ENVIRONMENTAL PRODUCT DECLARATION

COLD-FORMED STEEL FRAMING SYSTEMS

STRUCTURAL, STUDRITE®, JOISTRITE®, FRAMERITE® CONNECTORS, QUICKFRAME, VIPERSTUD®, SHAFTWALL, AREA SEPARATION WALL, FAS TRACK, SLOTTED TRACK, LATH, ACCESSORIES

ViperStud® Drywall Framing being installed on a jobsite.

ViperStud is Marino\WARE's proprietary brand of drywall framing studs, certified code-compliant by the Certified Steel Stud Association (CSSA), and listed in ICC-ES ESR-2620.

Marino\WARE produces a complete line of steel framing products in its four U.S. manufacturing facilities, primarily from American-made steel.

MARINO WARE®

Sustainability at Marino\WARE®

Marino\WARE believes sustainability and environmental management are not construction industry trends, but corporate responsibilities. Architects, designers and contractors demand tools and resources to improve the environmental performance of buildings, and Marino\WARE products help them achieve their sustainability objectives.

Steel is inherently a green building product. It can be recycled time and time again. It is our goal to show the construction industry through our company specific Environmental Product Declaration that steel should be the product of choice for green building professionals.

For additional information, visit www.marinoware.com.

UL CERTIFIED ENVIRONMENTAL PRODUCT DECLARATION UL.COM/EPD

ENVIRONMENTAL PRODUCT DECLARATION

Marino\WARE®
Cold-Formed Steel Framing Systems

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	Marino\WARE
DECLARATION NUMBER	4786795523.101.1
DECLARED PRODUCT	Cold-Formed Steel Framing Systems
REFERENCE PCR	North American PCR for Designated Steel Construction Products (SCS, 2015)
DATE OF ISSUE	August 17, 2015
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 Information about the in-use conditions Life cycle assessment results Testing results and verifications

The PCR review was conducted by:	Review Panel Chair: Thomas Gloria Industrial Ecology Consultants
This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories ☐ INTERNAL ☒ EXTERNAL	Wade Stout, UL Environment
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Thomas Gloria, Industrial Ecology Consultants

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Product Definition

Company Description

Marino\WARE® helps build America. A wholly U.S. owned and operated steel framing manufacturer, Marino\WARE produces a complete line of steel construction products and services used in commercial building across the country.

The company's four large, self-sufficient mega-plants in South Plainfield, NJ, Griffin, GA, East Chicago, IN, and Pasadena, TX, each make every product sold—ViperStud® drywall framing, structural, shaftwall, plastering and drywall finishing products—all under one roof.

Product Description

The Marino\WARE steel framing products covered by this EPD are:

Material & Coatings:

Marino\WARE uses only hot-dip galvanized steel

Structural Stud & Track
- Used for load-bearing framing, curtain wall, headers, rafters and floor systems
- Conventional C-shape, wide variety of gauges and flange sizes

StudRite®
- Proprietary stud sytem used for load-bearing framing, rafters and curtain walls
- Lip reinforced repetitve triangular knockouts
- Lightweight, easy to use, less cutting by trades

JoistRite®
- Used as a floor joist system
- Large lip reinforced repetitve triangular knockouts for easy pass through of trades

Environment

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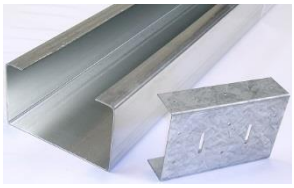
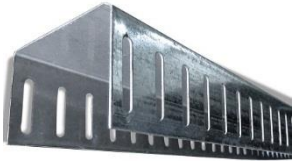


QuickFrame
Rough opening framing system that uses large C-shaped members to replace built up headers and jambs

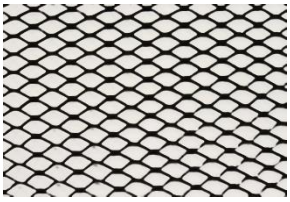
ViperStud®
Proprietary drywall framing system that uses thinner high-strength steel to achieve performance equivalent of conventional thickness lower-strength steel drywall framing members

