EPD®

DIPSO®
PAVIMENTOS S.A.

ENVIRONMENTAL PRODUCT DECLARATION OF TECHNICAL FLOOR – MEDIUM RANGE (SD) FROM DIPSO PAVIMENTOS, S.A.

In accordance to ISO 14025 and UNE-EN 15804

Registration number: S-P-01725

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Geographical scope: Global

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com.

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1. PROGRAM INFORMATION.

This Environmental Program Declaration (EPD) is developed in accordance with the Product Category Rules (PCR) from the Programme:

- Programme holder: The International EPD® System
  Operator programme: EPD International AB.
- Operator programme address: EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden, E-mail: info@environdec.com
- The EPD owner has the sole ownership, liability and responsibility of the EPD.

2. VERIFICATION.

CEN standard EN 15804:2012+A1:2013 served as the core PCR	
Product category rules (PCR):	PCR 2012:01 Construction products and construction services, Version 2.3. DATE 2018-11-15. VALID UNTIL: 2020-03-03
PCR review was conducted by:	The Technical Committee of the International EPD® System. Chair: Massimo Marino. Contact via info@environdec.com
Standards conformance:	General Programme Instruction of the International EPD® System, version 2.5, based on ISO 14025 and ISO 14040/14044. EN 15804:2012+A1:2013
Independent verification of the declaration and data, according to ISO 14025	☐ EPD process certification ☒ EPD verification
Third party verifier:	Name and contact information: Marcel Gómez Ferrer www.marcelgomez.com. Tlf. 0034 630 64 35 93 Email: info@marcelgomez.com
Accredited or approved by:	The International EPD® System

- Geographical scope of the EPD: global.
- Reference year of the data used in the EPD: 2018.
- Useful Web Sites Reference for more information:
  https://www.environdec.com; http://dipsopavimentos.com/es/ini/

3. INFORMATION OF THE EPD OWNER.

- Company name: DIPSO PAVIMENTOS, S.A.
- Issuer and contact details: DIPSO PAVIMENTOS, S.A., info@dipso.es; calidad@dipso.es.
  Address: Calle El Álamo nº 39 – Polígono industrial El Álamo, 28970 Humanes de Madrid (Madrid). Spain.
  Phone: 914 982 075 – FAX: 914 980 043

- Production Center: Calle El Álamo nº 39 – Polígono industrial El Álamo, 28970 Humanes de Madrid (Madrid)
- Production country: Spain

DIPSO PAVIMENTOS S.A. began its activity in the raised access flooring system in December 1997, accumulating to this day a long history in the field of installation and distribution.

The DIPSO production plant in Humanes de Madrid has an area of 4.000 m^2 and works with three fully automated production lines: the encapsulation line; line of coated; and the multi-service line. In these three lines they can be manufactured 49 different versions of raised access flooring, all of them produced entirely at DIPSO production center.

Dipso has also developed new models of versatile panels that, together with the rest of the product range, allow the company to offer solutions to the difficulties that arise in each raised access floor project. Since today the factory has a capacity of 5.000 tile units per day per shift.

The company performs all manufacturing and installation processes according to the criteria of the current standards applicable to raised access floor systems (UNE 12825:2002, UNE-EN 13501-1:2007, UNE EN ISO 9239-1:2002, UNE EN ISO11925-2:2002) maintaining the commitment of constant updating.

All technical tests are carried out in external laboratories accredited by ENAC, Cidemco or Afiti-licof to offer the greatest transparency and veracity in all results, since for DIPSO quality is a priority.

4. INFORMATION OF THE LIFE CYCLE ANALYSIS AND EPD AUTHOR.

The study of Life Cycle Analysis and the Environmental Product Declaration have been prepared by the company Abaleo S.L.

- Contact information: José Luis Canga Cabañes; +34 639 901 043; jlcanga@abaleo.es; info@abaleo.es.

5. PRODUCT INFORMATION.

5.1. Product specification.

- Trade name: SD bare/SD R.
- This EPD includes the manufacture of:
  - SD bare: 24, 27 and 30 mm thick;
  - SD R tile: 30 mm thick with linóleum, PVC and stratified coating and 40 mm thick with PVC and stratified coating.

- CPC code: 42190.
- The intended use of tiles is the construction of practicable raised access floors in buildings.
- Technical description of the product.

Name	Tile type			Units
	SD 24	SD 27	SD 30	
System construction (total, finished floor)	600x600x24	600x600x27	600x600x30	mm
Total system weight (average)	26	26,82	31,27	kg/m^2
Tile weight (per unit)	8,4	9,00	10,60	kg
Pedestal weight (average of sizes, per unit)	0,3677	0,3677	0,3677	kg
Deflection	2	2	2	mm
Ultimate load (EN 12825)	9	12	14	kN
Working load (EN 12825)	4,5	6	7	kN
Fire protection (EN 13501/DIN 4102) – fire resistance.	BFL – S1	BFL – S1	BFL – S1	-

