

Guide for product manufacturers

Calculating and declaring recycled content in construction products

'Rules of Thumb' guide



WRAP works in partnership to encourage and enable businesses and consumers to be more efficient in their use of materials and recycle more things more often. This helps to minimise landfill, reduce carbon emissions and improve our environment.

The term 'rule of thumb' or similar stands in many languages and cultures for 'quickly understood, easily used, practical method'.

Introduction

Construction clients and planning authorities are increasingly setting requirements to encourage greater use of recovered materials within construction projects. WRAP (Waste & Resources Action Programme) have been promoting and facilitating this trend as one contribution to waste reduction, reuse and recycling.

In order to assess contributions to the recycled content by value of a building or infrastructure, design teams need to know the recycled content by mass of products – particularly when looking at options to substitute one brand with another brand of the same type of product within the chosen design specification. Data are therefore needed on a brand by brand basis and must be able to be calculated and recorded on product data sheets in a clear and consistent fashion. A recent European standard identifies recycled content as part of an environmental product declaration¹.

The aim of this Guide is to provide a set of ‘Rules of Thumb’ for the calculation and declaration of recycled content in construction products. It should add clarity and consistency to the way such data are calculated and reported and clarify some situations where interpretation has been required in the past. The guide has been developed for WRAP by BRE in consultation with product manufacturers and their trade associations.

Who is taking action?

Various organisations have set requirements for reused and recycled content on their projects, including:

- British Land, Hammerson and Stanhope;
- John Lewis Partnership and Marks & Spencer;
- Skanska and Carillion;
- Olympic Delivery Authority;
- Scottish Government;
- Welsh Assembly Government;
- Northern Ireland Central Procurement Directorate;
- Yorkshire Forward;
- Welsh Health Estates;
- Hillingdon and Bristol Southmead hospitals;
- Defence Estates;
- Building Schools for the Future;
- National Offender Management Service;
- Raploch Urban Regeneration Company;
- Leeds Metropolitan University; and
- Aberdeen, Bristol, Glasgow, Leeds, Newcastle and Sheffield City Councils.

Typically, a requirement may be worded as follows:

‘... at least 10% of the total value of materials used should derive from recycled and reused content in the products and materials selected. In addition, show that the most significant opportunities to increase the value of materials derived from recycled and reused content have been considered, such as the top ten Quick Wins or equivalent, and implement good practice where technically and commercially viable.’

This focuses contractors onto identifying a limited number of product substitutions within their chosen design, and finding cost-competitive alternative brands and materials currently available on the market.

¹ See International Standard ISO 21930: 2007 *Sustainability in building construction – Environmental declaration of building products*.

Guiding principles

Whilst recycled content is a single indicator and cannot address all of the issues surrounding sustainability and environmental impact, this Guide was produced with the following guiding principles in mind:

1. resource efficiency – use fewer virgin materials;
2. send less to landfill and close the loop by reusing waste materials;
3. discourage wasteful or inefficient processing;
4. reduce environmental impact wherever possible; and
5. recognise commercial as well as environmental drivers.

Across all the ‘Quick Win’ product categories where higher recycled content can commonly be found at competitive cost and where sufficient data exist for conclusions to be drawn, *on average*, selecting options with higher recycled content within a category achieves lower overall environmental impact². However, it must be recognised that higher recycled content in an *individual* product does not always *guarantee* a lower impact.

Standards and legislative framework

This guide works within and is compliant to ISO 14021 and uses its definition of recycled content while offering a calculation which takes into account the yield of any input in relation to the final product.

ISO 14021 defines recycled content as “the proportion, by mass, of recycled material in a product or packaging. Only pre-consumer and post-consumer materials shall be considered as recycled content, consistent with the following usage of the terms:

■ **Pre-consumer material:**

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

■ **Post-consumer material:**

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

For the purposes of the calculation, the term ‘product’ refers to the final product as delivered to the construction site and incorporated in the works. So, for example, ready-mixed concrete will be set and composite products will be as finally assembled.

Recycling in the technical legal sense, for the purposes of the Packaging Directive and by extension also to other wastes is: “*Reprocessing in a production process of the waste materials for the original purpose or for other purposes including organic recycling but excluding energy recovery*”. Therefore the term “*recycled*” carries the meaning of a waste that has been through a production process and is destined for use.³

Declaration of recycled content

This guide has been produced with a view to manufacturers self-declaring the recycled content of their products based on the calculation and criteria laid out below, but each manufacturer should ensure that any data in support of the declaration can be made available to an independent verifier or challenger. Declaration of recycled content should be included on standard product data sheets alongside other environmental and technical data. It is anticipated that certification bodies will be able to offer a certification service based on this calculation to verify independently that the claims are correct.

² This is illustrated by BRE analysis for WRAP using life-cycle data and the BRE Ecopoints metric – see *Environmental impact of higher recycled content in construction projects*, WRAP, 2007.

³ Personal communication, Environment Agency, 2007.

Link to other schemes and standards

BRE Certification Environmental Profiles and the Green Guide

The 2007 methodology for the BRE Certification Scheme for Environmental Profiles will use this calculation and the intention is that manufacturers will be able to request a certificate for this as part of the Environmental Profile. This method has also been used for the calculations of generic data in support of the 2007 Green Guide for Specification.

British Board of Agrément (BBA)

The BBA will use the Rules of Thumb to introduce a working procedure to allow a declaration of recycled content to be included within a Agrément Certificate for an existing or new construction product.

The method of calculation

$$\frac{M_1Y_1 + M_2Y_2 + M_3Y_3}{P} \times 100 = \text{recycled content \%}$$

where: **M** = mass of recycled input
Y = yield of input (taking into account waste losses, moisture content, etc)
P = mass of final product⁴

The ISO 14021 definition uses the term 'proportion by mass of recycled material in a product or packaging'. In order to calculate the mass of the input that is actually in the final product, yield is used (see page 08).

