Environmental Product Declaration

BREG EN EPD No.: 000016 Issue: 02

ECO EPD Ref. No.: 000100

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 Professional Gloss

Company Address

Huddersfield Road

Birstall, Bately
WF17 9XA

JOHNSTONE'S TRADE

PAINT TO BE PROUD OF

Signed for BRE Global Ltd	Derek Hughes Operator	22 January 2015 Date of this Issue
12 December 2014 Date of First Issue		11 December 2019 Expiry Date

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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 ☐ Internal ☑ External
Third party verifier[b]: **Dr Jo Mundy**
a: Product category rules b: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4)

LCA Consultant	Verifier
Matthew Percy PPG Coatings BV Amsterdamseweg 14 Uithoorn, Netherlands 1422 AD	Dr Jo Mundy BRE Global Bucknalls Lane Watford WD25 9XX www.bre.co.uk

General Information

Summary

This environmental product declaration is for 1 square metre of Johnstone's Professional 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 Professional Gloss is a premium quality, alkyd based gloss formulated for interior and exterior use on wood and metal surfaces. It provides high gloss finish with excellent opacity.

Technical Information

Property	Value	Unit
Spreading Rate	17	m^2/L
VOC content	High (25 - 50)	%
Time until touch dry	4 - 6	Hours

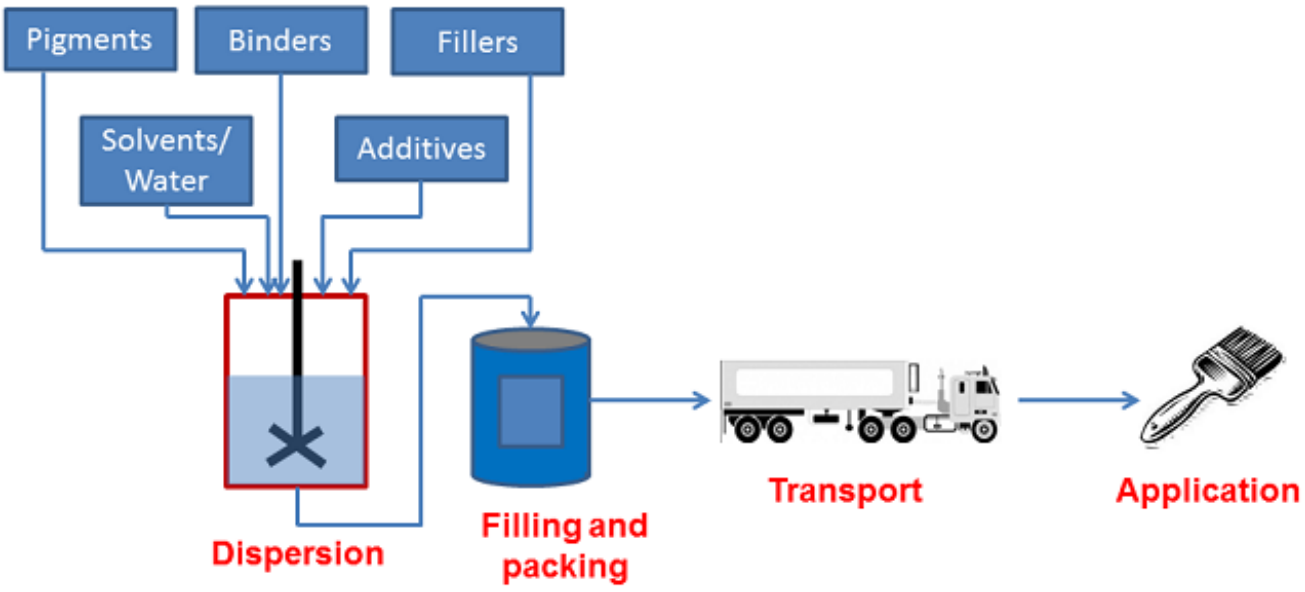
Product Contents

Material/Chemical Input	%
Additives	3.00
Inorganic Minerals	26.00
Hydrocarbon solvent	28.00
Alkyd	44.00

