The Specifications for the Verification of Recycled PVC Content Claims in PVC Products

Version 1.0

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Foreword

These specifications have been developed by the Vinyl Council of Australia in consultation with the PVC industry and key stakeholders. The Vinyl Council of Australia is the peak association for the vinyl, or PVC, value chain in Australia. Its members are companies engaged across the vinyl value chain including raw material and additive suppliers, compounders, local product manufacturers, importers of finished products and recyclers. The Council's purpose is to enhance the industry's opportunities for growth through sustainable development.

In 2002, the Council and its members launched a voluntary sustainability commitment, the PVC Stewardship Program. The Program is an on-going, long-term, voluntary undertaking by the Australian PVC industry to recognise, and progressively address, all relevant environmental, health and safety issues associated with the PVC product life cycle within responsible and deliverable timeframes. Today around 50 companies are Signatories to the Program and are obligated to report their progress in meeting the current commitments related to best practice manufacturing, safe and sustainable use of additives, energy efficiency and greenhouse gas management, resource efficiency and transparency and engagement.

As part of the objective to drive continuous improvement in recycling PVC, the Program introduced a commitment in 2015 that Signatories agree to use recycled PVC in the PVC products they supply to the Australian market, unless Australian standards or regulations prohibit the use of recycled material, or it is not technically feasible to integrate recyclate into the product. These specifications will support those manufacturers seeking recognition for advancing the circularity of PVC through use of recyclate.

The specifications will be reviewed 3 years after their release.

Disclaimer

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Purpose:

The primary purpose of the specifications is to define criteria for the verification of products claimed to be made wholly or partially from recycled PVC. Recycled PVC products may be environmentally preferable based on reduced demand for virgin PVC materials, reduced embodied energy and reduced amounts of PVC waste going to landfill.

The specifications specify requirements for the verification of the consistent use of a minimum quantity of recycled PVC by weight in verified products expressed as a percentage. It is the recycled PVC content percentage being claimed that is being verified; the licence, if granted, will indicate a minimum percentage of recycled PVC is being used and the minimum is being adhered to. If the manufacturer adds more recycled PVC to a product formulation after verification, this is not an issue provided their own internal quality systems are in place to monitor and record the details.

Claims shall consist of the manufacturer/distributor indicating the minimum percentage of recycled PVC content in the Product Range produced/imported. 'VinylCycle' products shall have appropriate strength and performance characteristics making them suitable for their intended purpose.

VinylCycle verification will aid specifiers, procurers and consumers in the identification of product with genuine recycled content to support informed procurement decisions, as well as provide a means for product manufacturers to gain recognition for contributing to the circular economy of PVC, and plastics more generally. It further provides a system to help maintain identification of recyclate through the supply chain from waste recovery to product use.

Consultation

The following organisations and groups were consulted or had the opportunity to provide feedback in the development of these specifications:

- GECA (Good Environmental Choice Australia)
- PVC Stewardship Program Technical Steering Group
- Vinyl Council of Australia PVC Circularity Task Force
- Vinyl Council of Australia Members and
- The broader PVC industry and stakeholders

How To Use This Document

This is a voluntary specification document that is not intended to replace the legal or regulatory requirements of any country. It is the responsibility of each Claimant to demonstrate compliance with all applicable laws and regulations related to health, safety and the environment, marketing, labour and business practices.

The intent of certain words is given by

- “shall” indicates a requirement;
- “should” indicates a recommendation;
- “may” indicates a permission;
- “can” indicates a possibility or capability.

Definitions[1]

Applicant or Claimant – The manufacturer/distributor seeking authentication of their claim of recycled content in a Product Range.

Converter – A manufacturer of a PVC product by extrusion, blow-moulding, injection moulding or calendaring processes.

Legacy additives – Chemicals that have been used in the past within PVC formulations, but have since been replaced with alternatives given their impact on human health and/or the environment. These additives may be present in recyclate depending on the year and place of manufacture. However, when recycled, the risks to human health and the environment from recycling materials containing these additives are considered low, and lower than the risk of landfilling.

