

Novembre 2012

Extract from the Environmental Product Declaration

In conformity with International Standards ISO 14025, ISO 14040 & ISO 14044

AFNOR Registration Number N° 08-265 : 2011

SGG DIAMANT[®]

4 mm

Extra clear tempered glass

Other configurations studied:

- 3 mm ;
- 6 mm ;
- 8 mm ;
- 10 mm.

The environmental impacts of this product have been assessed over its whole life cycle.

Its Environmental Product Declaration has been verified by an independent third party.





EXTRACT FROM THE
ENVIRONMENTAL PRODUCT DECLARATION
IN ACCORDANCE WITH ISO 14025 and ISO 14040

SGG DIAMANT[®]

(Extra clear tempered glass)

4 mm

Additional thicknesses: 3 mm, 5 mm, 6 mm, 8 mm, 10 mm

Version 2.0 November 2012
Verified under AFNOR programme
AFNOR Registration number N° 08-265: 2011

1. Data Sources

SAINT-GOBAIN GLASS is responsible for disclosing any information contained in this declaration in accordance with NF P 01-010 § 4.6.

Contact : sustainable.glass@saint-gobain.com

2. Product characterisation in accordance with NF P 01-010 § 4.3

2.1 Definition of the functional unit (FU)

1 m² extra clear tempered glass to be incorporated into a building or furniture for one year. The Reference Service Life (RSL) considered is 30 years. The impacts of installation are not taken into account.

2.2 Product mass and basic data required to calculate the functional unit (FU)

Product unit (nature and quantity for the reference 4 mm)

The product considered is representative of the SGG DIAMANT[®]; it consists of one pane, SGG DIAMANT[®]. Tempered. The nominal thickness of the glass panes is 4 mm and the actual thickness is 3.9 mm in accordance with the EN 572-2 standard.

The mass of the full DGU for each year is 0.33 kg (9.75 kg over the whole RSL).

The reference flow of the product Life Cycle Assessment (LCA) is 1 m² of product over a period of 30 years.

The reference flow of the FU is then 0.33 kg per year and 9.75 kg over the RSL of 30 years.

Distribution packaging (nature and quantity): a 1m² of glass needs the following packaging:

- Metal: 6.33 E-5 kg (0.0019 kg over the whole RSL);
- Board: 3.9 E-04 kg (0.0117 kg over the whole RSL);
- Spacer powder: 1.67 E-5 kg (0.0005 kg over the whole RSL);
- Plastic materials (polyethylene, polystyrene, polypropylene): 7.67E-4 kg (0.023 kg over the whole RSL);
- Wood (kg): 1.17 E-3 kg (0.035 kg over the whole RSL).

Installation accessories: Not taken into account because there are several methods of installation: different pieces of furniture, wood, aluminium or PVC window-frames... This in accordance with the standard NF P 01-010 § 4.3c.

Material losses: There are no material losses in the installation or on the building because there is no cutting to be done on the job-site, the products being delivered with the final dimensions.

Use: Cleaning is taken into account: 0.2 l of cleaning solution per m² of double glazing and per year.

Substantiation of information disclosed: the information collected comes from 1 European sites producing SGG DIAMANT[®](SAINT-GOBAIN GLASS), and two European sites of tempering (GLASSOLUTIONS).

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

The light transmittance T_L, is bigger than 90%.

The product complies with the EN 12150-2 standard.

