

# TGL-13-R1-07

## Washing Machines

---

### 1. Rationale

The environmental impacts of washing machines while in use are water and electricity consumption. In Thailand, electricity consumption per washing machine is approximately 50-80 kWh per year, while water usage is approximately 130-160 liters per wash. If approximately 300 washes occur in one year for a machine with an average lifespan of 10 years, the calculated amount of water consumed is 390,000 – 480,000 liters per machine.

Green label requirements regarding the amount of water and electricity consumed will help save natural resources and reduce air and water pollution. Furthermore, the required placing of symbols indicating plastic type will help to promote the recycling of plastics.

### 2. Category Definitions

2.1 The term ‘washing machine’ here refers to washing machines for household use and similar functions, used with alternate currents of not more than 250 volts for single phase, and not more than 480 volts for 3 phase, either with or without heating equipment, providing hot or cold washes. This includes machines that can wash, spin, and dry in one machine called washing-drying machines. Washing machines not intended for household use such as machines intended for use in laundromats, dry-cleaning services, and public machines in apartment complexes are also included in this category. All machines mentioned will be included in the term ‘washing machine,’ which will be used from here on.

2.2 The term ‘washing machine’ here does not include

2.2.1 Washing machines designed especially for industrial use.

2.2.2 Washing machines used under special or abnormal circumstances such as in environments that are corrosive or explosive (due to gas, fumes, or dust).

### 3. Definitions

The term ‘*clothes washing machine*’ here refers to machines used for cleaning and washing clothes with water that may separate excess water from the clothes being washed.

The term ‘*impeller-type washing machine*’ here refers to washing machines which, within the drum, water level covers the clothes, and mechanic forces are applied via impellers that continually spin around a core or reverse spin after several spins. The highest point of the impeller lies below the lowest water level.

The term ‘*agitator-type washing machine*’ here refers to washing machines which, within the drum, water level covers the clothes, and mechanic forces are

applied via propellers that swing back and forth around a vertical core. Typically, parts of the propellers lie above the highest water level.

The term '*horizontal drum type washing machine*' here refers to washing machines with horizontal drums which, within the drum, water covers some parts of the clothes, and mechanic forces are applied through the continuous rotation of the drum, or the back-and-forth motion of the drum.

The term '*nutator washing machine*' here refers to washing machines which requires clothes to be filled into the washing tub from the top, and, when filled, water covers some parts of the clothes. Mechanic forces are applied to the washing tub via nutation plates at the bottom of the tub. Rotation is either continuous or punctuated in one direction, or in back-and-forth motion.

The term '*washer-dryer*' here refers to washing machines that dry clothes by both spinning and heating (normally, clothes are dried using heating and turning of clothes).

The term '*manual electric washing machine*' here refers to washing machines which require manual switching between cleaning, washing, and spin drying.

The term '*automatic electric washing machine*' here refers to washing machines that automatically proceed from cleaning to washing, or from washing to spin drying.

The term '*full automatic electric washing machine*' here refers to washing machines which automatically proceed from cleaning to washing to spin-drying with no need to manually switch between each process.

The term '*spin extractor*' here refers to spinning drums used to extract water from the clothes by spinning motion.

The term '*single tub washing machine*' here refers to washing machines with one washing tub that both washes and spins dry via spinning motion after the wash, or machines that only washes. The machine may or may not have built-in heating mechanisms.

The term '*two tub washing machine*' here refers to washing machines with separate tubs for washing and spin drying. The machine may or may not have built-in heating mechanisms.

The term '*rated capacity*' here refers to the highest mass (in kilograms) for dry clothes that can be washed at one time specified by the manufacturer. If the manufacturer specifies a range, such as 4.5 kgs. to 5 kgs., the highest number should be used.

The term '*washing capacity*' here refers to the mass of test clothes (according to Appendix A, TIS 1462) in dry condition that can be washed at one time at different water levels.

The term ‘*standard washing capacity*’ here refers to the highest washing capacity in kilograms.

The term ‘*standard water-extracting capacity*’ here refers to the highest mass (in kilograms) of test clothes (according to Appendix A, TIS 1462) in dry condition that can be spin-dry at one time.

The term ‘*standard water-extracting and rinsing capacity*’ here refers to highest mass (in kilograms) of test clothes (according to Appendix A, TIS 1462) in dry condition that can be spin-dried and washed at one time.

The term ‘*quantity of water*’ here refers to the approximate amount of water in the washing drum (in liters) that is most suitable for washing clothes with a mass equal to the washing capacity.

The term ‘*standard quantity of water*’ here refers to the amount of water in the washing drum (in liters) that is most suitable for washing clothes with a mass equal to the washing capacity.

The term ‘*water level and water level line*’ here refers to the water level and water level line in the washing drum after loading dry clothes at washing capacity and filling the washing drum with the appropriate amount of water.

The term ‘*standard quantity of used water*’ here refers to the amount of water (in liters) that semi-automatic and automatic washing machines use per wash.

The term ‘*normal cycle*’ here refers to the process which begins with the loading of clothes into the washing machines, cleaning with detergent, washing with clean water, and spin-drying. If the washing machine does not have a spin-dry function, the process ends when clothes are washed with clean water.

