

ENVIRONMENTAL PRODUCT DECLARATION

USG DONN® BRAND DX® / DXL™ / DXLA™ ACOUSTICAL SUSPENSION SYSTEM

USG INTERIORS, LLC

CARTERSVILLE, GA; OAKVILLE, ON (CANADA); STOCKTON, CA; WESTLAKE, OH



The most widely used acoustical suspension system available, this economical, simple and versatile system allows for maximum access. USG Donn® Brand DX®/DXL™/DXLA™ Acoustical Suspension System is rust resistant and offers appropriate load-carrying capacities for acoustical panels, light fixtures and air distribution elements. The system can be used in both general and fire-rated applications.

- 15/16" exposed tee system. Components for use in general and fire-rated applications
- Maximum economy and design simplicity
- Compatible with Logix™ Integrated Ceiling Systems
- DXL™ system features more than 80 UL designs (up to three hours)
- Cross-tee override-ends resist twisting and give a professionally finished look
- Meets or exceeds all national code requirements, including seismic



For over a century, sustainable practices have naturally been an inherent part of business at USG. They help shape the innovative products that become the homes where we live, the buildings where we work and the arenas where we play. From the product formulations we choose, to the processes we employ, USG is committed to designing, manufacturing, and distributing products that minimize overall environmental impacts and contribute toward a healthier living space. We believe that transparency of product information is essential for our stakeholders and Environmental Product Declarations are the next step toward an even more transparent USG. Contained in this Underwriter's Laboratory certified, ISO compliant EPD is information regarding:

- The Life Cycle Assessment and impact measures including global warming and energy use
- Product performance attributes including fire, seismic, corrosion resistance, and exposure
- Product composition, ingredients, and sources
- Information on the manufacturing process
- Installation and application practices



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USG Donn® Brand DX® / DXL™ / DXLA™ Acoustical Suspension System

According to ISO 14025 & ISO 21930:2007

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. **Exclusions:** EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. **Accuracy of Results:** EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. **Comparability:** EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.



PROGRAM OPERATOR	UL Environment
DECLARATION HOLDER	USG
DECLARATION NUMBER	4789414231.105.
DECLARED PRODUCT	USG Donn® Brand DX®/DXL™/DXLA™ Acoustical Suspension System
REFERENCE PCR	SCSglobal North American PCR for Designated Steel Construction Products May 5, 2015, v.1.0
DATE OF ISSUE	April 1, 2020
PERIOD OF VALIDITY	5 Years
CONTENTS OF THE DECLARATION	Product definition and information about building physics Information about basic material and the material's origin Description of the product's manufacture Indication of product processing Life cycle assessment results Testing results and verifications
The PCR review was conducted by:	SCS Global Services Critical PCR review Panel Dr. Thomas Gloria, Ph.D (Chair)
This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories <input type="checkbox"/> INTERNAL <input type="checkbox"/> EXTERNAL	<i>Grant R. Martin</i> Grant R. Martin, UL Environment
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	<i>Thomas P. Gloria</i> Thomas P. Gloria, Industrial Ecology Consultants

This EPD conforms with ISO 21930:2007



USG Donn® Brand DX® / DXL™ / DXLA™ Acoustical Suspension System

According to ISO 14025

2.0 Product Information

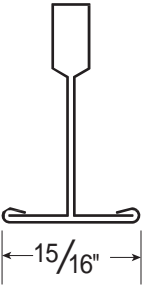
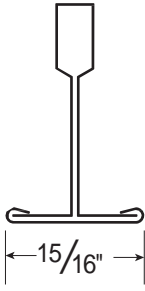
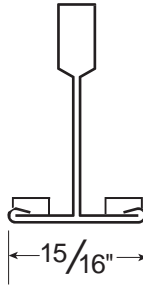



2.1 Product Description

USG Donn® Brand DX®/DXL™ /DXLA™ Acoustical Suspension System is a hot-dipped galvanized steel, roll-formed suspension system. The Donn DX®/DXL™/ DXLA™ suspension systems are roll formed with 15/16" wide face, hot dipped galvanized steel body, and painted cap. Some products are available with high recycled content for enhanced LEED® credits. The system is generally used to suspend acoustical ceiling tiles and/or metal panels. It is manufactured by USG in Cartersville, GA, Oakville, ON (Canada), Stockton, CA and Westlake, OH.