Manufacturing process – Refers to all steps related to the production of the Product Range. Any PVC waste generated during the Manufacturing Process that is put back into the Manufacturing Process for the same or subsequent production of the Product Range shall not be considered Recycled PVC.

Post-consumer material – Material that has reached its intended end user, and which is no longer being used for its intended purpose.

Pre-consumer recycled content – Material that has been diverted from the waste stream during a non-related manufacturing process or during an installation process (such as offcuts). It does not include materials generated in the Claimant's manufacturing process and capable of being reused as a substitute for virgin PVC or PVC compounds without being modified in any way. However externally sourced post-industrial material is included under the pre-consumer recycled content definition.

Product range – A finished article or group of articles under the same branded product or resulting in a product sold under the same tradename, with the same claimed level of recycled content. If products contain different levels of recycled PVC, they must be treated as separate Product Ranges for claim authentication so as to attain an individual license for each claim. Different shades or size of finished product can be classed as the same product range, provided they claim the same recycled PVC content.

PVC – Poly Vinyl Chloride, or vinyl

PVC component – Refers to the PVC compound and related fillers; excludes unrelated materials of the total product such as polyester within a PVC-coated fabric product, or wiring within a PVC cable.

PVC compound – PVC resin mixed or blended with additives, pigments, modifiers and stabilizers to achieve specific properties

PVC (or vinyl) product – A product in which a PVC compound is a key constituent.

Recovered material – Material that would have otherwise been disposed of as waste but has instead been collected and recovered as a material input for a recycling or manufacturing process.

Recycled content – The proportion of Pre-consumer/Post-consumer recycled or recovered material, by mass, in a product. 'Recycled content' excludes any product that is reused or re-purposed in a PVC product without additional reprocessing.

Recycled material – Material that has been reprocessed from recovered material by means of a manufacturing process, to be incorporated into a final product as a substitute for virgin material.

Recycled PVC, also referred to shorthand as '**rPVC'** – Pre-consumer or Post-consumer or Recovered PVC waste procured from sources external to the Claimant's business for reuse/recycling as a replacement for virgin PVC resin/compound, including PVC waste arising from other's manufacturing, fabrication, installation, repair, maintenance and end-of-life.

Vinyl Chloride Monomer (VCM) – A monomer produced as an intermediate chemical in the PVC polymerisation process.

VinylCycle – A registered trademark of the Vinyl Council of Australia used to represent verified recycled PVC content.

[1] Definitions have been developed with reference to ISO 14024, UL 2809, and ISEAL Code of Good Practice for Setting Social and Environmental Standards.

1.0 SCOPE

Criterion 1: Recycled Content Claim: The manufacturer claims a minimum recycled PVC content in a PVC Product Range.

The scope of these specifications is applicable to PVC products that are manufactured partially or fully from recycled PVC. The manufacturer is claiming a minimum recycled PVC content on the PVC part of the product.

In order to request claim authentication, a minimum of 10% of the PVC compound by weight must constitute recycled PVC. The Claimant must make a claim of a specific percentage ≥ 10%.

Where a product consists of a PVC component and other non-PVC components or parts, the claim will relate only to the recycled PVC content of the PVC component.

The recycled PVC content in a product is determined at the stage of manufacture where the recycled PVC is mixed with virgin materials, which could be as a batching step or online prior to extruding/ moulding, and the concentration of recycled PVC is assumed to remain constant in subsequent manufacturing stages to produce the finished product.

Each batch of material processed to make the Product Range subject to the recycled content claim, shall comply with a known concentration and source of recycled PVC.

*NOTE: In order to re-certify after the two-year authentication period, the manufacturer must claim an **equal or higher percentage** of recycled PVC content from the previous authentication process.*

Demonstration of Conformance
DoC 1.1:
A brief description of the Product Range(s) as they apply to the scope of these specifications including the relevant product identifying codes, marks or names
AND
A statement of the product manufacturer's claim of recycled PVC content (% by weight).

