



The New Zealand Ecolabelling Trust

Licence Criteria for Synthetic Carpets

EC-33-14

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Specification change history

Minor clarifications, corrections or technical changes made since the specification was last reviewed and issued in February 2014.

Date	Version	Change
13/10/14	EC-33-14, October 2014	Category Definition clarified. Addition of Bitumen to 5.2 Materials. 5.2.7 Rubber/Latex split into criteria for Natural Rubber and criteria for Synthetics.

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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 14024:1999 standard "Environmental labels and declarations – Type I environmental labelling – Principles and procedures" 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.

The New Zealand Ecolabelling Trust Board is pleased to publish this specification for Synthetic Carpets. The specification has been published to take account of substances harmful to the environment, energy management and consumption of resources.

This specification sets out the requirements that Synthetic Carpets products will be required to meet in order to be licensed to use the ECNZ 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 has been prepared based on an overview level life cycle assessment, information from specifications for similar products from other GEN-member labelling programmes, relevant information from other ECNZ specifications, and advice from independent environmental scientists.

This specification is 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 review process for the specification.

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2 Background

The impact on the environment of synthetic carpet products occurs throughout the lifecycle from the raw materials through to manufacturing and disposal of the synthetic carpet product.

Processing of the materials used in synthetic carpet can involve using hazardous substances including a wide range of, dyes, heavy metal additives, degreasing and cleaning agents, formaldehyde, solvents, adhesives, preservatives, biocides, and flame retardants. Some of these substances are carcinogenic, mutagenic, toxic, ecotoxic, or harmful to human reproductive systems. Discharges of these substances from processing operations can have adverse impacts on the environment and people.

Some of the hazardous substances used in manufacturing can also become incorporated in the materials and can result in discharges from the finished synthetic carpet. These can have adverse effects on human health during use, for example, carcinogenic emissions of volatile organic compounds (VOCs).

Another significant potential environmental impact associated with the manufacture of synthetic carpets, results from using adhesives and resins. Controls on adhesives and resins used in manufacturing will help to reduce adverse impacts from these products.

As some of the most significant adverse impacts in the life cycle of flooring products result from sourcing and producing the raw materials (including the associated use of hazardous substances). Encouraging features that ensure products are durable and have a long life, will help to reduce the overall burden of these products on the environment. Encouraging features that allow for reuse and recycling will also prolong the effective life of the raw materials used in manufacturing.

Of the GEN-member specifications reviewed, the Nordic Ecolabelling of Textile Floor Coverings, Blue Angel (Germany), EU Eco label, EcoLogo (Canadian) and Australian programmes have criteria specifically for textile flooring products (carpets). Many of the criteria in the existing ECNZ Wool and Wool-rich Pile Carpets (EC-04-11), Textiles, Skins and Leather (EC-31-12) and Floor Coverings (EC-28-12) specifications have also been included in this specification, especially in relation to polymers, rubbers and dyes. This specification also includes standard criteria on legal requirements, energy, waste and packaging which are being incorporated into all ECNZ specifications when they are developed or reviewed.

Based on a review of currently available information, the following product category requirements will produce environmental benefits by:

- reducing hazardous substance use, discharges and emissions to the environment;
- reducing the exposure of people to hazardous substances;
- encouraging the effective and responsible use of resources and sustainable management of resources;
- minimising waste; and
- improving energy efficiency and conservation.

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

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3 Interpretation

ASTM: American Society for Testing and Materials

Blowing agent means a substance (gas, liquid) that is able to produce cells in the plastic structure of a foam. This process can vary according to the property of the substance, e.g. a liquid may develop cells when changing into gas and a gas may expand when pressure is released.

Backing: Fabrics and yarns that make up the back of the carpet as opposed to the carpet pile or face. In tufted carpet:¹

- Primary backing — A woven or nonwoven fabric in which the yarn is inserted by the tufting needles.
- Secondary backing — Fabric laminated to the back of the carpet to increase dimensional stability.

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. These products may also be referred to as modular carpet.

CFCs means Chlorofluorocarbons.

EMS means Environmental Management System.

Energy Management Programme means a programme 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.

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.

GEN refers to the Global Ecolabelling Network.

Global Warming Potential (GWP) is a measure of how much a gas is estimated to contribute to global warming. It is a relative scale that compares the contribution of the gas to that of the same mass of carbon dioxide (CO₂), which has a GWP of 1, over a defined time frame. E.g. methane has a GWP of 21 (100-year time frame). This means that, over 100 years, methane will be approximately 21 times more heat-absorptive than CO₂ per unit of weight².

HSNO means Hazardous Substances and New Organisms Act 1996.

HCFCs means hydrochlorofluorocarbons.

HFCs means hydrofluorocarbons.

ISO means International Organisation for Standardisation.

Label means the ECNZ Label.

Ozone Depleting Potential is a relative value that indicates the potential of a substance to destroy ozone gas (and thereby damage the Earth's ozone layer) as compared with the impact of a similar mass

¹ The Carpet and Rug Institute Definition

² Published by the German Technical Cooperation – Programme Proklima and commissioned by the German Federal Ministry for Economic Cooperation and Development

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of chlorofluorocarbon-11 (CFC-11). CFC-11 is assigned a reference value of 1. E.g. a substance with an ODP of 2 is twice as harmful to the ozone layer as CFC- 111².

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

Recycled includes:

- Post-Consumer: Material generated by households, or by commercial, industrial and institutional facilities in their role as end-users of a product, which can no longer be used for its intended purpose. This includes returns of material from the distribution chain.
- Post-Industrial: Material diverted from the waste stream during a manufacturing process. Excluded is re-utilisation of materials such as rework, or scrap generated in a process and capable of being reclaimed within the same process that generated it.

