



The New Zealand Ecolabelling Trust

Licence Criteria for

Synthetic Carpets

EC-33-08

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1. INTRODUCTION

The New Zealand Ecolabelling Trust is an environmental labelling programme which has been created to help consumers find products 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 environmental impacts generated by the production, distribution, use and disposal of products. The programme is managed by the New Zealand Ecolabelling Trust (the Trust).

The New Zealand Ecolabelling Trust Board is pleased to publish this new specification for Synthetic Carpets. This specification sets out the requirements that Synthetic Carpets 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 verify conformance with the environmental criteria and product characteristics.

This specification has been prepared based on an overview level life cycle assessment, information from specifications for similar products from other national labelling programmes, relevant information from other Environmental Choice New Zealand specifications, information made available from product suppliers and advice from independent environmental scientists.

The objective of this Specification is to minimise environmental effects arising from the manufacture, use and disposal of synthetic carpets. To meet this objective, specifications have been developed for:

- recycled component of face-fibre and backing;
- refurbishment and other waste minimisation initiatives;
- dyeing Processes; and
- VOC Emissions.

The available technologies and processes to use energy and water efficient manufacturing technologies (including dyeing), recycle yarn, refurbish product and divert wastes from landfill are changing constantly. This specification is based on current understanding and technical information. Where relevant – for example energy efficiency requirements, the specification “signals” possible future changes.

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

2. BACKGROUND

The Environmental Choice Programme has been designed to support a continuing effort to improve and/or maintain environmental quality by reducing energy and materials consumption and by minimising adverse impacts generated by the production, use and disposal of goods and services in New Zealand.

The manufacture, use and disposal of synthetic carpets may impact on the environment through:

- manufacturing processes which contain hazardous compounds including volatile organic compounds, styrene butadiene latex (SBL) and 4-phenylcyclohexene (4-PC) and use significant amounts of energy, water and other resources;
- energy and material inputs required for maintenance and repair, and also reuse/recycling;
- end-of-Life waste to be disposed of; and
- public exposure to atmospheric emission during installation and use of the synthetic carpet.

The Environmental Choice label requirements described in this specification are based on life cycle information and will minimise environmental impacts through a longer product life, a reduction in wastes and toxic emissions to the environment, the use of more renewable and/or sustainably managed materials, and greater material re-use and recycling. As information and technology change, these requirements will be reviewed, updated and possibly amended.

3. INTERPRETATION

ASTM: American Society for Testing and Materials

Carpet tiles are carpet squares, often 500mm x 500mm or 18 inches by 18 inches (457 x 457 mm) each but also available in other sizes, with or without attached cushion backing. Also referred to as modular carpet.

Fibre is a natural or artificial material with a very high aspect ratio. That is, lengths hundreds to thousands of times greater than their widths. Useful textile fibres have high tensile strengths, flexibility, and in the case of polymer (synthetic) yarns, resistance to heat, light, chemical, and abrasives. Any substance which can be made into yarn.

HSNO means Hazardous Substances and New Organisms Act 1996.

ISO means International Organisation for Standardisation.

Label means the Environmental Choice New Zealand Label.

Post-consumer content refers to 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.

Post-industrial content refers to materials generated by manufacturers or product converters, such as trimmings, overruns, and obsolete products that are incorporated back into the manufacturing process.

Recyclability is the ability of a product or material to be recovered from or otherwise diverted from the solid waste stream for the purpose of recycling; does not include incineration (waste-to-energy) or use of incinerated by-product (ash).

Recycling means turning waste materials into useful materials. Examples include vinyl backing into vinyl backing, or face fibre into automotive parts.

Reusability is the ability of a product to be used again by another user or for another purpose. An example would be an extended life programme, where tiles are taken back, refurbished and then re-supplied to the same or another user to begin a 'second life'.