2.0 FITNESS FOR PURPOSE and REGULATORY COMPLIANCE

To be verified, the product(s) must be fit to perform its intended purpose or application. A minimum level of quality and durability is implicit before the label can be displayed on the product. The applicant must ensure that the product is fit for its intended purpose.

The manufacturer will have tested the material to specification. This may be to a recognised product conformance standard or to an internal specification, such as the customer's requirement.

The product authenticated must not be classifiable as dangerous according to the Australian Dangerous Goods (ADG) code.

This Claim Authentication procedure is not intended to address whole product lifecycle effects and does not validate any claims that may be made by the manufacturer in relation to applicable health, safety or other applicable legal regulations.

Criterion 2.1: The Claimant confirms that the Product Range is fit for its intended purpose and the manufacturer complies with relevant legislation including:

a. Environmental Legislation

b. Fair Pay and Labour Law

c. Workplace Safety

d. Equal Opportunity

e. Lawful Conduct

f. Modern Slavery

Demonstration of Conformance
DoC 2.1: A statement issued by an authorised executive signatory of the Claimant that the Product Range complies with the criteria outline in 2.1 and meets expected quality and durability requirements for such an application.

Nb. The Claim Authenticator may request sight of quality control test reports, or a report from an independent organisation that demonstrates fitness for purpose, market acceptance, suitability or quality.

3.0 RESPONSIBLE MANUFACTURING

Criterion 3.1 The Claimant shall demonstrate appropriate waste minimisation and reduced emissions to air and water.

Demonstration of Conformance
DoC 3.1: The Claimant submits evidence of compliance with one or more of the following:

- The PVC Stewardship Program's Commitments for Best Practice Manufacturing (Environmental Management System, Mercury Avoidance, VCM Emissions) and Resource Efficiency (Post-industrial PVC Product Waste)[2]
- Best Practice Guidelines for Manufacturing PVC (current third-party verification certificate)
- ISO 14001 certification and evidence the Environment Management System includes waste and emissions in its scope.

Criterion 3.2 The Claimant confirms that the virgin materials intentionally added to manufacture the Product Range shall not include substances or mixtures classified as hazardous to human health i.e., carcinogenic, mutagenic, allergens, teratogen or toxic for reproduction (classified as category 1 level based on Globally Harmonised System (GHS) of Classification and Labelling of Chemicals).

Demonstration of Conformance
DoC 3.2: The Claimant submits evidence of compliance including:

A statement issued by an authorised executive signatory of the Claimant that the virgin materials intentionally added to the Product Range do not contain substances classified as category 1 level based on Globally Harmonised System of Classification and Labelling of Chemicals AND

The Safety Data Sheet of the product(s).

AND one or more of the following:

- Evidence of compliance with the PVC Stewardship Program's Commitments for Residual VCM and Safe and Sustainable Use of Additives (Stabilisers and Pigments, Plasticisers) and confirms avoidance of low molecular weight phthalates[1]
- Best Practice Guidelines for Manufacturing PVC (current third-party verification certificate)
- Independent verification of avoidance of substances or mixtures classified as hazardous for human health (Cat 1 under GHS), and confirmation of residual VCM content in virgin resin of less than 1 ppm.

[2] Evidence of compliance requires confirmation the company is an existing signatory to the PVC Stewardship Program and includes the most recent annual survey compliance report issued to the signatory company by the Vinyl Council of Australia or the Program's auditor.

4.0 RECYCLED PVC CONTENT

In order for a claim to be verified for any Product Range, the quantity of recycled PVC used must adhere to the minimum agreed percentage claimed for the Product Range.

Where a product consists of a PVC component and other non-PVC components or parts, the claim will relate only to the recycled PVC content of the PVC component.

Non-PVC recycled material is not to be included in the calculations for Claim Authentication under these specifications. These non-PVC recycled materials are to have no impact on the claim being authenticated.

Criterion 4.1 Source Material: The Claimant will identify the sources of recycled PVC material (pre-consumer and/or post-consumer).