Shaftwall
CT stud framing system for non load-bearing framing that allows installation of gypsum wallboard from one side only; easy to use for stairwells and shafts



Slotted Track & FAS Track
Fire-rated head-of-wall system that allows for deflection at the ceiling-to-floor intersection while providing a fire-rated joint

FrameRite® Connectors
Steel framing connectors produced in a wide variety of shapes and sizes for connecting framing members



Lath
Expanded metal lath is made by slitting and stretching galvanized steel to create small openings that allow plaster to bond with the lath

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Marino\WARE®
Cold-Formed Steel Framing Systems

According to ISO 14025

Framing System Options

PRODUCT	SIZES	THICKNESS (MILS)
STRUCTURAL	1-5/8”–16” Stud & Track	33, 43, 54, 68, 97, 118
STUDRITE	3-5/8”, 4”, 6”	18, 30, 33, 43, 54, 68
JOISTRITE	8”, 9-1/4”, 10”, 11-1/4”, 12”, 14”	43, 54, 68, 97
QUICKFRAME	3-5/8”, 4”, 6”, 8”	54, 68, 97, 118
VIPERSTUD	1-5/8”–6”	25eq, 20eq, 30, 33
SHAFTWALL	2-1/2”, 4”, 6”	18, 30, 33, 43
SLOTTED / FAS TRACK	2-1/2”–10”	18, 30, 33, 43, 54, 68
FRAMERITE CONNECTORS	Various	Various
LATH	27” x 97”	1.75 lb./yd^2, 2.5 lb./yd^2, 3.4 lb./yd^2

Application and Codes of Practice

Material Specification (ASTM)	
ViperStud® Drywall Nonstructural Framing Members & Accessories	A1003/A653/A924
Structural Framing Members & Accessories	A1003/A653/A924
FrameRite® Framing Members & Accessories	A1003/A653/A924
Shaftwall	A1003/A653/A924
Beads & Trim (Metal, Paper, Vinyl)	A653/A879
Plaster Steel Products	A653
Veneer & Plaster Accessories	A653/B69
Product Specification (ASTM)	
ViperStud® Drywall Nonstructural Framing Members & Accessories	C645
Structural Framing Members & Accessories	C955
FrameRite® Framing Members & Accessories	C955
Shaftwall	C645
Beads & Trim (Metal, Paper, Vinyl)	C1047
Veneer & Plaster Accessories	C841/C1063
Metal Lath	C847
Coating Specification (ASTM)*	
ViperStud® Drywall Nonstructural Framing Members & Accessories	A1003
Structural Framing Members & Accessories	C955/A1003
FrameRite® Framing Members & Accessories	C955/A1003
Shaftwall	A1003
Metal Lath	C847

* Marino\WARE ONLY USES HOT-DIP GALVANIZED

VIPERSTUD® DRYWALL FRAMING
- ICC-ES ESR#2620
- ATI-ES CCRR-0154
- CSSA Certified Code Compliant

METAL LATH
- ICC-ES ESL #1005

STRUCTURAL STUD & TRACK
- ICC-ES ESR #3016
- CSSA Certified Code Compliant

SUREBOARD
- IAPMO ES ER-0126

JOISTRITE
- ICC-ES ESR #1741

FRAMERITE CONNECTORS
- ICC-ES ESR #3578

Marino\WARE products are not expected to create exposure conditions that exceed safe thresholds for health impacts to humans or flora/fauna under normal operating conditions.

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Life Cycle Assessment – Product System and Modeling

A "cradle-to-gate" analysis using life cycle assessment (LCA) techniques was conducted for this EPD. The analysis was done according to the product category rule (PCR) for Designated Steel Construction Products and followed LCA principles, requirements and guidelines laid out in the ISO 14040/14044 standards. As such, EPDs of construction products may not be comparable if they do not comply with the same PCR. While the intent of the PCR is to increase comparability, there may still be differences among EPDs that comply with the same PCR (e.g., due to differences in system boundaries, background data, etc.).

