



Eco Mark Product Category No.118
“Plastic Products Version 2.3”

Japan Environment Association
Eco Mark Office

1. Environmental Background

Plastic is the essential material widely used in today’s society. However, from the view of waste, used plastic products have accounted for large proportion of the waste. Total amount of general waste in recent Japan is 51-52 million tons per a year ¹⁾ and approximately 5 million tons of plastics are disposed in a year ²⁾, which account for approximately 10% of total waste. Plastic disposal has effect to the consumption of natural resources, emission of materials which cause global warming effect, contraction of landfill disposal sites, since the main raw material of plastic is petroleum, one of the fossil resources. In the statistics of 2003, the total amount of emission is about 10,010 thousand tons, which includes used plastic products produced in Japan and manufacturing loss during the production process. Approximately 15% of them is recycled as materials, and about 58% of waste plastic is recycled in some ways such as chemical recycling and energy recovery. The other 42% is treated by simple incineration or landfill, not made effective utilization ²⁾.

In the manufacturing process of plastic products, many kinds of raw materials, stabilizer, coloring agent, etc are used, and some of them may contain harmful chemical substances for human health. In addition, the harmful effect for wild organisms caused by the chemical substances solved out from plastic products has become the important issue.

Based on the above understanding, for the investigation of this Product Category No.118 “Plastic Products Using Recycled Materials Version 2.0”, we consider that material recycling of used plastic products to reduce the volume of waste is the most effective way to reduce environmental burden, and waste plastic which is difficult to conduct material recycling should be reused by chemical recycling or energy recovery, not landfill. Therefore, the promotion of material recycling of used plastic products has been set as the main aim, and the recycling ability of used plastic products has been the objective of valuation. Consequently, almost all of the criteria items on this Product Category refer to the lifecycle of the recycled materials, including criteria item for use of chemical substances.

Regarding to the use of chemical substances which are recognized to have strong harmful effect, we also consider the prevention of intentional addition to the products, commingling of chemical substances with recycled materials, evolution and elution in the process of disposal for the used products. Especially, for eco toxicity caused by chemical substances, we ask to the manufacturer and related industries to work for reducing harmful risk, including utilization of Pollutant Release and Transfer Register (PRTR) Law

(Law Concerning Reporting, etc. of Release to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management, July 13, 1999, Law No. 86).

- 1) "Report of research commission for waste condition including emission source (FY 1999)", issued by Tokyo Metropolitan Government Bureau of Cleansing (2000)
- 2) "Status of production, waste, recycling, and disposal of plastic products (2003 version)", issued by Plastic Waste Management Institute

2. Applicable Products

The percentage of plastic that is used for manufacturing products (as % by mass) is 50% or more.

The following individual products are not applicable:

- 1) Food containers which are not permitted for use by the Ministry of Health and Welfare or by local governments
- 2) Packaging materials which are generally considered as excessive
- 3) Products which are easy to scatter in the nature

NOTE: The following products for which the Eco Mark Product Categories have been set by their functional or material capability and also been in the "Applicable Products" shall be applied for the each Product Categories; Eco Mark Product Category No.103 "Clothes Version 2.0", No.104 "Household Textile Products Version 2.0", No.105 "Textile Products for Industrial Use Version 2.0", No.112 "Paper Stationery Version 1.0", No.123 "Building Products Using Recycled Material", No.128 "Commodity Version 1.0", and No.131 "Civil Engineering Products Version 1.0".

3. Terminology

- Plastics: material composed of single or plural polymers, plus additives, fillers, etc. which are added to the polymer(s) to give specific characteristics
- Polymer: high molecular material which is main constituent of plastic
- Recycled materials: post-consumer materials or pre-consumer materials, which are reused as raw materials not to be treated or disposed as waste; these went through the recovery process such as collection and segregation to be raw materials as an alternative for new materials in the recycling or production process.
- Recycled plastic materials: recycled materials mainly composed of polymer materials; recycled materials which contain additives not to be separated from polymers during the process of material recycling, such as plasticizer, etc. shall be regarded as recycled plastic materials
- Pre-consumer material: material or rejected product generated from a disposal route in a product manufacturing process, and went through the recovery process such as collection and segregation, excluding those