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 Raw materials supply	A2 Transport to factory	A3 Manufacturing	A1-A3 Aggregateted	A4 Transport to site	A5 Construction - installation	B1 Use	B2 Maintenance	B3 Repair
Environmental impacts per declared/functional unit										
GWP	kg CO_2 eq.	0.243	0.0114	0.0225	INA	0.00204	0.28	INA	INA	INA
ODP	kg CFC 11 eq.	2.95E-08	7.59E-10	1.27E-09	INA	1.36E-10	2.56E-08	INA	INA	INA
AP	kg SO_2 eq.	0.00117	6.22E-05	8.84E-05	INA	1.12E-05	0.000747	INA	INA	INA
EP	kg $(PO_4)^{3-}$ eq.	0.000827	1.46E-05	3.50E-05	INA	2.62E-06	0.000302	INA	INA	INA
POCP	kg C_2H_4 eq.	0.000297	6.30E-06	9.90E-05	INA	1.13E-06	0.00167	INA	INA	INA
ADPE	kg Sb eq.	1.17E-05	2.42E-08	4.64E-07	INA	4.34E-09	2.53E-06	INA	INA	INA
ADPF	MJ eq.	4.45	0.164	0.295	INA	0.0295	6.69	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	0.000114	0.00	6.25E-07	INA	0.00	1.14E-06	INA	INA	INA
PERM	MJ	0.664	0.00	0.163	INA	0.00	0.0164	INA	INA	INA
PERT	MJ	0.664	0.00	0.163	INA	0.00	0.0164	INA	INA	INA
PENRE	MJ	3.62	0.165	0.315	INA	0.0297	3.32	INA	INA	INA
PENRM	MJ	1.18	0.00	0.0118	INA	0.00	3.74	INA	INA	INA
PENRT	MJ	4.80	0.165	0.327	INA	0.0297	7.06	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	0.00406	6.33E-06	0.000151	INA	1.14E-06	0.000871	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	0.0535	1.24E-05	0.00176	INA	2.23E-06	0.0133	INA	INA	INA
NHWD	kg	0.0815	0.000259	0.011	INA	4.65E-05	0.0514	INA	INA	INA
TRWD	kg	1.61E-05	9.66E-07	9.11E-07	INA	1.74E-07	2.88E-05	INA	INA	INA
RWDHL	kg	9.89E-07	3.53E-09	9.27E-08	INA	6.35E-10	5.60E-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	0.00014	INA	0.00	0.00515	INA	INA	INA
MER	kg	0.00	0.00	0.000248	INA	0.00	0.0498	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 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse/ Recovery/ Recycling potential
Environmental impacts per declared/functional unit										
GWP	kg CO_2 eq.	INA	INA	INA	INA	INA	0.000572	7.52E-07	0.0186	INA
ODP	kg CFC 11 eq.	INA	INA	INA	INA	INA	3.82E-11	3.38E-14	1.02E-09	INA
AP	kg SO_2 eq.	INA	INA	INA	INA	INA	3.13E-06	3.77E-09	1.94E-05	INA
EP	kg $(PO_4)^{3-}$ eq.	INA	INA	INA	INA	INA	7.34E-07	1.61E-09	3.46E-05	INA
POCP	kg C_2H_4 eq.	INA	INA	INA	INA	INA	3.17E-07	8.58E-10	1.79E-06	INA
ADPE	kg Sb eq.	INA	INA	INA	INA	INA	1.21E-09	8.34E-12	4.33E-08	INA
ADPF	MJ eq.	INA	INA	INA	INA	INA	0.00824	9.36E-06	0.0378	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	0.00829	9.68E-06	0.0426	INA
PENRM	MJ	INA	INA	INA	INA	INA	0.00	0.00	0.00	INA
PENRT	MJ	INA	INA	INA	INA	INA	0.00829	9.68E-06	0.0426	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	3.18E-07	3.67E-09	3.86E-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	6.24E-07	9.36E-08	0.0121	INA
NHWD	kg	INA	INA	INA	INA	INA	1.30E-05	8.27E-07	0.0183	INA
TRWD	kg	INA	INA	INA	INA	INA	4.86E-08	2.10E-11	1.46E-07	INA
RWDHL	kg	INA	INA	INA	INA	INA	1.78E-10	9.57E-13	1.47E-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	0.0124	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/m³)**
Heavy duty vehicle	0.32	300	50	1152

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	0.68
Waste materials from installation wastage	Disposal of primary packaging	g	5.05
Waste materials from installation wastage	Disposal of secondary packaging	g	8.71

End-of-life modules – C1, C3, and C4			
Parameter	**Description**	**Unit**	**Value**
Waste for recycling	Waste to recycling	g	25
Waste for energy recovery	Waste to incineration	g	13.1
Waste for final disposal	Waste to landfill	g	12.4

