



**ENVIRONMENTAL PRODUCT
DECLARATION
IN ACCORDANCE WITH THE SAINT GOBAIN PCR
GYPTONE Sixto 60**

April 2012

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FOREWORD

This document constitutes a suitable framework for presenting the environmental and sanitary characteristics of building products in accordance with the requirements of the Saint Gobain PCR.

A project report of the declaration was drawn up. It can be consulted, under agreement of confidentiality with the head office of XXXXX.

Data producer (SG PCR §8.2)

Compliance with requirements concerning the information to be supplied (SG PCR §8.2)

Notes

- Example of reading: $-4,2 \text{ E-06} = -4,2 \times 10^{-6}$
-

1 Product characterisation in accordance with SG PCR § 8.4

1.1 Definition of the functional unit (FU)

Make a decorative function on 1 m² of ceiling during an annuity, providing the performance requirements of the product. The typical lifetime of the ceiling is 50 years.

1.2 Product mass required for the functional unit (FU)

Quantity of product contained in the functional unit on the basis of a reference service life

Product : The product studied is the plaster ceiling plate

Average thickness per m² of product: 10 mm

Total weight of product used: 6.6 kg / m²

Amount of plaster used: 6.24 kg / m²

Surfacing: Paint, acoustic paper, tissue and vinyl adhesive 195.9 g / m²

Additional product : Complementary products (type and quantity) to 1m² for implementation are:

No

Distribution packaging

Polyethylene: 29.2 g / m²

Wooden pallet: 149.5 g / m²

Justification of quantities supplied

The rate of falls during the implementation is: 5%

Maintenance (including partial replacement if necessary): No maintenance, or replacement.

1.3 Useful technical characteristics not contained in the definition of the functional unit

The life cycle inventory data set out below have been calculated for the functional unit defined in 1.1 and 1.2

2 Inventory and other data in accordance with SG PCR § 9

Comments relating to the environmental effects of the product

2.1 Consumption of natural resources (SG PCR § 9.3)

2.1.1 Consumption of natural energy resources and energy indicators

Flow	Units	Production	Transport	Process	Use	End of life	Total life cycle	
							Per year	Reference service life
Wood	kg	0.00508			0		0.00508	0.254
Coal	kg	0.00657			0		0.00658	0.329
Lignite	kg	0.00147			0		0.00147	0.0735
Natural gas	kg	0.0113			0		0.0113	0.565
Oil	kg	0.00387	0.000356		0		0.00433	0.216
Uranium	kg	1.24 E-07			0		1.25 E-07	6.23 E-06

Energy indicators

Total Primary Energy	MJ	0.935	0.0155		0		0.955	47.7
Renewable Energy	MJ	0.0928			0		0.0929	4.64
Non-renewable Energy	MJ	0.843	0.0155		0		0.864	43.2
Fuel Energy	MJ	0.780	0.0156		0		0.801	40.0
Feedstock Energy	MJ	0.155			0		0.155	7.73
Electricity	kWh	0.0326			0		0.0327	1.63

