

ENVIRONMENTAL PRODUCT DECLARATION

USG DONN® BRAND IDENTITEE® DXI™ ACOUSTICAL SUSPENSION SYSTEM

USG INTERIORS, LLC
STOCKTON, CA; WESTLAKE, OH



An innovative suspension system from USG, designed to accentuate design flexibility and product compatibility. A proprietary cap lance allows for extensive color and finish options delivering design freedom.

- Narrow-profile grid system, with double 1/8" reveal
- Seamless reveal at intersections
- Meets or exceeds all national code requirements including seismic
- Compatible with Logix™ Integrated Ceiling Systems
- Proprietary cap lance allows a variety of color and coating options to meet unique project requirements
- Available with High Recycled Content (HRC)



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 Identitee® DXI™ Acoustical Suspension System

According to ISO 14025

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	4788415787.102.1
DECLARED PRODUCT	USG Donn® Brand Identitee® DXI™ Acoustical Suspension System
REFERENCE PCR	SCSglobal North American PCR for Designated Steel Construction Products May 5, 2015, v.1.0
DATE OF ISSUE	January 1, 2019
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	
	Grant R. Martin, UL Environment
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	
	Thomas P. Gloria, Industrial Ecology Consultants

ENVIRONMENTAL PRODUCT DECLARATION



USG Donn® Brand Identitee® DXI™ Acoustical Suspension System

According to ISO 14025

2.0 Product Information

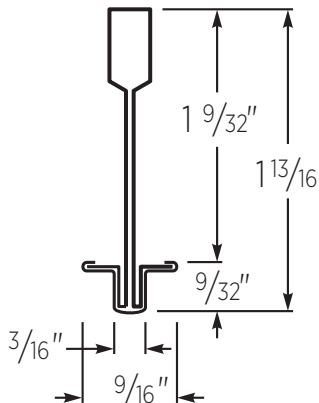



2.1 Product Description

USG Donn® Brand Identitee® DXI™ Acoustical Suspension System is a hot-dipped galvanized, roll-formed narrow-profile grid suspension system. The USG Donn® Brand Identitee® DXI™ Acoustical Suspension System is roll formed with a double 1/8" reveal. It has a 9/16" wide painted galvanized steel face and a hot dipped galvanized steel body. 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 Stockton, CA and Westlake, OH.

This EPD covers the Identitee® DXI™ Profile.

2.2 Technical Data

The performance of the USG Donn Identitee DXI Acoustical Suspension Systems is listed below.

Items Included in this EPD	Performance Attributes
<p>Donn Identitee DXI</p>  <p>Identitee DXI main and cross tees</p>	 <p>Class A</p>  <p>Qualified for seismic installations</p>  <p>High recycled content</p>



ENVIRONMENTAL PRODUCT DECLARATION



USG Donn® Brand Identitee® DXI™ Acoustical Suspension System

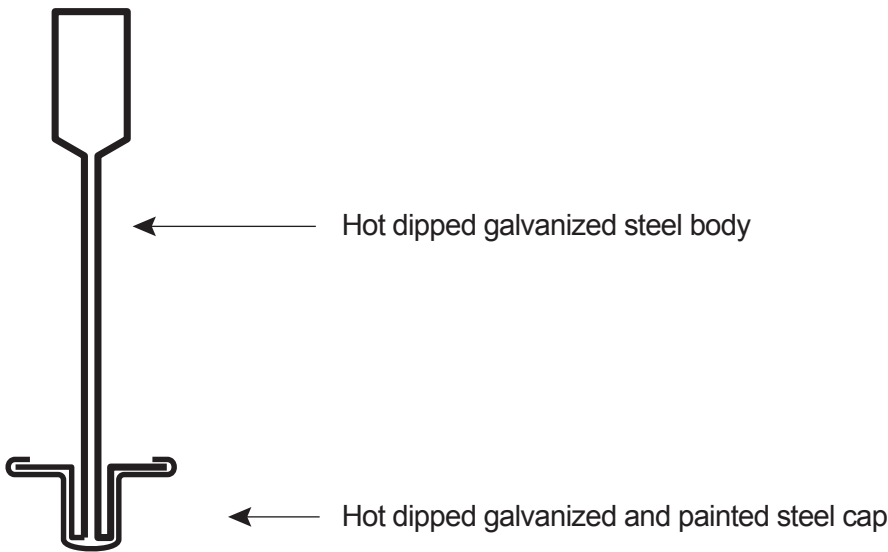
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2.3 Placing on the Market/Application Rules

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

2.4 Product Material Content

The performance of the Donn Identitee DXI Suspension Systems is listed below.



Grid Component	Function	Quantity (percent by weight)	Recycled Mineral Resource	Non-renewable Resource	Renewable Resource	Abundant Resource	Origin
Hot Dipped Galvanized Steel	Suspension	> 99%					US and Asian Sources
Paint	Finish	<1%					US Sources

Values shown above are for a volume-weighted averages for USG Donn® Brand Identitee® DXI™ Acoustical Suspension System produced at Stockton, CA and Westlake, OH.