Demonstration of Conformance
DoC 4.1 Documentation from the recycled PVC material supplier(s) identifying the source(s) of the recycled content (pre-consumer / post-consumer) for the production period of calculation (minimum 6 months).

Criterion 4.2 Calculation of Recycled Content: The recycling percentages shall be calculated as the quotient of the weight of recycled PVC used and the weight of the net total PVC compound used:

Recycled Content Percentage:

$$\frac{\text{Recycled PVC}}{(\ \text{Virgin PVC} + \text{Additives/Fillers} + \text{Recycled PVC}\ )} \times 100$$

Percentages should be rounded down to the nearest whole number value.

Losses in the system due to leakage, processing efficiency, conversion efficiencies or any other factors which reduce the total mass of recycled PVC content in the finished article are not accounted for.

However, a balance calculation may be requested at any time during the license period to confirm that the production of licensed finished product containing a minimum quantity of recycled PVC according to the claim authenticated is confirmed by the records of consumption of recycled PVC input.

Demonstration of Conformance
DoC 4.2 Declaration of conformance of claimed recycled PVC content according to the calculation above supported by relevant production documentation showing the manufacturing site address for Product Range and including:

- A manufacturing process flowchart and/or description

AND

- A Bill of Materials or full product composition specification for the Product Range being evaluated, identifying the recycled PVC as a feedstock along with the other raw materials and including the weight of all materials (both recycled and virgin) used in the final product(s)

AND

- Production sheets from which the amount of recycled PVC added can be confirmed and calculated, including the amounts of virgin and recycled material used and sources of material

AND

- Any standard operating procedures related to handling the recycled material which can be used to identify controls on source of materials in final product

AND

- Documentation of system for management of finished product from manufacturing to storage/inventory to shipping.

Criterion 4.3 Production Period: In order to verify the recycled PVC percentage content claim for the Product Range, the calculated recycling percentages from at least two production runs over a minimum period of the last 6 months prior to the date of the authentication process shall be used to confirm consistent use of the claimed minimum recycled PVC content. The lowest calculated percentage of recycled PVC over a 6-month period must exceed or equal the claimed recycled PVC percentage.

As the Claim Authentication is based on a claimed minimum recycled PVC content, the recycled PVC content documented by the manufacturer must never be below the minimum amount.

Demonstration of Conformance
DoC 4.3 Relevant documentation showing:

- Recycled PVC calculation for each Product Range based on the preceding 6 months production. *Nb. A total weight of the PVC Compound can be used to represent (virgin PVC + additives/ fillers + recycled PVC); individual amounts of virgin PVC and additives/fillers consumed do not need to be shown*

AND

- Total recycled PVC consumption based on stock balance of recycled PVC at the beginning of period, purchase invoices for the recycled PVC corroborating the total volume procured, the total production volume of the Product Range for the preceding 6-month period, less closing stock of recycled PVC procured.

Criterion 4.4 Environmental Impact: Use of recycled PVC extends the life of PVC materials, reduces consumption of natural resources and the embodied energy in new products as well as improves the circular use of materials. However, as most PVC has been, and continues to be consumed in useful long-life products, recycled PVC may contain additives that are no longer used in today's formulations. Known as 'legacy additives' when recycled, the risks to human health and the environment from recycling materials containing these additives are considered low, and lower than the risk of landfilling.

Where PVC recyclate containing legacy additives is used, the Converter will ensure safe and responsible handling and reprocessing of the recyclate including:

- meeting relevant regulatory health and safety obligations to workers and customers;
- ensuring products meet relevant performance requirements;
- avoiding use of PVC recyclate containing legacy additives in sensitive end use applications such as children's toys, medical devices, or food contact products.

Demonstration of Conformance

DoC 4.4: A statement confirming whether the recycled PVC used contains, is likely to contain or does not contain legacy additives. Where the presence of legacy additives is known or suspected, the Claimant is to confirm in writing compliance with the safe and responsible handling and reprocessing of the recyclate, as per Criterion 4.4 above.