Name	Tile type			Units
	SD 30R stratified	SD 30R PVC	SD 30R linoleum	
System construction (total, finished floor)	600x600x30	600x600x30	600x600x30	mm
Total system weight (average)	28,77	28,77	28,77	kg/m^2
Tile weight (per unit)	9,70	9,70	9,70	kg
Pedestal weight (average of sizes, per unit)	0,3677	0,3677	0,3677	kg
Deflection	2	2	2	mm
Ultimate load (EN 12825)	15,12	15,12	15,12	kN
Working load (EN 12825)	7,56	7,56	7,56	kN
Fire protection (EN 13501/DIN 4102) – fire resistance.	BFL – S1	BFL – S1	BFL – S1	-

Name	Tile type		Units
	SD 40R stratified	SD 40R PVC	
System construction (total, finished floor)	600x600x40	600x600x40	mm
Total system weight (average)	33,77	33,77	kg/m^2
Tile weight (per unit)	11,50	11,50	kg
Pedestal weight (average of sizes, per unit)	0,3677	0,3677	kg
Deflection	No data	No data	mm
Ultimate load (EN 12825)	No data	No data	kN
Working load (EN 12825)	No data	No data	kN
Fire protection (EN 13501/DIN 4102) – fire resistance.	No data	No data	-

5.2. Content declaration of materials and chemicals.

The composition of 1 m^2 of SD technical floor is as follows:

Components	Nº CAS	% by total weight			
		SD	SD R Stratified	SD R PVC	SD R Linoleum
Wood	n.a.	59,9-65,8 %	79,3-81,3 %	69,6-72,5 %	72,1 %
Linoleum	n.a.				8,0 %
PVC	9002-86-2		1,4-1,7 %	12,4-11,5 %	1,3 %
Steel	65997-19-5	33,5-39,3 %	16,0-18,1 %	15,0-16,8 %	17,4 %
Others (adhesive, rubbers, EVA, etc.)		0,7-0,8 %	1,1-1,2 %	1,0-1,2 %	1,2 %

During the product life cycle, no hazardous substance included in the "List of very high concern candidates (SVHC) for authorization" has been used in a percentage greater than 0,1% of the product's weight.

5.3. Declared unit.

The declared unit is one square meter of raised access flooring system, including the corresponding part of the packaging material and the pedestal.

5.4. Reference service life (RSL).

The service lifetime of the raised access flooring system is: not specified, as this is a cradle-to-gate EPD.

5.5. Units and quantities.

The units used are those required by the PCR. Decimals are indicated by commas, in the SI style (French version); for example, 2.156,234.

6. EPD SCOPE.

6.1. EPD geographical scope.

The geographical scope of EPD is global. It is valid for the sale of all product manufactured in DIPSO and sold anywhere in the world.

6.2. EPD comparison within this product category.

EPD of construction products may not be comparable if they do not comply with EN 15804.

Environmental product declarations within the same product category from different programs may not be comparable.

The results presented in this document do not constitute comparative statements. However, the results will be disclosed to the public in the form of EPD, which may be used to compare Dipso products with similar products presented in other EPDs that follow the same PCR.

7. LIFE CYCLE ANALYSIS INFORMATION.

7.1. Process diagram of the system boundaries studied in this EPD.

All phases of the life cycle, from cradle to gate, have been studied without omitting any material, energy or process.

The system boundaries in the Life Cycle Analysis of the production of SD technical floor system are shown below in the process diagram:

INPUTS		OUTPUTS
• Coating (linoleum, PVC and stratified) • Agglomerate • Adhesive • PVC • Steel. • Tap water. • Packaging plastic. • Plastic strap. • Paper labels. • Wood. • Diesel • Natural gas. • Electrical power.	A1. Raw materials production ↓ A2. Transport to factory ↓ A3. Raised access flooring production process: reception of raw materials, machining of the upper and lower sheets, assembly with the wood part and glued, packed and palletized.	• Raised access flooring • Air emissions. • Wastewater treatment in municipal sewage treatment plant. • Transport of waste to management. • Waste management.

7.2. Lyfe Cycle Análisis scope.

This cradle-to-gate EPD covers the production stage (modules A1-A3) of the raised access flooring system:

- A1, production of the raw materials that conform of the final product, including electricity and energy consumption and the electricity production used on the manufacturing process.
- A2, transport of materials up to DIPSO manufacturing facility.

- A3, production of of the different technical tiles including water consumption; production of auxiliary materials; production of packaging; transport of wastes; and waste management.

Subsequent processes as assembly and/or installation of floors are beyond the scope of this EPD.

