



# The New Zealand Ecolabelling Trust

Licence Criteria for

## Recycled Rubber Products EC-18-09

The New Zealand Ecolabelling Trust  
P.O. Box 56533  
Dominion Road  
Mt Eden  
Auckland  
New Zealand

Ph + 64-9-845 3330  
Fax + 64-9 845 3331

Email: [info@enviro-choice.org.nz](mailto:info@enviro-choice.org.nz)

---

These licence criteria have been prepared specifically for the New Zealand Ecolabelling Trust as part of the Environmental Choice New Zealand programme's life cycle approach and its principles and procedures for developing licence criteria for specific product categories. The New Zealand Ecolabelling Trust accepts no responsibility for any use by any party of information in the document in any other context or for any other purpose.

## 1. INTRODUCTION

Environmental Choice New Zealand (ECNZ) is an environmental labelling programme which has been created to help businesses and consumers find products and services that ease the burden on the environment. The programme results from a New Zealand Government initiative and has been established to improve the quality of the environment by minimising the adverse and maximising the beneficial environmental impacts generated by the production, distribution, use and disposal of products, and the delivery of services. The programme is managed by the New Zealand Ecolabelling Trust (the Trust).

ECNZ operates to the ISO 14024 standard "Environmental labels and declarations - Guiding principles" and the Trust is a member of the Global Ecolabelling Network (GEN) an international network of national programmes also operating to the ISO 14024 standard.

ISO 14024 requires environmental labelling specifications to include criteria that are objective, attainable and verifiable. It requires that interested parties have an opportunity to participate and have their comments considered. It also requires that environmental criteria be set, based on an evaluation of the environmental impacts during the actual product or service life cycle, to differentiate product and services on the basis of preferable environmental performance.

The life cycle approach is used to identify and understand environmental issues (adverse or beneficial impacts) across the whole life of a product or service (within a defined product or service category). This information is evaluated to identify the most significant issues and from those to identify the issues on which it is possible to differentiate environmentally preferable products or services from others available in the New Zealand market. Criteria are then set on these significant and differentiating issues. These must be set in a form and at a level that does differentiate environmentally preferable products or services, is attainable by potential ECNZ licence applicants and is able to be measured and verified. As a result of this approach, criteria may not be included in an ECNZ specification on all aspects of the life cycle of a product or service. If stages of a product or service life cycle are found not to differentiate environmentally preferable products or services, or to have insufficient data available to allow objective benchmarking in New Zealand, those stages will not generally be included in criteria in the specification. For some issues, however, (such as energy and waste) criteria may be set to require monitoring and reporting. These criteria are designed to generate information for future reviews of specifications

This specification sets out the requirements that recycled rubber products will be required to meet in order to be licensed to use the Environmental Choice New Zealand Label. The requirements include environmental criteria and product characteristics. The specification also defines the testing and other means to be used to demonstrate and verify conformance with the environmental criteria and product characteristics.

This specification will be valid for a period of five years. Twelve months before the expiry date (or at an earlier date if required), the Trust will initiate a further review process for the specification.

---

These licence criteria have been prepared specifically for the New Zealand Ecolabelling Trust as part of the Environmental Choice New Zealand programme's life cycle approach and its principles and procedures for developing licence criteria for specific product categories. The New Zealand Ecolabelling Trust accepts no responsibility for any use by any party of information in the document in any other context or for any other purpose.

## 2. BACKGROUND

The Ministry for Environment (MfE) estimates close to four million tyres are discarded annually in New Zealand, comprising approximately 36,000 tonnes of waste<sup>1</sup>. Globally, the number is estimated to be in excess of 2 billion, with less than 20% recycled.

In 2004, MfE introduced TyreTrack, a nationwide programme to encourage responsible management of used tyres. The programme has had limited uptake (only 30% participation in 2006) and success. TyreTrack data indicate approximately 75% of used tyres in New Zealand are disposed of in landfills, and about 10-15% are either used as silage cover, in playgrounds, retaining walls or other uses. The remainder are dumped illegally. Two years after the programme's inception, there was no evidence to show that illegal dumping diminished as a result of the programme<sup>2</sup>.

