

Environmental Product Declaration

BREG EN EPD No.: 000017

Issue: 02

ECO EPD Ref. No.: 000101

This is to certify that this verified Environmental Product Declaration provided by:

PPG Coatings

Is in accordance with the requirements of:

EN 15804:2012+A1:2013

This declaration is for:

Johnstone's Aqua Water Based Gloss

Company Address

Huddersfield Road

Birstall, Batley
WF17 9XA



PAINT TO BE PROUD OF



Derek Hughes

22 January 2015

Signed for BRE Global Ltd

Operator

Date of this Issue

12 December 2014

11 December 2019

Date of First Issue

Expiry Date



This verified Environmental Product Declaration is issued subject to terms and conditions (for details visit www.greenbooklive.com/terms).

To check the validity of this EPD please visit www.greenbooklive.com/check or contact us.

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EPD verification and LCA details

Demonstration of Verification	
CEN standard EN 15804 serves as the core PCR ^a	
Independent verification of the declaration and data according to EN ISO 14025:2010	
<input type="checkbox"/> Internal	<input checked="" type="checkbox"/> External
Third party verifier ^b : Dr Jo Mundy	
<small>a: Product category rules b: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4)</small>	

LCA Consultant	Verifier
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General Information

Summary

This environmental product declaration is for 1 square metre of Johnstone's Aqua Water Based Gloss produced by PPG Coatings at the following manufacturing facilities:

PPG Coatings
Huddersfield Road

Birstall, Batley
WF17 9XA
UK

This is a Cradle to gate with options EPD. The life cycle stages included are as shown below (X = included, MND = module not declared):

Product			Construction		Use stage							End-of-life				Benefits and loads beyond the system boundary
					Related to the building fabric					Related to the building						
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw materials supply	Transport	Manufacturing	Transport to site	Construction - Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water use	Deconstruction	Transport	Waste processing	Disposal	Reuse, Recovery and/or Recycling potential
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	MND

Programme Operator

BRE Global, Watford, Herts, WD25 9XX, United Kingdom.

This declaration is based on the BRE Environmental Profiles 2013 Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013.

Comparability

Environmental declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A1:2013. Comparability is further dependent on the product category rules used and the source of the data, e.g. the database. See EN 15804:2012+A1:2013 for further guidance.

Construction Product

Product Description

Johnstone's Aqua Water Based Gloss is a water based gloss with a high sheen finish, suitable for interior and exterior wood and metal. The product is formulated to give all the application and appearance characteristics of traditional gloss with the added advantage of being quick drying and low odour during application.

Technical Information

Property	Value	Unit
Spreading Rate	10 - 12	m ² /L
VOC Content	Medium (8 - 24.999)	%
Time until touch dry	1 - 2	Hours