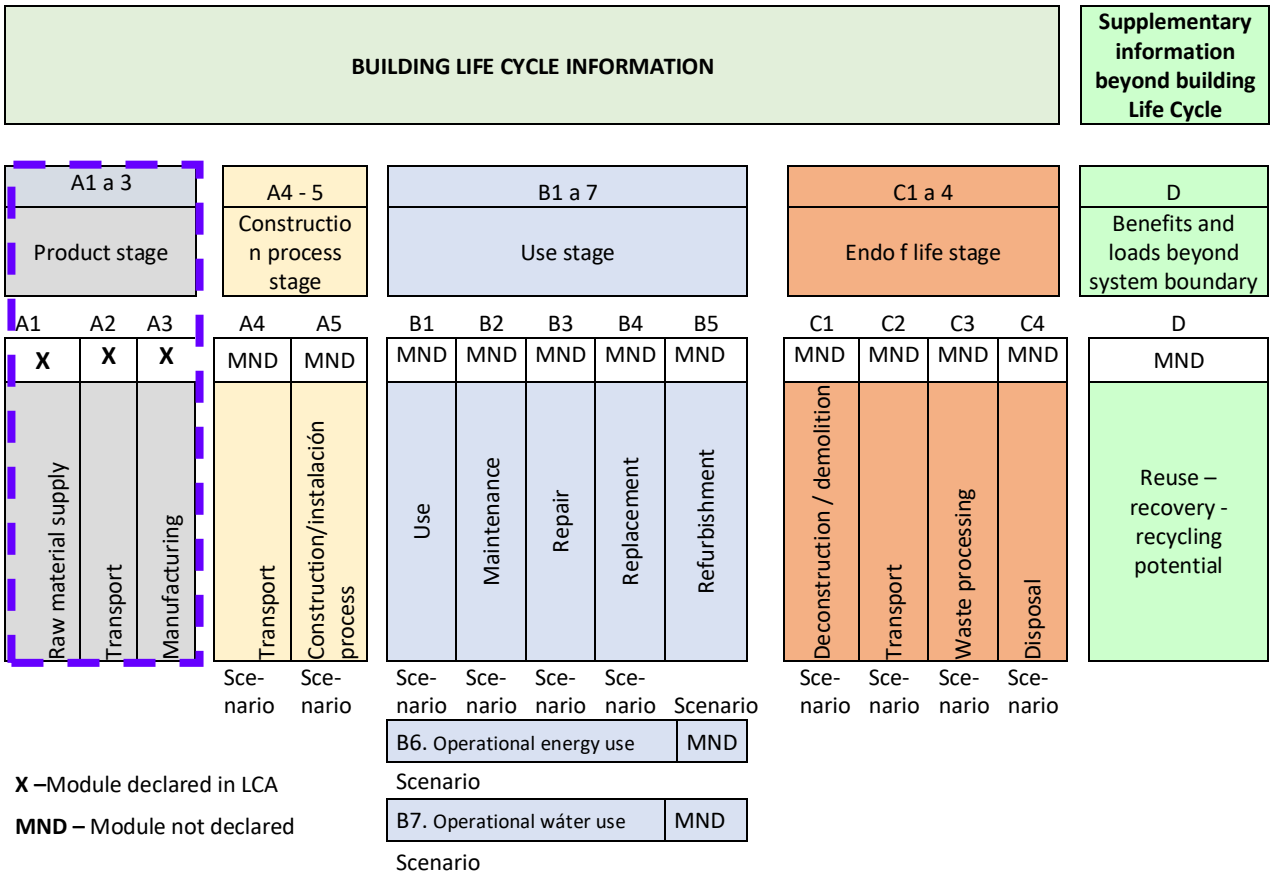


Figure 1. Information of the life-cycle stages and system boundary. Building life cycles

The LCA has studied more than 99% by weight of the materials used in technical floor system manufacturing. They have not been included in the LCA:

- All equipment whose useful life is longer than 3 years, neither the construction of the buildings of the plant, nor other capital goods.
- Staff work trips; or staff travels to work or from work.

Two principles have been followed in the LCA: the polluter pays principle and the modularity principle (environmental charges are assigned to the stage where the impact occurs).

This EPD only covers the cradle to gate stages because all the other stages are highly dependent on specific scenarios and is easier to associate their development to specific buildings and civil construction.

7.3. Data reference year.

The collected data for this EPD cover one year, 2018, a period with representative production data. The electricity mix of Spain for 2018 has been used for the electrical power production (composition shown in the annex).

7.4. Cut-off criteria.

As a rule, according to the PCR criteria, the LCA has included the gross weight/volume of all materials used in the manufacturing process so that at least 99% of the weight of the product unit is obtained.

7.5. Allocation.

According to the PCR, the criterion applied has been the assignment of system inputs and outputs based on physical properties (mass or volume). No other allocation criteria, such as economic allocation, have been required.

7.6. Data quality.

The Ecoinvent 3.5 database (November 2018) has been used to carry out the Life Cycle Analysis and the data has been treated with the SimaPro 9.0.0.30 software. Potential environmental impacts have been evaluated with the CML-IA baseline V3.05 / EU25 + 3, 2000 and EDIP 2003 V1.07 methodologies.

To assess the quality of the primary data used, a semi-quantitative data quality assessment criteria has been applied, as it is proposed by the European Union in its *Commission Recommendation 2013/179/EU of 9 April 2013 on the use of common methods to measure and communicate the life cycle environmental performance of products and organisations*. The results obtained are shown below:

- Integrity – very good. 1 point.
- Methodological appropriateness and consistency (M) - fair. 3 points.
- Time-related representativeness (TiR) – very good. 1 point.
- Technological representativeness (TeR) – very good. 1 point.
- Geographical representativeness (GR) – very good. 1 point.
- Parameter uncertainty (P) - very good. 1 point.

In accordance with this evaluation, the Data Quality Rating (DQR) of the dataset is: 8/6= 1,33, corresponding to an overall “excellent quality”.