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'.

Safety Data Sheet (SDS) means a document that describes the properties and uses of a substance, that is, identity, chemical and physical properties, health hazard information, precautions for use and safe handling information in accordance with the New Zealand Chemical Industry Council –Preparation of Safety Data Sheets Code of Practice.

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 Is 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 (VOCs) are any organic compound having at 293.15 K a vapour pressure of 0.01 kPa or more, or having a corresponding volatility under the particular conditions of use.

Waste Management Programme means a programme to achieve and sustain efficient and effective minimisation and disposal of waste including policies, practices, planning activities, responsibilities and resources that affect the organisation's performance for achieving the objectives and targets of the waste policy.

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4 Category Definition

This category includes:

- a Polymer fibre carpets delivered to market as commercial modular tile carpets.
- b Polymer fibre carpets delivered to market as broadloom residential and commercial carpets.

At least 90 % of the face fibre by weight must comprise one or more of the materials covered in clause 5.2 of this specification. No other single material shall comprise more than 5 % weight of the face fibre used.

At least 80% by weight of the backing, must comprise of one or more of the materials covered in clause 5.2 of this specification. In this context backing includes the primary and secondary backing materials and the stabilising adhesives; but excludes the fillers. No other single material shall comprise more than 10 % by weight of the total product.

To be licensed to use the Label, a synthetic carpet must meet all of the environmental criteria set out in clause 5 and product characteristics set out in clause 6.

Excluded from this category are;

Wool and Wool-rich Pile carpets and rugs (covered in other ECNZ specifications).

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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 or other authorised representative of the applicant company/Licence holder. This statement shall be supported by current documentation:

- identifying the applicable regulatory requirements including specific obligations arising from permits, regulations, and plan rules; and
- demonstrating how compliance is monitored and maintained.

Verification of continued compliance with legal requirements will form part of the Licence Supervision Plan.

Explanatory Notes

Relevant laws and regulations applicable to the facilities that are manufacturing the ECNZ-licensed product and the the Licence holder's distribution and sales operations, 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;
- information provided to customers and contractors regarding regulatory requirements;
- evidence of a formal certified environmental management system (for example an ISO 14001 certificate) and supporting records on regulatory compliance (for example, copies of regulatory requirements registers, procedures to manage regulatory compliance, monitoring and evaluation reports on regulatory compliance, internal or external audits covering regulatory compliance and management review records covering regulatory compliance);
- copies of published environmental, sustainability and/or annual reports expressly addressing environmental regulatory compliance (for example verified Environmental Statements prepared under the European EMAS regulations);
- audit reports completed by independent and competent auditors addressing regulatory compliance (for example, reports for other eco-label licences or reports from regulator audits).

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

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5.2 Materials

Recycled polymers are exempt from the requirements in 5.2.2 to 5.2.5, and 5.2.8

5.2.1 Product Information

Criteria

Licence applicants/holders and/or carpet manufacturers must provide the following information:

- a The composition of the finished carpet, including all material types used in the face fibres and backings, % by weight of the finished product, recycled content of materials used and % by weight of the finished product (see Table 1 in Attachment A);
- b A list of all chemicals and treatments added during and after manufacturing of the synthetic carpet (see Table 2 in Attachment A).

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by:

- Completed tables from Appendix A.
- When claiming that the material is recycled, documentation will be required to demonstrate that the polymers are recycled and to describe management systems in place (with relevant quality control and production documentation) to ensure that the claimed percentages are consistently met.
- More information may be required to demonstrate the environmental attributes of the filler where fillers other than chalk/calcium carbonate are used.

Explanatory Notes

Licence holders must maintain and update this information and advise The Trust about any changes to this information.

Changes to information, in particular to products and suppliers, will require assessment before they can be confirmed on an The Trust licence.

5.2.2 Acrylic Fibres

Criteria

- a The residual acrylonitrile content in raw fibres leaving the fibre production plant shall be less than 1.5 mg/Kg.
- b The emissions to air of acrylonitrile (during polymerisation and up to the solution ready for spinning), expressed as an annual average, shall be less than 1 g/Kg of fibre produced.

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by:

- a test report showing compliance with (a) using the following test method: extraction with boiling water and quantification by capillary gas-liquid chromatography;

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- detailed documentation and/or test reports showing compliance with (b).

5.2.3 Polyamide (nylon)

Criteria

Emissions to air of N₂O during monomer production, expressed as an annual average, shall not exceed 10g/kg polyamide 6 fibre produced and 50 g/kg polyamide 6,6 produced.

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by a declaration on compliance from the supplier or information on the supplier's compliance.

5.2.4 Polyester

Criteria

- a The amount of antimony in the polyester fibres shall not exceed 260 ppm.
- b The emissions of VOCs during polymerisation and fibre production of polyester, measured at the process steps where they occur, including fugitive emissions as well, expressed as an annual average, shall not exceed 1.2g/kg of produced polyester resin.

VOCs are any organic compound having at 293.15 K a vapour pressure of 0.01 kPa or more, or having a corresponding volatility under the particular conditions of use.

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by declarations on compliance from the supplier of the polyester or information on the supplier's compliance.

5.2.5 Polypropylene

Criteria

Lead-based pigments shall not be used.

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by a declaration from the supplier of the polypropylene.