Note that for the purposes of the Rules of Thumb, recycled content within packaging is not included.

Which materials can be included as recycled content?

This Guide sets out four criteria for the acceptance of a material as recycled content within a construction product. A material needs only comply to any one of these criteria to secure its status as recycled content. Whilst compliance to any one is sufficient, where more than one criterion is satisfied, preference is given to criteria A and B in terms of justifying the material status.

Note that aggregates subject to the Aggregates Levy **cannot** be classified as recycled content.

Any claims for materials used in this context must be verifiable independently if required.

The four criteria are shown overleaf.

⁴ Note that P should be equal to the mass of all input materials multiplied by their yields.

Criterion A***Any wastes⁵ that are listed in the European Waste Catalogue******Examples*****Recycled newspaper**

European Waste Catalogue reference: 20 01 01 'paper and cardboard'. Under section 20 for Municipal Wastes (Household waste and similar commercial, industrial and institutional wastes) including separately collected fractions.

Newspapers are post-consumer waste and the use of recovered paper in a construction product would count as recycled content.

PFA (pulverised fuel ash or fly ash)

European Waste Catalogue reference: 10 01 01 'bottom ash, slag and boiler dust (excluding boiler dust mentioned in 10 01 04) or 10 01 02 'coal fly ash'. Under section 10 for Wastes from Thermal Processes.

PFA is currently listed as a waste product and where this is recovered and used in a construction product, it can be included as recycled content.

China clay sand

European Waste Catalogue reference: 01 04 09 'waste sand and clays'. Under section 01 for Wastes Resulting from Exploration, Mining, Quarrying, and Physical and Chemical Treatment of Minerals.

China clay waste is a mineral waste from the production of kaolin that can be processed to produce china clay sand, which as a recovered waste can be included as recycled content of a construction product.

Criterion B***Any material that is classified or intended to be classified as 'waste' within the ISO 14021 definition stated previously. This includes post-construction waste and returns from the distribution chain.******Example*****Waste gypsum**

Returns from a construction site of any unused plasterboard are classed as a return from the distribution chain and, once recovered from the waste stream, can therefore be included as recycled content.

Criterion C***Offcuts or scrap generated within a process where a recovery operation process is required prior to its re-use that changes the physical or chemical nature of the material, e.g. granulation of extruded plastic or crushing of waste blocks.******Example*****Windows**

Window fabrication scrap can be ground, pulverized and blended before re-extrusion, so the recovery operation changes its physical nature to allow its re-use. This material does not need to have entered the distribution chain in order to be classed as recycled content in these circumstances.

5 Note that a material does not necessarily or immediately cease to be a waste if sent for use in construction products – the point of recovery of a waste is a separate issue.

Criterion D

By-products as defined by the EC Interpretative Communication on waste and by-products⁶. A by-product is defined as a production residue that is not a waste, and a production residue is defined as a material that is not deliberately produced in a production process but may or may not be a waste. In order to be considered a by-product, a production residue must satisfy all of the following three criteria⁷:

- *the further use of the residue is not a mere possibility but a certainty;*
- *the residue does not need any further processing prior to re-use; and*
- *the residue is produced for further use as an integral part of a continuing process of production.*

For the calculation of recycled content within this document, if all three criteria are true, the production residue is probably not a waste, but is a by-product. See the decision tree on the following page (Fig. 1).

Examples

Blast Furnace Slag

The Environment Agency (EA) issued a Position Statement in August 2007 which was informed by the Communication from the Commission on by-products and the Technical Report on Blast Furnace Slag produced by the EA/WRAP Waste Protocols Project. The Position Statement states that the EA is satisfied that BFS is a by-product and not waste.

Calcium sulphite as contained within Flue Gas Desulphurised (FGD) Gypsum

Calcium sulphite is a by-product of the coal fired power stations derived from the requirement to reduce the environmental impact of combustion through the neutralisation of the sulphur dioxide emissions. A further process of adding oxygen to the calcium sulphite is carried out to produce calcium sulphate (FGD gypsum), which can replace natural gypsum in construction products, notably plasterboard.

In order to calculate the calcium sulphite content of FGD gypsum for the purposes of the calculation of recycled content, a standard factor of 88%, based on the molecular weights of the FGD gypsum and the oxygen, should be applied to the mass of FGD gypsum being added, in any claim for recycled content.

For example: if 0.8 tonnes of FGD gypsum is in a tonne of a product, 0.7 tonnes can be claimed as recycled content, where $0.8 \times 88\% = 0.704$.