There are potentially significant adverse environmental impacts of landfilling of tyres<sup>3</sup>. The European Union has banned landfilling of whole tyres since 2003, and shredded tyres since 2006. Whole tyres resist compaction, taking up a disproportionate amount of valuable landfill space. Stockpiles of tyres can be a breeding ground for vermin, a source of contaminated leachate, and a considerable fire hazard unless properly managed. Tyre fires can have major environmental impacts, including effects on air, water, and soil quality. Combustion of tyres results in emissions to air of particulates, carbon monoxide, sulphur oxides, oxides of nitrogen, volatile organic compounds, polycyclic aromatic hydrocarbons, dioxins, furans, hydrogen chloride, benzene, polychlorinated biphenyls, and metals such as arsenic, cadmium, nickel, zinc, mercury, chromium, and vanadium<sup>4</sup>. Melted rubber can generate "pyrolitic oil", and elevated concentrations of metals in ash residue from combustion can contaminate surface and ground water<sup>5</sup>.

Internationally, used tyres are frequently used as tyre derived fuel (TDF), supplementing the solid fuel in cement kilns, electric arc furnaces, and coal fired boilers. Tyres contain more than 90% organic materials, with a heat value of around 33 MJ/kg<sup>6</sup>. In New Zealand, Golden Bay Cement (Whangarei) and Holcim Cement (Westport) have operations that could potentially use TDF<sup>2</sup>. In the US, an estimated 56 million scrap tires per year are used in civil engineering applications<sup>7</sup>. However, tyre recycling has also created a market nationally and internationally for consumer products that are made from shredded tyres, processed rubber crumb, and rubber/plastic compounding.

Approximately three-quarters of tyres in New Zealand are imported<sup>2</sup>. Bridgestone operate the only manufacturing plant in the country (Papanui, Christchurch), and three retread factories producing commercial retreads for the New Zealand market. The South Pacific Tyres manufacturing facility in Upper Hutt closed in 2006.

A life cycle analysis of car tyres indicates that the greatest consumption of water and generation of wastewater during the tyre life cycle occurs during raw materials acquisition and tyre use<sup>8</sup>. Products made from recycled rubber extend the use of a material that has had significant raw material input.

---

<sup>1</sup> MfE. 2004. *End-of-Life Tyre Management: Storage Options*. (Prepared under contract by MWH)

<sup>2</sup> MfE. 2006. *Product Stewardship Case Study for End-of-Life Tyres*. (Prepared under contract by URS)

<sup>3</sup> MfE. 2004. *Management of End-of-Life Tyres*. (Prepared under contract by Firecone)

<sup>4</sup> USEPA. 1997. *Air Emissions from Scrap Tire Combustion* (EPA-600/R-97-115)

<sup>5</sup> Massachusetts Department of Environmental Protection. 2006. *Safe Handling of Waste Tires*.

<sup>6</sup> Paul J. *Rubber* in Kirk-Othmer Encyclopaedia of Chemical Technology.

<sup>7</sup> Humphrey D.N. 2004. *Civil Engineering Applications of Scrap Tires*. Presentation to the Heartland Scrap Tire Management Conference

<sup>8</sup> Continental AG. 1999. *Life Cycle Assessment of a Car Tire*.

---

These licence criteria have been prepared specifically for the New Zealand Ecolabelling Trust as part of the Environmental Choice New Zealand programme's life cycle approach and its principles and procedures for developing licence criteria for specific product categories. The New Zealand Ecolabelling Trust accepts no responsibility for any use by any party of information in the document in any other context or for any other purpose.

The manufacturing processes involved in recycling rubber and producing new products typically involve:

- physical processing to create crumb, commonly grinding or shredding;
- separating out steel, wire, or textile fibre reinforcement using magnets and screens;
- addition of chemicals, such as adhesives/binders, fillers, softeners, and pigments;
- pressurized heating (digestion); and
- molding and curing to produce the new products.

There is currently one known recycling operation in New Zealand generating crumb rubber from end-of-life tyres. One operator produces chip rubber from end-of-life tyres which is used in applications including horse arenas for dressage, animal pens, and filler for sports equipment.<sup>9</sup> Recycling Operators of New Zealand (RONZ) is not aware of any importation of tyre-derived crumb<sup>10</sup>.

