



Green Label Product Room Air Conditioner (TGL- 7- R3 - 14)

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Room Air Conditioner TGL-7-R3-14

1. Background

Thailand has a tropical climate with high temperature. Hence, air conditioners are immensely installed inside residential and office buildings for comfort and cooling purpose. Since air conditioners consume large amounts of electricity, importance and popularity usage of air conditioners at present have a tendency to be a major cause of the highest daily electricity consumption. In addition, some types of air conditioner refrigerants have the ability to deplete ozone layer, leading to greenhouse effect and global issue of climate change.

In consequence, the requirements regarding the Green Label for Room Air Conditioner aim to help reduce impacts on environment and climate, as well as safety of consumers.

2. Scope

These criteria shall apply to room air conditioner used with air-cooled condenser or evaporative condenser in order to decrease temperature and humidity only. These exclude air conditioner purposely designed to raise temperature and humidity. Air conditioner has net total cooling capacity not exceeding 12,000 watts operating on either single-phase or three-phase AC circuits of frequency 50 Hz.

3. Definitions¹

- 3.1 **Room Air Conditioner** here refers to an air conditioner as defined in TIS 385 or TIS 1155.
- 3.2 **Net Total Room Cooling Effect of a Unit** refers to performance of an air conditioner to reject both sensible heat and latent heat from air-conditioned area, expressed in quantity per unit time of operation under standard test condition.
- 3.3 **Rated Power Input** refers to electric power consumed by all components of an air conditioner include compressor motor, fan, controller, and other components, simultaneously operated under standard test condition.
- 3.4 **Energy Efficiency Ratio: EER** refers to ratio of net total cooling capacity to electrical power input to air conditioner.
- 3.5 **Ozone Depleting Potential: ODP** refers to potential of a substance to destroy ozone in comparison with the potential of CFC 11.
- 3.6 **Global Warming Potential: GWP** refers to potential of a greenhouse gas to contribute global warming, which depends on infrared radiative forcing and atmospheric lifetime of the gas, in comparison with infrared radiative forcing of carbon dioxide over a 100 year period².

¹ TIS 385: Room air conditioners.

TIS1155: Air-cooled split type room air conditioners.

² US EPA. Ozone Layer Protection Glossary, 2010.

4. General requirements

- 4.1 Product shall be certified to Thai Industrial Standards for Room air conditioners: Energy efficiency, TIS 2134³ and Thai Industrial Standards for Room air conditioners, TIS 385 or Thai Industrial Standards for Air-cooled split type room air conditioners, TIS 1155 or shall pass the Thai Industrial Standard product quality tests as aforementioned standards.

Verification procedure

The applicant shall submit copies of certificates of Thai Industrial Standards for Room air conditioners: Energy efficiency, TIS 2134 and Thai Industrial Standards for Room air conditioners, TIS 385 or Thai Industrial Standards for Air-cooled split type room air conditioners, TIS 1155 or submit test reports of product quality according to aforementioned Thai Industrial Standard.

- 4.2 Product shall be certified to Thai Industrial Standard or pass the product safety tests according to TIS 1529⁴ or IEC 60335-2-40⁵ or equivalent standard.

Verification procedure

The applicant shall submit a certificate or test report stating compliance of product safety with TIS 1529 or IEC 60335-2-40 or equivalent standard.

- 4.3 Production, transportation, and post-industrials waste disposal shall comply with the government laws.

Verification procedure

The applicant shall submit documents or evidence to prove that the process of production, transportation, and post-industrials waste disposal are followed the government laws and regulations.

5. Environmental requirements

- 5.1 Sound pressure level of an air conditioner shall comply with the following requirements⁶;

Type of air conditioner, Cooling Capacity	Sound Pressure Level (dBA)	
	Indoors	Outdoors
Single pack, All capacity	≤ 55	≤ 60
Split, ≤ 8,000 Watts	≤ 50	≤ 57
Split, > 8,000 - 12,000 Watts	≤ 57	≤ 63

Verification procedure

The applicant shall submit a copy of sound pressure level test report using test method according to JIS C 9612⁷ or equivalent standard.

³ TIS 2134: Room Air Conditioners : Energy Efficiency

⁴ TIS 1529: Safety of household and similar electrical appliances Part 2: Particular requirements for electrical heat pumps, A/Cs and dehumidifiers.

⁵ IEC 60335-2-40: Household and similar electrical appliances - Safety - Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers.