Declared Unit

The declared unit for an EPD is one metric ton of steel construction product.

Name	Required Unit	Optional Unit
Declared Unit	metric ton	short ton
Density	kg/m^3	lb/ft^3

System Boundaries

The "cradle-to-gate" life cycle stages represent the product stage (information modules A1-A3) and include

- A1: all extraction and processing of raw materials; any reuse of products or materials from a previous product system; processing of secondary materials; generation of electricity from primary energy resources, including upstream processes; and any energy recovery or other recovery processes from secondary fuels;
- A2: all transportation to the factory gate and all internal transport;
- A3: production of all ancillary materials, pre-products, products, and co-products, including any packaging.

Product Stage			Construction Stage		Use Stage					End-of-Life Stage			
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4
			EXCLUDED FROM THIS STUDY										
Raw materials supply	Transport	Manufacturing	Transport	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	De-construction	Transport	Waste processing	Disposal

Time coverage: Primary data were collected on production within calendar year 2012. Background data for upstream and downstream processes (i.e., raw materials, energy resources, transportation and ancillary materials) were obtained from the GaBi 2014 databases.

Technology coverage: Data were collected for the production of cold-formed steel framing at Marino\WARE's facilities in the United States.

Geographical coverage: Marino\WARE manufactures steel framing products at four US facilities. As such, the geographical coverage for this study is based on United States system boundaries for all processes and products. Whenever US background data were not readily available, European data or global data were used as proxies.

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Assumptions

No significant assumptions have been made. All of the raw materials and energy inputs have been modeled using processes and flows that closely follow actual production raw materials and processes. All of the material and energy flows have been accounted.

Allocation

No multi-output (i.e., co-product) allocation was performed in this study. Allocation of background data (energy and materials) taken from the GaBi 2014 databases is documented online at http://documentation.gabi-software.com/.

Cut-off Criteria

The cut-off criteria for including or excluding materials, energy and emissions data of the study are as follows:

- Mass: If a flow is less than 1% of the cumulative mass of the model it may be excluded, providing its environmental relevance is not a concern.
- Energy: If a flow is less than 1% of the cumulative energy of the model it may be excluded, providing its environmental relevance is not a concern.
- Environmental relevance: If a flow meets the above criteria for exclusion, yet is thought to potentially have a significant environmental impact, it was included.

No processes were neglected or excluded. Capital items for the production processes (machines, buildings, etc.) were not taken into consideration.

Transportation

Inbound: The four Marino\WARE plants receive their materials from different sources, i.e., across different transport distances. For HDG steel inputs, a weighted average transport distance was apllied based on each plant's fraction of total production and based on each plant's primary steel supplier's location. As a result, the weighted average distance is 493 miles by heavy-duty truck. Lubricant, propane and packaging inputs were each assigned an estimated transport distance of 100 miles.

Outbound: Transport distances to local waste management sites were estimated at 20 miles. Transportation to distribution centers or installation sites falls outside of the scope of this "cradle-to-gate" study.

LCA Practitioner

The EPD and underlying LCA model were developed by thinkstep, Inc.

thinkstep

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Life Cycle Assessment – Results and Analysis

Use of Energy and Material Resources

Primary Energy (PE) Demand	Unit	Magnitude
Use of renewable PE excluding renewable PE resources used as raw materials	MJ, net calorific value	1.20E+03
Use of renewable PE resources used as raw materials	MJ, net calorific value	377
Total use of renewable PE resources (PE and PE resources used as raw materials)	MJ, net calorific value	1.57E+03
Use of non-renewable PE excluding non-renewable PE resources used as raw materials	MJ, net calorific value	2.99E+04
Use of non-renewable PE resources used as raw materials	MJ, net calorific value	1.16E-03
Total use of non-renewable PE resources (PE and PE resources used as raw materials)	MJ, net calorific value	2.99E+04

Material Resource Use	Unit	Magnitude
Use of secondary material	metric ton	0.465
Use of renewable secondary fuels	MJ, net calorific value	0
Use of non-renewable secondary fuels	MJ, net calorific value	0
Blue water use*	m^3	3.34E-02

* The PCR requires the reporting of “net use of fresh water.” However, inconsistencies in blue water consumption and the waste inventories of Worldsteel data, which dominates this steel fabrication model, would distort the required parameter. As a more practical contingency, “blue water use” is reported instead.