Binders (adhesives), such as latex, polyurethane prepolymers reacted with diisocyanates, are added to aid digestion of the crumb. Up to 20% of binder may be required to produce recycled rubber products from crumb<sup>11</sup>. Compounding ingredients (fillers) such as carbon black, are used to stiffen or strengthen the rubber. Softeners and surfactants may be added to improve the workability of the material. These may include petroleum products (oils, tars, waxes), resins, and fatty acids. Pigments may include zinc oxide, various organic dyes, and metal-based pigments. Small amounts of chemical plasticizers or peptizers may be added to lower the viscosity of the uncured product<sup>12</sup>. Depending on the product application, UV stabilizers or flame retardants are also sometimes used in formulation of recycled rubber products.

For some types of recycled rubber products, there is the potential for leaching of metals into water (for example, products used for drainage or in wet conditions)<sup>13</sup>, or release of volatile or semi-volatile organic compounds when products are exposed to heat. However, these potential effects have been reported to be relatively low risk for products that do not involve additional chemical treatment<sup>14</sup>.

The main environmental aspects in the manufacturing and use stages of the life cycle of products made from recycled rubber are use of energy and potential use of chemicals. If chemicals are used this may prevent further recycling of products and it may cause problems when products are used.

Based on a review of currently available life cycle information, the following product category requirements are likely to produce environmental benefits by:

- reducing the amount of rubber entering the waste stream,
- conserving a valuable resource,
- reducing the use and subsequent release of environmentally harmful substances to the environment at all stages of the recycled rubber product's life cycle,
- reducing impacts from energy use in production processes, and
- encouraging recovery, reuse, recycling and responsible disposal of waste materials.

---

<sup>9</sup> J Loughton, 2009, personal communication

<sup>10</sup> B Gledhill, 2009, personal communication

<sup>11</sup> Sartomer. *Polyurethane Binders for the Production of Composite Materials*. sartomer.com/TechLit/4891.pdf

<sup>12</sup> Barnhart, RR. *Rubber Compounding* in Kirk Othmer Encyclopaedia of Chemical Technology

<sup>13</sup> Humphrey DN, and M Swett. 2006. *Literature Review of the Water Quality Effects of Tire Derived Aggregate and Rubber Modified Asphalt Pavement*. Prepared for USEPA Resource Conservation Challenge.

<sup>14</sup> California Integrated Waste Management Board. 2007. *Evaluation of Health Effects of Recycled Waste Tires in Playground and Track Products* (prepared under contract by Office of Environmental Health Hazard Assessment).

---

These licence criteria have been prepared specifically for the New Zealand Ecolabelling Trust as part of the Environmental Choice New Zealand programme's life cycle approach and its principles and procedures for developing licence criteria for specific product categories. The New Zealand Ecolabelling Trust accepts no responsibility for any use by any party of information in the document in any other context or for any other purpose.

As information and technology change, product category requirements will be reviewed, updated and possibly amended.

### 3. INTERPRETATION

“**Consumer**” means a household, commercial establishment or institutional facility.

“**Energy Management Programme**” means a program to achieve and sustain efficient and effective use of energy including policies, practices, planning activities, responsibilities and resources that affect the organisation’s performance for achieving the objectives and targets of the Energy Policy.

“**Halogenated solvent**” means any volatile organic compound incorporating halogens including fluorine, chlorine, bromine and iodine.

“**Label**” means the Environmental Choice New Zealand Label.

“**Recycled Rubber**” includes:

**Post-Consumer:** Material generated by households, or by commercial, industrial and institutional facilities in their role as end-users of the product, which can no longer be used for its intended purpose. This includes returns of material from the distribution chain.

**Pre-Consumer:** Material diverted from the waste stream during a manufacturing process. Excluded is re-utilisation of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.

“**Rubber**” means any of a number of natural or synthetic high polymers having unique properties of deformation (elongation or yield under stress) and elastic recovery after vulcanisation with sulphur or other cross-linking agents to change the polymer from thermoplastic to thermosetting.

“**Rubber Compound**” means a mixture that may consist of natural and synthetic rubber, filler/reinforcing agents such as carbon black and chemicals such as antioxidants.

“**Rubber Product**” means a product that consists of a minimum of 50% by weight of rubber compound.