⁶ Hong Kong Green Label. Air Conditioners: Hong Kong Green Council. 2010.

⁷ JIS C 9612: Japanese Industrial Standard Room Air Conditioners.

- 5.2 Energy efficiency of product shall comply with EGAT Label No.5. (Updated edition on application date for Green Label certification)⁸

Verification procedure

1. In case of certified product to EGAT Label No.5, the applicant shall submit a copy of test report issued by EGAT or
2. In case of non-certified product to EGAT Label No.5, the applicant shall submit a copy of test report stating that product energy efficiency complies with EGAT Label No.5 on energy efficiency standard: testing agency, requirements and test methods for energy efficiency for high performance air conditioner, 2009.

- 5.3 Ozone depleting potential (ODP) of Refrigerant shall not exceed 0.5 and Global warming potential (GWP_{100a}) shall not exceed 2500.

Note: Ozone depleting potential (ODP) shall be zero effectively starting January 1, 2017.

Verification procedure

The applicant shall submit certified document stating Ozone depleting potential (ODP) of Refrigerant below 0.5 and Global warming potential (GWP_{100a}) below 2500. The document must be signed by authorized personnel of the manufacturer.

- 5.4 Product shall be designed to promote recycling, which by means of supplying recyclable plastic components at least 80% by weight of plastic components in product.⁹

Verification procedure

The applicant shall submit certified document stating plastic components which are capable of being recycled in product together with report of their weight and proportion in product as a percentage. The document must be signed by authorized personnel of the manufacturer.

- 5.5 The following information shall be stated;
- 5.5.1 Name plate marking information in accordance with TIS 2134¹⁰
 - 5.5.2 User manual should be in Thai, containing at least the following information;
 - Instructions on maintenance and appropriate usage procedures of air conditioner in order to prolong product's shelf-life for longer product life and energy saving¹¹:
 - turn off the air conditioner immediately when not in use
 - turn off the ventilation fan when not needed, if applicable
 - Set the air conditioner temperature at no less than 25°C
 - Clean the heat sink in the condensing unit once every three months
 - Clean the air filter for fan coil units at least once a month

Verification procedure

The applicant shall submit name plate/ user manual according to specific criteria No. 5.5.

⁸ EGAT Label No.5. for air conditioner.

⁹ Korea Eco-Label. Air Condition: Korea Environmental Industry & Technology Institute. 2011

¹⁰ TIS 2134: Room Air Conditioners : Energy Efficiency

¹¹ Green Mark: Air condition, Environmental Protection Administration Government of the Republic of China (Taiwan).

- 5.6 Each plastic component of an air conditioner which weighs more than 25g shall contain heavy metals or their compounds and flame retardants as the following requirements;

Substances	Heavy metal contents or heavy metal compounds				Frame retardants	
	Pb	Cd	Hg	Cr ^{6+**}	PBB	PBDE
Content (ppm)	≤1 000	≤100	≤1 000	≤1 000	≤1 000	≤1 000

Note: ** If the total chromium (Cr) is less than or equal to 1,000 ppm, the standard value of chromium hexavalent (Cr⁶⁺) will be used as the base value.

Verification procedure

Applicant shall submit one of the following documents:

1. If the product manufacturer has established the Hazardous Substance Process Management system, the applicant shall submit the following documents:
 - 1.1 Certification from product manufacturer to declare compliance with the requirement including the manual or evidence to confirm the existence of Hazardous Substance Process Management.
 - 1.2 Declaration letter and/or test results from part manufacturer confirming heavy metal and flame retardants in plastic parts are in accordance with IEC 62321¹³ or other equivalent standard.
2. If manufacturer doesn't have the Hazardous Substance Process Management system in place, the applicant shall submit test results for heavy metal and flame retardants in plastic parts weighing more than or equal to 25 g in accordance with IEC 62321 or other equivalent standard.

- 5.7 Each plastic component which weighs more than 25g or has surface area of more than 200 mm², the notification symbol is required. This notification symbol shall notify the type of plastic use according to Thai Industrial Standard: *recycling plastics* (TIS 1310¹²) or ISO 1043¹³ or ISO 11469¹⁴.

Verification procedure

The applicant shall submit a declaration letter for plastic parts weighing more than or equal to 25 g and with a plane surface of at least 200 square millimeters has been labeled properly for plastic identification in accordance with TIS 1310 for recyclable plastic or in accordance with ISO 1043 or ISO 11469. The applicant shall submit sample plastic part or picture of plastic part that shows the existence of plastic identification for inspection.