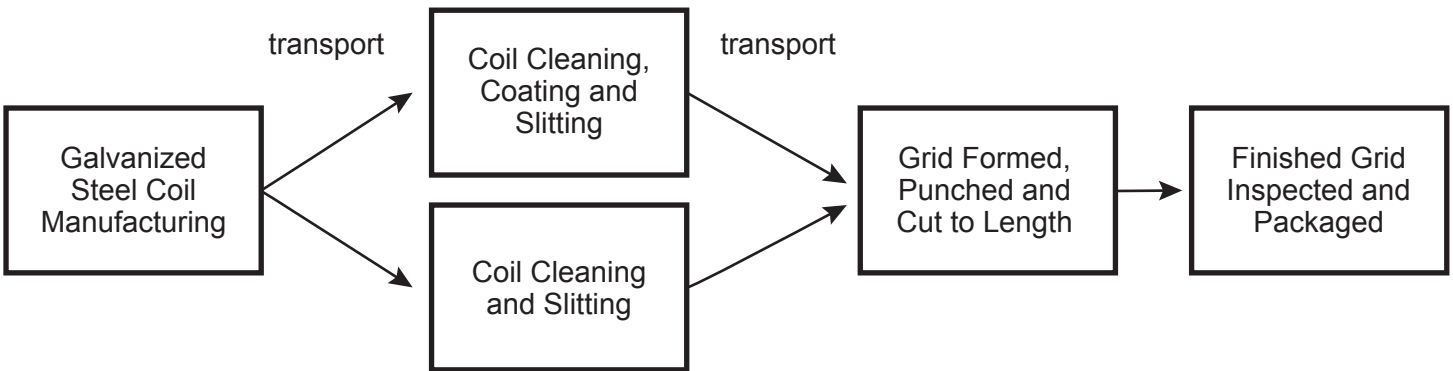
ENVIRONMENTAL PRODUCT DECLARATION



USG Donn® Brand Identitee® DXI™ Acoustical Suspension System

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 (destined to be the cap) are combined into the proper configuration using a series of driven roll forms. 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 Identitee® DXI™ 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.

ENVIRONMENTAL PRODUCT DECLARATION



USG Donn® Brand Identitee® DXI™ Acoustical Suspension System

According to ISO 14025

2.9 Environment and Health during Use Stage

The USG Donn® Brand Identitee® DXI™ 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 Identitee® DXI™ Acoustical Suspension System

According to ISO 14025

3.0 LCA: Calculation Rules

3.1 Declared Unit

USG Donn® Brand Identitee® DXI™ 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 Identitee® DXI™ 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.



ENVIRONMENTAL PRODUCT DECLARATION



USG Donn® Brand Identitee® DXI™ Acoustical Suspension System

According to ISO 14025

3.5 Data Requirements and Data Sources

Manufacturer specific data was obtained from the USG plants in Stockton, CA and Westlake, OH. All results are reported as a mass weighted average across the grid manufacturing locations. Steel 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.

ENVIRONMENTAL PRODUCT DECLARATION



USG Donn® Brand Identitee® DXI™ 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 demolition	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



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USG Donn® Brand Identitee® DXI™ Acoustical Suspension System

According to ISO 14025

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

Traci 2.1 Impact Assessment

Impact Category	Units	A1. Raw Materials	A2. Transport	A3. Production
Global warming potential (GWP)	metric ton CO2 eq.	2.35	0.07	0.07
Depletion potential of the stratospheric ozone layer (ODP)	metric ton CFC 11 eq.	3.86E-08	2.38E-15	1.56E-11
Acidification potential of soil and water (AP)	metric ton SO2 eq.	1.12E-02	4.78E-04	6.72E-04
Eutrophication potential (EP)	metric ton N eq.	5.01E-04	3.60E-05	9.63E-06
Formation potential of tropospheric ozone (POCP)	metric ton O3 eq.	1.66E-01	1.63E-02	1.90E-03
Abiotic depletion potential (ADP-elements) for non-fossil resources	metric ton Antimony eq.	9.01E-06	1.27E-08	1.03E-08
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	MJ, net calorific value	27,295	978	803

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

Parameter	Units	A1. Raw Materials	A2. Transport	A3. Production
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net heat content*	986	24	142
Use of renewable primary energy resources used as raw materials	MJ, net heat content*	0	0	0
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net heat content*	986	24	142
Use of nonrenewable primary energy excluding nonrenewable primary energy resources used as raw materials	MJ, net heat content*	28,813	983	887
Use of nonrenewable primary energy resources used as raw materials	MJ, net heat content*	0	0	0
Total use of nonrenewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net heat content*	28,813	983	887
Use of secondary material	metric tonne	0.35	0.00	0.00
Use of renewable secondary fuels	MJ, net heat content*	0.00	0.00	0.00
Use of non-renewable secondary fuels	MJ, net heat content*	0.00	0.00	0.00
Use of net fresh water	m3	14.0	0.1	0.3