- which are recycled within the same process (plant)
- Post-consumer material: material or product which was disposed of after being used as a product
 - Recycle: material recycling only; energy recovery, gasification and use as reducing agent for blast furnace & raw material for coke oven are not included.
 - Prescription constituents: material components added for intended purpose to give any characteristics to the products. Impurities that are technically unavoidable in the manufacturing process are not included.
 - Throwaway product and one-time use product: product which is not designed to be used repeatedly in a particular field, whereas its original product is durable and used repeatedly is called “throwaway product”. On the other hand, “one-time use product” refers to the product which is impossible to be used repeatedly due to the reasons such as purpose of use, its functions, consideration for hygiene standpoint, regulations, etc.
 - Collection rate: value to show the proportion of collection (as % by mass) to the shipments of certified products during one year; the amount of collection includes the materials to be placed back from distribution channel.
 - Auto recycling products: products for which the collection route of used products has been established, and which are newly produced from the recycled plastic materials (made by material recycling of the collected products)
 - Reused part: Part to be reused, retrieved from used products without processing and appropriately treated such as cleansing/grinding, etc.

4. Certification Criteria

4-1. Environmental criteria

4-1-1. Material criteria

- (1) The weight percentage of recycled plastic materials in the total weight of the product shall satisfy the standard value specified for each product group in accordance with the Attachment 1. In case of using pre-consumer material and post-consumer material to blend each other, the value to be calculated according to the method in Attachment 2 shall meet the standard ratio of pre-consumer material.
- (2) For auto recycling products, 90% and more plastic part of used products to be collected should be recycled as material (including reused part). Regarding to the standard ratio of recycled plastic materials in the auto recycling products, the recycled plastic materials obtained from the auto recycling products shall be used 20% and more (see Attachment 1). (For recycled plastic materials which are not produced from the auto recycling products, there is no limitation for use, but it is not permitted to add the weight percentage of recycled materials.)

- (3) For the products to use halogenated compounds as prescription constituents of polymers or additives, 70% or more of the plastic part of the used products shall be collected. Moreover, 70% or more collected plastic part shall be recycled as materials.

However, even if the product uses halogenated compounds, this article is not applied to the product to be used continuously for 20 years or more, industrial waste under special management specified by the “Waste Disposal and Public Cleansing Law”, and radioactive waste provided by the “Law for Control of Nuclear Materials”, “Nuclear Fuel Materials and Atomic Reactors” or the “Law for Prevention of Damage from Radioactive Isotopes”.

4-1-2. Recycling criteria

- (4) The product shall be marked to facilitate recycling. To indicate a type of polymers, a symbol of JIS K 6899-1 or ISO 1043-1 is used, and regarding to the indicating method, it shall follow the JIS K 6999. Though the above-mentioned display method is basically followed, it is possible to substitute it by the display that is obligated by other laws, etc. In addition, for the product to use multiple types of polymers, the indication such as “R-PE, PP, PS” can be used. In case to use three or more types of polymers, indicate the top two polymers and the rest can be omitted. (example: “R-PE, PP, and the others”)

- (5) Concerning a product combined with multiple materials (glass, wooden part, metals, etc.) and plastic, separation and segregation of parts by the type of materials (paper, wood, plastic, metals, glass, etc.) shall be well considered to facilitate its recycling. (For the product composed of single material, this item is not applicable.)

4-1-3. Harmful substances criteria

- (6) For products and packaging materials, ozone-destroying substances such as CFSs substitutes (HCFSs) shall not be used.

- (7) Plastic additives to be used for products including plasticizer, coloring agent, stabilizer, slip additive, etc. shall follow the positive lists specified by industry’s own standard. In case there is no standard for the relevant industry, you shall follow the similar industry’s own standard.

In case of using the plastic additives which are not listed in the positive lists for the products among the grouping of 2-10 in Attachment 1, the plastic additives can meet the requirements of harmful substances described in ISO 8124-3 (Corresponding standard: 88/378/EEC EN-71 Part 3).

- (8) The product shall not contain Cd, Pb, Cr, Hg and their compounds as prescription constituents.
- (9) The products relevant to “1. Food/cosmetic containers, medical related products”, “2. Accessories/personal adornments”, and “3. Toys/play

set/sporting goods” shown in Attachment 1 shall not be added the substances classified as Groups 1, 2A and 2B by IARC (International Agency for Research on Cancer) as prescription constituents. However, it excludes the chemical substances to use for the purpose of making polymers by polymerization reaction (ex; polyvinyl monomer, styrene).