This EPD covers the USG Donn® DX®/DXL™, DXLA™, DX/DXLHRC, DXACE™, GDX™ profiles.

2.2 Technical Data

The performance of the USG Donn DX/DXL, DXLA, DX/DXLHRC, DXACE, GDX Acoustical Suspension Systems is listed below.

Items Included in this EPD	Performance Attributes
<p>Donn DX®/DXL™, DXLA™, DXACE™</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>DX®/DXL™</p> </div> <div style="text-align: center;">  <p>DXLA™</p> </div> <div style="text-align: center;">  <p>DXACE™</p> </div> </div>	<div style="display: flex; flex-direction: column; align-items: center;">  <p>Class A</p>  <p>Qualified for seismic installations</p>  <p>HRC</p> <p>High recycled content</p> </div>



ENVIRONMENTAL PRODUCT DECLARATION



USG Donn® Brand DX® / DXL™ / DXLA™ Acoustical Suspension System

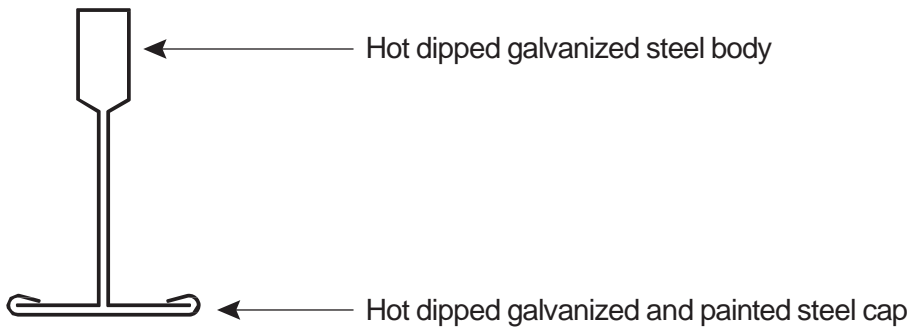
According to ISO 14025

2.3 Placing on the Market/Application Rules

Standard application rules for USG Donn® Brand Acoustical Suspension System are available on usg.com.

2.4 Product Material Content

The performance of the USG Donn DX/DXL, DXLA, DX/DXLHRC, DXACE, GDY Acoustical Suspension Systems is listed below.



Grid Component	Function	Quantity (percent by weight)	Recycled Mineral Resource	Non-renewable Resource	Renewable Resource	Abundant Resource	Origin
USG DX®/DXL™ Acoustical Suspension System							
Galvanized Steel Coil	Suspension	> 99%					US Sources
Paint	Finish	<1%					US Sources
USG DXLA™ Acoustical Suspension System							
Galvanized Steel Coil	Suspension	>75%					US Sources
Aluminum Coil	Suspension	<25%					US Sources
Paint	Finish	<1%					US Sources

Values shown above are for a volume-weighted averages for USG DONN® Brand DX®/DXL™/DXLA™ Acoustical Suspension System produced at Cartersville, GA, Oakville, ON (Canada), Stockton, CA and Westlake, OH.