* 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 Identitee® DXI™ Acoustical Suspension System

According to ISO 14025

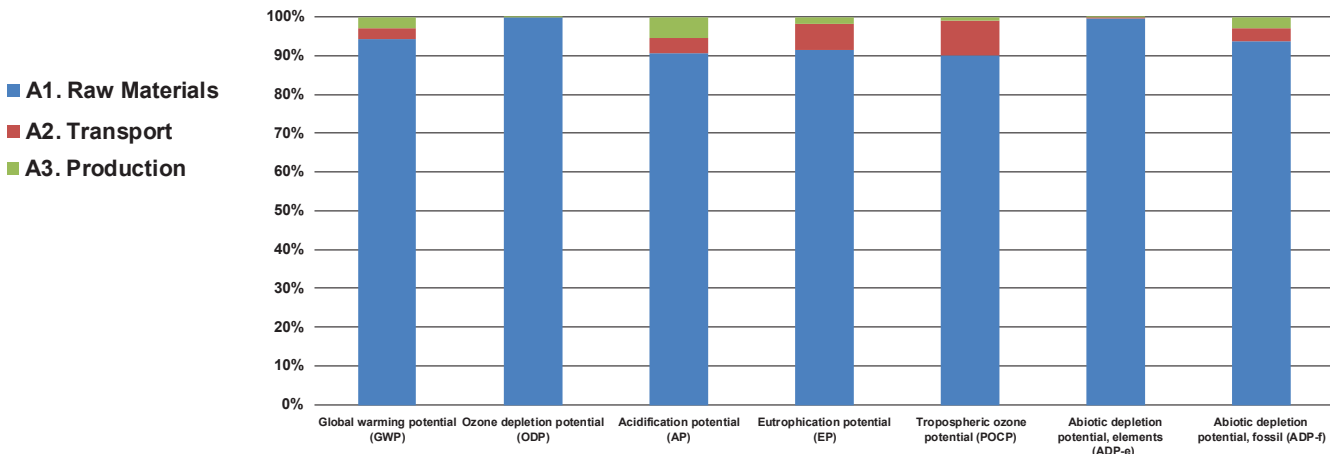
Part 4- Results of the LCA- OUTPUT FLOWS and WASTE CATEGORIES: Cradle-to-Gate (A1-A3) for 1 metric ton of USG Donn® Brand Identitee® DXI™ Acoustical Suspension System

Waste:				
Parameter	Units	A1. Raw Materials	A2. Transport	A3. Production
Hazardous waste disposed	metric ton	NA	NA	NA
Non-hazardous waste disposed	metric ton	NA	NA	NA
Radioactive waste disposal	metric ton	NA	NA	NA

Outputs:				
Parameter	Units	A1. Raw Materials	A2. Transport	A3. Production
Components for re-use	metric ton	0	0	0
Materials recycling	metric ton	0	0	0.0141
Materials for energy recovery	metric ton	0	0	0
Exported Energy	MJ	0	0	0

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 Identitee® DXI™ Acoustical Suspension System. The significant sources of greenhouse gases at the plant are generated during production of raw materials.





USG Donn® Brand Identitee® DXI™ Acoustical Suspension System

According to ISO 14025

6.0 References

Sustainability Standards

1. International Organization for Standardization (ISO), International Standard ISO 14025, Environmental labels and declarations – Type III environmental declaration – Principles and procedures, 2006
2. International Organization for Standardization (ISO), International Standard ISO 14040, Environmental management Life cycle assessment – Principles and framework, 2006.
3. International Organization for Standardization (ISO), International Standard ISO 14044, Environmental management Life cycle assessment – Requirements and guidelines, 2006.
4. International Organization for Standardization (ISO), International Standard ISO 21930, Sustainability in building construction – Environmental declaration of building products, 2007.
5. European Standards, EN 15804, Sustainability of construction works, Environment product declarations, core rules for the product category of construction products, 2012.
6. PCR for Building-Related Products and Services - Part A: Calculation Rules for the LCA and Requirements Project Report, (IBU/UL E, V1.3, 06.19.2014)
7. North American Product Category Rule for Designated Steel Construction Products by SCS Global Services, May 5, 2015 V.1.0
8. Part B Addendum: IBU PCR for Products of aluminum and aluminum alloys (UL E, V1.1 April 2018)
9. Dr. Mark Englert, "A Cradle-to-Gate Life Cycle Assessment of USG Grid Products", 2018 (Confidential)
10. GENERAL PROGRAMME INSTRUCTIONS FOR THE INTERNATIONAL EPD® SYSTEM, Version 2.01 (2013-09-18), downloadable from:
http://www.environdec.com/Documents/GPI/General_programme_instructions_2_01_20130918.pdf