- (10) The products relevant to “1. Food/cosmetic containers, medical related products” shown in Attachment 1 shall meet the requirement of harmful substances in the Food Sanitation Law (December 24, 1947, Law No. 233). The products relevant to “2. Accessories/personal adornments” and “3. Toys/play set/sporting goods” shall meet the requirements of harmful substances described in ISO 8124-3 (Corresponding standard: 88/378/EEC EN-71 Part 3).
- (11) Elusion of chemical substances from products shall meet the requirements of the following eight items (cadmium, lead, hexavalent chromium, arsenic, total mercury, PCB, benzene and selenium) shown in Attachment 2 (December 26, 2002, Environment Ministerial Ordinance No.29) of the enforcement regulations of the environmental standard concerning soil contamination. However, in that an elusion test of the ISO 8124-3 (Corresponding standard: 88/378/EEC EN-71 Part 3) is conducted, and the result is reported, it is not necessary to conduct additional tests for cadmium, lead, hexavalent chromium, arsenic, total mercury and selenium.
- (12) In manufacturing, the use of chemical substances must be managed appropriately. Specifically, it shall satisfy the requirement of the following a and b.
 - a. It shall submit MSDSs (Material Safety Data Sheets) of the product which conform to the contents, items and order in accordance with JIS Z 7250.
 - b. For the Class 1 specified chemical substances in Pollutant Release and Transfer Register (PRTR) Law (Law Concerning Reporting, etc. of Release to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management, July 13, 1999, Law No. 86), the site and amount of their emission and transfer shall be reported.

(Note) Certification criteria of harmful substances for each product categories are shown in Attachment 1.

4-1-4. Other criteria

- (13) The product shall be durable and shall not be “throwaway type” in principle. However, this article may not apply to “throwaway product” as defined, provided that a system of recycling after use has been established and this system is actually working. While, “one-time use product” in “3. Terminology” is applicable to this Product Category.
- (14) The product packaging shall be designed to facilitate reducing and

recycling. The packaging materials to use halogenated compounds shall satisfy the collection rate and material recycling rate in “4-1-1. Material criteria (3)”.

- (15) Applied product shall be considered to reduce in size and weight, for saving materials to use within the range not to detract the functions and strength of the product compared with the traditional product.
- (16) Laws and regulations related to discharge of air and water pollutants, noise, odor, waste treatment, emission of harmful substances, labor safety and sanitation as well as agreements on pollution prevention shall be followed during manufacturing.
- (17) Manufacturing plant shall consider reducing energy consumption, gas emission effecting global warming, and wastes. In addition, the applicant shall work on voluntary environmental conservation activities such as energy saving.
- (18) Indication to promote the appropriate treatment for users, including methods of separation and segregation by each different material-part of the used product shall be put on the product, manuals, labeling or catalogue. (For the product composed of single material, this item is not applicable.) For the products relevant to the certification criteria 4-1-1.(2) and (3), collection method (address, phone number, etc.) shall be indicated on the product or catalogue to inform to users.

4-2. Quality criteria

- (19) The product shall meet the following requirements of 1) to 3) for its quality.
 - 1) The quality of the product shall meet laws and regulations such as JIS.
 - 2) The product which is not relevant to 1) on the above, its quality shall meet industry's own standard.
 - 3) The product which is not relevant to 1) or 2) on the above, there shall be the own quality standard and sufficient quality management shall be conducted.

5. Certification Procedure

Submit attached certificates to prove conformity to each criterion.

When certified products under Product Category No. 118 “Plastic Products Using Recycled Materials” are reexamined under this product category, certification procedure in 4-2(19) can be replaced by declaration of no change from those certificates of current certified products with submission of attached certificate filled with necessary information.

(* [] referred to “Issued by”)

- (1) Certification procedure for 4-1-1.(1) [Applicant]

Applicant shall indicate total weight of product, weight of plastic materials, weight of materials other than plastic, and weight percentage of recycled

plastic materials on the attached certificates, to prove that 50% and more plastic materials are used in the product (weight percentage), and the value (%) of recycled materials in plastic materials meets the requirement in Attachment 1. In addition, for recycled materials, raw material certificate issued by recycled material collector shall be submitted.