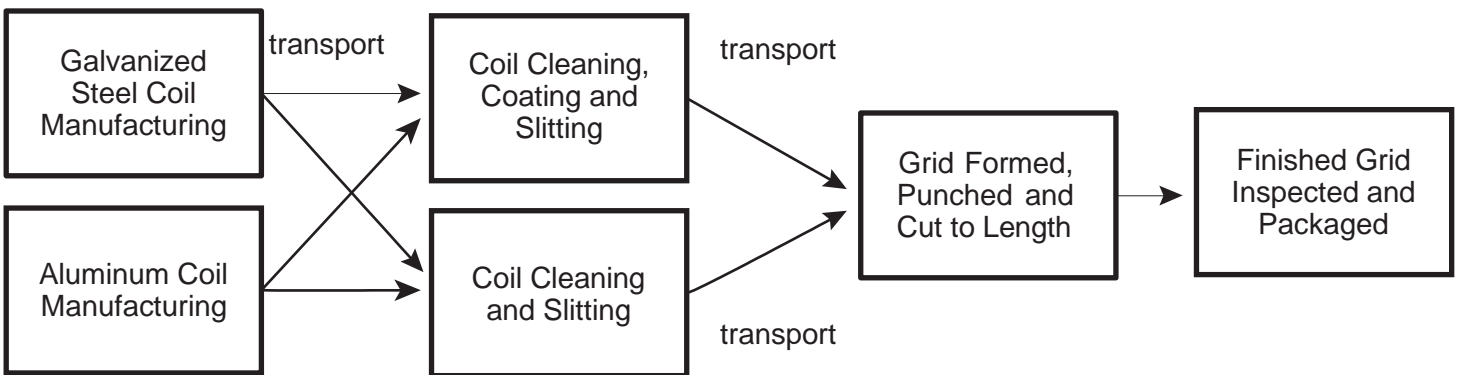
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According to ISO 14025

2.5 Product Manufacturing



During the grid production process, a piece of galvanized steel coil (destined to be the body) and a second piece of coated galvanized steel coil or coated aluminum coil (destined to be the cap) are combined into the proper configuration using a series of driven dies. A clip is attached to both ends of the main tee and cross tee members allowing for connection of the various pieces.

2.6 Environment and Health during Manufacturing

All appropriate equipment required by federal, state and local regulations are in place at all USG manufacturing facilities.

2.7 Packaging

The finished grid product is packaged in cardboard boxes. Wooden pallets are used to protect unit loads during shipping.

2.8 Product Installation

The USG Donn® Brand DX®/DXL™/DXLA™ Acoustical Suspension System must be installed according to ASTM C636, ASTM E580, CISCA and USG requirements. Alternate installation methods may be used when approved by the authority having jurisdiction. Standard rules and practices for installing and finishing USG grid products are available online at usg.com.





USG Donn® Brand DX® / DXL™ / DXLA™ Acoustical Suspension System

According to ISO 14025

2.9 Environment and Health during Use Stage

The USG Donn® Brand DX®/DXL™/DXLA™ Acoustical Suspension System is not a controlled product under WHMIS (Workplace Hazardous Materials Information System).

2.10 Reference Service Life

Per the PCR, the reference service life for this cradle-to-gate (A1-A3) analysis is reported as not specified.

2.11 End-of-Life

This EPD covers life stage modules A1, A2 and A3 and does not cover end of life disposal. In normal practice, most grid components are recycled at end of life.

2.12 Further Information

Additional information can be found at usg.com





USG Donn® Brand DX® / DXL™ / DXLA™ Acoustical Suspension System

According to ISO 14025

3.0 LCA: Calculation Rules

3.1 Declared or Functional Unit

USG Donn® Brand DX®/DXL™/DXLA™ Acoustical Suspension System	Value and Units
Declared Unit	1,000 kg of finished, packaged grid
Declared Density	7700 kg/m3

3.2 System Boundary

The system boundaries are cradle to gate (modules A1-A3) and include the following system processes in the production of grid: raw material extraction, raw material production, raw material transportation from suppliers to the production facility, product manufacturing and waste management.

3.3 Estimates and Assumptions

All raw material and energy data is specific to the manufacture of USG Donn® Brand DX®/DXL™/DXLA™ Acoustical Suspension System. No significant issues pertaining to the methods used, assumptions made such as allocation rules, cut-off decisions, selection of impact categories, category indicators and models were identified.