- 5.8 Paints used in product shall not contain heavy metals or their compounds include mercury (Hg), lead (Pb), cadmium (Cd) and hexavalent chromium (Cr⁶⁺).

Note: The sum of heavy metal concentrations of mercury, lead, cadmium and hexavalent chromium due to impurities and contamination shall not exceed 0.1% (1,000 ppm) by weight.

¹² TIS 1310: Symbols for recycling plastics.

¹³ ISO 1043: Plastics - Symbols and abbreviated terms - Part 1: Basic polymers and their special characteristics.

¹⁴ ISO 11469: Plastics - Generic identification and marking of plastics products.

Verification procedure

The applicant shall submit a test report for mercury, lead, cadmium, and hexavalent chromium according to the following test methods:

- 1) For mercury, test method under ISO 3856-7 or ASTM D 3624 or IEC 62321 or other equivalent standards;
- 2) For lead, test method under ISO 3856-1 or ASTM D 3335 or IEC 62321 or other equivalent standards;
- 3) For cadmium, test method under ISO 3856-4 or ASTM D 3335 or IEC 62321 or other equivalent standards;
- 4) For hexavalent chromium, test method under ISO 3856-5 or IEC 62321 or other equivalent standards.

5.9 Packaging

- 5.9.1 Paper packaging shall be made from 100% recycled pulp in which using corrugating medium paper and shall be made from at least 85% recycled pulp in which using Kraft liner board, reported on a dry weight basis or an 'as received' basis.

Verification procedure

The applicant shall submit certified documents stating content of recycled pulp in packaging, reported on a dry weight basis or an 'as received' basis. The document must be signed by authorized personnel of the paper packaging manufacturer.

- 5.9.2 Plastic packaging shall be symbolized according to Thai Industrial Standard: *recycling plastics*, TIS 1310 or ISO 1043 or ISO 11469.

Verification procedure

The applicant shall submit a declaration letter to certify that the plastic packaging is symbolized by type of plastic used according to TIS 1310 or ISO 1043 or ISO 11469. Samples and photographs of the mentioned packaging are also required for consideration.

- 5.9.3 Plastic packaging shall not contain halogenated hydrocarbon.

Verification procedure

The applicant shall submit certified document stating no presence of halogenated hydrocarbon in plastic packaging. The document shall be signed by managing committee or authorized personnel of the manufacturer or authorized personnel of the applicant and stamped with the company hallmark.

- 5.9.4 Foam materials such as EPS (Expanded polystyrene), EPE (expanded polyethylene) and EPP (expanded polypropylene) shall be zero of Ozone depleting potential (ODP) of blowing agents.¹⁵

Verification procedure

¹⁵ Korea Eco-Label: Air Condition: Korea Environmental Industry & Technology Institute, 2011.

The applicant shall submit certified document stating types of foam materials and blowing agents used in packaging. The document shall be signed by managing committee or authorized personnel of the foam material manufacturer or authorized personnel of the applicant and stamped with the company hallmark.

- 5.9.5 Paints or pigments used for printing on packaging or for labeling on packaging are permitted to have the sum of concentrations of mercury, lead, cadmium and hexavalent chromium due to impurities and contamination not exceeding 0.01% (100 ppm) by weight.

Verification procedure

The applicant shall submit a test report for mercury, lead, cadmium, and hexavalent chromium according to the following test methods:

- 1) For mercury, test method under ISO 3856-7 or ASTM D 3624 or IEC 62321 or other equivalent standards;
- 2) For lead, test method under ISO 3856-1 or ASTM D 3335 or IEC 62321 or other equivalent standards;
- 3) For cadmium, test method under ISO 3856-4 or ASTM D 3335 or IEC 62321 or other equivalent standards;
- 4) For hexavalent chromium, test method under ISO 3856-5 or IEC 62321 or other equivalent standards.

6. Testing and certification

6.1 Testing

6.1.1 Laboratories shall be as follows:

- 1) Laboratories operated by the government
- 2) Laboratories under governmental control as defined by clause 5 of the Industrial Standard Act B.E. 2511 (and its addenda)
- 3) Certified laboratories under TIS 17025 or ISO/IEC 17025 (for applicable scope)

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 starting from the issuing date to 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).