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5.2.6 PVC

Criteria

Information shall be provided to The Trust at application and thereafter reported annually on PVC and/or phthalates used in the synthetic carpet. This should include information from production records and/or suppliers on:

- i. the percentages by weight of recycled and virgin PVC;
- ii. the particular production processes (membrane cells, non-asbestos diaphragms, modified diaphragms, graphite anodes, mercury cells, closed-lid production etc) used to produce chlorine and VCM for the PVC being used in an ECNZ-licensed synthetic carpets (including the locations of the production);
- iii. information, where available, on waste disposal, wastewater treatment and emissions to air (occupational exposure, emissions from the factory and emissions from the final PVC resin);
- iv. information on any Environmental Management System (EMS) for the production process, including requirements for waste, water, air and product-related requirements;
- v. the types of stabilisers used;
- vi. the types and amounts of any phthalate plasticisers present in recycled content of the PVC (if that information is available) and/or added when manufacturing PVC;
- vii. research and initiatives implemented on substitutes for phthalates identified as of concern by regulators; and
- viii. any product stewardship arrangements for the PVC.

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by appropriate documentation including:

- product specifications;
- production methods;
- calculations and quality controls; and
- initial and ongoing annual reports to The Trust on PVC and plasticisers used.

Explanatory Notes

Regulators have identified the following phthalates to be of concern – dibutyl phthalate (DBP), diisobutyl phthalate (DIBP), butyl benzyl phthalate (BBP), di-n-pentyl phthalate (DnPP), di(2-ethylhexyl) phthalate (DEHP), di-n-octyl phthalate (DnOP), diisononyl phthalate (DINP) and diisodecyl phthalate (DIDP). These phthalates may be prohibited by the Hazardous Substances criteria in clause 5.4.

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5.2.7 Natural Rubber

The synthetic carpet manufacturer must:

- i. have a system to trace and verify the origin of any natural rubber;
- ii. maintain records of any certification of rubber material used in licensed products; and
- iii. have, implement and report on an ongoing programme to review options to include Forest Stewardship Council or equivalent certified rubber content in licensed products.

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by documentation:

- recording the supplier, nature and geographical source of all rubber inputs to the synthetic carpet;
- including, certificates or other evidence on forest management and certification; and
- including an initial and annual report to The Trust on the programme to review options to include Forest Stewardship Council or equivalent certified rubber content in licensed products.

5.2.8 Latex, Synthetic Rubber and Bitumen

The synthetic carpet manufacturer must have, implement and report on a procurement policy to avoid or minimise the use of hazardous additives in the production of rubber, latex, or bitumen based backing materials and stabilising adhesives (for example styrene and butadiene).

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by documentation:

- identifying the hazardous additives used in the latex, synthetic rubber or bitumen backing materials and stabilising adhesives;
- describing the procurement policy to avoid or decrease the hazardous additives added in the production of Latex, Synthetic Rubber or Bitumen
- describing management systems in place with relevant quality control and production documentation to ensure that these requirements are consistently met; and
- including an initial and annual report to The Trust on the procurement programme and additives used.

Explanatory Notes

The use of some phthalates or additives may be prohibited by the Hazardous Substances criteria in clause 5.4 Hazardous Substances.

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5.3 Resource Use and Emissions

5.3.1 Manufacturing

Criteria

The carpet manufacturer must have ISO14001 or equivalent certification and be able to demonstrate that it is:

- i. committed to reducing use of water and energy; and
- ii. committed to reducing emissions to air and water, particularly “greenhouse gases”.

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by:

- a copy of the ISO 14001 of equivalent certificate covering the carpet manufacturer, and
- a copy of the environmental policy of the carpet manufacturer demonstrating the required commitments.

5.3.2 Fibre and Backing Materials

Criteria

- a Face fibre and backing materials used in synthetic carpet products shall be sourced only from manufacturing facilities which:
 - i. are committed to reducing use of water and energy;
 - ii. are committed to reducing emissions to air and water, particularly “greenhouse gases”; and
 - iii. have active programmes to investigate and increase post-consumer recycled content in the materials they supply.
- b The carpet manufacturer shall have and implement a procurement programme that:
 - i. gives preference to suppliers who have environmental management systems that are ISO 14001 (or equivalent) certified;
 - ii. informs suppliers of the licence applicant/holder’s preference for certified environmental management systems; and
 - iii. requests and pursues reporting information from the suppliers on their measures taken to increase recycled content and the origin of any post-consumer content and their programmes to reduce energy use, water use and emissions to air and water.
- c An annual report for iii will be required to The Trust either prepared by the Licence holder, or provided by the carpet manufacturer or supplier.

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by:

- copies or extracts of supply contracts with suppliers of synthetic fibre and backing that include requirements for programmes to reduce water and energy use and reduce emissions and to report on these;

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- information on facilities at which synthetic fibre and backing materials destined for an ECNZ-licensed carpet is manufactured, the certification status of their environmental management systems and/or plans or intentions regarding formal management systems and certification;
- a copy of the carpet manufacturers procurement programme covering point b; and
- an annual report to The Trust on the supplier(s) programmes, prepared by the licence holder, or provided by the supplier(s).

5.3.3 Total Recycled Content of Finished Product

Criteria

The synthetic carpet manufacturer must:

- a Have, and implement an on-going programme to review options to increase post-consumer recycled carpet content in licensed products.
- b Provide annual reports to The Trust on the quantity of total recycled content by % of weight of the finished product clearly indicating the % in both the facing and backing of the carpet product. The % of post-consumer and post-industrial recycled content shall be reported on separately. The report shall include information on the measures taken to increase post-consumer recycled content, any barriers which are preventing recycled content from being increased further and the origin of the post-consumer content.