Solution dyed yarn is created when the colour pigments are added to the material before extrusion (which is the process used to create the yarn) as opposed to yarn dyed after it has been converted to yarn. Note that there are also numerous means of dyeing face fibre prior to tufting or dyeing carpet after it has been tufted including beck, injection dyeing, topical dyeing, print dyeing or continuous dyeing.

Total recycled content is a combination of post-consumer content and post-industrial content. That is the amount of pre- and post-consumer recovered material introduced as a feed stock in a material production process, usually expressed as a percentage by total weight.

Tufted / Tufting A process for attaching yarn to primary backing. Several hundred needles stitch hundreds of rows of pile yarn tufts through a backing fabric called the primary backing. Other methods include weaving, and fusion bonding.

Volatile organic compound (VOC) is any organic compound which participates in atmospheric photochemical reactions. VOCs in indoor air refer to any volatile carbon containing compounds [excluding carbon dioxide (CO₂) and carbon monoxide (CO)] that may or may not participate in photochemical reactions.

4. CATEGORY DEFINITION

This category includes:

- a) polymer and high polymer / wool fibre blend (such as 80% polymer and 20% wool) modular carpets which include nylon (both type 6 and 6.6) and nylon blends, olefin (polypropylene), polyester (PET), acrylic and wool delivered to market as Commercial Modular Tile Carpets.
- b) polymer fibre carpets which include nylon and nylon blends, olefin (polypropylene), polyester (PET) and acrylic, delivered to market as broadloom residential and commercial carpets.

5. ENVIRONMENTAL CRITERIA

5.1 Legal Compliance

Criteria

The product must comply with the provisions of all relevant 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 or other authorised representative 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; and
- using and disposing of the product.

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 of Face Fibre

Criteria

- a) To extend the “life” of the carpet fibre constituents – the face fibre for all Solution Dyed virgin tile products shall contain 10% or higher total recycled content by weight (non-Solution Dyed or white fibre is excluded from this requirement). The recycled content may include post-industrial and/or post-consumer waste.
- b) Fibres must be manufactured in facilities covered by an environmental management system that is ISO 14001 (or equivalent) certified.

Verification Required

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

- providing a breakdown of fibre type, including source and type of recycled content; and
- yarn suppliers ISO 14001, or equivalent, certificates.

Explanatory Notes

The objective of this requirement is to extend the life of the materials used for the virgin face fibres. Non-Solution Dyed Nylon, or white nylon, is excluded from this requirement, following communications from various yarn producers stating that this is not possible with white nylon, only Solution Dyed nylon.

5.3 Recycled Content of Backing

Criteria

- a) PVC and non-PVC carpet tile backings must have a minimum 20% post-consumer and/or post-industrial recycled content by weight.
- b) Carpet tiles and broadloom carpets shall be manufactured with a backing which is sourced from facilities covered by an environmental management system that is ISO 14001, or equivalent, certified.

Verification Required

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

- providing a breakdown of backing materials used, including source and type of recycled content; and
- backing suppliers ISO 14001, or equivalent, certificates.

5.4 Refurbishment

The applicant must have and implement processes to take back used carpet product and either refurbish (to be on-sold as second-hand carpet) or “downcycle” recovered product to an alternative use (such as weed-matting).

Verification Required

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

5.5 Waste Minimisation

Criteria

- a) Manufacturing production waste must be less than 10% of total production by volume. This must include factory seconds, non-conforming products and unused and unusable yarn offcuts.
- b) Carpet products shall be recyclable into either new carpet products, other nylon-based products or incinerated for process energy, or to be on-sold as second-hand carpet.
- c) Modular carpet tiles shall be sold as removable tiles using either a peel and stick system, a water-based adhesive or no adhesive, such as ‘nipple backed’ for use on access flooring. Permanently stuck and non-removable tiles will not be accepted.

