, and Cobalt in Paint.
[15] ISO 3856-4: Paints and varnishes - Determination of soluble metal content - Part 4: Determination of cadmium content.
[16] ISO 3856-5: Paints and varnishes - Determination of soluble metal content - Part 5: Determination of chromium hexavalent content of the pigment portion of the liquid paint or the paint in powder.
[17] TIS 1310: Symbols for recycling plastics.
[18] ISO 1043: Plastics - Symbols and abbreviated terms - Part 1: Basic polymers and their special characteristics.
[19] ISO 11469: Plastics - Generic identification and marking of plastics products.

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 amendment) or certified by TIS 17025 or ISO/IEC 17025.

6.1.2 Test reports

6.1.2.1 Test reports shall comply with testing methods defined in the Green Label criteria.

6.1.2.2 If "comparable test methods" are submitted, the following documents shall be submitted together with the test reports:

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

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

6.2 Letter for declaration of compliance to verify compliance with the Green Label criteria

6.2.1 Shall have been issued no more than 1 year following the Green Label application date.

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