3. Environmental impacts representative of construction products in accordance with NF P 01-010 6

N°	Environmental impact	Indicator value for the Functional Unit					Units
		4 mm	3 mm	6 mm	8 mm	10 mm	
1	Consumption of energy resources						
	Total primary energy	7.61	6.27	10.3	13.1	15.75	MJ/FU
	Renewable energy	0.328	0.303	0.379	0.433	0.484	MJ/FU
	Non-renewable energy	7.28	5.97	9.90	12.7	15.3	MJ/FU
	Fuel energy	7.36	6.05	9.96	12.7	15.3	MJ/FU
2	Depletion of natural resources	0.00303	0.00248	0.00414	0.00531	0.00642	kg of antimony (Sb) eq./FU
3	Total water consumption	4.75	3.72	6.81	8.97	11.0	litre/FU
4	Solid waste:						
	Recovered waste (total)	0.0188	0.0143	0.0278	0.0373	0.0464	kg/FU
	Waste disposed of:						
	Hazardous waste	0.00272	0.00242	0.00331	0.00394	0.00453	kg/FU
	Non-hazardous waste	0.00770	0.00699	0.009	0.011	0.012	kg/FU
Inert waste	0.341	0.258	0.507	0.682	0.848	kg/FU	
Radioactive waste	4.50 E-05	3.74 E-05	0.000060	0.000076	0.000091	kg/FU	
5	Climatic change	0.517	0.417	0.717	0.927	1.13	kg of CO ₂ eq./FU
6	Atmospheric acidification	0.00315	0.00252	0.00441	0.00573	0.00698	kg of SO ₂ eq./FU
7	Air pollution	64.5	53.3	86.8	110	133	m ³ /FU
8	Water pollution	0.285	0.220	0.416	0.553	0.683	m ³ /FU
9	Stratospheric ozone layer depletion	4.31 E-12	3.20 E-12	6.53 E-12	8.83 E-12	1.10 E-11	kg CFC eqR11/FU
10	Formation of photochemical oxidants	0.000223	0.000186	0.000296	0.000374	0.000447	kg of ethylene eq./FU
Other indicator (not included in the NF P 01-010)							
11	Eutrophication	0.218	0.163	0.329	0.445	0.556	g eq PO ₄ ³⁻ /FU

N°	Environmental impact	Indicator value for the Reference Service Life					Units
		4 mm	3 mm	6 mm	8 mm	10 mm	
1	Consumption of energy resources						
	Total primary energy	228	188	308	392	472	MJ
	Renewable energy	9.84	9.08	11.4	13.0	14.5	MJ
	Non-renewable energy	218	179	297	379	458	MJ
	Fuel energy	221	182	299	381	459	MJ
2	Depletion of natural resources	0.0910	0.0743	0.124	0.159	0.193	kg eq antimony (Sb)
3	Total water consumption	143	112	204	269	331	litre
4	Solid waste:						
	Recovered waste (total)	0.564	0.428	0.835	1.12	1.39	kg
	Waste disposed of:						
	Hazardous waste	0.082	0.0726	0.0994	0.118	0.136	kg
	Non-hazardous waste	0.231	0.210	0.27	0.32	0.36	kg
Inert waste	10.2	7.74	15.2	20.5	25.4	kg	
Radioactive waste	0.00135	0.00112	0.00180	0.00228	0.00274	kg	
5	Climatic change	15.5	12.5	21.5	27.8	33.8	kg eq CO ₂
6	Atmospheric acidification	0.0946	0.0757	0.1322	0.172	0.209	kg eq SO ₂
7	Air pollution	1 935	1 600	2 604	3 307	3 976	m ³
8	Water pollution	8.55	6.59	12.5	16.59	20.5	m ³
9	Stratospheric ozone layer depletion	1.29 E-10	9.60 E-11	1.96 E-10	2.65 E-10	3.31 E-10	kg CFC eq R11
10	Formation of photochemical oxidants	0.00669	0.00558	0.00889	0.0112	0.0134	kg eq ethylene
Other indicator (not included in the NF P 01-010)							
11	Eutrophication	6.50	4.9	9.90	13.4	16.7	g eq PO ₄ ³⁻

4. Product contribution to assessing health risks and quality of life inside buildings in accordance with NF P 01-010 § 7

Product contribution	Environnemental Impact	Comments
To assess health risks	Indoor air quality	<p>Clear flat glass is an inert material which releases no elements. Through the manufacturing process in particular (melting at over 1000°C) glass neither contains nor emits any VOCs.</p> <p>Radioactive emissions: no natural radioactivity measured.</p> <p>Fibres and particulates emissions: not relevant for glass.</p> <p>Micro-organisms and mould: some moulds can grow on the glass surface, but they do not produce any degradation. These moulds can be removed easily (report CONIDIA DEV 0111-006).</p>
	Water quality	There is no impact. No migration of glass elements occurs when in contact with water (REACH Dossier CPIV).
To the quality of life	Hygrothermal comfort	Not applicable.
	Acoustic comfort	Not applicable.
	Visual comfort	Not applicable.
	Olfactive comfort	No odour emission test has been conducted.

5. Additional information

On average, 30% of the weight of a glass pane produced by SAINT-GOBAIN GLASS comes from internally recycled cullet (compared to 20% 10 years ago).

Cullet from SGG DIAMANT® can be recycled in a glass furnace. Nowadays however, nearly 95% of glass at the end of life goes to landfill due to a lack of dismantling, sorting and collecting networks.

The tempering does not affect the possibility to recycle this glass in a glass furnace.

Abbreviations used:

RSL: Reference Service Life.

FU: Functional Unit.

VOC: Volatile Organic Compounds.