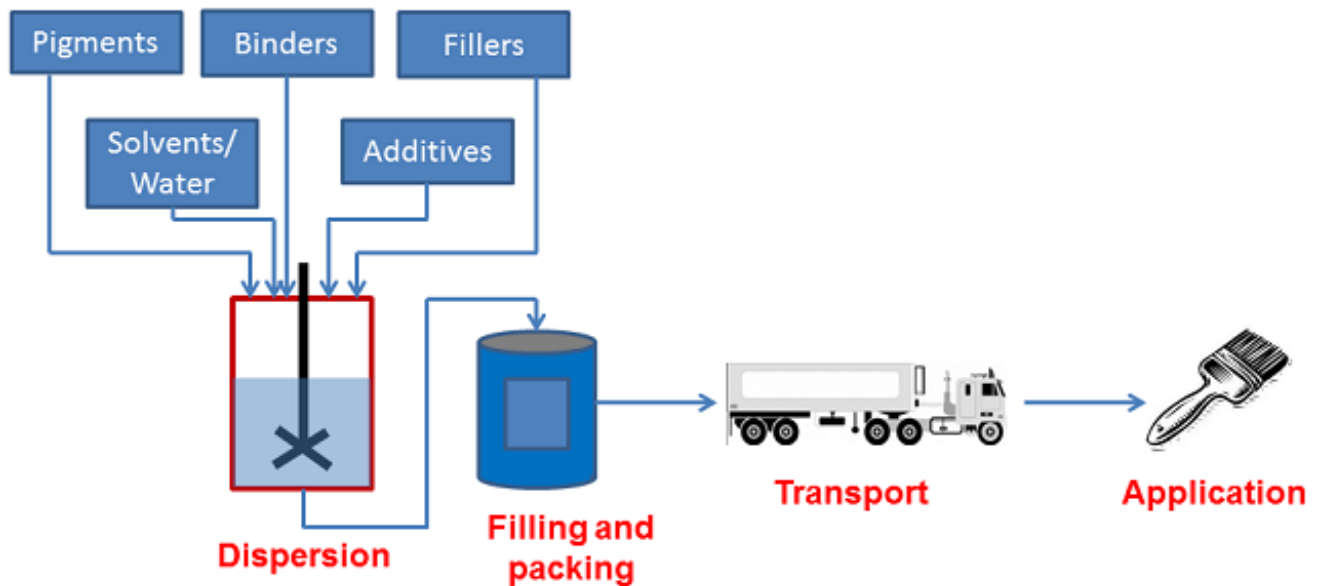
Product Contents

Material/Chemical Input	%
Additives	1.00
Alkyd	29.00
Glycol ethers	3.00
Inorganic Minerals	26.00
Water	41.00

Manufacturing Process

The manufacturing process involves the mixing and dispersing of raw materials into a homogeneous mixture. The product is then packaged for distribution to the customer.

The process flow diagram is shown below:



Construction Installation

All surfaces to be painted should be clean, dry and free from loose and flaking material. For best results a suitable primer should be first applied.

Stir well before use and apply by brush or roller. Apply liberally and evenly for a smooth finish.

Reference Service Life

The reference service life of the product is highly dependent on the conditions of use.

End of Life

Coatings are often not removed, so the end of life the product is that of the end of life of the underlying wood substrate. This can be incineration, landfill or re-use of the wood.

Life Cycle Assessment Calculation Rules

Declared / Functional unit

Protecting and decorating 1m² of substrate, suitably prepared, on the basis of one layer of the product.

System boundary

The system boundaries of the product LCA follow the modular design defined by /EN15804/. This cradle-to-gate with options study includes the Product stage (A1-A3), transport stage (A4), installation stage (A5), End-of-life transport (C2), Waste Processing (C3) and Disposal (C4).

Data sources, quality and allocation

Data related to in-house PPG processes has been collected from PPG reporting systems and is of high quality.

For life cycle modelling of the process, SimaPro V.8.01 is used. All relevant background datasets are taken from Ecoinvent V3.01 database and are documented in supporting Ecoinvent documentation.

Many Ecoinvent processes, such as waste disposal, are multi-input and not just for the material specified. For these processes the allocation used for the material in question is the one specified in the Ecoinvent process.

Allocation of waste to reuse and waste disposal streams is made on the basis of recent data from reliable sources.

The allocation of product to different end of life scenarios is based on recent data from reliable sources for the disposal of the wood substrate.

Cut-off criteria

Cut off criteria are:

- 1% of the renewable and non-renewable energy usage
- 1% of the mass of the process under consideration