Fireclay

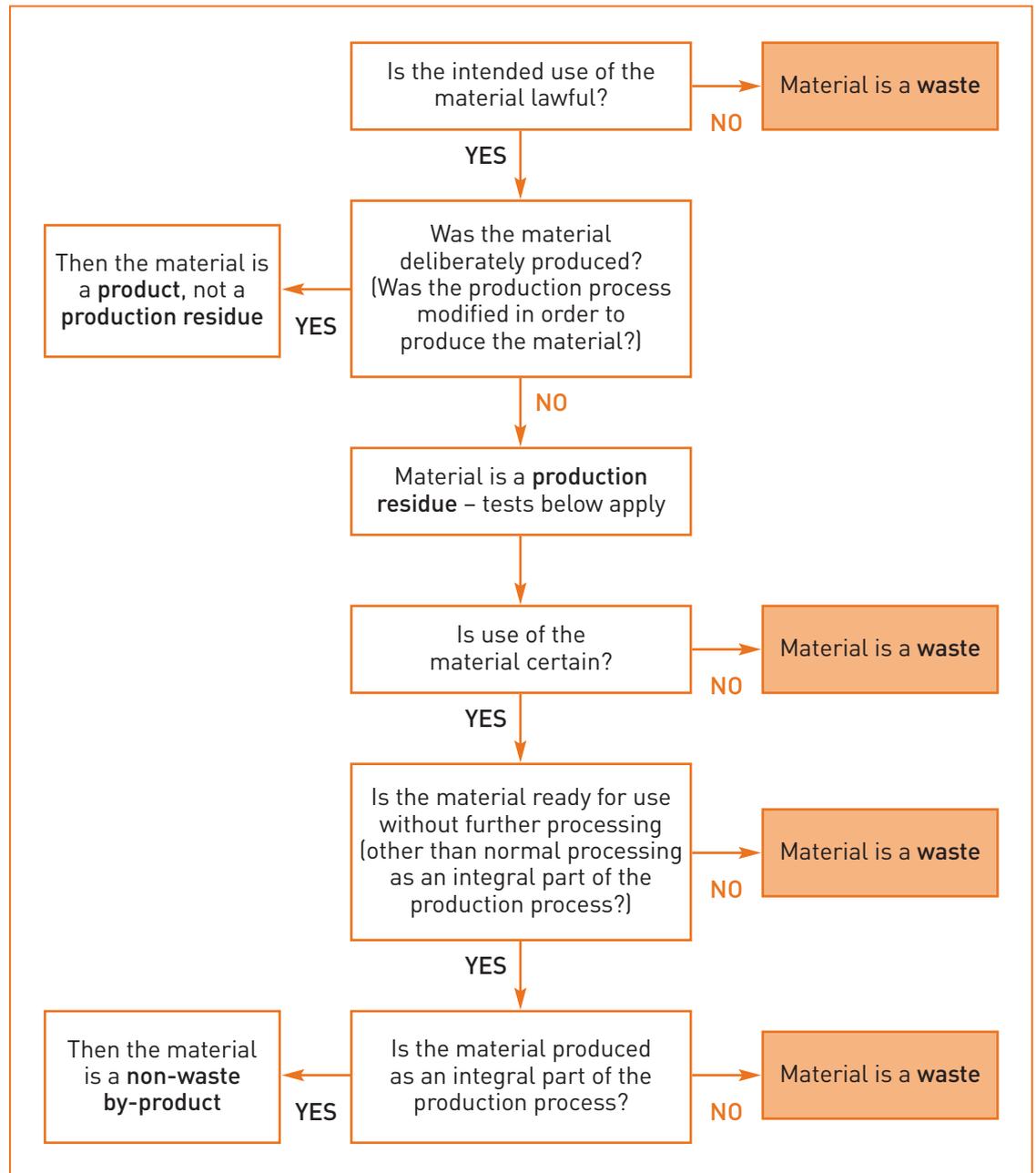
Fireclays extracted from sites where the sole purpose of the operation is to extract fireclays for sale would be classed as a primary raw material and therefore not recycled. However, fireclays that arise as a result of the opencast extraction of coal as the intended primary product (so that the fireclay arisings are incidental to the operation of the site and have been verified as by-products by CERAM) are considered to be recycled materials.

Contact CERAM www.ceram.com for further information.

⁶ COM(2007)59. Communication from the Commission (of the European Communities) to the Council and the European Parliament on the Interpretative Communication on waste and by-products. Brussels 21.2.2007.

⁷ See the Communication for the precise wording and clarification of these three test criteria. In addition, the use for which the by-product is destined must be lawful – in other words, that the by-product is not something that the manufacturer is obliged to discard or for which the intended use is forbidden under EU or national law. The Communication also identifies a number of other factors used by the European Court of Justice to distinguish between waste and by-product.

Figure 1: A decision tree for waste versus by-product decisions
 (reproduced from the EC Interpretative Communication on waste and by-products)



Why/how is the yield taken into account?

The inclusion of yield in the calculation reflects the reality of using different material inputs and is where the calculation modifies the evaluation methodology put forward in ISO 14021. It allows for any increased (or decreased) wastage rates generated by recycled rather than virgin materials and allows for losses (or gains) in the mass of the material during the manufacturing process, e.g. moisture content during firing or kiln-drying processes and the combustion of fuels.

There will be instances where more than one yield factor applies to an input material.

Can recycled fuels be included?

This method calculates the recycled content within construction products and thus any fuels or fuel residues that remain measurable by mass within the final product can be included in the calculation.

Example:

Bricks/pavers may use recycled paper and fuel type materials in their production. Where ash content or residual carbon remain in the product and are measurable, these can be counted as recycled content.

Recycled or recovered fuels used in the production process as energy input are not included although a separate indicator has been identified within ISO 14021 clause 7.6 "Recovered Energy", which could be used to demonstrate good practice.

Can recycled water be included?

Recycled water may be included if it remains measurable in the final product. For this purpose, the term 'measurable in the final product' relates to the form of the product in the completed building or infrastructure. For example, ready-mixed concrete would be hardened and paint would be dried on the walls.

Whilst the use of recycled water for the manufacturing process is recommended, its inclusion in the measure for recycled content of a product is outside the scope of this calculation unless the water remains within the final product as above. A separate indicator "Reduced Water Consumption" has been identified within ISO 14021 clause 7.11, which could be used to demonstrate good practice.

Are allowances made for moisture content?

Within the calculation, allowance is made for changes in moisture content through the yield.

The final moisture content will be the amount that remains in the product within a completed building, so this may be negligible for concrete, or may be 5% in chipboard, for example.

Where accepted industry-wide figures for moisture content are available for standard products, they should be used.

How often should the calculation be updated?

For the purposes of a manufacturer declaring the recycled content of a branded product, figures should be declared for any calendar year's actual production of that branded product. The frequency of updates for that product is at the discretion of the manufacturer and/or their trade association. In any event the data should be externally verifiable should the declaration be brought into question at a later date or if independent verification or certification is required.

If recycled content changes significantly, the declaration should be updated (based on actual recent production or planned future production – see below).

How should the information be stated?