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by documentation:

- demonstrating the recycled content;
- recording the supplier, nature and source of all recycled content;
- describing management systems in place with relevant quality control and production documentation to ensure that any claimed % of recycled content is consistently met; and
- that includes an initial and annual report to The Trust on the programme and measures taken to increase the post-consumer recycled content in the synthetic carpet.

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5.4 Hazardous Substances

5.4.1 General Hazardous Substances

The following are exempt from clause 5.4.1:

- Trace levels (<0.1% by weight) of substances reported in SDS to be potentially present as contaminants or impurities in raw materials or component substances.
- Recycled carpet content that may have been treated or produced with the prohibited substances during its previous lifecycle.
- These general requirements do not apply to substances that are specifically identified in substance-specific criteria elsewhere in this specification.

Criteria

- a The carpet product shall not be manufactured with materials or substances that are classified as, carcinogens, mutagens or reproductive/developmental toxins, as identified using any of the classifications (or combinations thereof) listed in the table in Appendix C.

The following are exempt from clause a:

- i. formaldehyde;
- ii. 1,3 butadiene, N-nitrosamines, styrene used in the production of rubber; and
- iii. VCM and EDC in the production of PVC.

- b Raw materials or substances added to the carpet product that are classified as ecotoxins (as identified using any of the classifications, or combinations thereof, listed in the table in Appendix C) must not comprise in total more than 2% by weight of the finished carpet product.

- c Organotin compounds must not be used.

The following is exempt from clause c:

- i. Organic tin catalysts used in the production of flexible polyurethane where the manufacturer has in place a contract with a hazardous waste disposal company for the disposal of the waste and can demonstrate that the hazardous waste is correctly disposed of.

- d Blowing agents with a global warming potential (GWP) of more than 140, measured over a 100 year time frame must not be used.

- e Blowing agents must have an ozone depleting potential (ODP) of zero.

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by documentation that includes:

- lists of materials and substances used in the manufacture of the synthetic carpet;
- SDS for substances, including information on hazardous substance classifications of the substance and its constituent ingredients;
- calculations and other supporting documents demonstrating that the limits set for finished synthetic carpet products are met;
- includes records of disposal of hazardous waste from the use of organic tin if applicable
- identifies the blowing agents used and their ODPs and GWPs;

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- information about the classification of substances where there is a discrepancy between the identified classification schemes.

Explanatory Notes

- Under current HSNO classifications, GHS classifications or EU Risk phrases, this clause will preclude the use of certain phthalates including DEHP and DBP, certain aziridine compounds, certain preparatory treatments and certain plastics.
- Compliance with the requirements in 5.4.1 may be demonstrated by providing data indicating that the substance does not have any of the classifications (or combinations thereof) listed in the table in Appendix C.

GWP and ODP of common blowing agents are given in Appendix D. For determining the ODP and GWP of substances not included in Appendix D, reference should be made to one of the following:

- Daniel, J.S., and G.J.M. Velders (Lead Authors), A.R. Douglass, P.M.D. Forster, D.A. Hauglustaine, I.S.A. Isaksen, L.J.M. Kuijpers, A. McCulloch, and T.J. Wallington, Halocarbon scenarios, ozone depletion potentials, and global warming potentials, Chapter 8 in Scientific Assessment of Ozone Depletion: 2006, Global Ozone Research and Monitoring Project—Report No. 50, 572 pp., World Meteorological Organization, Geneva, Switzerland, 2007.
http://www.wmo.ch/pages/prog/arep/gaw/ozone_2006/ozone_asst_report.html
- US EPA Ozone Depleting Substances website <http://www.epa.gov/ozone/science/ods/index.html>
- Forster, P., V. Ramaswamy, P. Artaxo, T. Berntsen, R. Betts, D.W. Fahey, J. Haywood, J. Lean, D.C. Lowe, G. Myhre, J. Nganga, R. Prinn, G. Raga, M. Schulz and R. Van Dorland, 2007: Changes in Atmospheric Constituents and in Radiative Forcing. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. <http://ipcc-wg1.ucar.edu/wg1/wg1-report.html>

If alternative reference sources are used, The Trust will require full details of the reference source or a copy of the document, if it is not readily and freely available.

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5.4.2 Treatment and Finishing Processes

The following are exempt from clause 5.4.2:

- Trace levels (<0.1% by weight) of substances reported in SDS to be potentially present as contaminants or impurities in raw materials or component substances;
- Recycled content that may have been treated or produced with the prohibited substances during its previous lifecycle.
- These requirements do not apply to substances that are specifically identified in substance - specific criteria elsewhere in this specification.

Criteria

- a The following substances shall not be used as part of any preparations or formulations used to treat textile fibres:
- i. alkylphenoethoxylates (APEOs)
 - ii. linear alkylbenzene sulfonates (LAS)
 - iii. bis(hydrogenated tallow alkyl) dimethyl ammonium chloride (DTDMAC)
 - iv. distearyl dimethyl ammonium chloride (DSDMAC)
 - v. di(hardened tallow) dimethyl ammonium chloride (DHTDMAC)
 - vi. ethylene diamine tetra acetate (EDTA)
 - vii. diethylene triamine penta acetate (DTPA).
- b The following substances shall not be actively added or used during transportation or storage of products and semi-manufactured products.
- i. Antimony oxides ;
 - ii. Inorganic ammonium phosphates (diammonium phosphates, ammonium polyphosphates etc.);
 - iii. boron compounds (boric acid, borates);
 - iv. Halogenated organic substances including (but not limited to) methylene chloride, binding agents, Chlorophenols (their salts and esters), PCB, Chlorinated/brominated paraffins, Polybrominated diphenyl ethers and other halogenated flame retardants.
 - v. Fluorochemical finishes;
 - vi. Sulphonated phenolic stainblockers.
- c Biocidal or biostatic products shall not be applied to products so as to be active during the use phase.