Module C2 – Transport to waste processing				
Vehicle Type	**Fuel Consumption (L/km)**	**Distance (km)**	**Capacity Utilisation (%)**	**Density Of Product (kg/m³)**
Heavy duty vehicle (for reused material to sorting station)	0.32	250	50	1152
Heavy duty vehicle (to disposal site for disposed waste)	0.32	30	50	1152

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 the solvent for cleaning the brush after use (Figure 4). The contribution from the solvent is difficult to quantify. The scenario is based on a job of 5m2. For a larger job the imapct of the solvent would be distributed over a greater number of square metres, thus the relative imapct for the fdeclaired unit of 1m2 would be lower.

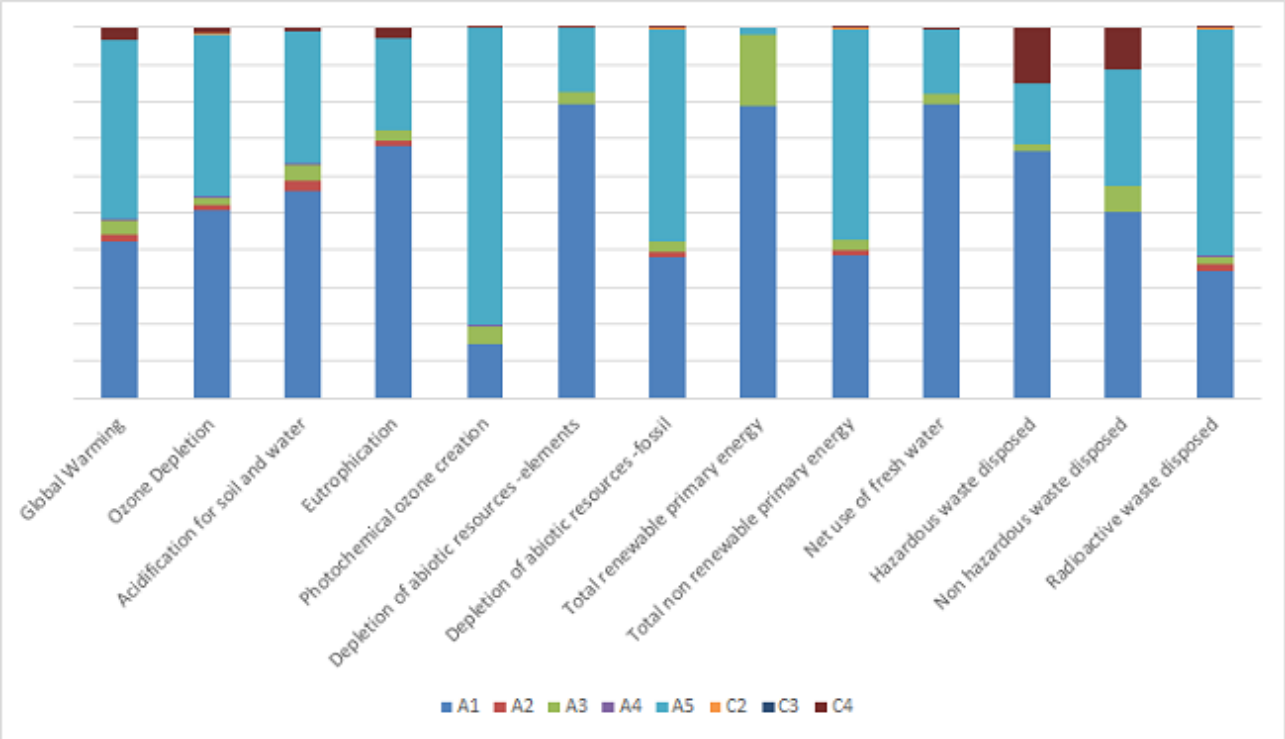


Figure 1

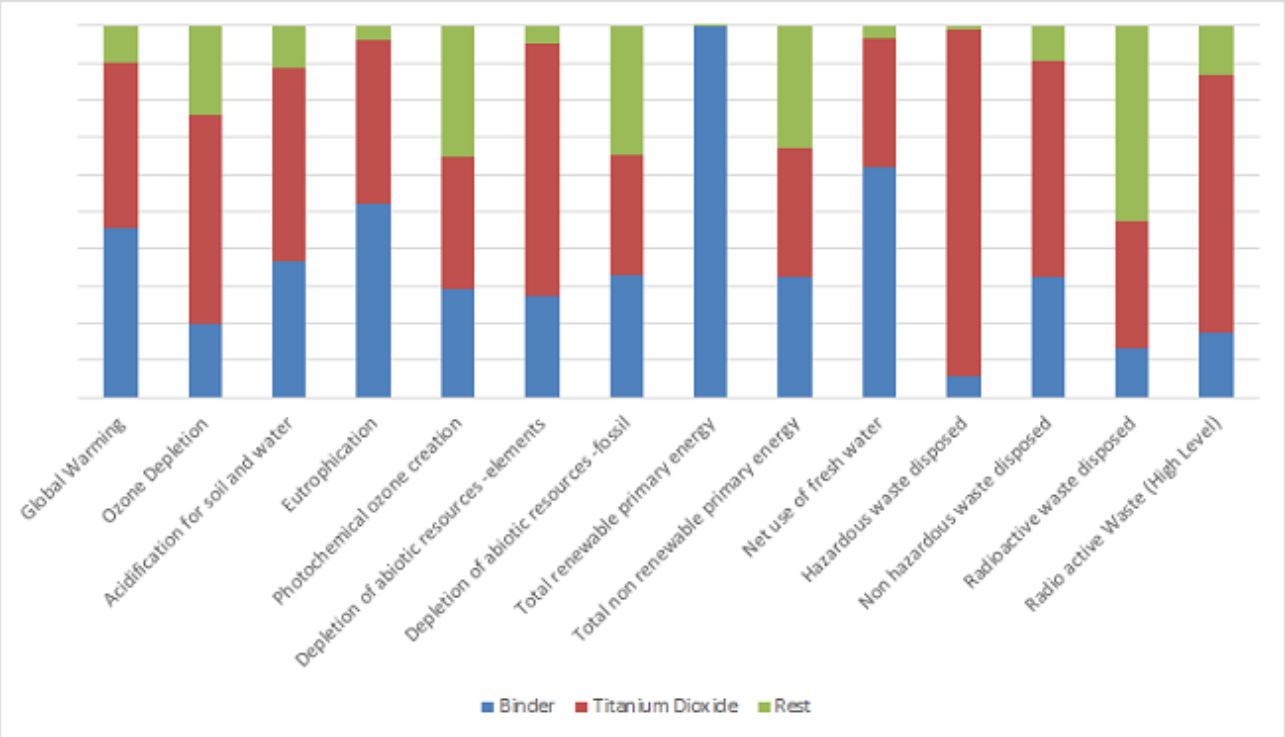


Figure 2

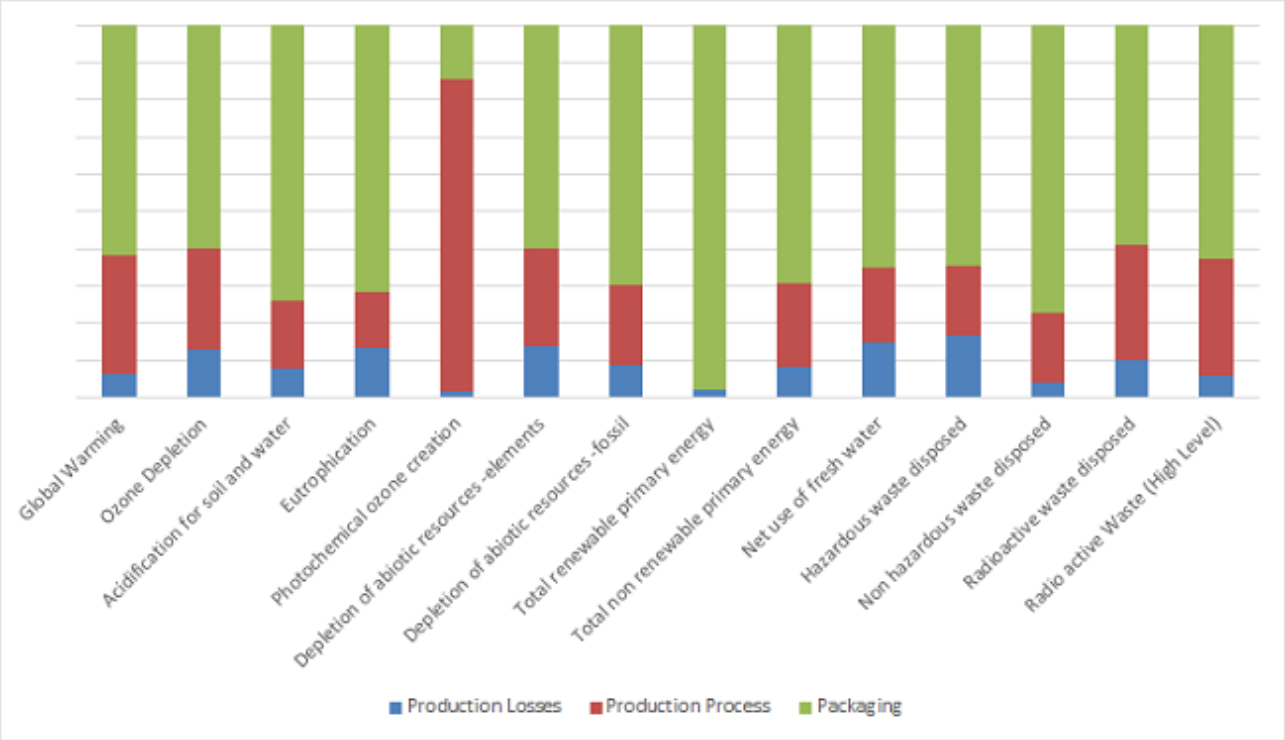


Figure 3

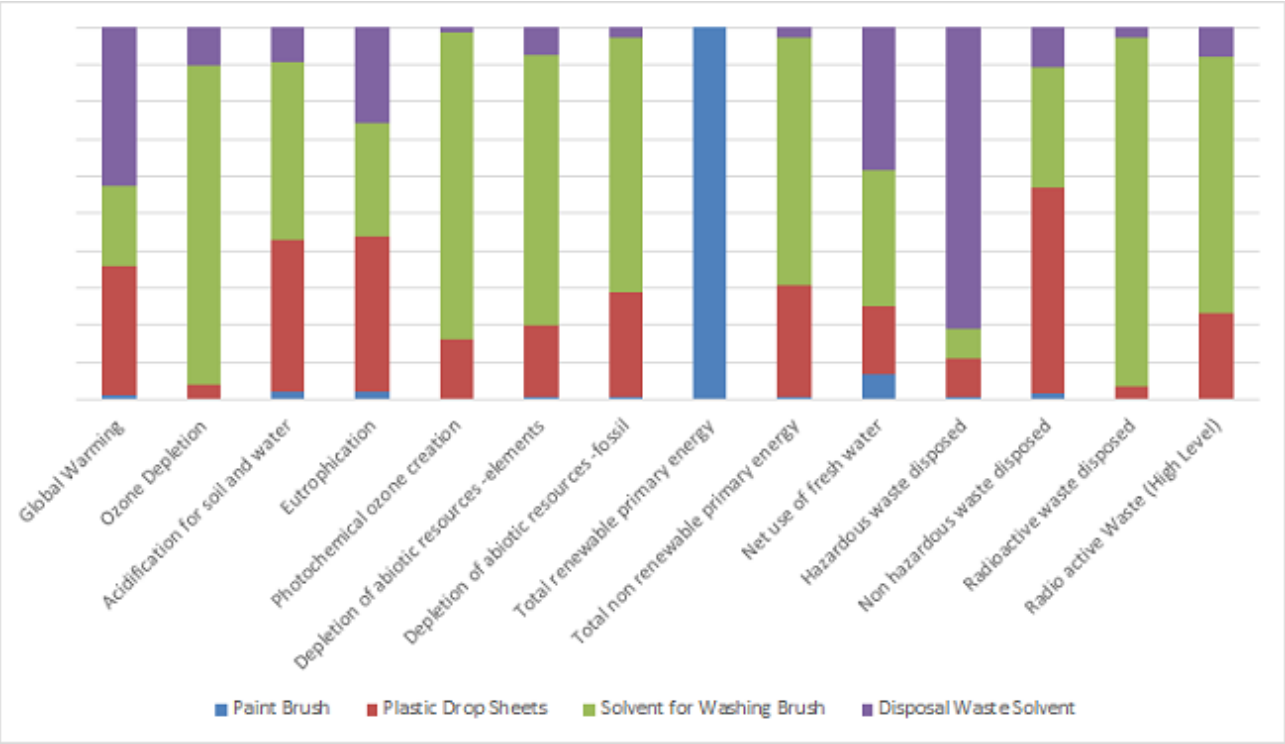


Figure 4

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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