#### **4. General Requirements**

4.1 The product must be certified to the Thai Industrial Standard for Clothes Washing Machines for Household Use, TIS 1462.

4.2 Production, transportation, and waste disposal must be in accordance with all applicable government acts and regulations.

#### **5. Product Specific Requirements**

5.1 The machine must have good washing performance, i.e., it must have a washability ratio of no less than 0.8 or 80 percent of the reference washing machine.

5.2 The amount of electricity consumed per wash must be no more than the stated criteria, according to the following table:

Standard Washing Capacity	6 kg	7-8 kgs	9-10 kgs	11-12 kgs
Amount of electricity consumed in washing with cold water (Watt-hour/kilogram standard washing capacity)	≤ 25	≤ 20	≤ 16	≤ 13
Amount of electricity consumed in washing with warm water* (Watt-hour/kilogram standard washing capacity)	≤ 170			

Note: \* 1. In the event that the machine is able to wash with both cold and warm water, testing for electricity consumption in washing with warm water must be made.

\* 2. Testing for electricity consumption in warm water wash must be in accordance to the standard EN 60456:1999. Three tests must be run under the same testing conditions, i.e., cotton clothes must be washed at 60 °C according to the wash program specified in Directive 95/12/EC(1). The average value obtained must be less than or equal to the specified criteria.

5.3 The amount of water consumed by the washing machine per wash must be no more than the specified criteria, according to the following table:

Standard Washing Capacity	6 kgs	7-8 kgs	9-10 kgs	11-12 kgs
Amount of water consumed (Litres per kilogram washing capacity)	≤ 28	≤ 26	≤ 24	≤ 22

5.4 While in use, the washing machine must not generate more noise than the levels stated in the following table:

	While washing	While drying
Sound pressure level LW <sub>Ad</sub> [dB (A)]	≤ 50	≤ 55

5.5 The use of hazardous materials in the production process:

5.5.1 No Halogens must be used in synthetic resins such as PVC in components weighing more than 25 grams, except electrical cords and electronic parts.

5.5.2 If fire retardants are used in synthetic resins weighing more than 25 grams which is a component for the drum, the product must be made from materials which does not have additives such as Polybrominated biphenyls (PBBs), Polybromodiphenyl Ethers (PBDEs), and short-chain Chlorinated Paraffins (C=10~13) which consist of more than 50 percent of fire-retardant Chlorine.

5.6 Recyclability of product

5.6.1 For easy separation and disposal, symbols must be displayed on synthetic resins used as components in the product (for resins with a mass of more than 25 grams and a surface area of more than 200 square millimeters).

5.6.2 Packages and packaging materials must be made from recycled materials such as recycled pulp and foam, which must have ODP values of zero.

5.6.3 The product must come with measures regarding the collection and recyclability of the product that will be disposed of.

5.7 The product must be designed to reduce natural resources and energy use, reduce pollution emissions, and reduce hazardous substances used. The product must also use recycled materials, comprise of parts with improved recyclability, and be durable so as to reduce the environmental impact from the production process.

5.8 The following information shall be included for consumers:

5.8.1 Working process of the washing machine, divided by cloth type and washing method.

5.8.2 Instructions for selecting energy- and water-saving modes of wash.

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

5.8.3 Appropriate amounts of washing detergent for different quantity of clothes, water levels, or dirtiness of clothes.

5.8.4 Information on advanced washing.

5.8.5 Electricity consumption and water use per wash.

## **6. Testing Methods**

6.1 Testing for characteristics, safety, and competency of the washing machine, as well as testing for electricity and water consumption shall be in accordance with the Thai Industrial Standard for Clothes Washing Machines for Household Use, TIS 1462. Measurements of electricity and water consumption shall be done under the same testing conditions as the test for competency of cleaning, washing, and spin-drying (if available) of the washing machines.

6.2 Testing for noise shall be in accordance with JIS C 9606 no. 8.7 or EN 60704-2-4, or other acceptable national standards.

6.3 The manufacturer shall submit documents regarding the use of hazardous materials in the production process, according to requirement no.5.5, signed by the company's Managing Director, or other suitable authorities.

6.4 The manufacturer shall submit to Green Label officers, plastic parts of the washing machines which weigh at least 25 grams and with a surface area of 200 square centimeters or more, complete with documents certifying the use of symbols indicating different plastic types issued by the company's Managing Director, or other suitable authorities.

6.5 The manufacturer shall submit documents certifying the recyclability and use of materials with an ODP value of zero in the package and packaging materials, signed by the Managing Director or other authorities of the company that manufactured the package or packaging materials.

6.6 An instruction booklet indicating information that will be useful for consumers detailed in Product Specific Requirements no. 5.8 shall be submitted.

Note: All tests must be conducted in government laboratories or independent labs that have been certified to be in compliance with the general requirements for the competence of testing and calibration laboratories, TIS 17025 (ISO/IEC 17025) only.

All test results and certificates submitted as part of the application for Green Label shall be no more than 1 year old on the date of application submission.