The data on recycled content should be provided (e.g. as part of a standard product data sheet) wherever a declaration of recycled content may be requested by the project client, contractor, designer, builders' merchant, etc. Declarations should always be given as a percentage and should state the year on which the data were based.

For example:

Recycled content: 58% (Jan 2006 to Dec 2006 data)

How can the recycled content of a new product be calculated?

For a new product, some assumptions will need to be made based on the production mix and availability of the recycled material that is intended for use. If such an estimate is used, the words 'Estimated – actual production data due by' should be used.

For example:

Recycled content: Estimated 58%
(actual production data due by December 2007)

How do you calculate the recycled content of a product made on more than one site?

Where companies have more than one site producing the same product, they can choose whether to declare the recycled content on a site-specific basis for an individual product or as an average across sites, or both, as long as the following criterion is met.

The consumer must be able to purchase the specific goods on the basis of the recycled content. If a product is declared individually for a given site, the customer must be able to buy that specific product from that site and the manufacturer must be able to prove that this has been fulfilled. If a product is declared as an average across all sites on which it is made, then the supply of that product is acceptable from any of those sites.

Any product averages should be calculated on a mass-weighted basis.

Illustration:

Product A is made in equal quantities of annual production at three sites within the UK, say Bristol, Glasgow and Norwich. Due to the availability of the recycled materials used for the product in the different areas, the reality is that Bristol's product may have 30% of the recycled content in the final product, Glasgow may have 60% and Norwich may have 30%. The manufacturer can declare individually on the Glasgow product, but the product must be identifiable as being made at the Glasgow site and, if selected, the manufacturer must be able to prove that it is the Glasgow site that actually fulfils the order. That manufacturer may also sell Product A as having an average recycled content of 40%, but only if a group of random customers (from across the UK) buying Product A without specifying recycled content, or specifying 40%, would on average receive products with 40% recycled content.

Calculation of average recycled content:

$$\frac{A\% \times \text{Production A} + B\% \times \text{Production B} + C\% \times \text{Production C}}{\text{Production A} + \text{Production B} + \text{Production C}}$$

As with all the criteria in this guide, in the case of independent verification, any claims will need to be justified and verified. The onus is on the manufacturer not to mislead the consumers. In the above example, if the customer is in Bristol and asks for output with 60% recycled content from the Glasgow factory, it would fall to the manufacturer to explain that any benefit gained by the extra recycled content would be at least partially offset by increased environmental impacts due to the extra transport (particularly for 'heavy' building products⁸).

It would also be possible to calculate production averages on a European or international basis, but the same criteria in terms of supply will still apply.

How would generic values be calculated?

For the purposes of declaring generic data on the range of values of recycled content available in a product category for use on tools and databases, industry-wide figures for standard, good and best practice should ideally be supplied on an annual basis for the previous year's actual production.

8 In this scenario, higher transport costs are likely to deter the customer from requesting supply from the more distant plant.

Classification of levels of recycled content:

- Standard practice – the likely level of recycled content in a given specification if no request is made for recycled content.
- Good practice – a higher level of recycled content which is better than that for standard products but is still readily available in the market place at no additional cost. The recycled content of these products may not necessarily be as high as current technology or market conditions allow; and
- Best practice – is defined as the highest recycled content currently available in products on the UK market.

Special cases**1. Metals**

For recycled content within the metals industry, where recycling is already optimised (where over 90% of waste arising is recycled or reused), an industry average for each product type, e.g. aluminium sheet or steel sections, should be declared, rather than on a site-by-site or company-by-company basis. If, for example, steel sections available globally to the UK market have 60% recycled content on average, then the steel industry could all use that figure as the recycled content of sections.⁹ This % should be supplied by the appropriate trade association and reviewed and, if necessary, amended on an annual basis.

2. Composite products

For composite products, calculations should be based on accepted industry-standard specifications or elements from the Green Guide, as appropriate. As a rule of thumb, recycled content should be declared for products delivered to site, apart from pre-fabricated modules where the products delivered to the assembly facility should be assessed individually. For example:

- in reinforced concrete, the ready-mix concrete and rebar are treated as separate products, because these materials are typically delivered separately to site (and appear separately on a cost plan);
- the concrete itself is treated as a single product, combining its constituent parts (cement, sand, aggregate etc.);
- a pre-cast product containing reinforcement would be treated as a single product; and
- a pre-fabricated component such as a bathroom pod assembled off-site would be assessed in the same way as if the component products had been assembled on site.

Useful links**WRAP**

www.wrap.org.uk/construction, including

- Toolkit for quantifying the recycled content of construction projects and identifying the main opportunities for improvement: www.wrap.org.uk/rctoolkit
- Guide to recycled content of construction products (to which manufacturers can contribute additional product entries): www.wrap.org.uk/rcproducts
- Procurement guidance for construction clients: www.wrap.org.uk/construction/construction_procurement
- Aggregain website on the use of recycled and secondary aggregates (including guide to suppliers): www.aggregain.org.uk

BRE

www.bre.co.uk, including

- Certified Environmental Profiles and Green Guide to Specification

BREEAM

www.breeam.org

British Board of Agrément www.bbacerts.co.uk

European Waste Catalogue www.envirowise.gov.uk/page.aspx?o=166037

⁹ In this example, the 60% would be an average across steel sections available in the global market for sale in the UK – rather than an average across UK production.

Appendix A – Product profiles

The following pages give a few real product profiles illustrating how the criteria are met and how the recycled content is calculated.

The criteria are labelled A, B, C and D and relate to the list below.

Criterion A

Any wastes that are listed in the European Waste Catalogue.

Criterion B

Any material that is classified or intended to be classified as 'waste' within the ISO 14021 definition stated previously. This includes post-construction waste and returns from the distribution chain.