3.4 Criteria for the Exclusion of Inputs and Outputs

The use of criteria for the exclusion of inputs and outputs (i.e., cut off rules) may be used to in situations for which data is not readily available. Cut off rules shall not be used in order to hide data. All hazardous and toxic materials and substances shall be included in the inventory and the cut-off rules do not apply. All use of criteria for exclusion of inputs and outputs shall be documented in the Project Report.

The following steps shall be used for the exclusion of inputs and outputs:

- All inputs and outputs to a unit process shall be included in the LCA calculation for which data are available. Any data gaps may be filled through use of conservative assumptions using representative data. Assumptions used for filling data gaps shall be documented in the Project Report.
- In situations where there is a data gap or insufficient data, criteria for exclusion of inputs and outputs shall be 1% of primary energy usage (including both renewable and non-renewable energy) and 1% on a mass basis for the specific unit process. The maximum criteria for exclusion of inputs and outputs shall be 5% of primary energy usage and mass across all modules included in the LCA.
- Care should be exercised to ensure that material and energy flows which may cause significant emissions to air, water, or soil are included. Use of conservative assumptions and expert judgment may be needed to ensure that this requirement is followed.





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3.5 Data Requirements and Data Sources

Manufacturer specific data was obtained from the USG plants in Cartersville, GA, Oakville, ON, Canada, Stockton, CA and Westlake, OH. All results are reported as a mass weighted average across the grid manufacturing locations. Steel coil and aluminum coil was purchased at multiple locations in both the US and Asia.

The LCA model for grid was created using GaBi software developed by Thinkstep. The GaBi datasets for hot-dipped galvanized steel were the most up-to-date available. The data for these datasets has been collected on site by steel industry experts in accordance with the worldsteel methodology and ISO 14040 standards, and consistency-checked by worldsteel LCA-experts. All transportation associated with raw materials reflects the actual modes of transportation and mileage. The data quality is considered to be good to high quality.

3.6 Allocation

The LCI data was collected for the 2017 production year. No allocations were required in this analysis.

3.7 Comparability of EPDs

Any comparison of EPDs shall be subject to the requirements of ISO 21930. For comparison of EPDs which report different module scopes, such that one EPD includes module D and the other does not, the comparison shall only be made on the basis of Modules A1, A2, and A3. Additionally, when Module D is included in the EPDs being compared, all EPDs must use the same methodology for calculation of Module D values.

Full conformance with the North American Product Category Rule for Designated Steel Construction Products ensures EPD comparability when all stages of a product's life cycle have been duly considered; however, variations and deviations are possible.



USG Donn® Brand DX® / DXL™ / DXLA™ Acoustical Suspension System

According to ISO 14025

4.0 LCA Results

This Environmental Product Declaration (EPD) conforms to ISO 14025, ISO 14040, ISO 14044, and ISO 21930.

Scope of Results Reported: The PCR requires the reporting of a limited set of LCA metrics; therefore, there may be relevant environmental impacts beyond those disclosed by this EPD. The EPD does not indicate that any environmental or social performance benchmarks are met nor thresholds exceeded.

Accuracy of Results: This EPD has been developed in accordance with the PCR applicable for the identified product following the principles, requirements and guidelines of the ISO 14040, ISO 14044, ISO 14025 and ISO 21930 standards. The results in this EPD are estimations of potential impacts. The accuracy of results in different EPDs may vary as a result of value choices, background data assumptions and quality of data collected.

Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. Such comparisons can be inaccurate, and could lead to the erroneous selection of materials or products which are higher-impact, at least in some impact categories. Any comparison of EPDs shall be subject to the requirements of ISO 21930. For comparison of EPDs which report different module scopes, such that one EPD includes Module D and the other does not, the comparison shall only be made on the basis of Modules A1, A2, and A3. Additionally when Module D is included in the EPDs being compared, all EPDs must use the same methodology for calculation of Module D values.