The quality rating is based on scoring from 1 to 5 each of the six criteria (lower punctuation means the best quality); and the final overall is obtained according to the following table:

Overall data quality level according to the achieved data quality rating

Overall data quality rating (DQR)	Overall data quality level
≤ 1.6	"Excellent quality"
>1.6 to≤ 2.0	"Very good quality"
>2.0 to ≤3.0[71]	"Good quality"
>3 to ≤4.0	"Fair quality"
>4	"Poor quality"

8. ENVIRONMENTAL INFORMATION.

8.1. Environmental impacts.

The results obtained for SD technical floors are shown below in the environmental impact categories requested by the PCR for the three phases of the life cycle.

Potential environmental impacts - 1 m² of technical floor SD bare tile				
Impact category	**Unit**	**SD.24**	**SD.27**	**SD.30**
		A1 - A3	**A1 - A3**	**A1 - A3**
Global warming potential (GWP)	kg CO_2 eq.	54,31	56,22	58,84
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11 eq	3,66E-06	3,84E-06	4,17E-06
Acidification potential of land and water (AP)	kg SO_2 eq.	2,86E-01	2,96E-01	3,10E-01
Eutrophication potential (EP)	kg PO_4^{3-} eq.	3,18E-02	3,31E-02	3,54E-02
Formation potential of tropospheric ozone photochemical oxidants (POCP).	kg C2H4 eq	2,15E-02	2,24E-02	2,37E-02
Abiotic depletion potential for non-fossil resources (ADPE).	Kg Sb eq	1,11E-03	1,13E-03	1,13E-03
Abiotic depletion potential for fossil resources (ADPFF).	MJ, net calorific value	634,21	659,81	703,39

Potential environmental impacts - 1 m² of technical floor SD 30R (30mm thick with coating)				
Impact category	**Unit**	**SD 30R stratified**	**SD 30R PVC**	**SD 30R linoleum**
		A1 - A3	**A1 - A3**	**A1 - A3**
Global warming potential (GWP)	kg CO_2 eq.	43,64	49,66	46,86
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11 eq	3,68E-06	3,58E-06	3,78E-06
Acidification potential of land and water (AP)	kg SO_2 eq.	2,27E-01	2,40E-01	2,56E-01
Eutrophication potential (EP)	kg PO_4^{3-} eq.	2,88E-02	3,00E-02	4,73E-02
Formation potential of tropospheric ozone photochemical oxidants (POCP).	kg C2H4 eq	1,87E-02	1,90E-02	1,86E-02

Potential environmental impacts - 1 m² of technical floor SD 30R (30mm thick with coating)				
Abiotic depletion potential for non-fossil resources (ADPE).	Kg Sb eq	6,21E-04	6,21E-04	6,21E-04
Abiotic depletion potential for fossil resources (ADPFF).	MJ, net calorific value	588,19	726,88	616,97

Potential environmental impacts - 1 m² of technical floor SD 40R (40mm thick with coating)			
Impact category	**Unit**	**SD 40R stratified**	**SD 40R PVC**
		A1 - A3	**A1 - A3**
Global warming potential (GWP)	kg CO_2 eq.	46,89	52,90
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11 eq	4,06E-06	3,96E-06
Acidification potential of land and water (AP)	kg SO_2 eq.	2,43E-01	2,56E-01
Eutrophication potential (EP)	kg PO_4^{3-} eq.	3,14E-02	3,25E-02
Formation potential of tropospheric ozone photochemical oxidants (POCP).	kg C2H4 eq	2,02E-02	2,06E-02
Abiotic depletion potential for non-fossil resources (ADPE).	Kg Sb eq	6,21E-04	6,21E-04
Abiotic depletion potential for fossil resources (ADPFF).	MJ, net calorific value	643,73	782,42

8.2. Resource use.

The consumption of natural resources and other resources used per functional unit are presented for A1, A2 and A3 product stages.

Resource use - 1 m² of technical floor SD bare tile					
Parameter		**Unit**	**SD.24**	**SD.27**	**SD.30**
			A1 - A3	**A1 - A3**	**A1 - A3**
Renewable primary energy resources	Use of energy (PERE)	MJ, net c.v.	324,49	343,89	390,10
	As material utilization (PERM)	MJ, net c.v.	0,00	0,00	0,00
	TOTAL	MJ, net c.v.	**324,49**	**343,89**	**390,10**
Non renewable primary energy resources	Use of energy (PENRE)	MJ, net c.v.	0,00	0,00	0,00
	As material utilization (PENRM)	MJ, net c.v.	786,17	816,97	867,30
	TOTAL	MJ, net c.v.	**786,17**	**816,97**	**867,30**
Use of secondary material (SM)		kg	0,00	0,00	0,00
Use of renewable secondary fuels (RSF)		MJ, net c.v.	0,00	0,00	0,00
Use of non-renewable secondary fuels (NRSF)		MJ, net c.v.	0,00	0,00	0,00
Use of net fresh wáter (FW)		m^3	2,05E-01	2,12E-01	2,22E-01

Note: Data obtained from SimaPro inventory analysis; raw material compartment.