### 4. CATEGORY DEFINITION

This category includes all rubber products made from recycled rubber as further defined in the sub-categories in this section. The sub-categories include but are not limited to:

- 4.1 Agricultural and horticultural supplies (include garden hoses, soaker hoses and tubing)
- 4.2 Building and construction materials (include earthquake isolation pads and sound insulation pads)

---

These licence criteria have been prepared specifically for the New Zealand Ecolabelling Trust as part of the Environmental Choice New Zealand programme’s life cycle approach and its principles and procedures for developing licence criteria for specific product categories. The New Zealand Ecolabelling Trust accepts no responsibility for any use by any party of information in the document in any other context or for any other purpose.

- 4.3 Civil engineering products (include maintenance hole collars, bridge bearing pads, traffic management and road safety products)
- 4.4 Containers (include composting units and rubbish bins)
- 4.5 Marine products (include marine fenders and marine bumpers)
- 4.6 Automotive products (include bumpers, car mats, fanbelts, and vibration mounts)
- 4.7 Sporting goods (include sports mats and running tracks)
- 4.8 Tyres (include commercial and passenger vehicle tyres)
- 4.9 Household and office supplies (include mouse mats and household items)
- 4.10 Flooring and surface treatments (include mats, anti-static mats, playground surfacing)
- 4.11 Crumb rubber

To be licensed to use the Label, a recycled rubber product must comply with all the environmental criteria set out in clause 5 and product characteristics set out in clause 6.

## 5. ENVIRONMENTAL CRITERIA

### 5.1 Legal Requirements

#### ***Criteria***

The product must comply with the provisions of all relevant environmental laws and regulations that are applicable during the product's life cycle.

#### ***Verification Required***

Conformance with this requirement shall be demonstrated by providing a written statement on regulatory compliance, signed by the Chief Executive Officer of the applicant company. This statement shall be supported by documentation identifying the applicable regulatory requirements and demonstrating how compliance is monitored and maintained.

#### ***Explanatory Notes***

Relevant laws and regulations could, for example, include those that relate to:

- Producing, sourcing, transporting, handling and storing raw materials and components for manufacture;
- Manufacturing processes;
- Handling, transporting and disposing of waste products arising from manufacturing;
- Transporting product within and between countries;
- Using and disposing of the product; and
- Relevant land use or discharge laws.

The documentation required may include, as appropriate:

- Procedures for approving and monitoring suppliers and supplies; and
- Information provided to customers and contractors regarding regulatory requirements.

It is not intended to require licence holders to accept increased legal responsibility or liability for actions that are outside their control.

### 5.2 Recycled Content

---

These licence criteria have been prepared specifically for the New Zealand Ecolabelling Trust as part of the Environmental Choice New Zealand programme's life cycle approach and its principles and procedures for developing licence criteria for specific product categories. The New Zealand Ecolabelling Trust accepts no responsibility for any use by any party of information in the document in any other context or for any other purpose.

### **Criteria**

To be authorised to carry the Environmental Choice label, products made from recycled rubber must meet the criterion for minimum recycled content specific to their sub-category.

- 5.2.1 Recycled rubber products identified in sub-categories 4.1 through 4.3 and 4.10 must contain a minimum of 50% by weight recycled rubber.
- 5.2.2 Recycled rubber products identified in sub-categories 4.4 through 4.7 and 4.9 must contain a minimum of 75% by weight recycled rubber.
- 5.2.3 Recycled rubber products identified in sub-category 4.8 must contain a minimum of 5% by weight recycled rubber.
- 5.2.4 Recycled rubber products identified in sub-category 4.11 must contain 100% by weight recycled rubber

### **Notes:**

- 1. For some specialised products, product performance standards set maximum recycled content requirements. Where this is the case, the maximum limit set in the relevant performance standard will apply as the minimum recycled content acceptable for award of an Environmental Choice licence. The criteria set above will not therefore apply.
- 2. Where a product contains components other than rubber (for example, plastic), the % requirement applies to the rubber component and the total weight of the rubber component only.

### **Verification Required**

Conformance with this requirement shall be stated in writing and signed by the Chief Executive Officer of the applicant company. This statement shall be accompanied by relevant quality control and production documentation.