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by documentation that:

- lists of materials and substances used in the manufacture of the synthetic carpet;
- SDS for substances, including information on hazardous substance classifications of the substance and its constituent ingredients;
- relevant quality control and production documentation; and
- information on production methods to confirm the banned finishing processes are not used .

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5.5 Dyes and Dye Processes

5.5.1 Dyes

Criteria

- a Dyes (including metal complex dyes) and pigments containing lead (Pb), cadmium (Cd), mercury (Hg) or chromium (chromium total) as ingredients of the dyeing component must not be used to dye the materials.
- i. The limit value for the total heavy metal content (including metal complex dyes) of a finished carpet is 100 mg/kg.

- b Azo dyes shall not be used that may cleave to any one of the following aromatic amines:

Name(s)	CAS No.
- Benzidine	- 92-87-5
- 2-Naphthylamine	- 91-59-8
- 5-Nitro-o-toluidine/2 amino-4 nitrotoluene	- 99-55-8
- 4-Methoxy-m-phenylenediamine/2,4 diaminoanisole	- 615-05-4
- 3,3.-Dichlorobenzidine	- 91-94-1
- 3,3.-Dimethylbenzidine	- 119-93-7
- 6-Methoxy-m-toluidine/p-cresidine	- 120-71-8
- 4,4.-Oxydianiline	- 101-80-4
- o-Toluidine	- 95-53-4
- 2,4,5-Trimethylaniline	- 137-17-7
- 4-Aminoazobenzene	- 60-09-3
- 2,6-Xylidine	- <u>95-68-1</u>
- 4-Chloro-o-toluidine	- 95-69-2
- o-Amino azotoluene	- 97-56-3
- p-Chloroaniline	- 106-47-8
- 4,4.-Methylenedianiline/4,4 diaminodiphenylmethane	- 101-77-9
- 3,3.-Dimethoxybenzidine	- 119-90-4
- 4,4.-Methylenedi-o-toluidine/3,3-dimethyl-4,4-diaminodiphenylmethane	- 838-88-0
- 4,4.-Methylenebis (2-chloroaniline)	- 101-14-4
- 4,4.-Thiodianiline	- 139-65-1
- 4-Methyl-m-phenylenediamine/2,4 diaminotoluene	- 95-80-7
- O-anisidine	- 90-04-0
- 2,4-Xylidine	- <u>87-62-7</u>
- 4-Aminobiphenyl	- 92-67-1

Source: specified in the fifth Addendum to the German ordinance on consumer goods: German ban of use of certain azo compounds in some consumer goods, ETAD information notice no. 6, Ecological and Toxicological Association of Dyes and Organics, November 1995

- c The following dyes that are carcinogenic, mutagenic or toxic to reproduction shall not be used:

- C.I. Basic Red 9
- C.I. Disperse Blue 1
- C.I. Acid Red 26
- C.I. Basic Violet 14
- C.I. Disperse Orange 11
- C.I. Direct Black 38
- C.I. Direct Blue 6
- C.I. Direct Red 28

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- C.I. Disperse Yellow 3
- d No use is allowed of dye substances or dye preparations containing more than 0.1% by weight of substances that are classified as carcinogens, mutagens or toxic to reproduction as identified using any of the classifications (or combinations thereof) listed in the table in Appendix C.
- e The following potentially sensitising dyes shall not be used:

Name (s)	CI No.
- C.I. Disperse Blue 3	- C.I. 61 505
- C.I. Disperse Blue 7	- C.I. 62 500
- C.I. Disperse Blue 26	- C.I. 63 305
- C.I. Disperse Blue 35	-
- C.I. Disperse Blue 102	-
- C.I. Disperse Blue 106	-
- C.I. Disperse Blue 124	-
- C.I. Disperse Brown 1	-
- C.I. Disperse Orange 1	- C.I. 11 080
- C.I. Disperse Orange 3	- C.I. 11 005
- C.I. Disperse Orange 37	-
- C.I. Disperse Orange 76 (previously designated Orange 37)	-
- C.I. Disperse Red 1	- C.I. 11 110
- C.I. Disperse Red 11	- C.I. 62 015
- C.I. Disperse Red 17	- C.I. 11 210
- C.I. Disperse Yellow 1	- C.I. 10 345
- C.I. Disperse Yellow 9	- C.I. 10 375
- C.I. Disperse Yellow 39	-
- C.I. Disperse Yellow 49	-

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by:

- information on dye recipes demonstrating the heavy metal limit is met;
- Supplier declarations and/or SDS (safety data sheets) or other information to demonstrate the risks, if any, assigned to dyes used.

5.5.2 Dye Processes

Criteria

Dyeing using after-chroming/chrome mordant techniques shall not be used.

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by:

- information on dye recipes demonstrating the chromium limit is met;
- manufacturing process information and specification and performance criteria for relevant technologies utilised.

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5.5.3 Metal Complex Dyes

Criteria

Only metal complex dyes based on copper or nickel can be used provided:

- a Where these metal complex dyes are part of the dye recipe, less than 7% of each of those metal complex dyes applied (input to the process) shall be discharged to waste water treatment (whether on-site or off-site).
- b The emissions to water after treatment shall not exceed the value in the following table:

Substance	Limit Value
Cu (fibre, yarn or fabric)	75 mg/kg
Ni	75 mg/kg

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by test reports using the following (or equivalent) test methods: ISO 8288 for Cu and Ni. If an alternative test method is proposed, the applicant will need to provide technical supporting information from a competent laboratory that the alternative test method is equivalent and appropriate to use to test and report against the limits set in the criteria.