Comments relating to consumption of energy resources

2.1.2 Consumption of non-energy natural resources

Flow	Units	Production	Transport	Process	Use	End of life	Total life cycle	
							Per year	Reference service life
Antimony (Sb)	kg	0	0	0	0	0	0	0
Silver (Ag)	kg	8.64 E-11			0		8.65 E-11	4.32 E-09
Clay	kg	0.000126			0		0.000127	0.00633
Arsenic (As)	kg	0	0	0	0	0	0	0
Bauxite (Al ₂ O ₃)	kg	3.46 E-05			0		3.46 E-05	0.00173
Bentonite	kg	1.74 E-06			0		1.75 E-06	8.73 E-05
Bismuth (Bi)	kg	0	0	0	0	0	0	0
Boron (B)	kg	0	0	0	0	0	0	0
Cadmium (Cd)	kg	0	0	0	0	0	0	0
Limestone	kg	0.000965			0		0.000965	0.0483
Sodium Carbonate (Na ₂ CO ₃)	kg	0	0	0	0	0	0	0
Potassium Chloride (KCl)	kg	4.18 E-05			0		4.18 E-05	0.00209
Sodium Chloride (NaCl)	kg	5.68 E-05			0		5.69 E-05	0.00284
Chrome (Cr)	kg	1.05 E-08			0		1.05 E-08	5.23 E-07
Cobalt (Co)	kg	0	0	0	0	0	0	0
Copper (Cu)	kg	1.74 E-08			0		1.75 E-08	8.73 E-07
Dolomite	kg				0		4.42 E-08	2.21 E-06
Tin (Sn)	kg	0	0	0	0	0	0	0
Feldspar	kg		0	0	0	0	2.14 E-12	1.07 E-10
Iron (Fe)	kg	5.70 E-05			0		5.71 E-05	0.00285
Fluorite (CaF ₂)	kg	3.08 E-09	0	0	0	0	3.08 E-09	1.54 E-07
Gravel*	kg	2.54 E-05	2.66 E-07		0		2.58 E-05	0.00129
Gypsum (CaSO ₄)	kg	0	0		0		0	0
Lithium (Li)	kg	0	0	0	0	0	0	0
Kaolin (Al ₂ O ₃ , 2SiO ₂ , 2H ₂ O)	kg	9.44 E-05	0	0	0	0	9.44 E-05	0.00472
Magnesium (Mg)	kg	1.69 E-13	0	0	0	0	1.69 E-13	8.45 E-12
Manganese (Mn)	kg	2.00 E-09			0		2.00 E-09	9.99 E-08
Mercury (Hg)	kg	1.69 E-13	0	0	0	0	1.69 E-13	8.47 E-12
Molybdenum (Mo)	kg	0	0	0	0	0	0	0
Nickel (Ni)	kg	1.16 E-09			0		1.16 E-09	5.81 E-08
Gold (Au)	kg	0	0	0	0	0	0	0
Palladium (Pd)	kg	0	0	0	0	0	0	0
Platinum (Pt)	kg	0	0	0	0	0	0	0
Lead (Pb)	kg	8.78 E-09			0		8.78 E-09	4.39 E-07
Rhodium (Rh)	kg	0	0	0	0	0	0	0

Rutile (TiO ₂)	kg	0	0	0	0	0	0	0
Sand	kg	5.33 E-06			0		5.34 E-06	0.000267
Silica (SiO ₂)	kg	0	0	0	0	0	0	0
Sulphur (S)	kg	0.000265			0		0.000265	0.0133
Barium Sulphate (BaSO ₄)	kg	1.78 E-05			0		1.79 E-05	0.000893
Titanium (Ti)	kg	8.90 E-08	0		0	0	8.90 E-08	4.45 E-06
Tungsten (W)	kg	0	0	0	0	0	0	0
Vanadium (V)	kg	0	0	0	0	0	0	0
Zinc (Zn)	kg				0		1.34 E-10	6.71 E-09
Zirconium (Zr)	kg	0	0	0	0	0	0	0
Vegetal raw materials not specified above	kg	4.20 E-08	0	0	0	0	4.20 E-08	2.10 E-06
Animal raw materials not specified above	kg	0	0	0	0	0	0	0
Intermediate products not integrated upstream (total)	kg	0.000389			0		0.000389	0.0195

Comments relating to consumption of non-energy resources

2.1.3 Consumption of water

Flow	Units	Production	Transport	Process	Use	End of life	Total life cycle	
							Per year	Reference service life
Water : Lake	litre	0	0	0	0	0	0	0
Water : Sea	litre	0.000152			0		0.000152	0.00759
Water : Water table	litre	1.64 E-07			0		1.64 E-07	8.22 E-06
Water : Unspecified source	litre	0.161	0.00147		0		0.163	8.16
Water: River	litre	3.40 E-06			0		3.40 E-06	0.000170
Drinking Water (network)	litre	0.0995			0		0.0995	4.98
Consumed Water (total)	litre	0.261	0.00147		0		0.263	13.1

Comments relating to the consumption of water

2.1.4 Consumption of recovered energy, recovered material

Flow	Units	Production	Transport	Process	Use	End of life	Total life cycle	
							Per year	Reference service life
Recovered Energy (stock)	MJ	0	0	0	0	0	0	0
Recovered Material (stock) : Total	kg	0.0153			0		0.0153	0.767
Recovered Material (stock) : Steel	kg	8.81 E-05	2.98 E-07		0		8.84 E-05	0.00442
Recovered Material (stock) : Aluminium	kg	0	0	0	0	0	0	0
Recovered Material (stock) : Metal (unspecified)	kg	0	0	0	0	0	0	0
Recovered Material (stock) : Paper-Cardboard	kg	0.0152	0	0	0	0	0.0152	0.762
Recovered Material (stock) : Plastic	kg	0	0	0	0	0	0	0
Recovered Material (stock) : gypsum	kg	0	0	0	0	0	0	0
Recovered Material (stock) : Biomass	kg	0	0	0	0	0	0	0
Recovered Material (stock): Mineral	kg	0	0	0	0	0	0	0
Recovered Material (stock) : Unspecified	kg	7.37 E-06	0	0	0	0	7.37 E-06	0.000368