Part 1- Description of the system boundary (X: included in LCA; NS- not in scope)															
Product stage				Construction process stage				Use stage				End of life stage			
Raw material supply	Transport	Manufacturing	Transport	Construction-Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction	Transport	Waste processing	Disposal
A	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
X	X	X	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS





USG Donn® Brand DX® / DXL™ / DXLA™ Acoustical Suspension System

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Part 2- Results of the LCA- ENVIRONMENTAL IMPACT: Cradle-to-Gate (A1-A3) for 1 metric ton of USG Donn® Brand DX®/DXL™ Acoustical Suspension System

Traci 2.1 Impact Assessment

Impact Category	Units	A1. Raw Materials	A2. Transport	A3. Production	A1-A3 Total
Global warming potential (GWP)	metric ton CO2 eq.	2.28	0.07	0.07	2.41
Depletion potential of the stratospheric ozone layer (ODP)	metric ton CFC 11 eq.	4.44E-08	2.27E-15	1.50E-11	4.45E-08
Acidification potential of soil and water (AP)	metric ton SO2 eq.	1.16E-02	4.64E-04	4.63E-04	1.25E-02
Eutrophication potential (EP)	metric ton N eq.	5.14E-04	3.49E-05	8.84E-06	5.58E-04
Formation potential of tropospheric ozone (POCP)	metric ton O3 eq.	1.71E-01	1.59E-02	1.67E-03	1.88E-01
Abiotic depletion potential (ADP-elements) for non-fossil resources	metric ton Antimony eq.	2.46E-06	1.21E-08	1.42E-08	2.46E-06
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	MJ, net caloric value	26,819	932	768	28,519

Part 2- Results of the LCA- ENVIRONMENTAL IMPACT: Cradle-to-Gate (A1-A3) for 1 metric ton of USG Donn® Brand DXLA™ Acoustical Suspension System

Traci 2.1 Impact Assessment

Parameter	Units	A1. Raw Materials	A2. Transport	A3. Production	A1-A3 Total
Global warming potential (GWP)	metric ton CO2 eq.	3.04	0.07	0.06	3.18
Depletion potential of the stratospheric ozone layer (ODP)	metric ton CFC 11 eq.	3.38E-08	2.49E-15	1.65E-11	3.38E-08
Acidification potential of soil and water (AP)	metric ton SO2 eq.	1.59E-02	4.53E-04	4.43E-04	1.68E-02
Eutrophication potential (EP)	metric ton N eq.	5.31E-04	3.48E-05	8.45E-06	5.74E-04
Formation potential of tropospheric ozone (POCP)	metric ton O3 eq.	1.91E-01	1.54E-02	1.60E-03	2.08E-01
Abiotic depletion potential (ADP-elements) for non-fossil resources	metric ton Antimony eq.	1.93E-06	1.33E-08	1.31E-08	1.94E-06
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	MJ, net caloric value	34,910	1,024	733	36,667



ENVIRONMENTAL PRODUCT DECLARATION



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Part 3- Results of the LCA- RESOURCE USE: Cradle-to-Gate (A1-A3) for 1 metric ton of USG Donn® Brand DX®/DXL™ Acoustical Suspension System

Impact Category	Units	A1. Raw Materials	A2. Transport	A3. Production	A1-A3 Total
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net heat content*	974	23	172	1,169
Use of renewable primary energy resources used as raw materials	MJ, net heat content*	0	0	0	0
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net heat content*	974	23	172	1,169
Use of nonrenewable primary energy excluding nonrenewable primary energy resources used as raw materials	MJ, net heat content*	28,381	936	876	30,194
Use of nonrenewable primary energy resources used as raw materials	MJ, net heat content*	0	0	0	0
Total use of nonrenewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net heat content*	28,381	936	876	30,194
Use of secondary material	metric tonne	0.39	0.00	0.00	0.39
Use of renewable secondary fuels	MJ, net heat content*	0.00	0.00	0.00	0.00
Use of non-renewable secondary fuels	MJ, net heat content*	0.00	0.00	0.00	0.00
Use of net fresh water	m3	28.1	0.1	0.4	28.6