5.5.4 Water Use

Criteria

- a The Licence applicant/holder must ensure formal processes are in place as part of certified environmental management systems 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.

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by:

- manufacturing process information and specification and performance criteria for relevant technologies utilised;
- details of water recycling initiatives during dyeing processes.

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5.6 Emissions to Air from Finished Product

Criteria

The finished flooring shall have emissions to air that meet either:

- i. the GuT requirements;
- ii. the AgBB requirements;
- iii. the Greenguard requirements; or
- iv. the Carpet and Rug Institute's (CRI) Green Label Plus programme.

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by documentation either:

- for compliance with the GuT requirements – a test report (for testing using the methods specified by GuT) and calculations demonstrating the GuT limits (applicable at the time of application) are met for the synthetic carpet;
- for compliance with the AgBB requirements – a test report (for testing using the methods specified by AgBB) and calculations demonstrating the AgBB limits (applicable at the time of application) are met for the synthetic carpet;
- for compliance with Greenguard - either a current certificate of compliance covering the flooring, issued by Grennguard, or a test report (for testing using the methods specified by GreenGuard) demonstrating the limits set by GreenGuard (at the time of application) are met for the synthetic carpet;
- for compliance with CRI Green Label Plus - either a current certificate of compliance covering the flooring, issued by the CRI, or a test report (for testing using the methods specified by CRI) demonstrating the limits set by the CRI Green Label Plus (at the time of application) are met for the synthetic carpet.

Explanatory Notes

- Information on the GuT testing methods and limits is available at http://www.gut-ev.de/en/emission_test.htm
- Information on the AgBB Testing methods can be found at <http://www.umweltbundesamt.de/produkte-e/bauprodukte/agbb.htm>
- Information on the Greenguard requirements can be found at http://www.greenguard.org/en/technicalCenter/tech_testMethods.aspx
- Information on the CRI Green Label Plus programme is available at www.carpet-rug.com/commercial-customers/green-building-and-the-environment/green-label-plus and for the current limits at http://www.carpet-rug.org/pdf_word_docs/071028_Carpet_GLP_Criteria.pdf

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5.7 Energy Management

Criteria

- a The Licence Applicant/Holder and/or carpet manufacturer must have effective energy management policies and procedures and/or an energy management programme.
- b Licence holders must report annually to The Trust on energy management, including:
 - i. total energy use;
 - ii. breakdown of total energy use to types of energy used;
 - iii. energy use related to production;
 - iv. initiatives taken to reduce energy use and improve energy efficiency; and
 - v. 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/Licence holder. This statement shall be supported by documentation that:

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

Explanatory Notes

The report provided should include:

- Energy data for the facilities that are manufacturing the ECNZ licensed product (this does not need to be apportioned to the volume of ECNZ Licensed products produced).
- Energy data for the Licence holder's New Zealand operations.

5.8 Waste Management

Criteria

- a The Licence applicant/holder and/or carpet manufacturer must have effective waste management and minimisation policies and procedures and/or a waste management programme.
- b Licence holders must report annually to The Trust on waste management, including:
 - i. quantities and types of waste recovered for reuse internally and externally;
 - ii. quantities and types of waste recycled internally and externally;
 - iii. quantities and types of waste disposed of to landfill;
 - iv. quantities and types of waste burned internally for energy recovery;
 - v. waste generation related to production; and
 - vi. initiatives taken to reduce waste generation and improve recovery/recycling of waste.

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/Licence holder. This statement shall be accompanied by documentation that:

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

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Explanatory Notes

The report provided should include:

- Waste data for the facilities that are manufacturing the ECNZ Licensed product (this does not need to be apportioned to the volume of ECNZ licensed products produced).
- Waste data for the Licence holder's New Zealand operations.

5.9 Packaging Requirements

Criteria

- a All plastic packaging must be made of plastics that are able to be recycled in New Zealand (or the country to which the product is exported and sold).
- b Packaging must not be impregnated, labelled, coated or otherwise treated in a manner, which would prevent recycling (i.e. PVC sleeves, metallic labels).

Verification Required

Conformance with these criteria shall be stated in writing and signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported with the following documentation and evidence.

- Conformance with criteria (a) shall be supported by documentation verifying the packaging is recyclable.
- Conformance with criteria (b) shall be demonstrated by providing samples of all plastic containers and components.

5.10 Product Installation

5.10.1 Carpet Tile Installation

Criteria

- a 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.
- b Modular carpet tiles must be sold with a service offering to customers that includes rotation and replacement of worn tiles.

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/Licence holder. This statement shall be supported by documentation:

- identifying the applicable standards and or consumer/customer requirements; and
- demonstrating how compliance is monitored and maintained;
- setting out warranty information; and
- describing how tiles can be removed.

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5.10.2 Installation Adhesives

Criteria

- a The installation adhesive must be water-based.
- b For modular carpets and tiles the installation adhesive must be pressure sensitive.
- c 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 stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by document including (as relevant):

- Consumer information and recommendations on adhesives to use for installation;
- SDS 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.