5.0 RECYCLED PVC QUALITY CONTROL PROCESSES

Recycled PVC material must be trackable from the moment it enters the manufacturer's site to when it leaves as part of the finished product. If recycled PVC or reprocessed PVC is moved between the manufacturer's sites, documentation shall be kept to record shipments including unique batch numbers, quantities, shipment dates and locations.

Traceability of recycled PVC back to source is also desirable.

Criterion 5.1 Quality Management: Claimants shall have a quality management system in place to account for all the raw materials used in the product including the use of recycled PVC. The quality assurance (QA) process shall require, among other things:

(a) that the quality requirements for recycled PVC suitable for the Product Range being authenticated, such as restricted substances, acceptable contamination thresholds and acceptable legacy additives concentrations (relative to relevant product standards and restrictions) etc., are clearly specified

AND

(b) that the finished product be released for sale only once the minimum recycled PVC content claim has been verified internally as having been achieved.

Demonstration of Conformance
DoC 5.1 QA clearance documentation in a summary form in respect of the use of recycled PVC in the Product Range in compliance with the Claim, sufficient to demonstrate assurance of the goals of the QA system i.e., that the specified quality requirements of the Claimant for the recycled PVC are being met.

Documentation should record as a minimum:

- Date of batch, batch size, identification and marking
- Material type/form
- Source product type
- Processing history and potential for contamination by substances other than the intended end product.
- Transportation origin of batch
- Any processing by Manufacturer prior to use
- Storage location and tracking

Criterion 5.2 Traceability: The Claimant shall have a system for management of documentation from suppliers of PVC waste/recyclate and of the origin and content of material used.

Demonstration of Conformance
DoC 5.2 Documentation from the supplier of the PVC waste material or recyclate to the Claimant including:

Compulsory documentation:

- Supplier Identification
- Batch date and weight or volume
- Whether the waste PVC is derived from a single source or multiple sources, pre- or post-consumer and is one or more product types
- Whether properties disclosed are for the virgin material, or the waste material and whether specific representative sampling has been carried out
- Known properties and constituents of the waste (e.g., presence of polymers other than PVC; stabiliser/plasticiser type)

Additional preferable documentation:

- Original application(s) the waste is derived from (pipe, cable, medical, windows etc.)
- Colour (white/natural, single colour or multi-colour (jazz)).
- Form of waste supplied (flake, granulate, product pieces etc.)
- Any processing of the material by the original waste generator or recyclate supplier (separation of parts, washing, shredding etc.)
- Any known properties from representative sampling of the waste such as specific gravity, melt flow etc.

Note: Manufacturers whose products need to comply to international regulatory requirements such as ROHS and REACH may need additional traceability documentation in place to ensure recycled PVC used is compliant with these regulations.

6.0 PRODUCT INFORMATION

Criterion 6.1: The manufacturer shall make available written information to the consumer clearly stating:

- The intended use of the product.
- Instructions for correct use and storage to maximise the product lifetime (if applicable).
- Any safety measure needs to be taken by consumers (if applicable).
- Recycling instructions for the product(s) end-of-life.

Demonstration of Conformance
DoC 6.1: Copy of documentation to be supplied with the product providing the above information. Alternatively, the information can be provided on the website of the company or in the store to clearly communicate with consumers.

Labelling of Products with Claimed Recycled PVC Content

Claims must match the minimum percentage claim authenticated (not claim higher amounts).

This Claim Authentication process relates only to claims of recycled PVC use; other sources of recycled materials such as other polymers or materials are not authenticated by this process and cannot be included in the claims made under the Authentication label.

Acceptable wording example:

"[Product/actual product name] contains a minimum of XX% recycled PVC content."