Resource use - 1 m² of technical floor SD 30R (30mm thick with coating)					
Parameter		**Unit**	**SD 30R stratified**	**SD 30R PVC**	**SD 30R linoleum**
			A1 - A3	**A1 - A3**	**A1 - A3**
Renewable primary energy resources	Use of energy (PERE)	MJ, net c.v.	447,72	380,35	429,26
	As material utilization (PERM)	MJ, net c.v.	0,00	0,00	0,00
	TOTAL	MJ, net c.v.	**447,72**	**380,35**	**429,26**
Non renewable primary energy resources	Use of energy (PENRE)	MJ, net c.v.	0,00	0,00	0,00
	As material utilization (PENRM)	MJ, net c.v.	705,74	851,69	742,78
	TOTAL	MJ, net c.v.	**705,74**	**851,69**	**742,78**

Resource use - 1 m² of technical floor SD 30R (30mm thick with coating)				
Parameter	**Unit**	**SD 30R stratified**	**SD 30R PVC**	**SD 30R linoleum**
		A1 - A3	**A1 - A3**	**A1 - A3**
Use of secondary material (SM)	kg	0,00	0,00	0,00
Use of renewable secondary fuels (RSF)	MJ, net c.v.	0,00	0,00	0,00
Use of non-renewable secondary fuels (NRSF)	MJ, net c.v.	0,00	0,00	0,00
Use of net fresh wáter (FW)	m^3	1,69E-01	2,03E-01	5,68E-01

Note: Data obtained from SimaPro inventory analysis; raw material compartment.

Resource use - 1 m² of technical floor SD 40R (40mm thick with coating)				
Parameter		**Unit**	**SD 40R stratified**	**SD 40R PVC**
			A1 - A3	**A1 - A3**
Renewable primary energy resources	Use of energy (PERE)	MJ, net c.v.	499,34	431,97
	As material utilization (PERM)	MJ, net c.v.	0,00	0,00
	TOTAL	MJ, net c.v.	**499,34**	**431,97**
Non renewable primary energy resources	Use of energy (PENRE)	MJ, net c.v.	0,00	0,00
	As material utilization (PENRM)	MJ, net c.v.	769,26	915,21
	TOTAL	MJ, net c.v.	**769,26**	**915,21**
Use of secondary material (SM)		kg	0,00	0,00
Use of renewable secondary fuels (RSF)		MJ, net c.v.	0,00	0,00
Use of non-renewable secondary fuels (NRSF)		MJ, net c.v.	0,00	0,00
Use of net fresh wáter (FW)		m^3	1,82E-01	2,15E-01

Note: Data obtained from SimaPro inventory analysis; raw material compartment.

8.3. Waste production.

The amount of waste generated during manufacturing of the different SD technical floors of DIPSO, obtained from the analysis in SimaPro using the EDIP 2003 V1.07. methodology, is showed below:

Waste generated during the manufacturing stage - 1 m² technical floor SD bare tile (kg per m² of floor)				
Parameter	**Unit**	**SD.24**	**SD.27**	**SD.30**
		A1 - A3	**A1 - A3**	**A1 - A3**
Hazardous waste disposed (HW)	kg	1,40E-03	1,44E-03	1,48E-03
Non-hazardous waste disposed (NHW)	kg	4,30E-05	4,50E-05	4,91E-05
Radioactive waste disposed (RW)	kg	1,87E-03	1,95E-03	2,11E-03

Waste generated during the manufacturing stage - 1 m² technical floor 30R (30mm thick with coating) (kg per m² of floor)				
Parameter	**Unit**	**SD 30R stratified**	**SD 30R PVC**	**SD 30R linoleum**
		A1 - A3	**A1 - A3**	**A1 - A3**
Hazardous waste disposed (HW)	kg	9,71E-04	9,60E-04	9,75E-04
Non-hazardous waste disposed (NHW)	kg	4,36E-05	4,24E-05	4,50E-05
Radioactive waste disposed (RW)	kg	1,87E-03	1,80E-03	1,92E-03

Waste generated during the manufacturing stage - 1 m² technical floor 40R (40mm thick with coating) (kg per m² of floor)			
Parameter	**Unit**	**SD 40R stratified**	**SD 40R PVC**
		A1 - A3	**A1 - A3**
Hazardous waste disposed (HW)	kg	1,02E-03	1,01E-03
Non-hazardous waste disposed (NHW)	kg	4,82E-05	4,71E-05
Radioactive waste disposed (RW)	kg	2,05E-03	1,98E-03

8.4. Other environmental information regarding to output flows.

Parameter	Value
Components for re-use	0 Kg/m² technical floor
Materials for recycling	8,73 E-05 Kg/m² technical floor
Materials for energy recovery	5,37 E-03 Kg/m² technical floor
Exported energy (electricity)	0 MJ/ m² technical floor

9. ADDITIONAL INFORMATION.

DIPSO is certified by the ISO 9001:2015 in raised access floors manufacturing, the ISO 14001:2015 environment system and the FCS certification.

As an additional environmental information of the product, the values obtained with the application of the environmental impact assessment methodology ILCD 2011 Midpoint+ are shown below. This methodology is proposed in the *Commission Recommendation 2013/179/EU of 9 April 2013 on the use of common methods to measure and communicate the life cycle environmental performance of products and organisations*.