5.11 Product Stewardship

5.11.1 Recyclability of Finished Product

Criteria

The licence applicant/holder and or synthetic carpet manufacturer must:

- a Report initially and then annually to The Trust on the current recycling options for the licensed product that reduces the quantity of product being landfilled once it has completed its useful life and how the current manufacturing /design process enables the finished product to be recycled.
- b Have, implement and report annually on an ongoing programme to review design and manufacturing options that increase the licensed products ability to re-enter the carpet manufacturing process as quality raw material rather than being down-cycled after it has finished its useful life as a synthetic carpet.

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by documentation:

- that includes an initial and annual report to The Trust on current recycling options for the licensed product that reduces the quantity of product being landfilled and how the current manufacturing /design process enables the finished product to be recycled;

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- that includes an initial and annual report to The Trust on the programme and measures taken to increase the licensed products ability to re-enter the carpet manufacturing process as quality raw material rather than being downcycled after it has finished its useful life as a floor covering.

5.11.2 Take-back Schemes

Criteria

- a The applicant must have and implement processes in New Zealand to take back used carpet product and either refurbish (to be on-sold as second-hand carpet), send back to the parent company for recycling within the parent company's product stewardship/recycling systems or "downcycle" recovered product to an alternative use (such as weed-matting).
- b Licence holders must report annually to The Trust on product stewardship, including:
 - i. availability, feasibility, and involvement in product take-back schemes, including for products which are currently installed;
 - ii. current recycling options available in New Zealand for the licensed product;
 - iii. initiatives taken to promote or implement take-back schemes;
 - iv. total volume of returned product in New Zealand via the take-back scheme;
 - v. information on what has happened to the product bought back in New Zealand via the take-back scheme; and
 - vi. initiatives or requirements for suppliers or contract manufacturers.

Verification Required

Conformance with this requirement shall be stated in writing, signed by the Chief Executive Officer or other authorised representative of the applicant company/Licence holder. This statement shall be supported by documentation describing refurbishment processes:

- describes the product stewardship initiatives, procedures and programmes; and
- includes annual reports to The Trust on product stewardship initiatives and required information.

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6 Product Characteristics

6.1 Fitness for Purpose

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 Carpet tiles must meet accepted dimensional stability tests.

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/Licence holder. This statement shall be supported by documentation:

- identifying the applicable standards and or consumer/customer requirements; and
- demonstrating how compliance is monitored and maintained.

6.2 Product Warrantys

Criteria

- a Modular tile carpets and broadloom commercial carpets must carry a standard 15 year minimum manufacturer's warranty.
- b Residential broadloom carpets must carry a standard 5 year minimum manufacturer's warranty.
- c The product must carry a minimum 5 year colour fastness warranty.
- d Refurbished products must carry a minimum 5 year warranty.

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/Licence holder. This statement shall be supported by documentation:

- Setting out warranty information.

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7 Requirements and Notes for Licence Holders

Monitoring Compliance

Prior to granting a licence, The Trust 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, The Trust 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 or environmental management system documentation (for example, ISO 9001 or ISO 14001 or similar).

The monitoring plan will require the licence holder to advise The Trust 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.

The Trust will maintain the confidentiality of identified confidential information provided and accessed during verification and monitoring of licences.

Using the ECNZ 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 eg 'licence No1234'.

The Label must be reproduced in accordance with the ECNZ 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 ECNZ Label and advertising could result in the Licence being withdrawn.

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Appendix A: Table 1 Carpet Composition Tables.

FACE FIBRES	Raw Material type	Manufacturer /supplier (s)	Manufacturer environmental credentials (e.g. ISO14001)	% By weight of facing	% By weight of finished carpet product	% total recycled content in face fibre	% post-consumer recycled content in face fibre	% Post-industrial Recycled content in face fibre	Origin of all recycled content	Dyeing process
Primary										
Secondary										
Any other fibres please list										

BACKINGS	Raw Material type	Manufacturer /supplier (s)	Manufacturer environmental credentials (EG ISO14001)	% by weight of backing excluding the filler	% By weight of finished product	% recycled content	% post-consumer recycled content	% Post-industrial Recycled content	Origin of all recycled content
Primary									
Secondary									
Stabilising adhesive									
Fillers*				N/A					
Any other materials/ substance used in the backing please list									

*where fillers used are not calcium carbonate additional information on environmental providence will be expected to be provided at the time of assessment.

Appendix C : Table 3- Hazardous Substance Classifications

European Risk Phrases	New Zealand HSNO Classes	Globally Harmonised System
Toxins		
R23 toxic by inhalation	6.1B or 6.1C	Acute Tox. 2 and 3 H330, H331
R24 toxic in contact with skin	6.1B	Acute Tox. 3 H311
R25 toxic if swallowed	6.1B	Acute Tox. 3 H301
R26 very toxic by inhalation	6.1A	Acute Tox. 2 and 3 H330
R27 very toxic in contact with skin	6.1A	Acute Tox. 1 H310
R28 very toxic if swallowed	6.1A	Acute Tox. 2 H300
Ecotoxins		
R50 very toxic to aquatic organisms	9.1A	Aquatic Acute 1 H400
R51 toxic to aquatic organisms	9.1D or 9.1B	
R52 harmful to aquatic organisms	9.1D or 9.1C	
R53 may cause long-term adverse effects in the aquatic environment	9.1D	Aquatic Acute 4 H413
R50/53 very toxic to aquatic life with long lasting effects	9.1A	H410
R51/53 toxic to aquatic life with long lasting effects	9.1B	H411
R52/53 toxic to aquatic life with long lasting effects	9.1C	H412
Sensitisers		
R42 May cause sensitisation by inhalation	6.5A	Resp. Sens. 1 H334
R43 May cause sensitisation by skin contact	6.5B	Skin Sens. 1 H317
Carcinogens, mutagens and reproductive toxins		
R40 limited evidence of a carcinogenic effect	6.7B	Carc. 2 H351
R45 may cause cancer	6.7A	Carc. 1A and 1B H350
R46 may cause heritable genetic damage	6.6A	Muta. 1B H340
R49 may cause cancer by inhalation	6.7A	Carc. 1A and 1B H350
R60 may impair fertility	6.8A	Repr. 1A and 1B H360
R61 may cause harm to the unborn child	6.8A	Repr. 1A and 1B H360
R62 possible risk of impaired fertility	6.8B	Repr 2 H361
R63 possible risk of harm to the unborn child	6.8B	Repr 2 H361d
R68 possible risk of irreversible effects	6.6B	Muta. 2 H341