(2) Certification procedure for 4-1-1.(2) [Applicant]

For auto recycling products, the document to indicate the collection rate, outline of the manufacturing process to produce the same quality product by using recycled plastic materials, and the actual performance of 90% or more material recycling of used products to be collected shall be submitted. The standard of compounding ratio shall be proved by the “5. Certification Procedure (1)”.

(3) Certification procedure for 4-1-1.(3) [Applicant]

Fill in the attached certificate that if the applied product falls under this criteria item or not. In case that the product falls under this criteria item, document certifying that collection and recycling of the product is ensured at disposal or the product is to be used continuously for 20 years or more shall be submitted. Eco Mark Office may ask the applicant to report the collection rate after approving to use Eco Mark (or Eco Mark Office may supervise), and the applicant shall cooperate with the act.

(4) Certification procedure for 4-1-2.(4) [Applicant]

Photographs and/ or design drawings to show the contents and the labeled portion of indication shall be submitted.

(5) Certification procedure for 4-1-2.(5) [Applicant]

Documents to explain the method to separate plastic from other materials shall be submitted. For the product mixed with plastic and other materials, explanation certifying that recycling, collection and treatment are not difficult (“difficult” means, for example, that recycling is not actually done or pulverization requires large energy) shall be also submitted.

(6) Certification procedure for 4-1-3.(6) [Applicant]

Certification to indicate no use of ozone-destroying substances such as CFSs substitutes (HCFSs) shall be submitted.

(7) Certification procedure for 4-1-3.(7) [Manufacturer of each process]

Certification to indicate that plastic additives to be used for products including plasticizer, color material, stabilizer, slip additives, etc. follow the positive lists specified by industry’s own standard shall be submitted.

In case of using the plastic additives which are not listed in the positive lists, the test results to show the plastic additives meet the requirements of harmful substances described in ISO 8124-3 (Corresponding standard: 88/378/EEC EN-71 Part 3) shall be submitted.

(8) Certification procedure for 4-1-3.(8) [Applicant]

Certification to indicate not to add chemical substances as prescribed constituents during manufacturing process shall be submitted.

(9) Certification procedure for 4-1-3.(9) [Applicant]

Fill in the attached certificate that if the applied product falls under this

criteria item or not. In case that the product falls under this criteria item, document certifying that the products do not contain chemical substances described in each criteria item as prescribed constituents shall be submitted.

- (10) Certification procedure for 4-1-3.(10) and (11) [Third party testing body, applicant or manufacturer]
Test results to certifying that the products do not contain the corresponding harmful substances shall be submitted.
- (11) Certification procedure for 4-1-3.(12) [a. Applicant, b. Finished product manufacturing/assembly plant]
For a., MSDSs of the product shall be submitted.
For b., certificate indicating the used amount, site of emission and transportation, amount of emission and transportation of the Class 1 chemical substances in the previous fiscal year in accordance with the PRTR law shall be submitted.
- (12) Certification procedure for 4-1-4.(13) [Applicant]
Fill in the attached certificate that the product is not “throwaway product”. However, in case that a system of collection and recycling after use has been established, the document to indicate the practical methods of collection and recycling shall be submitted.
- (13) Certification procedure for 4-1-4.(14) [Applicant]
Fill in the packaging condition, packaging materials and their raw materials on the attached certificate. Photographs and drawings can be attached.
- (14) Certification procedure for 4-1-4.(15) [Finished product manufacturing/assembly plant]
Document to explain the consideration and ingenuity to reduce used amount of plastic during manufacturing shall be submitted. In case no comparative products exist, the policy as environmental-friendly products shall be explained.
- (15) Certification procedure for 4-1-4.(16) [Finished product manufacturing/assembly plant]
Certificate shall be submitted to certify that the relevant local environmental laws, regulations, etc. have been observed with no violation by the plant for the five years before the filing of the application.
- (16) Certification procedure for 4-1-4.(17) [Finished product manufacturing/assembly plant and applicant]
Document to explain the outline of manufacturing process and practical efforts of manufacturing plant to reduce energy consumption, gas emission effecting global warming and wastes shall be submitted. In addition, document to explain the voluntary environmental conservation activities conducted by applicant shall be submitted.
- (17) Certification procedure for 4-1-4.(18) [Applicant]
Photographs or design drawings showing the labeled contents and portion of the product shall be submitted.

- (18) Certification procedure for 4-2.(19) [Third party testing body or applicant]
Test results based on quality criteria such as corresponding laws, JIS standard and own quality standard, or a copy of the document certifying that the plant is JIS-certified shall be submitted.