Criterion C

Offcuts or scrap generated within a process where a recovery operation process is required prior to its re-use that changes the physical or chemical nature of the material, e.g. granulation of extruded plastic or crushing of waste blocks.

Criterion D

By-products as defined by the EC Interpretative Communication on waste and by-products¹⁰. A by-product is defined as a production residue that is not a waste, and a production residue is defined as a material that is not deliberately produced in a production process (but may or may not be a waste). In order to be considered a by-product, a production residue must satisfy all of the following three criteria:

- the further use of the residue is not a mere possibility but a certainty;
- the residue does not need any further processing prior to re-use; and
- the residue is produced for further use as an integral part of a continuing process of production.

For the calculation of recycled content within this document, if all three criteria are true, the production residue is probably not a waste, but is a by-product.

¹⁰ Communication from the Commission (of the European Communities) to the Council and the European Parliament on the Interpretative Communication on waste and by-products. Brussels 21.2.2007.

Product profiles

Anglian Windows		
70mm window (Standard BFRC configuration, fixed next to side opener), PVCu sections only	12	
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Company/product/material information

For the purposes of the calculation, the term 'product' refers to the final product as it sits in a completed building, so for example ready-mixed concrete will be set and composite products will be as finally assembled.

Anglian Windows PO Box 65, Norwich, Norfolk NR6 6EJ www.anglianhome.co.uk

Product description and application

70mm window (Standard BFRC configuration, 1,230mm wide x 1,480mm high, fixed next to side opener), PVCu sections only.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Window fabrication offcuts			✓		Pre-consumer
Post-consumer windows		✓			Post-consumer
Products returned from distribution chain		✓			Post-consumer
Fabrication process waste whole windows			✓		Pre-consumer

Calculation tables

The yield factor reflects the % decrease in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Waste fabrication offcuts and waste windows	0.17	95	0.16	
Post-consumer windows and distribution returns	0.02	95	0.02	
Total recycled input per tonne of final product			0.18	
Recycled content (%)				18

Product description and application

Cavity closure system, 1,230mm wide x 1,480mm high, PVCu sections only.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Window fabrication offcuts			✓		Pre-consumer
Post-consumer windows		✓			Post-consumer
Products returned from distribution chain		✓			Post-consumer
Fabrication process waste whole windows			✓		Pre-consumer

Calculation tables

The yield factor reflects the % decrease in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Waste windows	0.59	95	0.56	
Post-consumer windows and distribution returns	0.18	95	0.17	
Total recycled input per tonne of final product			0.73	
Recycled content (%)				73

Aggregate Industries – MasterblockMarions Way Croft, Leicester, Leicestershire LE9 3GP www.masterblock.co.uk**Brand name:** Masterblock – Enviroblock 3.6N (EV1)**Product description and application**

Enviroblock is a lightweight masonry unit with 93% secondary and recycled aggregates with 3.6N compressive strength. For use in cavity walls (external and inner leaf) and internal partition walls with face working size of 440 x 215mm and 100mm width. Manufactured in ISO 14001 compliant factories to dimensional category D1 within the European standard BS EN 771-3:2003.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Recycled Concrete Aggregate			✓		
Aerated block			✓		
Stanton Slag	✓				

Calculation tables

The yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Recycled Concrete Aggregate	0.43	100	0.43	no waste
Aerated block	0.34	100	0.34	no waste
Stanton Slag	0.16	100	0.16	no waste
Total recycled input per tonne of final product			0.93	
Recycled content (%)			93	

Brand name: Masterblock – Masterdenz 7.3N**Product description and application**

Masterdenz 100 and 140 blocks (440 x 215mm or 290 x 215mm by 100mm/140mm) are high density (7.3N compressive strength), general purpose, load bearing blocks for use in external walls, outer and inner leaves of cavity walls, separating walls, walls below ground level/dpc and in beam/block flooring. Compliant with BS EN 771-3:2003 and satisfy BS 5628: Part 1 and BS 6073: Part 2 and manufactured to BS EN 771-3: 2003.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
6mm S/S aggregate (melbur)	✓				
0-6mm dust (melbur)	✓				
0-3mm dust (melbur)	✓				

Calculation tables

The yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
6mm S/S aggregate	0.13	100	0.13	no waste
0-6mm dust	0.52	100	0.52	no waste
0-3mm dust	0.28	100	0.28	no waste
Total recycled input per tonne of final product			0.92	
Recycled content (%)			92	

Aggregate Industries – Masterblock continued
Marions Way Croft, Leicester, Leicestershire LE9 3GP www.masterblock.co.uk

Brand name: Masterblock – Enviroblock 7.3N (EV11 and EV12)

Product description and application

Enviroblock is a lightweight masonry unit with 93% secondary and recycled aggregates with 7.3N compressive strength. For use in cavity walls (external and inner leaf) and internal partition walls with face working size of 440 x 215mm and 100mm width. Manufactured in ISO 14001 compliant factories to dimensional category D1 within the European standard BS EN 771-3:2003.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Recycled Concrete Aggregate			✓		

Calculation tables

The yield factor reflects the % decrease in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Recycled Concrete Aggregate	0.93	100	0.93	no waste
Total recycled input per tonne of final product			0.93	
Recycled content (%)			93	

Aggregate Industries – Fyfestone
North End, Ashton Keynes, Wiltshire SN6 6QX www.fyfestone.com

Brand name: Fyfestone – Enviromasonry 14N (100mm Solid)

Product description and application

Architectural sustainable masonry for use in external, internal and partitions walls. Manufactured to ISO 14001 and quality assurance ISO 9001 and to BS EN 771-3. Compressive strength of 14N and size of 440 x 215 x 100mm and available in split, fairfaced, polished and textured finishes. Available in range of colours – Ash, Birch, Harvest, Autumn, Terra Cotta, Glacier and Everglade.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
0-6mm Lee Moor sand	✓				
Ground Granulated Blastfurnace Slag (GGBS)				✓	