Values for the environmental impact categories considered in the applied methodology are shown in the following tables for the declared unit of 1 m² of SD and SD.R raised access flooring system.

Impact category	**Unit**	**SD.24 bare tile**	**SD.27 bare tile**	**SD.30 bare tile**
		A1 - A3	**A1 - A3**	**A1 - A3**
Climate change	kg CO2 eq	42,89	43,88	43,94
Ozone depletion	kg CFC-11 eq	3,66E-06	3,83E-06	4,17E-06
Human toxicity, non-cancer effects	CTUh	2,12E-05	2,19E-05	2,25E-05
Human toxicity, cancer effects	CTUh	1,92E-05	1,96E-05	1,97E-05
Particulate matter	kg PM2.5 eq	8,73E-02	9,02E-02	9,39E-02
Ionizing radiation HH	kBq U235 eq	1,87	1,95	2,09
Ionizing radiation E (interim)	CTUe	1,48E-05	1,54E-05	1,65E-05
Photochemical ozone formation	kg NMVOC eq	2,09E-01	2,17E-01	2,29E-01
Acidification	molc H+ eq	3,56E-01	3,69E-01	3,87E-01
Terrestrial eutrophication	molc N eq	7,80E-01	8,12E-01	8,69E-01
Freshwater eutrophication	kg P eq	2,37E-03	2,46E-03	2,60E-03
Marine eutrophication	kg N eq	5,78E-02	5,99E-02	6,30E-02
Freshwater ecotoxicity	CTUe	234,17	239,95	242,18
Land use	kg C deficit	96,11	102,86	120,61

Impact category	Unit	SD.24 bare tile	SD.27 bare tile	SD.30 bare tile
		A1 - A3	A1 - A3	A1 - A3
Water resource depletion	m3 water eq	1,30E-02	1,76E-02	3,35E-02
Mineral, fossil & ren resource depletion	kg Sb eq	5,64E-03	5,76E-03	5,77E-03

Impact category	Unit	SD 30R stratified	SD 30R PVC	SD 30R linoleum
		A1 - A3	A1 - A3	A1 - A3
Climate change	kg CO2 eq	21,94	32,62	25,32
Ozone depletion	kg CFC-11 eq	3,67E-06	3,58E-06	3,77E-06
Human toxicity, non-cancer effects	CTUh	1,50E-05	1,53E-05	1,71E-05
Human toxicity, cancer effects	CTUh	1,09E-05	1,10E-05	1,10E-05
Particulate matter	kg PM2.5 eq	7,01E-02	6,69E-02	6,80E-02
Ionizing radiation HH	kBq U235 eq	1,80	1,74	1,84
Ionizing radiation E (interim)	CTUe	1,42E-05	1,37E-05	1,45E-05
Photochemical ozone formation	kg NMVOC eq	1,79E-01	2,05E-01	1,85E-01
Acidification	molc H+ eq	2,91E-01	3,06E-01	3,38E-01
Terrestrial eutrophication	molc N eq	7,13E-01	7,49E-01	9,01E-01
Freshwater eutrophication	kg P eq	2,02E-03	1,97E-03	3,12E-03
Marine eutrophication	kg N eq	4,80E-02	5,20E-02	6,91E-02
Freshwater ecotoxicity	CTUe	142,00	147,23	154,44
Land use	kg C deficit	152,64	127,92	187,96
Water resource depletion	m3 water eq	9,23E-02	1,89E-01	3,29E-01
Mineral, fossil & ren resource depletion	kg Sb eq	3,17E-03	3,19E-03	3,20E-03

Impact category	Unit	SD 40R stratified	SD 40R PVC
		A1 - A3	A1 - A3
Climate change	kg CO2 eq	22,34	33,01
Ozone depletion	kg CFC-11 eq	4,06E-06	3,96E-06
Human toxicity, non-cancer effects	CTUh	1,57E-05	1,60E-05
Human toxicity, cancer effects	CTUh	1,09E-05	1,10E-05
Particulate matter	kg PM2.5 eq	7,43E-02	7,11E-02
Ionizing radiation HH	kBq U235 eq	1,96	1,89
Ionizing radiation E (interim)	CTUe	1,55E-05	1,50E-05
Photochemical ozone formation	kg NMVOC eq	1,94E-01	2,20E-01
Acidification	molc H+ eq	3,12E-01	3,28E-01
Terrestrial eutrophication	molc N eq	7,79E-01	8,14E-01
Freshwater eutrophication	kg P eq	2,18E-03	2,13E-03
Marine eutrophication	kg N eq	5,17E-02	5,57E-02
Freshwater ecotoxicity	CTUe	144,80	150,02
Land use	kg C deficit	172,35	147,63
Water resource depletion	m3 water eq	1,15E-01	2,11E-01
Mineral, fossil & ren resource depletion	kg Sb eq	3,18E-03	3,20E-03

10. DIFFERENCE WITH PREVIOUS VERSIONS OF THIS EPD.

There are no previous versions of this EPD.