Or *"The PVC part of this product/product name contains a minimum of XX% recycled PVC content."*

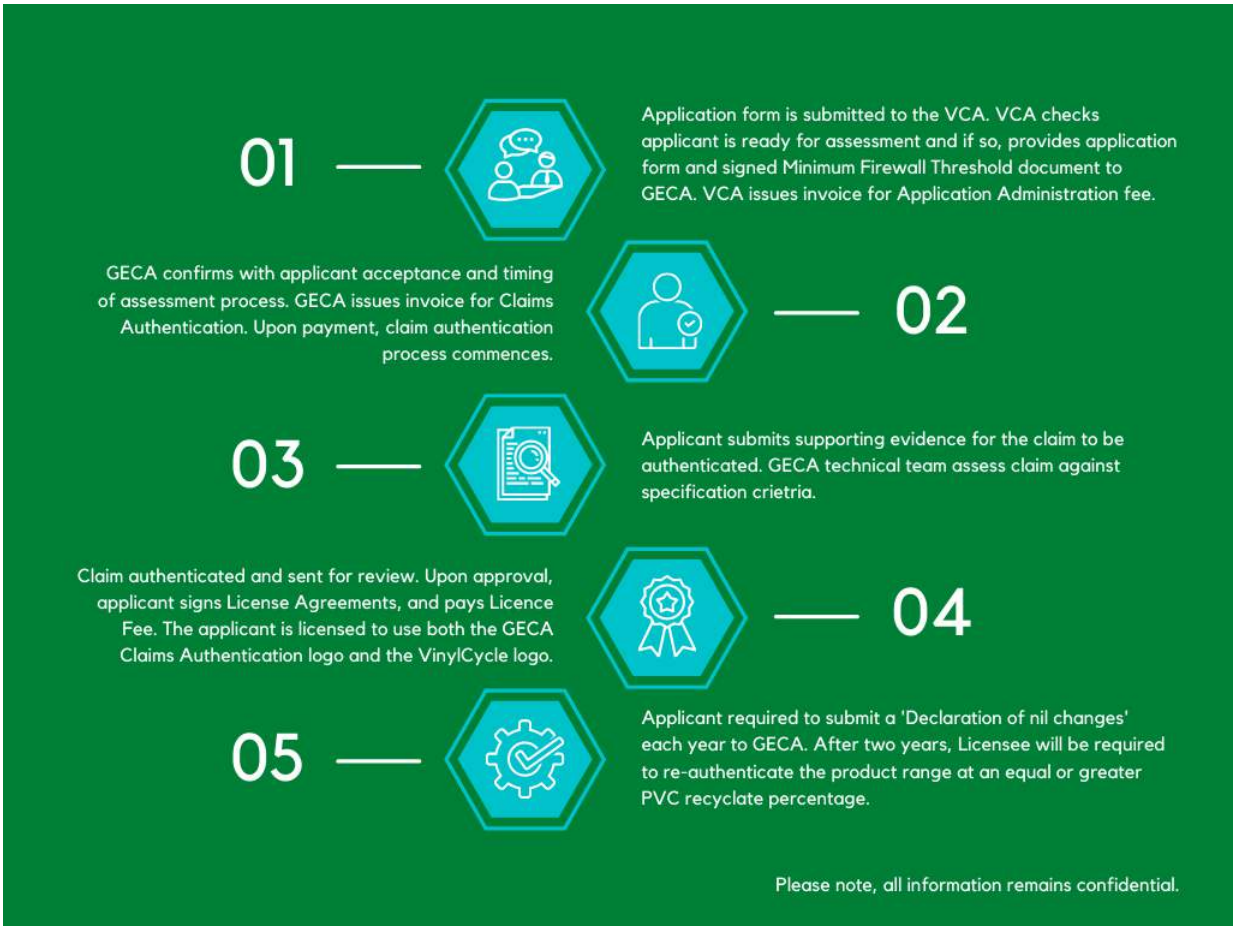
Demonstration of Conformance Summary Checklist