Calculation tables

The yield factor reflects the % decrease in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
0-6mm Lee Moor sand	0.72	100	0.72	no waste
GGBS	0.06	100	0.06	no waste
Total recycled input per tonne of final product			0.78	
Recycled content (%)			78	

Aggregate Industries – CharconHulland Ward, Ashbourne, Derbyshire DE6 3ET www.charcon.com**Brand name:** Charcon – EcoPave**Product description and application**

EcoPave is a range of sustainable and environmental kerbs, block and paving slabs that maximise materials and resource in their production. They are designed for high trafficking areas such as town centres, pedestrian areas and shopping precincts. The block paving complies with BS EN 1338; Kerb with BS EN 1340 and flag paving with BS EN 1339.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Lee Moor grit sand	✓				
3.5mm Down Copper Slag	✓				

Calculation tables

The yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Lee Moor grit sand	0.65	95	0.62	minimal waste
3.5mm Down Copper Slag	0.15	97	0.15	minimal waste
Total recycled input per tonne of final product			0.76	
Recycled content (%)			76	

Brand name: Charcon – K-Lite Traditional Kerb**Product description and application**

K-Lite kerbs are a lightweight, durable, natural granite replicate kerb for use on short run and small repair kerb installations. Designed for occasional vehicular impact. K-Lite comply with European Standard BS EN 1340. Sizes 440 x 140 x 100mm & 290 x 215 x 100mm). Available in two colours – Silver Grey and Dark Grey.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Lee Moor grit sand	✓				

Calculation tables

The yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Lee Moor grit sand	0.85	95%	0.81	minimal waste
Total recycled input per tonne of final product			0.81	
Recycled content (%)			81	

Aggregate Industries – BradstoneHulland Ward, Ashbourne, Derbyshire DE6 3ET www.charcon.com**Brand name:** Bradstone-Old Town Chelsea Cobble Paving**Product description and application**

Old Town Conservation Chelsea Cobble is an eco friendly paving product made from recycled and reclaimed aggregates. Each slab has a random edge and over 20 randomly arranged cobbles to enable hidden joints and a random effect when laid. It is available in three sizes (450 x 450 x 40mm in Random, Side and Corner), and two colours (Weathered Limestone and Grey/Green). It can be used for a variety of domestic paving purposes.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
6/14 Crushed concrete			✓		
0-6mm Lee Moor sand	✓				

Calculation tables

The yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
6/14 Crushed concrete	0.42	100	0.42	no waste
Lee Moor sand	0.36	100	0.36	no waste
Total recycled input per tonne of final product			0.78	
Recycled content (%)			78	

Epwin

Manor Park Business Centre, Mackenzie Way, Cheltenham, Gloucester GL51 9TX
www.epwin.co.uk

Brand name: Sierra, Wrekin Windows, Plastal, Europlas

Product description and application

PVCu windows, fully glazed, steel reinforced.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Scrap steel		✓			Material is recovered from the general market
Window fabrication offcuts and extrusion scrap		✓			Pre-consumer material. The majority of profile used has gasket attached and it all now is reprocessed in specialised plant before reuse. Recovery requires several process steps.
Scrap aluminium		✓			Material recovered from the general market
Glass cullet		✓			Pre-consumer material returned from the distribution chain

Calculation tables

The yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Scrap steel	0.07	100	0.07	
Window fabrication offcuts and extrusion scrap	0.03	100	0.03	
Scrap aluminium	0.01	100	0.01	
Glass cullet	0.07	100	0.07	
Total recycled input per tonne of final product			0.18	
Recycled content (%)			18	

Note:

In this application, the steel components have an industry-average recycled content as advised by the relevant steel trade association. This principle also applies to other metals – see section on special cases within the guide.

Epwin continued**Brand name:** Sierra, Wrekin Windows, Plastal, Europlas**Product description and application**

PVCu windows, fully glazed, non-metal reinforced.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Window fabrication offcuts and extrusion scrap		✓			Pre-consumer material. The majority of profile used has gasket attached and it all now is reprocessed in specialised plant before reuse.
Scrap aluminium		✓			Material recovered from the general market
Glass cullet		✓			Pre-consumer material returned from the distribution chain

Calculation tables

The yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Glass cullet	0.08	100	0.08	
Window fabrication offcuts and extrusion scrap	0.14	100	0.14	
Scrap aluminium	0.01	100	0.01	
Total recycled input per tonne of final product			0.23	
Recycled content (%)			23	

Product description and application

General PVCu building and window ancillary products.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Window fabrication offcuts, extrusion scrap and Post Consumer Waste (PCW)		✓			Pre-consumer material collected from the distribution chain. The majority of profile used has gasket attached and it all now is reprocessed in specialised plant before reuse. Post consumer material from end of use stage, reprocessed in specialist separation facilities.

Calculation tables

The yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Window fabrication offcuts, extrusion scrap and PCW	0.60	100	0.60	
Total recycled input per tonne of final product			0.60	
Recycled content (%)			60	

Epwin continued**Brand name:** Profile22, Swish Windows and Doors**Product description and application**

PVCu window profile.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Window fabrication offcuts		✓			Pre-consumer material collected from the distribution chain. The majority of profile used has gasket attached and it all now is reprocessed in specialised plant before reuse.

Calculation tables

The yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Window fabrication offcuts and extrusion scrap	0.10	100	0.10	
Total recycled input per tonne of final product			0.10	
Recycled content (%)			10	

Excel Industries LimitedMaerdy Industrial Estate, Rhymney, Gwent NP22 5PY www.excel fibre.com**Brand name:** Warmcel 300**Product description and application**

Thermal insulation for housing, commercial premises and public buildings.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Recycled newspaper	✓	✓			PCW 2 million tonnes of which is landfilled. Waste generated is not guaranteed to be used.