Part 3- Results of the LCA- RESOURCE USE: Cradle-to-Gate (A1-A3) for 1 metric ton of USG Donn® Brand DXLA™ Acoustical Suspension System

Impact Category	Units	A1. Raw Materials	A2. Transport	A3. Production	A1-A3 Total
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net heat content*	6,509	25	174	6,708
Use of renewable primary energy resources used as raw materials	MJ, net heat content*	0	0	0	0
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net heat content*	6,509	25	174	6,708
Use of nonrenewable primary energy excluding nonrenewable primary energy resources used as raw materials	MJ, net heat content*	36,811	1,030	862	38,703
Use of nonrenewable primary energy resources used as raw materials	MJ, net heat content*	0	0	0	0
Total use of nonrenewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net heat content*	36,811	1,030	862	38,703
Use of secondary material	metric tonne	0.43	0.00	0.00	0.43
Use of renewable secondary fuels	MJ, net heat content*	0.00	0.00	0.00	0.00
Use of non-renewable secondary fuels	MJ, net heat content*	0.00	0.00	0.00	0.00
Use of net fresh water	m3	51.0	0.1	0.4	51.5

* Net calorific value is applicable to combustible fuels and is not applicable to other forms of renewable energy (e.g., solar, wind).





USG Donn® Brand DX® / DXL™ / DXLA™ Acoustical Suspension System

According to ISO 14025

Part 4- Results of the LCA- OUTPUT FLOWS and WASTE CATEGORIES: Cradle-to-Gate (A1-A3) for 1 metric ton of of DX®/DLX™ grid

Waste:						
Parameter	Units	A1. Raw Materials	A2. Transport	A3. Production	A1-A3 Total	
Hazardous waste disposed	metric ton	NA	NA	NA	NA	
Non-hazardous waste disposed	metric ton	NA	NA	NA	NA	
Radioactive waste disposal	metric ton	NA	NA	NA	NA	
Outputs:						
Parameter	Units	A1. Raw Materials	A2. Transport	A3. Production	A1-A3 Total	
Components for re-use	metric ton	0	0	0	0	
Materials recycling	metric ton	0	0	0.0143	0.0143	
Materials for energy recovery	metric ton	0	0	0	0	
Exported Energy	MJ	0	0	0	0	

Part 4- Results of the LCA- OUTPUT FLOWS and WASTE CATEGORIES: Cradle-to-Gate (A1-A3) for 1 metric ton of DXLA™ grid

Waste:						
Parameter	Units	A1. Raw Materials	A2. Transport	A3. Production	A1-A3 Total	
Hazardous waste disposed	metric ton	NA	NA	NA	NA	
Non-hazardous waste disposed	metric ton	NA	NA	NA	NA	
Radioactive waste disposal	metric ton	NA	NA	NA	NA	
Outputs:						
Parameter	Units	A1. Raw Materials	A2. Transport	A3. Production	A1-A3 Total	
Components for re-use	metric ton	0	0	0	0	
Materials recycling	metric ton	0	0	0.0141	0.0141	
Materials for energy recovery	metric ton	0	0	0	0	
Exported Energy	MJ	0	0	0	0	