The total neglected flows shall be no more than

- 5% of the energy usage
- 5% of the total mass

LCA Results

(INA = Indicator not assessed, AGG = Aggregated, NA = Not Applicable)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3
		Raw materials supply	Transport to factory	Manufacturing	Aggregated	Transport to site	Construction - installation	Use	Maintenance	Repair
Environmental impacts per declared/functional unit										
GWP	kg CO ₂ eq.	0.352	0.0175	0.0313	INA	0.0035	0.106	INA	INA	INA
ODP	kg CFC 11 eq.	4.54E-08	1.17E-09	1.97E-09	INA	2.34E-10	1.68E-09	INA	INA	INA
AP	kg SO ₂ eq.	0.00175	9.58E-05	0.000138	INA	1.91E-05	0.000339	INA	INA	INA
EP	kg (PO ₄) ³⁻ eq.	0.00122	2.25E-05	5.39E-05	INA	4.49E-06	0.000151	INA	INA	INA
POCP	kg C ₂ H ₄ eq.	0.000315	9.71E-06	2.60E-05	INA	1.94E-06	6.65E-05	INA	INA	INA
ADPE	kg Sb eq.	1.90E-05	3.72E-08	7.62E-07	INA	7.44E-09	1.30E-06	INA	INA	INA
ADPF	MJ eq.	4.85	0.252	0.454	INA	0.0504	1.99	INA	INA	INA
GWP = Global Warming Potential (Climate Change); ODP = Ozone Depletion Potential; AP = Acidification Potential for Soil and Water; EP = Eutrophication Potential; POCP = Photochemical Ozone Creation; ADPE = Abiotic Depletion Potential – Elements; ADPF = Abiotic Depletion Potential – Fossil Fuels										
Resource use										
PERE	MJ	0.00	0.00	0.00	INA	0.00	0.00	INA	INA	INA
PERM	MJ	0.759	0.00	0.249	INA	0.00	0.0182	INA	INA	INA
PERT	MJ	0.759	0.00	0.249	INA	0.00	0.0182	INA	INA	INA
PENRE	MJ	4.93	0.254	0.494	INA	0.0508	1.19	INA	INA	INA
PENRM	MJ	0.475	0.00	0.0115	INA	0.00	1.03	INA	INA	INA
PENRT	MJ	5.41	0.254	0.505	INA	0.0508	2.23	INA	INA	INA
SM	kg	0.00	0.00	0.00	INA	0.00	0.00	INA	INA	INA
RSF	MJ	0.00	0.00	0.00	INA	0.00	0.00	INA	INA	INA
NRSF	MJ	0.00	0.00	0.00	INA	0.00	0.00	INA	INA	INA
FW	m ³	0.00584	9.75E-06	0.00023	INA	1.95E-06	0.00051	INA	INA	INA
PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water										
Waste to disposal										
HWD	kg	0.097	1.91E-05	0.00264	INA	3.82E-06	0.00416	INA	INA	INA
NHWD	kg	0.129	0.000398	0.0178	INA	7.96E-05	0.036	INA	INA	INA
TRWD	kg	1.36E-05	1.49E-06	1.38E-06	INA	2.97E-07	1.35E-06	INA	INA	INA
RWDHL	kg	1.60E-06	5.44E-09	1.49E-07	INA	1.09E-09	1.56E-07	INA	INA	INA
HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; TRWD = Total Radioactive waste disposed; RWDHL = Radioactive waste disposed (high-level nuclear waste)										
Other output flows										
CRU	kg	0.00	0.00	0.00	INA	0.00	0.00	INA	INA	INA
MFR	kg	0.00	0.00	0.000246	INA	0.00	0.00787	INA	INA	INA
MER	kg	0.00	0.00	0.000434	INA	0.00	0.0506	INA	INA	INA
EE	MJ	0.00	0.00	0.00	INA	0.00	0.00	INA	INA	INA
CRU = Components for reuse; MFR = Materials for recycling; MER = Materials for energy recovery; EE = Export energy										

LCA Results (continued)

(INA = Indicator not assessed, AGG = Aggregated, NA = Not Applicable)