	Criteria	Conformance Evidence
1.0	**RECYCLED CONTENT CLAIM**	
1.1	A claim of a percentage (%) recycled PVC content in a specified PVC Product Range	• A brief description of the Product Range(s) including relevant product identifying codes, marks or names AND • A statement of the product manufacturer's claim of recycled PVC content (% by weight).
2.0	**FITNESS FOR PURPOSE & REGULATORY COMPLIANCE**	
2.1	The Product Range is fit for its intended purpose and the manufacturer complies with relevant legislation	A statement issued by an authorised executive signatory of the Claimant that the Product Range complies with the criteria outline in 2.1 and meets expected quality and durability requirements for such an application.
3.0	**RESPONSIBLE MANUFACTURING**	
3.1	The Claimant demonstrates appropriate waste minimisation and reduced emissions to air and water.	Either: • Compliance with PVC Stewardship Program's Commitments for Best Practice Manufacturing (Environmental Management System, Mercury Avoidance, VCM Emissions) and Resource Efficiency (Post-industrial PVC Product Waste) OR • Current Best Practice PVC certificate, OR • ISO 14001 certification and evidence the EMS includes waste and emissions in its scope.
3.2	Virgin materials intentionally added to manufacture the Product Range shall not include substances or mixtures classified as hazardous to human health.	A confirmatory statement issued by an authorised executive signatory of the Claimant AND • the Safety Data Sheet of the product(s) AND one or more of the following: • compliance with the PVC Stewardship Program's Commitments for Residual VCM and Safe and Sustainable Use of Additives (Stabilisers and Pigments, Plasticisers) and avoidance of low molecular weight phthalates • Current Best Practice PVC certificate • Independent verification of avoidance of substances or mixtures classified as hazardous for human health, and confirmation of residual VCM content in virgin resin of less than 1 ppm.
4.0	**VINYLCYCLE CONTENT**	
4.1	Identify the sources of recycled PVC material (pre-consumer and/or post-consumer).	Documentation from the recycled PVC material supplier(s) identifying the source(s) of the recycled content for the production period of calculation (minimum 6 months).

4.2	Recycling percentage calculated as the quotient of recycled PVC used and the weight of the net total PVC compound used	Percentage calculated supported by relevant production documentation showing the manufacturing site address for Product Range and including:
		• Manufacturing process flowchart and/or description AND • A detailed Bill of Materials or full product composition specification for the Product Range AND • Production sheets from which the amount of recycled PVC added can be confirmed and calculated AND • Any relevant standard operating procedures AND • Documentation of system for management of finished product from manufacturing to storage/inventory to shipping.
4.3	Average recycled PVC use calculated from at least two production runs over a minimum 6 months period.	Relevant documentation showing: • Recycled PVC calculation for each Product Range based on the preceding 6 months production. • Total recycled PVC consumption based on stock balance of recycled PVC at the beginning of period, purchase invoices for the recycled PVC, the total production volume of the Product Range for the period, less closing stock of recycled PVC procured.
4.4	Where PVC recyclate containing legacy additives is used, the Converter will ensure safe and responsible handling and reprocessing of the recyclate.	A statement confirming recycled PVC used contains/ is likely to contain/does not contain legacy additives. Where legacy additives present, confirmation in writing of compliance with the safe and responsible handling and reprocessing of the recyclate.
5.0	**QUALITY CONTROL PROCESSES**	
5.1	Quality Management: Claimants shall have a quality management system in place to account for all the raw materials used in the product including the use of recycled PVC.	QA clearance documentation sufficient to demonstrate assurance that the specified quality requirements of the Claimant for the recycled PVC are being met.
5.2	Traceability: The Claimant shall have a system for management of documentation from suppliers of PVC waste/recyclate and of the origin and content of material used.	Documentation from the supplier of the PVC waste material or recyclate to the Claimant.
6.0	**PRODUCT INFORMATION**	
6.1	The manufacturer shall make available written information to the consumer about the intended use, management and recycling of the product.	Copy of documentation or information provided on website for the product providing relevant information for consumers.

Authentication Process

The process to assess authentication of the recycled PVC content claim within a product range, in line with the VinylCycle Specifications developed by the VCA and Claims Authentication process conducted by GECA, is succinctly outlined below.



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