11. REFERENCES.

- Reference PCR document:
  PCR 2012:01 Construction products and construction services, Version 2.3. DATE 2018-11-15. VALID UNTIL: 2020-03-03
  EPD International (2017). General Program Instructions for the International EPD® System. Version 3.0 date 2017-12-11, based on ISO 14025 and ISO 14040/14044. www.environdec.com
- Standard UNE-EN 15804:2012+A1:2014. Sustainability of construction works. Environmental Product Declaration. Core rules for the product category of construction products.
- Ecoinvent 3.5 (November 2018)
- Environmental Impact Assessment Methodologies:
  - CML-IA baseline V3.05 / EU25+3, 2000.
  - EDIP 2003 V1.07
  - ILCD 2011 Midpoint+
- Databases and environmental impact methodologies applied through SimaPro 9.0.0.30.
- LCA, by Abaleo S.L., of the production of the raise flooring system by Dipso S.A.: SD bare tile with 24, 37 and 30 mm thick; SD R with 30 and 40 mm thick and PVC / stratified coating, and SD R with 30 mm thick and linoleum coating.
- Standard ISO 14040. Environmental management. Life cycle assessment. Principles and framework. 2006.
- Standard ISO 14044. Environmental management. Life cycle assessment. Requirements and guidelines. 2006.
- Standard UNE-EN ISO 14020: 2002. Environmental labels and declarations. General principles. (ISO 14020:2000).
- Standard ISO 14025. Environmental labels and declarations. Type III environmental declarations. Principles and procedures. 2006.
- *COMMISSION RECOMMENDATION, 2013/179/UE, of 9 april 2013, on the use of common methods to measure and communicate the life cycle environmental performance of products and organizations*.
- ILCD Handbook (International reference life cycle data system). 2011.

12. ANNEX. ELECTRICAL MIX USED.

The regional electrical mix 2018 has been used in this EPD. It was composed from the annual report of the Spanish Electricity System, of Red Eléctrica de España. The GHG emissions of this mix, assessed with the IPCC 2013 methodology (100-year), are 74,34 gCO_2e/MJ.

The data from that report is shown below:

National electrical energy balance [1]

	Peninsular system		Non-peninsular systems		National total	
	GWh	%18/17	GWh	%18/17	GWh	%18/17
Hydro	34,103	84.9	3	0.1	34,106	84.9
Pumped storage [2]	2,009	-10.7	-	-	2,009	-10.7
Nuclear	53,198	-4.2	-	-	53,198	-4.2
Coal	34,882	-17.8	2,392	-7.9	37,274	-17.2
Fuel/gas [3]	-	-	6,683	-4.5	6,683	-4.5
Combined cycle [4]	26,403	-21.5	3,642	6.5	30,044	-18.9
Hydro-wind	-	-	24	16.9	24	16.9
Wind	48,946	3.0	625	56.6	49,570	3.5
Solar photovoltaic	7,374	-7.8	385	-3.1	7,759	-7.6
Solar thermal	4,424	-17.3	-	-	4,424	-17.3
Other renewables [5]	3,547	-1.5	10	-8.3	3,557	-1.5
Cogeneration	28,981	2.9	35	-3.5	29,016	2.8
Non-renewable waste	2,294	-6.7	141	-5.2	2,435	-6.6
Renewable waste	733	0.7	141	-5.2	874	-0.3
Generation	**246,893**	**-0.5**	**14,081**	**-0.7**	**260,974**	**-0.5**
Pumped storage consumption	-3,198	-11.3	-	-	-3,198	-11.3
Peninsula-Balearic Islands link [6]	-1,233	4.6	1,233	4.6	0	-
International exchange balance [7]	11,102	21.1	-	-	11,102	21.1
Demand (b.c.-at power station busbars)	**253,563**	**0.4**	**15,314**	**-0.3**	**268,877**	**0.4**

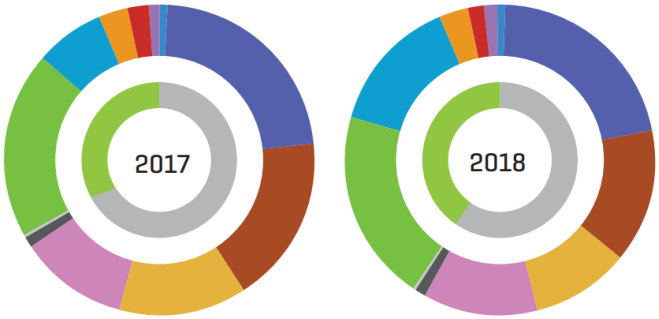
[1] Allocation of generation units based on primary fuel
[2] Pure pumped storage + estimate of mixed pumped storage.
[3] Generation from auxiliary generation units is included in the Balearic Islands' electricity system
[4] Includes operation in open-cycle mode. The Canary Islands' electricity system uses gas-oil as primary fuel
[5] Includes biogas, biomass, marine energy and geothermal
[6] Positive value: importer balance; negative value: exporter balance.
[7] Positive value: importer balance; negative value: exporter balance. Increment values are not calculated when exchange balances have different signs.

Source: Annual report of the Spanish Electricity System 2018 (Red Eléctrica de España).