Comments relating to the consumption of recovered energy and materials

2.2 Emissions in the environment (water, air and soil) (SG PCR § 9.4)

2.2.1 Emissions in the air

Flow	Units	Production	Transport	Process	Use	End of life	Total life cycle	
							Per year	Reference service life
Hydrocarbons (unspecified)	g	0.0129			0		0.0129	0.643
Hydrocarbons (unspecified, except methane)	g	0.0552	0.00404		0		0.0604	3.02
PAHs (unspecified)	g	5.32 E-06			0		5.33 E-06	0.000266
Methane (CH ₄)	g	0.0952	0.00159		0		0.0972	4.86
Volatile organic compounds (e.g. acetone, acetate...)	g	0.000486	0	0	0	0	0.000486	0.0243
Carbon Dioxide (CO ₂)	kg	50.2	1.16		0		51.7	2 584
Carbon Monoxide (CO)	g	0.0845	0.00300		0		0.0884	4.42
Nitrogen oxides (NO _x in NO ₂)	g	0.0879	0.0137		0		0.106	5.29
Nitrous Oxide (N ₂ O)	g	0.000730	0.000149		0		0.000924	0.0462
Ammonium Hydroxide (NH ₃)	g	0.00373			0		0.00373	0.186
Dust (unspecified)	g	0.0934	0.00132		0		0.0951	4.75
Sulphur oxides (SO _x in SO ₂)	g	0.162	0.000526		0		0.163	8.15
Hydrogen Sulphide (H ₂ S)	g	0.000330			0		0.000330	0.0165
Hydrocyanic Acid (HCN)	g	1.03 E-06			0		1.03 E-06	5.15 E-05
Organic chlorine compounds (in Cl)	g	2.25 E-07			0		2.25 E-07	1.13 E-05
Hydrochloric Acid (HCl)	g	0.00549			0		0.00549	0.275
Inorganic chlorine compounds (in Cl)	g	1.14 E-06			0		1.14 E-06	5.70 E-05
Unspecified chlorine compounds (in Cl)	g	3.52 E-07			0		3.52 E-07	1.76 E-05
Organic fluorine compounds (in F)	g	4.98 E-07	7.26 E-08		0		5.92 E-07	2.96 E-05
Inorganic fluorine compounds (in F)	g	0.000233			0		0.000233	0.0117
Unspecified halogen compounds	g	3.11 E-05			0		3.11 E-05	0.00155
Unspecified fluorine compounds (in F)	g	0	0	0	0	0	0	0
Metals (unspecified)	g	0.00341			0		0.00341	0.171
Antimony and its compounds (in Sb)	g	9.74 E-07			0		9.74 E-07	4.87 E-05
Arsenic and its compounds (in As)	g	3.29 E-06	6.02 E-09		0		3.29 E-06	0.000165
Cadmium and its compounds (in Cd)	g	1.38 E-06	2.98 E-08		0		1.41 E-06	7.07 E-05

Chromium and its compounds (in Cr)	g	3.74 E-06			0		3.74 E-06	0.000187
Cobalt and its compounds (in Co)	g	2.12 E-06	1.34 E-08		0		2.13 E-06	0.000107
Copper and its compounds (in Cu)	g	3.89 E-06	2.06 E-08		0		3.92 E-06	0.000196
Tin and its compounds (in Sn)	g	9.92 E-08			0		9.92 E-08	4.96 E-06
Manganese and its compounds (in Mn)	g	5.12 E-06			0		5.12 E-06	0.000256
Mercury and its compounds (in Hg)	g	1.22 E-06			0		1.22 E-06	6.12 E-05
Nickel and its compounds (in Ni)	g	2.71 E-05	2.68 E-07		0		2.75 E-05	0.00137
Lead and its compounds (in Pb)	g	1.20 E-05	9.96 E-08		0		1.21 E-05	0.000606
Selenium and its compounds (in Se)	g	2.79 E-06	6.10 E-09		0		2.79 E-06	0.000140
Tellurium and its compounds (in Te)	g	0	0	0	0	0	0	0
Zinc and its compounds (in Zn)	g	4.63 E-05	4.47 E-05		0		0.000104	0.00522
Vanadium and its compounds (in V)	g	9.56 E-05	1.07 E-06		0		9.70 E-05	0.00485
Silicon and its compounds (in Si)	g	0.00268			0		0.00268	0.134
Micro-organisms... acarids...legionnaire's disease								