Indicator	Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
		Replacement	Refurbishment	Operational energy use	Operational water use	Demolition	Transport	Waste processing	Disposal	Reuse/ Recovery/ Recycling potential
Environmental impacts per declared/functional unit										
GWP	kg CO ₂ eq.	INA	INA	INA	INA	INA	0.00078	9.87E-07	0.0244	INA
ODP	kg CFC 11 eq.	INA	INA	INA	INA	INA	5.20E-11	4.43E-14	1.34E-09	INA
AP	kg SO ₂ eq.	INA	INA	INA	INA	INA	4.26E-06	4.95E-09	2.54E-05	INA
EP	kg (PO ₄) ³⁻ eq.	INA	INA	INA	INA	INA	1.00E-06	2.12E-09	4.54E-05	INA
POCP	kg C ₂ H ₄ eq.	INA	INA	INA	INA	INA	4.32E-07	1.13E-09	2.35E-06	INA
ADPE	kg Sb eq.	INA	INA	INA	INA	INA	1.66E-09	1.09E-11	5.68E-08	INA
ADPF	MJ eq.	INA	INA	INA	INA	INA	0.0112	1.23E-05	0.0496	INA
GWP = Global Warming Potential (Climate Change); ODP = Ozone Depletion Potential; AP = Acidification Potential for Soil and Water; EP = Eutrophication Potential; POCP = Photochemical Ozone Creation; ADPE = Abiotic Depletion Potential – Elements; ADPF = Abiotic Depletion Potential – Fossil Fuels										
Resource use										
PERE	MJ	INA	INA	INA	INA	INA	0.00	0.00	0.00	INA
PERM	MJ	INA	INA	INA	INA	INA	0.00	0.00	0.00	INA
PERT	MJ	INA	INA	INA	INA	INA	0.00	0.00	0.00	INA
PENRE	MJ	INA	INA	INA	INA	INA	0.0113	1.27E-05	0.0559	INA
PENRM	MJ	INA	INA	INA	INA	INA	0.00	0.00	0.00	INA
PENRT	MJ	INA	INA	INA	INA	INA	0.0113	1.27E-05	0.0559	INA
SM	kg	INA	INA	INA	INA	INA	0.00	0.00	0.00	INA
RSF	MJ	INA	INA	INA	INA	INA	0.00	0.00	0.00	INA
NRSF	MJ	INA	INA	INA	INA	INA	0.00	0.00	0.00	INA
FW	m ³	INA	INA	INA	INA	INA	4.34E-07	4.81E-09	5.06E-05	INA
PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water										
Waste to disposal										
HWD	kg	INA	INA	INA	INA	INA	8.51E-07	1.23E-07	0.0158	INA
NHWD	kg	INA	INA	INA	INA	INA	1.77E-05	1.08E-06	0.024	INA
TRWD	kg	INA	INA	INA	INA	INA	6.62E-08	2.76E-11	1.92E-07	INA
RWDHL	kg	INA	INA	INA	INA	INA	2.42E-10	1.26E-12	1.93E-08	INA
HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; TRWD = Total Radioactive waste disposed; RWDHL = Radioactive waste disposed (high-level nuclear waste)										
Other output flows										
CRU	kg	INA	INA	INA	INA	INA	0.00	0.00	0.00	INA
MFR	kg	INA	INA	INA	INA	INA	0.00	0.00	0.00	INA
MER	kg	INA	INA	INA	INA	INA	0.00	0.00	0.0162	INA
EE	MJ	INA	INA	INA	INA	INA	0.00	0.00	0.00	INA
CRU = Components for reuse; MFR = Materials for recycling; MER = Materials for energy recovery; EE = Export energy										

Scenarios and Additional Technical Information

Module A4 – Transport to the building site				
Vehicle Type	Fuel Consumption (L/km)	Distance (km)	Capacity Utilisation (%)	Density Of Product (kg/m ³)
Heavy Duty Vehicle	0.32	300	50	1310