Calculation tables

The yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Recycled newspaper	0.80	95	0.76	Moisture loss
Total recycled input per tonne of final product			0.76	
Recycled content (%)			76	

H+H UKH+H Celcon Limited, Celcon House, Ightham, Sevenoaks, Kent TN15 9HZ www.celcon.co.uk**Brand name:** Celcon Aircrete**Product description and application**

Aircrete masonry units to EN 771-4 for walling, internal and external, foundation blocks and infill blocks for beam and block floors.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
PFA		✓			Pre-consumer material
Aluminium powder		✓			Pre-consumer material

Calculation tables

The yield factor reflects the % decrease in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
PFA	0.75	100	0.75	No waste
Aluminium powder	0.00	100	0.00	No waste – represents 0.001% of product
Total recycled input per tonne of final product			0.75	
Recycled content (%)			75	

HansonThe Ridge, Chipping Sodbury, Bristol BS37 6AY www.hanson.biz**Brand name:** Recyclacrete (RB)**Product description and application**

Ready mixed concrete in accordance with BS EN 206-1 and BS 8500 for use in structural and non-structural applications.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
GGBS in accordance with BS 6699 and BS 8500				✓	The further use of the residue is a certainty
Recovered aggregate in accordance with Quality Scheme for Ready Mixed Concrete (QSRMC) regulations	✓	✓	✓		(B) Post-construction waste and returns from the distribution chain (C) Generated within a process

Calculation tables

The yield factor reflects the % decrease in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
GGBS in accordance with BS 6699 and BS 8500	0.10	100	0.10	
Recovered aggregate in accordance with QSRMC regulations	0.50	100	0.50	
Total recycled input per tonne of final product			0.60	
Recycled content (%)			60	

Hanson continued**Brand name:** Recyclacrete (RCA)**Product description and application**

Ready mixed concrete in accordance with BS EN 206-1 and BS 8500 for use in structural and non-structural applications.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
GGBS in accordance with BS 6699 and BS 8500				✓	The further use of the residue is a certainty
Recycled concrete aggregate in accordance with BS 8500	✓	✓	✓		(B) Post-construction waste and returns from the distribution chain (C) Generated within a process

Calculation tablesThe yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
GGBS in accordance with BS 6699 and BS 8500	0.10	100	0.10	
Recycled concrete aggregate in accordance with BS 8500	0.50	100	0.50	
Total recycled input per tonne of final product			0.60	
Recycled content (%)			60	

Brand name: Recyclacrete (RGF)**Product description and application**

Ready mixed concrete in accordance with BS EN 206-1 and BS 8500 for use in structural and non-structural applications.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
GGBS in accordance with BS 6699 and BS 8500				✓	The further use of the residue is a certainty

Calculation tablesThe yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
GGBS in accordance with BS 6699 and BS 8500	0.10	100	0.10	
Total recycled input per tonne of final product			0.10	
Recycled content (%)			10	

Hanson continued**Brand name:** Recyclafalt (RA) base and binder courses**Product description and application**

Asphalt base and binder courses in accordance with BS EN 13108 for use on roads and other paved areas.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Reclaimed asphalt	✓	✓	✓		(B) Post-construction waste and returns from the distribution chain (C) Generated within a process

Calculation tables

The yield factor reflects the % decrease in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Reclaimed asphalt planings	0.60	100	0.60	
Total recycled input per tonne of final product			0.60	
Recycled content (%)			60	

Brand name: Recyclafalt (RA) surface courses**Product description and application**

Asphalt surface courses in accordance with BS EN 13108 for use on roads and other paved areas.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Reclaimed asphalt	✓	✓	✓		(B) Post-construction waste and returns from the distribution chain (C) Generated within a process

Calculation tables

The yield factor reflects the % decrease in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Reclaimed asphalt	0.10	100	0.10	
Total recycled input per tonne of final product			0.10	
Recycled content (%)			10	

Hanson continued**Brand name:** Recyclafalt (RB) base and binder courses**Product description and application**

Asphalt surface courses in accordance with BS EN 13108 for use on roads and other paved areas.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Reclaimed railway ballast		✓	✓		Post-consumer material: industrial and institutional facilities, the material which can no longer be used for its intended purpose

Calculation tablesThe yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Reclaimed railway ballast	0.60	100	0.60	
Total recycled input per tonne of final product			0.60	
Recycled content (%)			60	

Brand name: Recyclafalt (RG) base, binder and surface courses**Product description and application**

Asphalt base, binder and surface courses in accordance with BS EN 13108 for use on roads and other paved areas.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Reclaimed glass	✓	✓			Material diverted from the waste stream during a manufacturing process

Calculation tablesThe yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Reclaimed glass	0.10	100	0.10	
Total recycled input per tonne of final product			0.10	
Recycled content (%)			10	

Hanson Building Products Ltd
Stewartby, Bedford MK43 9LZ www.hanson.biz

Brand name: Cumbrian Red bricks

Product description and application

Extruded wire cut brick for external facing applications.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
GGBS in accordance with BS 6699 and BS 8500				✓	The further use of the residue is a certainty
Sawdust	✓				Recovered waste product from timber and furniture manufacturing industries

Calculation tables

The yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
GGBS in accordance with BS 6699 and BS 8500	0.10	100	0.10	
Sawdust	0.02	0	0.00	Combusted during firing process
Total recycled input per tonne of final product			0.15	
Recycled content (%)			15	

Ibstock Brick Ltd

Leicester Rd, Ibstock, Leicestershire LE67 6HS www.ibstock.com

Brand name: Ibstock bricks

Product description and application

Soft mud (hand made lookalike) brick produced with the addition of silt sands recovered from the tailings of sand and gravel operations.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Silt sands				✓	By-product from sand or sand/gravel extraction that has limited commercial use and as such would tend to be deposited in silt lagoons and only used for restoration