## **5.3 Manufacturing Process**

### **5.3.1 Hazardous Substances**

#### **Criteria**

The following shall not be added to the granulated waste rubber:

- (i) Substances that are classified under the Hazardous Substances and New Organisms Act as:
  - a) 6.7A (known or presumed carcinogens);
  - b) 6.6 (mutagens); or
  - c) 6.8 (reproductive/ developmental toxins)

Except that the requirements in (i) do not apply to trace levels (<0.1% by weight) of substances reported in MSDS to potentially be present as contaminants or impurities in raw materials or component substances.

- (ii) A combined total of more than 0.1% by weight of the recycled rubber product (rubber component), of substances that are classified under the Hazardous Substances and New Organisms Act as 6.5 (respiratory and contact sensitisers) or 6.1 (acutely toxic).

---

These licence criteria have been prepared specifically for the New Zealand Ecolabelling Trust as part of the Environmental Choice New Zealand programme's life cycle approach and its principles and procedures for developing licence criteria for specific product categories. The New Zealand Ecolabelling Trust accepts no responsibility for any use by any party of information in the document in any other context or for any other purpose.

- (iii) Substances that are classed under the Hazardous Substances and New Organisms Act as 9.1A (aquatic ecotoxins) AND are not readily degradable or are potentially bioaccumulative, or substances classified as 9.1B.

In this context, a substance is considered to be potentially bioaccumulative if the log  $K_{ow}$  (log octanol/water partition coefficient)  $\geq 3.0$  (unless the experimentally determined BCF  $\leq 100$ ).

#### **Verification Required**

Conformance with these requirements shall be demonstrated by providing a written statement on compliance, signed by the Chief Executive Officer or other authorised representative of the applicant company. The statements shall be supported by relevant formulation and ingredient information, including:

- Formulation information sufficient to establish if the above % limits or specific ingredient requirements are met;
- Ingredient lists;
- Copies of the material safety data sheets, test reports (or other evidence) for all ingredients, which indicate that they meet the criteria listed in (i) to (iii).

Additional supporting documentation about quality control and production processes may also be required to demonstrate that compliance with the requirement is checked and consistently achieved.

### **5.3.2 Halogenated hydrocarbons**

#### **Criteria**

Solvents used to clean the production equipment must not contain halogenated hydrocarbons.

#### **Verification**

Conformance with these criteria shall be stated in writing and signed by the Chief Executive Officer of the applicant company. The statement shall be supported by relevant quality control and production documentation.

### **5.4 Product Stewardship**

#### **Criteria**

- (a) The recycled rubber product (or component) must not be impregnated, labelled, coated or otherwise treated in a manner which would prevent recycling in New Zealand or in the country where the product is used.
- (b) Licence holders must report annually to Environmental Choice New Zealand on product stewardship, including:
- availability, feasibility, and involvement in product takeback schemes;
  - initiatives taken to promote or implement takeback schemes;
  - initiatives taken to make products more recyclable; and
  - initiatives or requirements for suppliers or contract manufacturers.

#### **Verification**

---

These licence criteria have been prepared specifically for the New Zealand Ecolabelling Trust as part of the Environmental Choice New Zealand programme's life cycle approach and its principles and procedures for developing licence criteria for specific product categories. The New Zealand Ecolabelling Trust accepts no responsibility for any use by any party of information in the document in any other context or for any other purpose.



Conformance with these criteria shall be stated in writing and signed by the Chief Executive Officer of the applicant company. **This statement shall be accompanied by documentation that:**

- Provide process information demonstrating that coatings/labels do not prevent the product from being recycled
- Describe the product stewardship initiatives, procedures and programmes; and
- Includes annual reports on product stewardship initiatives.

## 5.5 Waste Management

- a) The licence applicant/holder and product manufacturer must have effective waste management policies and procedures and/or a waste management programme.
- b) Licence holders must report annually to Environmental Choice New Zealand on waste management, including:
  - quantities and types of waste recovered for reuse internally and externally;
  - quantities and types of waste recycled internally and externally;
  - quantities and types of waste disposed of to landfill;
  - quantities and types of waste burned for energy recovery;
  - waste generation related to production;
  - initiatives taken to reduce waste generation and improve recovery/recycling of waste; and
  - initiatives or requirements for suppliers or contract manufacturers.