6. Other Requirements

- (1) A product certification group shall correspond to a product function group (6 or 7 digits in principle) based on Classification of Standard Goods in Japan and shall represent a brand. Further division by color or size shall not be done. Two products of different materials are separated, without depending on material composition ratio.
- (2) To label the Eco Mark on Eco Mark certified containers or packaging materials one by one, “Eco Mark certified as a container or packaging material using recycled plastic” or similar remarks shall be indicated to clarify that the Eco Mark is not related to the contents of the container or packaging.
- (3) The lower line in the mark shall be the environmental information which consists of two lines aligned to the left and enclosed in a rectangular box. The 1st line shall be “in plastic” and the 2nd line shall be “recycled materials XX%”. “XX%” indicates the weight percentage of recycled plastics in the whole product. (Round down to whole numbers. If the values of weight percentage of recycled materials in the same product category are different, the minimum value in the same product category or “XX% or more (XX is the minimum value)” shall be indicated. If pre-consumer materials and post-consumer materials are used together, total value of weight percentage of each material shall be indicated.) For the lower line in the mark of auto recycling products, the 1st line shall be “auto recycling product” and the 2nd line shall be “recycled materials XX%”. The followings show examples.




XXX Ltd.
(Authorized Eco-Mark user name)

プラスチック中に
再生材料 〇〇%使用

Recycled materials XX%
in plastic

Eco Mark Certification Number
No. XXXX

(Indication of numbers only is allowed)



XXX Ltd.
(Authorized Eco-Mark user name)

プラスチック中に
再生材料 〇〇%以上使用

Recycled materials XX%
in plastic

Eco Mark Certification Number
No. XXXX

(Indication of numbers only is allowed)



XXX Ltd.
(Authorized Eco-Mark user name)

自己資源化製品
再生材料 〇〇%使用

Auto recycling product
Recycled materials XX%

Eco Mark Certification Number
No. XXXX

(Indication of numbers only is allowed)



XXX Ltd.
(Authorized Eco-Mark user name)

自己資源化製品
再生材料 〇〇%以上使用

Auto recycling product
Recycled materials XX%

Eco Mark Certification Number
No. XXXX

(Indication of numbers only is allowed)

(4) In order to make the information in the lower line of the mark stated in (3) on the above, you can use “(XX, YY)” which shows the recycled plastic materials to be used on the 3rd line. In case that the recycled plastic materials are three kinds or more, you can omit from the 3rd material and down, such as “(XX,YY, and the others)”. The followings show examples.



XXX Ltd.
(Authorized Eco-Mark user name)

プラスチック中に
再生材料 〇〇%使用
(XX, YY, 他)

Recycled materials XX% in
plastic (XX, YY, and the others)

Eco Mark Certification Number
No. XXXX

(Indication of numbers only is allowed)



XXX Ltd.
(Authorized Eco-Mark user name)

プラスチック中に
再生材料 〇〇%以上使用
(XX, YY, 他)

Recycled materials XX% in
plastic (XX, YY, and the others)

Eco Mark Certification Number
No. XXXX

(Indication of numbers only is allowed)

- (5) Regarding to the certified products of the Product Category No. 118 “Plastic Products Using Recycled Materials” (Established: May 10, 2000), you can use the former statement below the mark such as “Use of recycled plastic XX%” and “Recycling of plastic R-XX%”. The certified products to be concluded its license contract after 1 April, 2005 are exceptional and allowed to use their former certification numbers as a basic rule .
- (6) The Eco Mark labeling method shall be used in accordance with Eco Mark Use Regulations Article 7 separately prescribed based on the “Guidelines for Eco Mark Program Implementation”.
- (7) In principle, the products to be applied shall be free of “flame retardant”, “antibacterial agent” materials and “biodegradable plastic” indication. When using these materials reasoning special circumstances, however, the products shall satisfy the provisions contained in the “Guidelines for Eco Mark Program Implementation”, concerning “flame retardant”, “antibacterial agent” and “indication of biodegradable plastic”. Specifically, the use of these materials shall be described in the form “Application for Eco Mark Product Certification/Use” with documents stipulated in the form to be attached.