Calculation tables

The yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Silt sands	0.38	80	0.30	20% moisture content of silt sands
Total recycled input per tonne of final product			0.30	
Recycled content (%)			30	

Knauf Drywall PlasterboardP.O. Box 133, Sittingbourne, Kent ME10 3HW www.knaufdrywall.co.uk**Brand name:** Knauf Wallboard**Product description and application**

Standard plasterboard for the construction of internal walls and partitions.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
FGD gypsum				✓	
Waste gypsum		✓	✓		
Recycled paper		✓			

Calculation tables

The yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
FGD gypsum	0.783	100	0.78	Production commit that what is at the input side remains as the output
Waste gypsum	0.05	100	0.05	
Recycled paper	0.04	90	0.04	Machine cuts an edge off the initial input volume.
Total recycled input per tonne of final product			0.87	
Recycled content (%)			87	

Note:

0.890 tonnes of FGD gypsum reduced by a factor of 0.88 to reflect calcium sulphite content giving a figure of 0.783 tonnes.

Knauf InsulationPO Box 10, Stafford Road, St Helens, Merseyside WA10 3NS www.knaufinsulation.com**Brand name:** Crown**Product description and application**

Glass mineral wool roll and slab products used for thermal and acoustic insulation in pitched roofs, lofts, metal buildings, masonry walls, timber and light steel framed walls, suspended timber floors, timber and steel lightweight partitions, air handling ducts vessels and tanks.

Recycled material used**Inclusion criteria**

	A	B	C	D	Reason for inclusion
Container glass cullet		✓			Post-consumer waste
Plate glass cullet		✓			Mixed pre- and post-consumer waste

Calculation tables

The yield factor reflects the % decrease in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Container glass cullet	0.27	100	0.27	
Plate glass cullet	0.26	100	0.26	
Total recycled input per tonne of final product			0.53	
Recycled content (%)			53	

Brand name: Crown Supafil Cavity Wall Insulation**Product description and application**

Crown Supafil Cavity Wall Insulation is a loose glass mineral wool insulation material which is injected into existing or newly-built cavity walls.

Recycled material used**Inclusion criteria**

	A	B	C	D	Reason for inclusion
Container glass cullet		✓			Post-consumer waste
Plate glass cullet		✓			Mixed pre- and post-consumer waste

Calculation tables

The yield factor reflects the % decrease in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Container glass cullet	0.28	100	0.28	
Plate glass cullet	0.27	100	0.27	
Total recycled input per tonne of final product			0.55	
Recycled content (%)			55	

Rockwool LtdPencoed, Bridgend, South Wales CF35 6NY www.rockwool.co.uk**Brand name:** Rockwool**Product description and application**

Rockwool is a mineral wool used for insulation, sound reduction and fire protection.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Steel slag	✓	✓	✓		Further processing needed before it is used
Formstone binder (industry waste)	✓	✓	✓		Further processing needed before it is used
Rockwool off-cuts etc directly recycled into process	✓		✓		Further processing needed before it is used
Rockwool incorporated into formstones (post consumer)	✓		✓		Further processing needed before it is used
Fly ash	✓		✓		Further processing needed before it is used
Pit waste (production furnace residue)	✓		✓		Further processing needed before it is used

Calculation tables

The yield factor reflects the % decrease in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Steel slag	0.211	100	0.21	
Rockwool off-cuts etc directly recycled into process	0.110	100	0.11	
Formstone binder (industry waste)	0.024	100	0.02	
Rockwool incorporated into formstones (where source is post-consumer)	0.183	100	0.18	
Fly ash and pit waste (production furnace residue)	0.029	100	0.03	
Total recycled input per tonne of final product			0.56	
Recycled content (%)				56

Swish Building Products

Pioneer House, Mariner, Lichfield Road Ind Estate, Tamworth, Staffs B79 7TF

www.swishbp.co.uk**Brand name:** Swish Cellular PVC**Product description and application**

Swish cellular pvc used for roofline (fascia, soffit, bargeboard), cladding and window/interior trims.

Recycled material used**Inclusion criteria**

	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Reground manufacturing/supply chain waste (Pulver) + pre-treated post-consumer waste		✓	✓		Majority C (production scrap which is ground, pulverised and blended before re-extrusion) but just starting to include post-consumer waste B (sourced from reprocessor)

Calculation tablesThe yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Pulver	0.075	100	0.075	
Total recycled input per tonne of final product			0.08	
Recycled content (%)			8	

Weinerberger Ltd

Wienerberger House, Brooks Drive, Cheadle Royal Business Park, Cheadle, Cheshire
www.wienerberger.co.uk

Brand name: Wienerberger – Smooth Cream

Product description and application

Fireclay bricks. Buff high strength durable bricks for use in external applications including severe exposure situations.

Recycled material used	Inclusion criteria				Reason for inclusion
	A	B	C	D	
Fireclay				✓	Recovered waste product from the opencast coal extraction process. If not utilised this material would be used in restoration/void filling applications and similar quality clays would be required to be won as the primary extraction objective.

Calculation tables

The yield factor reflects the % **decrease** in mass of the input during the manufacturing process due to wastage, moisture reduction, etc.

Recycled input material	Input mass per tonne of product (tonnes)	Yield (loss) factor (%)	Input x yield factor (tonnes)	Factor explanation (e.g. wastage rate, moisture content, etc.)
Fireclay	1.25	80	1.00	12% moisture and 8% LOI (Loss on Ignition)
Total recycled input per tonne of final product			1.00	
Recycled content (%)			100	

Notes:

- 1) Fireclays extracted from sites where the sole purpose of the operation is to extract fireclays for sale would be classed as a primary raw material and therefore not recycled.
- 2) Fireclays that arise as a result of the opencast extraction of coal as the intended primary product (so that the fireclay arisings are incidental to the operation of the site and have been verified as by-products by CERAM) are classed as recycled materials.

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**Waste & Resources
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