In 2018, the contribution of renewable energy to peninsular electricity generation has registered the fourth highest value in the entire historical series. 2018 was a year with a good contribution from hydroelectric production, almost double that the previous year.

Annual generation structure of the peninsular electricity energy 2017 and 2018 (%)

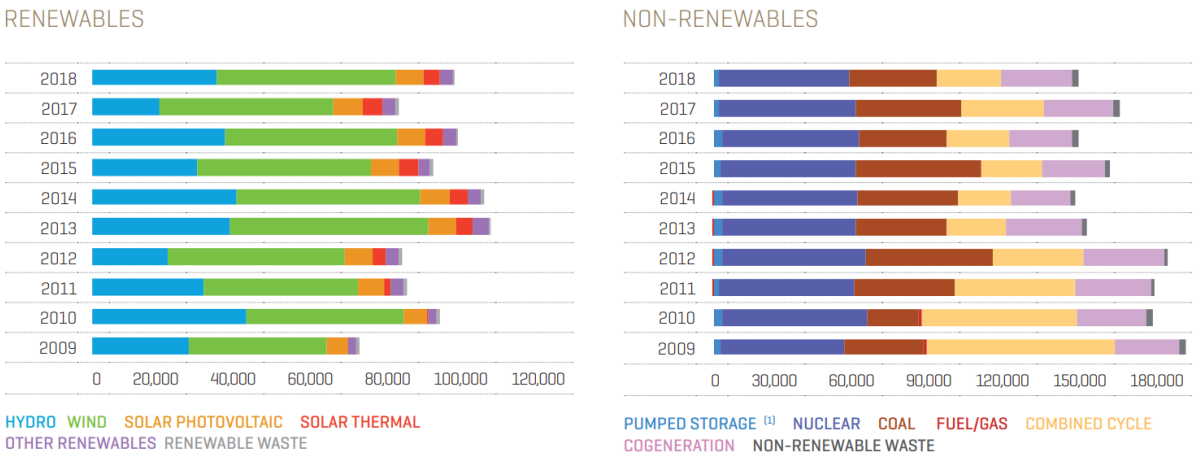
	2017	2018
PUMPED STORAGE	0.9	0.8
NUCLEAR	22.4	21.5
COAL	17.1	14.1
COMBINED CYCLE	13.6	10.7
COGENERATION	11.3	11.9
NON-RENEWABLE WASTE	1.0	0.9
RENEWABLE WASTE	0.3	0.3
WIND	19.1	19.8
HYDRO	7.4	13.8
SOLAR PHOTOVOLTAIC	3.2	3.0
SOLAR THERMAL	2.2	1.8
OTHER RENEWABLES	1.5	1.4



	2017	2018
RENEWABLES	33.7	40.1
NON-RENEWABLES	66.3	59.9

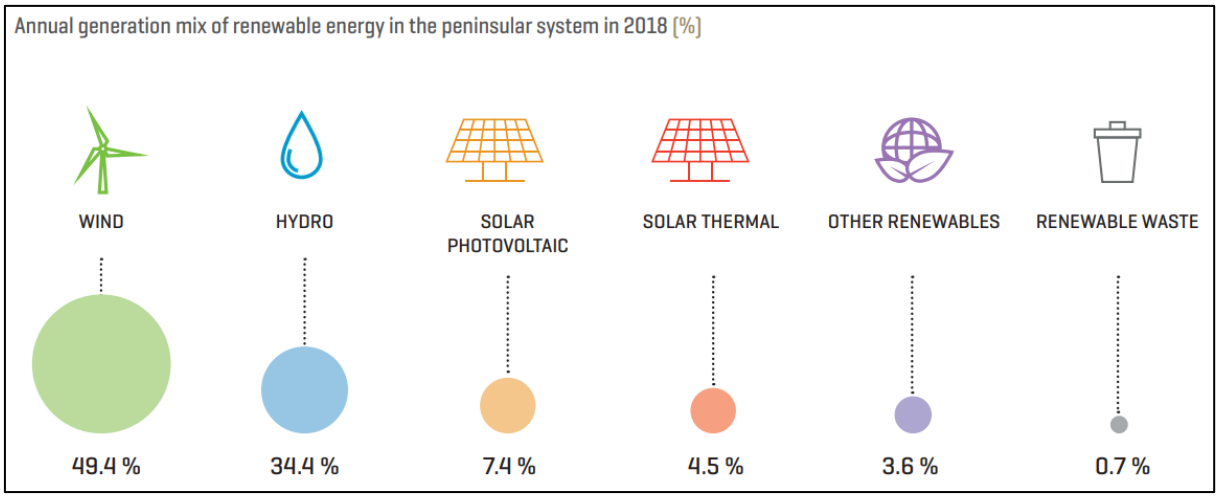
Source: Annual report of the Spanish Electricity System 2018 (Red Eléctrica de España)..

Evolution of renewable and non-renewable electricity generation in the peninsular system (GWh)



(1) Pure pumped storage + estimation of mixed pumped storage.

Source: Annual report of the Spanish Electricity System 2018 (Red Eléctrica de España).



Source: Annual report of the Spanish Electricity System 2018 (Red Eléctrica de España)..