- d) Modular carpet tiles must be sold with a service offering to customers that includes rotation and replacement of worn tiles.
- e) The applicant and their suppliers/manufacturers of face fibre and backing must have formal procedures and/or environmental improvement programmes on waste minimisation as part of their certified environmental management systems. These procedures and/or improvement programmes must include (as appropriate) measures to include and/or increase post industrial and/or post consumer content in face fibre and/or backing.
- f) Licence holders must report annually to Environmental Choice New Zealand on waste management and minimisation procedures, programmes and performance, including (as relevant):
 - waste generation as a % of manufacturing production and its disposal;
 - types and quantities of waste recovered (post industrial and post consumer) for reuse in manufacturing;
 - types and quantities of waste diverted from landfill and the nature of their reuse;
 - energy required to collect and recycle post consumer waste and comparison with energy use associated with use of virgin materials in fibre and backings; and
 - other environmental benefits or constraints associated with waste minimisation objectives and processes.

Verification Required

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

- service offering contracts and marketing material offered to potential clients, clearly stating terms of take back scheme and ultimate destination of recovered products;
- a description of the applicant's and supplier/manufacturers' waste management procedures and programmes; and
- annual reports on waste generation, management and minimisation.

Explanatory Notes

The applicant will need to demonstrate proactive environmental initiatives to recycle – where appropriate (given energy considerations), post-consumer fibre or (where energy demand is too high) post-industrial recycling, which is largely re-using “factory floor” offcuts and is a widespread and standard operating practice.

5.6 Dyeing Process

Criteria

- a) The applicant must have formal processes in place as part of the certified environmental management system to minimise energy consumption and also water use in dyeing processes.

- b) Formal processes must include monitoring and regular checks of water input and wastewater output volumes. Any remedial actions identified as a result of the monitoring processes should be implemented and closed out.
- c) Azo-based dyes that shed carcinogenic aryl amines (listed below) must not be used.

4-Aminobiphenyl	92-67-1
Benzidine	92-87-5
4-Chloro-o-toluidine	95-69-2
2-Naphthylamine	91-59-8
o-Aminoazotoluene	97-56-3
5-Nitro-o-toluidine	99-55-8
p-Chloroaniline	106-47-8
4-Methoxy-m-phenylenediamine	615-05-4
4,4.-Methylenedianiline	101-77-9
3,3.-Dichlorobenzidine	91-94-1
3,3.-Dimethoxybenzidine	119-90-4
3,3.-Dimethylbenzidine	119-93-7
4,4.-Methylenedi-o-toluidine	838-88-0
6-Methoxy-m-toluidine	120-71-8
4,4.-Methylenebis(2-chloroaniline)	101-14-4
4,4.-Oxydianiline	101-80-4
4,4.-Thiodianiline	139-65-1
o-Toluidine	95-53-4
4-Methyl-m-phenylenediamine	95-80-7
2,4,5-Trimethylaniline	137-17-7
O-anisidine	90-04-0

Verification Required

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

- manufacturing process information and specification and performance criteria for relevant technologies utilised;
- details of water recycling initiatives during dyeing processes; and
- identifying the dyes used; and
- MSDS (material safety data sheets) or other information to demonstrate the risks, if any, assigned to dyes used.

5.7 VOC emissions

Criteria

The following maximum limits for concentrations of VOCs in air (based on the standard room calculation) must not be exceeded by the product when the emission rate is tested in a small scale environmental chamber:

	$\mu\text{g}/\text{m}^3$
Formaldehyde	16

Acetaldehyde	4.5
Benzene	30
Caprolactam	100
2-Ethylhexanoic Acid	25
1-Methyl-2-Pyrrolidinone	160
Naphthalene	4.5
Nonanal	13
Octanal	7.2
4-Phenylcyclohexene	2.5
Styrene	220
Toluene	150
Vinyl Acetate	100

Verification Required

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

- emission test reports; and
- calculations of emission concentrations demonstrating the limits are met for each product.

Testing and Calculation Methods

Emissions shall be tested after a 10-day conditioning period followed by a 96-hour test period.