Established: September 1, 2005 (Version 2.0)

Revised: Nov. 20, 2005 (addition to “Terminology”, etc) (Version2.1)

Minor revision: June 27, 2006 (Version2.2)

Minor revision: October 19, 2006 (Version2.3)

Term of validity: August 31, 2010

The certification criteria for this Product Category may be revised or discontinued as required.

Attachment 1 Classification of Products (Purpose of use, Characteristics), Standard Ratio for Recycled Materials, and Number of Criteria Items to be Applied

Category			Standard ratio for recycled materials (%)		Number of criteria items to be applied (○: Applied item)										
Grouping	Basis of grouping	Examples	Pre-consumer materials	Post-consumer materials	4-1-1			4-1-2		4-1-3			4-1-4	4-2	
					(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	Food/cosmetic containers, medical related products	Products containing liquid with which living body comes in contact (ex: food and cosmetics)	Food/cosmetic containers, etc.	50	25	○		○*1	○	○	○	○	○	○	○
2	Accessories/personal adornments	Products to contact with human body (skin, etc.) for relatively long time such as accessories	Accessories other than clothes and fiber (bracelet, jewel, etc.), cigar lighter, etc.	50	25	○		○*1	○	○	○	○	○	○	○
3	Toys/play set/sporting goods	Products to contact with human body (skin, etc.) for relatively short time as tools	Toys, sporting goods, industrial tools, play equipment (fishing gear, etc.), musical instruments, entertainment equipment, etc.	50	25	○		○*1	○	○	○	○	○	○	○
4	Recording media, etc.	Products to temporarily contact with human body (skin, etc.), and for the purpose of long-term use to save data, etc.	Film, CD-ROM, MD cassettes, etc.	50	25	○		○*1	○	○			○	○	○
5	Packaging, etc.	Products to temporarily contact with human body (skin, etc.), and to be disposed after use for packaging	Packaging paper, sheet, etc.	50	25	○		○*1	○	○			○	○	○
6	Indoor facilities/equipment	Products with little opportunity to contact with human body, and to be installed for relatively long time in doors	Indoor facilities, bulletin board, notice plate, figurine, mat, tile-carpet, etc.	50	25	○		○*1	○	○			○	○	○
7	Products for agriculture, fisheries and forestry	Products with a little opportunity to contact with human body, but relate to ecological system such as food resources for long time	Fishing equipment for aqua-farming, sheets for agriculture and forestry, etc.	50	25	○		○*1	○	○			○	○	○
8	Outdoor facilities/equipment	Products with little opportunity to contact with human body, and to be installed for relatively long time in outdoor location (contact with rain and wind, soil, and water region)	Outdoor facilities, bulletin board, notice plate, figurine, etc.	50	25	○		○*1	○	○			○	○	○
9	Auto recycling products	Products manufactured by using recycled materials obtained from collected products	-	-	20	○	○	○*1	○	○	○*2		○	○	○
10	Other products	Products not to be included 1 to 9 on the above		50	25	○		○	○	○	○		○	○	○

*1) It is applicable only in the case to relevant to the requirement of 4-1-1.(3)

*2) Products to be used for food related or toys among the grouping of auto recycling products shall satisfy the certification criteria 4-1-3. (9) and (10).

Attachment 2 Standard Ratio and Weight Percentage for Recycled Materials

Product (A)	Plastic part (B) $(B/A) \times 100 \geq 50$	Recycled plastic materials (C) $(C/B) \times 100 \geq$ Standard ratio for recycled materials	Post-consumer materials (D)
		Virgin materials	Pre-consumer materials (E)
			Polymers
	Other materials (metal, wooden part, etc.)		

- * Requirement for plastic product: $(B/A) \times 100 \geq 50$
- * Weight percentage of recycled materials: $Y = (C/B) \times 100 \geq$ Standard ratio for recycled materials (Attachment 1)
- * In case of using pre-consumer materials and post-consumer materials together:
Assign the value “ $C1 = (2.0 \times D) + E$ ” to C
 $Y1 = ((2.0 \times D) + E)/B \times 100 \geq$ Attachment 1 standard ratio for “pre-consumer materials”

Y: Weight percentage of recycled materials
Y1: Weight percentage of recycled materials to make an adjustment to weight of post-consumer materials
A: Weight of whole product
B: Weight of plastic part
C: Weight of recycled plastic materials
C1: Weight of recycled plastic materials to make an adjustment with coefficient to weight of post-consumer materials
D: Weight of post-consumer materials
E: Weight of pre-consumer materials