NOTE 1 : With regards to radioactive emissions, this table will be completed as soon as the transposition of the Euratom European Directive on radioactive emissions is issued.

Comments relating to emissions in the air :

2.1.2 Emissions in water

Flow	Units	Production	Transport	Implementation	Utilisation	End of life	Total life cycle	
							Per year	Reference service life
COD (Chemical Oxygen Demand)	g	0.0293			0		0.103	5.16
5-day BOD (Biochemical Oxygen Demand)	g	0.00349			0		0.0212	1.06
Matter in Suspension (MIS)	g	0.0255			0		0.0462	2.31
Cyanide (CN ⁻)	g	9.33 E-06	7.74 E-08		0		9.43 E-06	0.000472
AOX (Adsorbable organic halogen compounds)	g			2.95 E-05	0		0.000598	0.0299
Hydrocarbons (unspecified)	g	0.0278	0.000541		0		0.0344	1.72

Nitrogen compounds (in N)	g	0.000722	4.92 E-05	0.000887	0		0.0185	0.925
Phosphorous compounds (in P)	g	0.00460			0		0.00460	0.230
Organic fluorine compounds (in F)	g	0.0128			0		0.0216	1.08
Inorganic fluorine compounds (in F)	g	0	0	0	0	0	0	0
Unspecified fluorine compounds (in F)	g	0	0	0	0	0	0	0
Organic chlorine compounds (in Cl)	g	2.65 E-06			0		2.65 E-06	0.000133
Inorganic chlorine compounds (in Cl)	g	0.183	0.0181		0		0.206	10.3
Unspecified chlorine compounds (in Cl)	g	0.000513			0		0.000513	0.0257
PAHs (unspecified)	g	3.05 E-06	4.56 E-07		0		3.64 E-06	0.000182
Metals (unspecified)	g	0.0349	0.00146		0		0.0486	2.43
Aluminium and its compounds (in Al)	g	0.00756			0		0.00756	0.378
Arsenic and its compounds (in As)	g	9.04 E-07	1.47 E-08		0		9.23 E-07	4.62 E-05
Cadmium and its compounds (in Cd)	g	3.38 E-07	2.46 E-08		0		3.70 E-07	1.85 E-05
Chrome and its compounds (in Cr)	g	4.94 E-06			0		5.05 E-06	0.000253
Copper and its compounds (in Cu)	g	6.79 E-06	5.00 E-08		0		6.85 E-06	0.000343
Tin and its compounds (in Sn)	g	4.00 E-10	5.52 E-13		0		4.01 E-10	2.00 E-08
Iron and its compounds (in Fe)	g	0.0354			0		0.0354	1.77
Mercury and its compounds (in Hg)	g	7.74 E-07			0		7.74 E-07	3.87 E-05
Nickel and its compounds (in Ni)	g	2.58 E-06	8.52 E-08		0		2.69 E-06	0.000135
Lead and its compounds (in Pb)	g	1.24 E-05	1.70 E-08		0		1.25 E-05	0.000623
Zinc and its compounds (in Zn)	g	0.000357			0		0.000357	0.0179

Comments relating to discharges in water :