The test method and calculations must follow ASTM D5116-06 *Standard Guide for Small-Scale Environment Chamber Determinations of Organic Emissions from Indoor Materials/Products* and the further instructions set out in:

- Part 1.3 B of The Collaborative for High Performance Schools, Section 01350 Special Environmental Requirements issued 12 December 2002; and
- Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers (*supersedes previous versions of small-scale environmental chamber testing portion of **California Specification 01350***). Prepared by Indoor Air Quality Section, Environmental Health Laboratory Branch, Division of Environmental and Occupational Disease Control, California Department of Health Services on behalf of The California Sustainable Building Task Force, July 15, 2005.

5.8 Adhesives

Criteria

- a) The installation adhesive must be water-based and pressure sensitive.
- b) The adhesive must have a low VOC emission and may demonstrate this by meeting either (i) or (ii):
 - (i) The total VOC content of the adhesive must not exceed 5% by weight of the adhesive product.

- (ii) VOC emissions must not exceed 0.05mg/m² per hour after 24 hours following application.

Verification Required

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

- Consumer information and recommendations on adhesives to use for installation;
- MSDS for the adhesives recommended for installation;
- Calculations or other information to demonstrate that the 5% limit is met for the recommended adhesives; and
- VOC emission test reports from a laboratory competent to carry out required testing.

Testing Method

VOC emissions must be tested using ASTM D5116-90: *Guide to small scale environmental chamber determination of organic emissions from indoor materials / product*, or equivalent method.

5.9 Other Compounds

Criteria

- a) Inorganic ammonium phosphates (diammonium phosphates, ammonium polyphosphates etc.), boron compounds (boric acid, borates) or Polybrominated diphenyl ethers must not be used as flame retardants.
- b) Antimony oxides must not be used in product manufacture.
- c) The products must not be manufactured using any substance included on the International Agency for Research on Cancer (IARC) Group 1 list of known carcinogens

Verification Required

Conformance with this requirement shall be demonstrated by providing a written statement, signed by the Chief Executive Officer or other authorised representative of the applicant company. **This statement shall be supported by documentation demonstrating that the banned substances are not used.**

5.10 Energy Management

Criteria

- (a) The carpet product's manufacturer or supplier 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; and
 - initiatives taken to calculate and reduce CO₂ emissions associated with energy use.

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

6. PRODUCT CHARACTERISTICS

Criteria

- a) The product must be fit for its intended use and conform, as appropriate, to relevant product performance standards.
- b) The product must meet or exceed the performance requirements of the relevant local carpet classification scheme for its intended application and be rated at a minimum level of contract heavy duty;
OR
The product must meet or exceed other applicable internationally accepted standards if it is to be exported.
- c) Modular tile carpets and broadloom commercial carpets must carry a standard 12 year minimum manufacturer's warranty.
- d) Residential broadloom carpets must carry a standard 5 year minimum manufacturer's warranty.
- e) The product must carry a minimum 5 year colour fastness warranty.
- f) Carpet tiles must meet accepted dimensional stability tests.
- g) Carpet tiles must be sold as removable and reusable once removed (no permanent stick).
- h) Refurbished products must carry a minimum 5 year warranty.

Verification Required

Conformance with these requirements shall be demonstrated by providing a written statement of compliance, signed by the Chief Executive Officer, or other authorized

representative of the applicant company. **This statement shall be supported by documentation:**

- identifying the applicable standards and certification or test reports showing that these standards are met;
- demonstrating how compliance is monitored and maintained;
- setting out warranty information; and
- describing how tiles can be removed.

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 and type 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 will include formal quality management or environmental management system documentation (for example, ISO 9001 and ISO 14001 or similar).

The monitoring plan will require the licence holder to advise Environmental Choice immediately of any noncompliance 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.

Wherever it appears, the Label must be accompanied by the words 'Synthetic Carpets' and by the Licence Number e.g. 'licence No1234'.

The Label must be reproduced in accordance with the Environmental Choice programmes 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.