### **Verification Required**

Conformance with this requirement shall be stated in writing and signed by the Chief Executive Officer or other authorised representative of the applicant company. **This statement shall be accompanied by documentation that:**

- describes the waste management policies, procedures and programmes; and
- includes annual reports on waste generation and management.

## 5.6 Energy Management

### **Criteria**

- (a) The licence applicant/holder and product manufacturer must have effective energy management policies and procedures and/or an energy management programme.
- (b) Licence holders must report annually to Environmental Choice New Zealand on energy management, including:
  - total energy use;
  - breakdown of total energy use to types of energy used;
  - energy use related to production;
  - initiatives taken to reduce energy use and improve energy efficiency;
  - initiatives taken to calculate and reduce CO<sub>2</sub> emissions associated with energy use; and
  - initiatives or requirements for suppliers or contract manufacturers.

### **Verification Required**

---

These licence criteria have been prepared specifically for the New Zealand Ecolabelling Trust as part of the Environmental Choice New Zealand programme's life cycle approach and its principles and procedures for developing licence criteria for specific product categories. The New Zealand Ecolabelling Trust accepts no responsibility for any use by any party of information in the document in any other context or for any other purpose.

Conformance with this requirement shall be stated in writing and signed by the Chief Executive Officer or other authorised representative of the applicant company. **This statement shall be accompanied by documentation that:**

- describes the energy management policies, procedures and programmes; and
- includes annual reports on energy use and management.

## 6. PRODUCT CHARACTERISTICS

### ***Criteria***

The product shall be fit for its intended purpose and conform, as appropriate, to relevant product standards.

### ***Verification Required***

Conformance with this requirement shall be demonstrated by providing a written statement of compliance, signed by the Chief Executive Officer or other authorised representative of the applicant company. This statement shall be supported by documentation:

- identifying the applicable standards, specifications and or consumer/customer requirements;
- demonstrating how compliance is monitored and maintained (including quality control and assurance procedures);
- records of customer feedback and complaints.

## 7. REQUIREMENTS AND NOTES FOR ENVIRONMENTAL CHOICE LICENCE HOLDERS

### ***Monitoring Compliance***

Prior to granting a licence, Environmental Choice will prepare a plan for monitoring ongoing compliance with these requirements. This plan will reflect the number of products covered by the licence and the level of sampling appropriate to provide confidence in ongoing compliance with criteria. This plan will be discussed with the licence applicant and when agreed will be a condition of the licence.

As part of the plan, Environmental Choice will require access to relevant quality control and production records and the right of access to production facilities. Relevant records may include formal quality management system documentation (for example, ISO 9001 or ISO 14001 or similar).

The monitoring plan will require the licence holder to advise Environmental Choice immediately of any non-compliance with any requirements of this specification which may occur during the term of the licence. If non-compliance occurs, the licence may be suspended or terminated as stipulated in the Licence Conditions. The licensee may appeal any such suspension.

Environmental Choice New Zealand will maintain the confidentiality of identified confidential information provided and accessed during verification and monitoring of licences.

### ***Using the Environmental Choice Label***

The Label may appear on the wholesale and retail packaging for the product, provided that the product meets the requirements in this specification and in the Licence Conditions.

---

These licence criteria have been prepared specifically for the New Zealand Ecolabelling Trust as part of the Environmental Choice New Zealand programme's life cycle approach and its principles and procedures for developing licence criteria for specific product categories. The New Zealand Ecolabelling Trust accepts no responsibility for any use by any party of information in the document in any other context or for any other purpose.

Wherever it appears, the Label must be accompanied by the words “recycled rubber product” and by the Licence Number e.g. “Licence No 1234”.

The Label must be reproduced in accordance with the Environmental Choice programme’s keyline art for reproduction of the Label and the Licence Conditions.

Any advertising must conform to the relevant requirements in this specification, in the Licence Conditions and in the keyline art.

Failure to meet these requirements for using the Environmental Choice Label and advertising could result in the Licence being withdrawn.

---

These licence criteria have been prepared specifically for the New Zealand Ecolabelling Trust as part of the Environmental Choice New Zealand programme’s life cycle approach and its principles and procedures for developing licence criteria for specific product categories. The New Zealand Ecolabelling Trust accepts no responsibility for any use by any party of information in the document in any other context or for any other purpose.