Module A5 - Installation in the building			
Parameter	Description	Unit	Value
Ancillary materials for installation	Brush for application	g	0.937
Ancillary materials for installation	Plastic sheeting to protect from spills	g	22.8
Waste materials from installation wastage	Disposal of brush used for installation	g	0.937
Waste materials from installation wastage	Disposal of plastic sheeting for installation	g	22.8
Waste materials from installation wastage	Disposal of paint lost in spills and residue	g	1.19
Waste materials from installation wastage	Disposal primary packaging	g	7.72
Waste materials from installation wastage	Disposal secondary packaging	g	13.3

End-of-life modules – C1, C3, and C4			
Parameter	Description	Unit	Value
Waste for recycling	Waste to recycling	g	32.18
Waste for energy recovery	Waste to incineration	g	17.23
Waste for final disposal	Waste to landfill	g	16.24

Module C2 – Transport to waste processing				
Vehicle Type	Fuel Consumption (L/km)	Distance (km)	Capacity Utilisation (%)	Density Of Product (kg/m ³)
Heavy duty vehicle (for reused material to sorting station)	0.32	250	50	1310
Heavy duty vehicle (to disposal site for disposed waste)	0.32	30	50	1310

Interpretation

The raw materials stage (A1) tends to contribute highly to the impact of many indicators (Figure 1). This high contribution of raw materials to the impact indicators is not unexpected. As paints are a business to consumer product, they are at the end of the chemical value chain, and as such much of the expenditure of energy, raw materials, processing, waste processing, etc. in bringing the product to existence has occurred prior to the entry of the raw materials onto the PPG production site.

Of the raw materials the majority of each impact comes from the titanium dioxide and the binder (Figure 2). This is typical for coatings products and not unexpected given these two raw materials are often present in high proportions and have a relatively high environmental impact.

The majority of the impact for module A3 comes from the packaging for the product (including raw materials, processing and transport to PPG production site), and not the production process itself (Figure 3). This is expected of paint, as since it is a formulated product. The production process is mixing, dispersing, and some grinding, and does not comprise energy intensive processes such as heating or cooling that would be required for chemical reaction processes.

There is also noticeable impact from the application stage (A5). When this is examined in detail, it can be seen that the application tools are the major contributors to this module. When the application tools impact is further broken down, it can be seen that the major contribution is from the plastic sheeting (Figure 4). The use of this item is difficult to quantify, for example, the model is based on a particular scenario of 5m², and using the plastic sheeting over for a larger area, or for separate jobs would result in a reduction in environmental impact.