NOTE:

There are different classification systems for hazardous substances that are used internationally. As the ECNZ specifications need to consider products that are manufactured in New Zealand and overseas, it is necessary to consider the equivalence of hazardous property classification systems in different jurisdictions. The table above shows the (broadly) equivalent European Risk Phrases, New Zealand HSNO Classifications and the United Nations' Globally Harmonised System of Classification and Labelling of Chemicals (GHS) classifications. The EU has implemented the GHS into EU law, replacing the Risk Phrases, and all "substances" (single compounds) have now been transferred to the new classification system. Mixtures must be classified under the GHS by 31 May 2015.

It is important to note that the Risk Phrases, HSNO Classifications and GHS are classification frameworks and the particular classifications applied to a substance may vary between jurisdictions (for example Europe, the United States and New Zealand each have their own agency with responsibility for assessing and classifying hazardous substances). Differences between classifications can be due to the weight placed on particular toxicity studies (i.e. a jurisdiction may consider that a study is flawed) or in the event that new information becomes available (i.e. differences in the timing of the classification or re-classification of a substance).

Where there is a discrepancy between the classifications applied to specific substances in the different schemes, The Trust's appointed technical advisors will review supporting information regarding the classifications on a case-by-case basis to determine and recommend to The Trust how these discrepancies should be managed within the life cycle context of the relevant product category. Where appropriate, technical clarifications and changes, with accompanying explanation, will be included in the relevant specification.

Appendix D: Physical and Environmental Properties of Major Blowing Agents

Ref: UNEP (2007): 2006 Report of the Flexible and Rigid Foams Technical Options Committee – 2006 Assessment. Nairobi: UNEP/Ozone-Secretariat. Available online: http://ozone.unep.org/teap/Reports/FTOC/ftoc_assessment_report06.pdf [Accessed May 2010]

• **Table 4: Fluorinated Blowing Agents**

	CF C- 11	CFC -12	HCF C-22	HCFC- 142b	HCFC- 141b	HFC- 134a	HFC- 152a	HFC- 245fa	HFC- 365mfc	HFC- 227ea
Chemical Formula	CF Cl ₃	CCl ₂ F ₂	CHCl F ₂	CH ₃ CC lF ₂	CCl ₂ F CH ₃	CH ₂ F CF ₃	CHF ₂ CH ₃	CF ₃ CH ₂ C HF ₂	CF ₃ CH ₂ CF ₂ CH ₃	CF ₃ CHF CF ₃
Molecular Weight	13 7	121	86	100	117	102	66	134	148	170
Boiling Point (°C)	24	-30	-41	-10	32	-27	-25	15.3	10.2	-16.5
Gas Conducti vity (mW/m° K at 10 °C)	7.4	10. 5	9.9	8.4	8.8	12.4	14.3''	12.5*	10.6*	11.6
Flamma ble limits in air (vol. %)	no ne	non e	non e	6.7- 14.9	7.3- 16.0	none	3.9- 16.9	none	3.8-13.3	none
TVL or OEL (ppm) (USA)	10 00	100 0	100 0	1000	500	1000	1000	n/a	n/a	1000
GWP (100 yr.)**	40 00	850 0	170 0	2000	630	1300	140	820	840	2900
ODP	1.0	1.0	0.05 5	0.065	0.11	0	0	0	0	0

• **Table 5: Non-fluorinated Blowing Agents**

	Methylene Chloride	Trans-1,2-dichloroethylene	Isopentane	Cyclopentane	n-pentane	Carbon Dioxide	Isobutane	n-butane	Methyl Formate (Ecomate®)
Chemical Formula	CH ₃ Cl ₂	C ₂ H ₂ Cl ₂	CH ₃ CH(CH ₃)CH ₂ CH ₃	(CH ₂) ₅	CH ₃ (CH ₂) ₃ CH ₃	CO ₂	C ₄ H ₁₀	C ₄ H ₁₀	CH ₃ (HCOO)
Molecular Weight	84.9	97	72.1	70.1	72.1	44	58.1	58.1	60
Boiling Point (°C)	40	48	28	49.3	36	-139	-11.7	0.5	31.5
Gas Conductivity (mW/m ² °K at 10 °C)	n/a	n/a	13.0	11.0	14.0	14.5	15.9	13.6***	10.7"
Flammable limits in air (vol. %)	none	6.7-18	1.4-7.6	1.4-8.0	1.4-8.0	none	1.8-8.4	1.8-8.5	5.0-23.0
TVL or OEL (ppm) (USA)	35-100	200	1000	600	610	n/a	800	800	100
GWP (100 yr.)**	n/a	<25	<25	<25	<25	1	<25	<25	<25
ODP	0	0	0	0	0	0	0	0	0

" Measured at 25 °C

* Measured at 24 °C

** IPCC-Report 1996

*** Measured at 0 °C