2.2.3 Emissions in the soil

Flow	Units	Production	Transport	Implementation	Utilisation	End of life	Total life cycle	
							Per year	Reference service life
Arsenic and its compounds (in As)	g	9.08 E-08			0		9.09 E-08	4.54 E-06
Biocides ^a	g	0	0	0	0	0	0	0
Cadmium and its compounds (in Cd)	g	4.12 E-11			0		4.12 E-11	2.06 E-09
Chrome and its compounds (in Cr)	g	1.14 E-06			0		1.14 E-06	5.69 E-05
Copper and its compounds (in Cu)	g	2.08 E-10			0		2.08 E-10	1.04 E-08
Tin and its compounds (in Sn)	g	0	0	0	0	0	0	0
Iron and its compounds (in Fe)	g	0.000454			0		0.000455	0.0227
Lead and its compounds (in Pb)	g	9.54 E-10			0		9.55 E-10	4.77 E-08
Mercury and its compounds (in Hg)	g	7.58 E-12			0		7.59 E-12	3.79 E-10
Nickel and its compounds (in Ni)	g	3.14 E-10			0		3.14 E-10	1.57 E-08
Zinc and its compounds (in Zn)	g	3.42 E-06			0		3.42 E-06	0.000171
Heavy metals (unspecified)	g	0	0	0	0	0	0	0

^a Biocides: e.g. pesticides, herbicides, fungicides, insecticides, bactericides etc.

Comments relating to emissions in the soil :

2.3 Waste production (SG PCR § 9.4)

2.3.1 Recovered matter

Flow	Units	Production	Transport	Implementation	Utilisation	End of life	Total life cycle	
							Per year	Reference service life
Recovered Energy (stock)	MJ	2.80 E-05	0	0	0	0	2.80 E-05	0.00140
Recovered Material (stock) : Total	kg	0.00215			0		0.00215	0.107
Recovered Material (stock) : Steel	kg	3.30 E-05			0		3.30 E-05	0.00165
Recovered Material (stock) : Aluminium	kg	0	0	0	0	0	0	0
Recovered Material (stock) : Metal (unspecified)	kg	0	0	0	0	0	0	0
Recovered Material (stock) : Paper-Cardboard	kg	0.000713	0	0	0	0	0.000713	0.0356
Recovered Material (stock) : Plastic	kg	1.06 E-05	0	0	0	0	1.06 E-05	0.000531
Recovered Material (stock): Cullet	kg	0	0	0	0	0	0	0
Recovered Material (stock): Biomass	kg	4.66 E-05	0	0	0	0	4.66 E-05	0.00233
Recovered Material (stock): Mineral	kg	0	0	0	0	0	0	0
Recovered Material (stock): Unspecified	kg	0.00134			0		0.00134	0.0672

2.3.2 Eliminated waste

Flow	Units	Production	Transport	Implementation	Utilisation	End of life	Total life cycle	
							Per year	Reference service life
Hazardous waste	kg	0.00102			0		0.00102	0.0510
Non-hazardous waste	kg	0.000982		0.00807	0	0.132	0.141	7.05
Inert waste	kg	0.00335			0		0.00335	0.168

Comments relating to waste production and management methods

3 Contribution of the product to environmental impacts in accordance with SG PCR § 9.6

All these impacts are entered or calculated in compliance with indications of § 9.6 of the SG PCR.

No.	Environmental impact		Value - Unit
1	Consumption of energy resources		
	Total primary energy		47.75 MJ
	Renewable energy resources		4.64 MJ
	Process energy resources		43.18 MJ
2	Depletion of natural resources (ADP)		0.02 kg éq. antimoine (Sb)
3	Water Consumption		13.14 litre
4	Solid waste	Recovered	0,107 kg
		Disposed of	
		Hazardous waste	0,0510 kg
		Non-hazardous waste	7,05 kg
		Inert waste	0,17 kg
5	Climatic change		2.67 kg éq. CO ₂
6	Atmospheric acidification		0,01 kg éq. SO ₂
7	Eutrophication		1,2033 g eq PO ₄ ³⁻
8	Stratospheric ozone layer depletion		0 kg CFC éq. R11
9	Formation of photochemical oxidants		0,00146 kg éq. éthylène

4 Annex I: Characterisation of data for calculating the life cycle inventory

4.1 Définition of LCA system

4.1.1 Stages included

Production

Transport

Implementation

Utilisation

End of life

4.1.2 Flow excluded

4.1.3 System boundaries

Data sources

4.1.4 Characterisation of primary data

Fabrication

- Year :
- Geographical coverage:
- Technology coverage :
- Source :

Transport

- Year :
- Geographical coverage:
- Technology coverage :
- Source :

Implementation

- Year :
- Geographical coverage:
- Technology coverage :
- Source :

End of life

- Year :
- Geographical coverage:
- Technology coverage :
- Source :