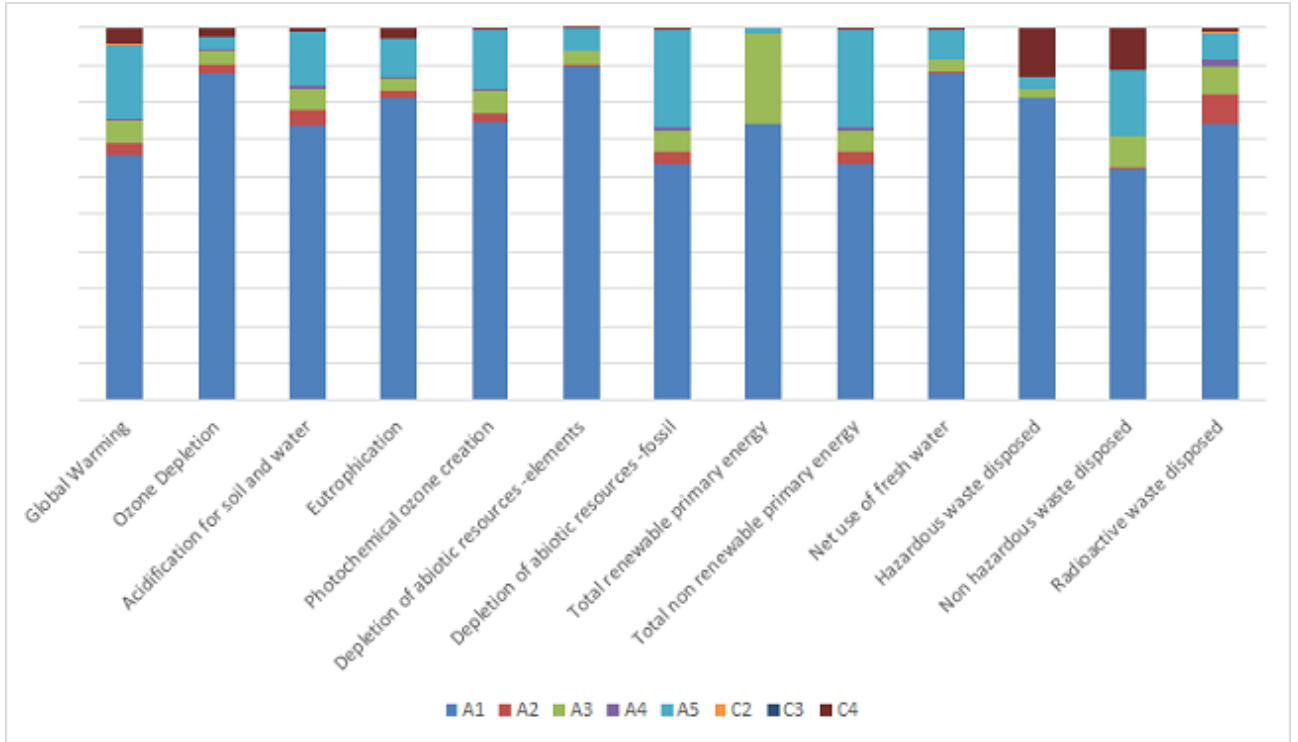


Figure 1

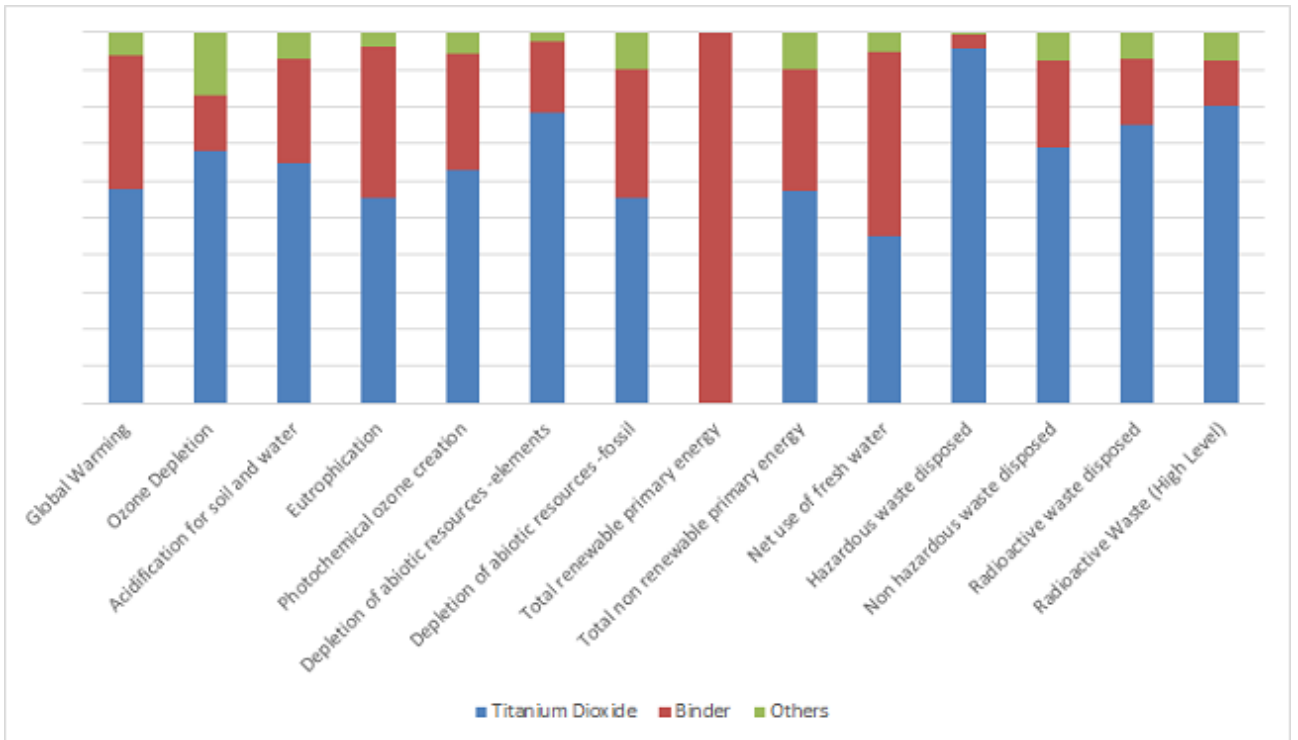


Figure 2

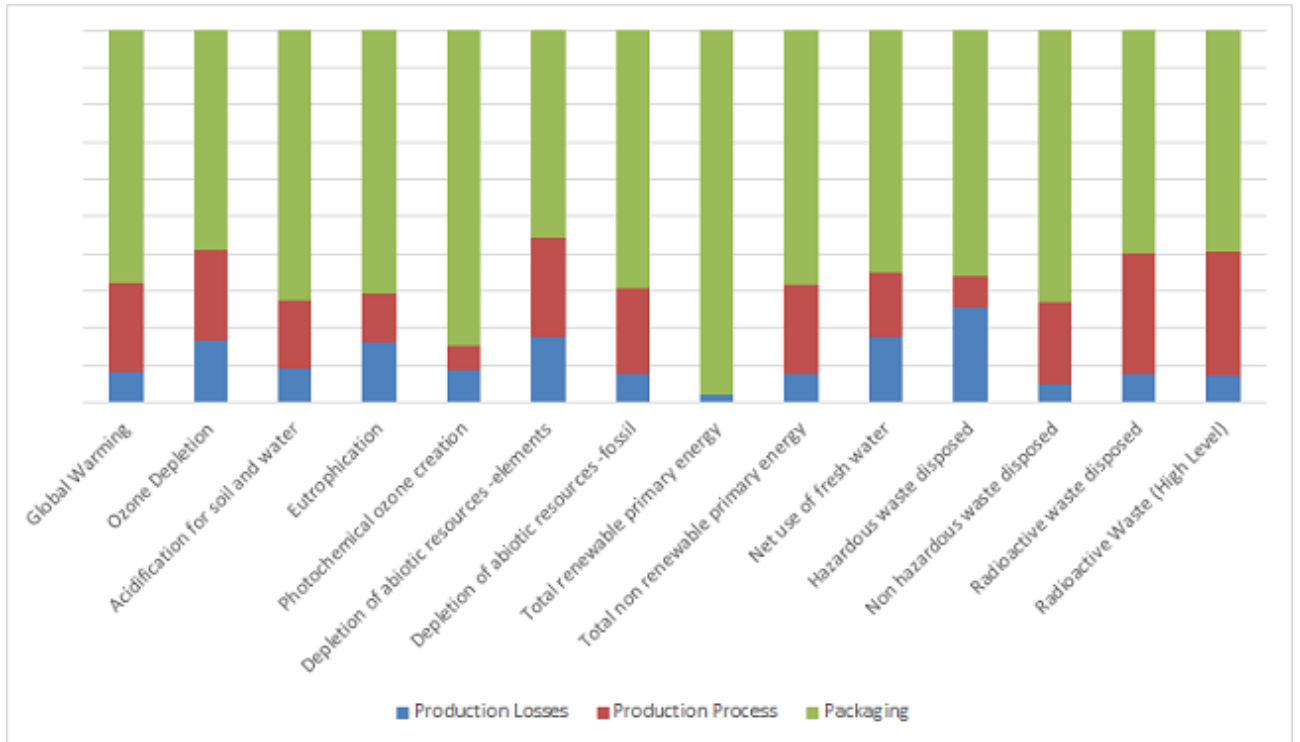


Figure 3

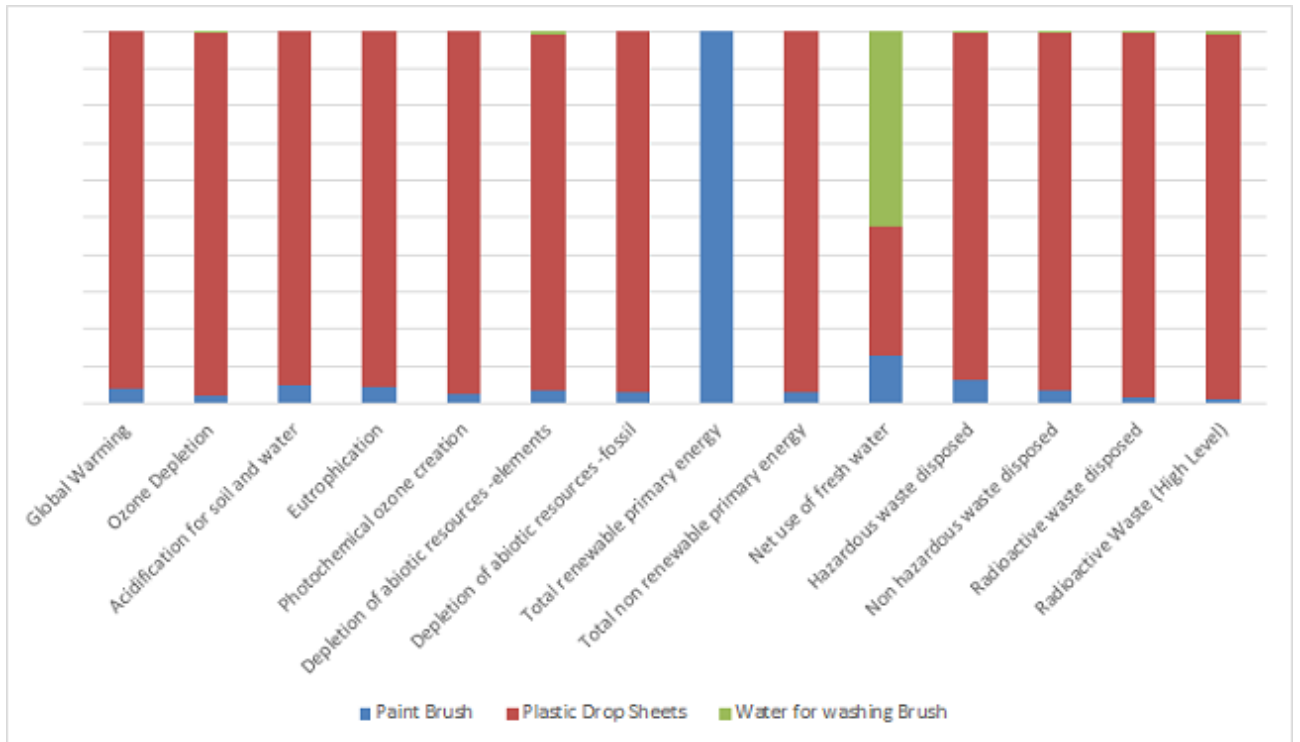


Figure 4

Sources of additional information

BRE Global. BRE Environmental Profiles 2013: Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013. PN 514. Watford, BRE, 2014.

BSI. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. BS EN 15804:2012+A1:2013. London, BSI, 2013.

BSI. Environmental labels and declarations – Type III Environmental declarations – Principles and procedures. BS EN ISO 14025:2010 (exactly identical to ISO 14025:2006). London, BSI, 2010.

BSI. Environmental management – Life cycle assessment – Principles and framework. BS EN ISO 14040:2006. London, BSI, 2006.

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