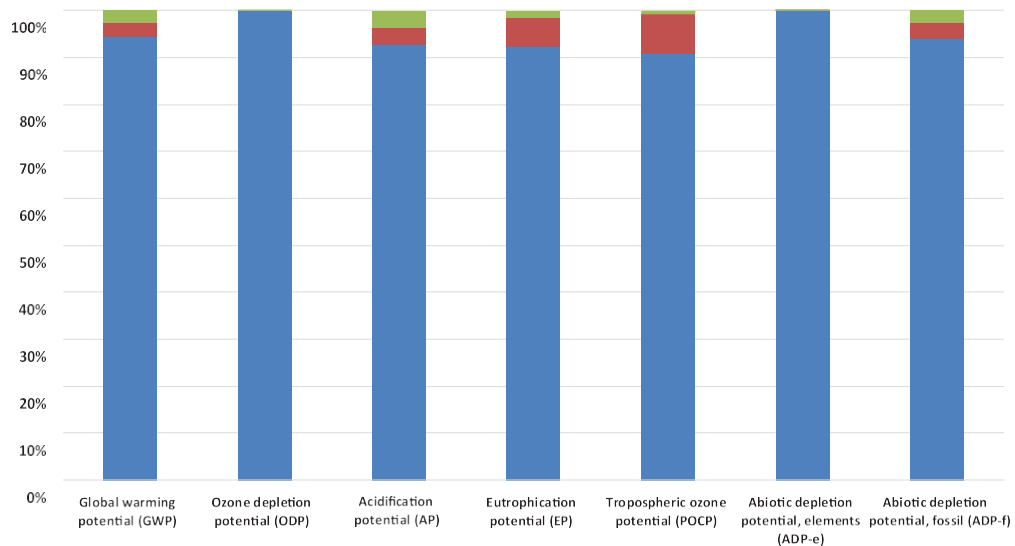
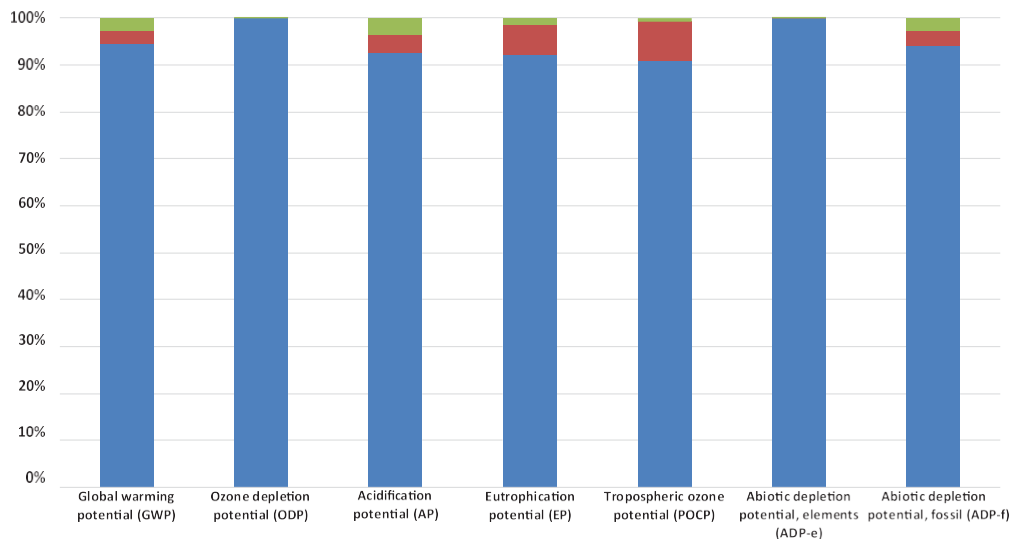
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According to ISO 14025

5.0 LCA Interpretation

The figure below graphically depicts relative contributions for the cradle-to-gate production of 1,000 kg of USG Donn® Brand DX®/DXL™ and DXLA™ Acoustical Suspension System, respectively. The significant sources of greenhouse gases at the plant are generated during production of raw materials.

- A1. Raw Materials
- A2. Transport
- A3. Production





USG Donn® Brand DX® / DXL™ / DXLA™ Acoustical Suspension System

According to ISO 14025

6.0 References

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2. International Organization for Standardization (ISO), International Standard ISO 14040, Environmental management Life cycle assessment – Principles and framework, 2006.
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9. Dr. Mark Englert, "A Cradle-to-Gate Life Cycle Assessment of USG Grid Products", 2018 (Confidential)
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