Life Cycle Impact Assessment

Parameter	Unit	Magnitude
Impact Assessment Method: TRACI 2.1		
Global warming potential (GWP)	metric ton CO_2 eq	2.41
Depletion potential of the stratospheric ozone layer (ODP)	metric ton CFC-11 eq	5.69E-04
Acidification potential of soil and water (AP)	metric ton SO_2 eq	1.29E-02
Eutrophication potential (EP)	metric ton N eq	5.27E-08
Formation potential of tropospheric ozone (POCP)	metric ton O_3 eq	0.194
Impact Assessment Method: CML		
Abiotic depletion potential (ADP-elements)*	metric ton antimony eq	4.76E-05
Abiotic depletion potential (ADP-fossil)	MJ, net calorific value	2.81E+04

* This indicator is based on assumptions regarding current reserves estimates. Users should use caution when interpreting results because there is insufficient information on which indicator is best for assessing the depletion of abiotic resources.

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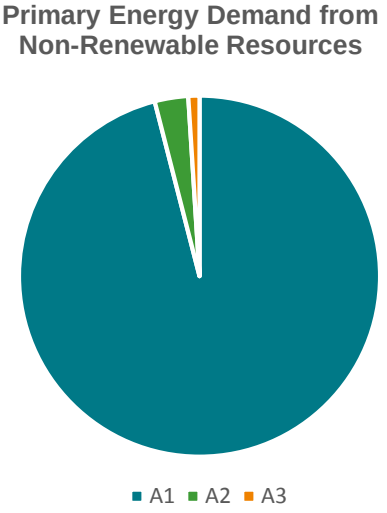
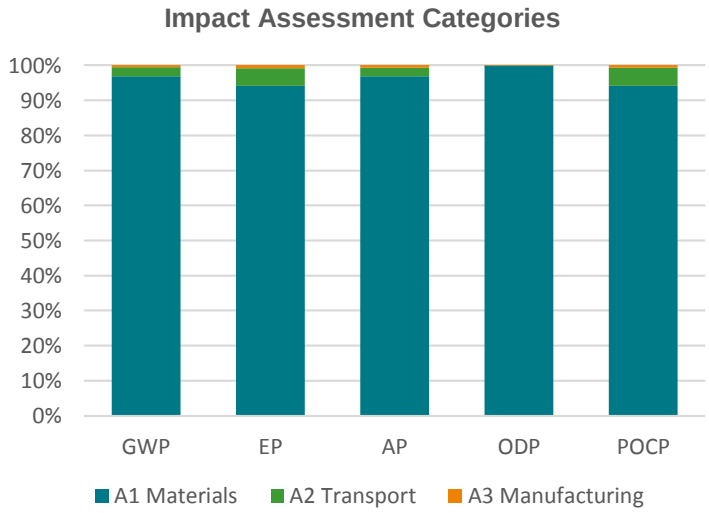
Other Environmental Information

Parameter	Unit	Magnitude
Hazardous waste disposed	metric ton	2.44E-07
Non-hazardous waste disposed	metric ton	8.22E-04
Radioactive waste disposed	metric ton	6.42E-04
Components for re-use	metric ton	0
Materials for recycling	metric ton	5.9E-2
Materials for energy recovery	metric ton	0
Exported energy	MJ per energy carrier	0

Visualization of Life Cycle Impact Assessment

The diagrams below illustrate the degree to which the modules drive the major impact categories.





Data Quality Assessment

Temporal representativeness: All primary data were collected for the year 2012. All secondary data come from the GaBi 2014 databases and are representative of the years 2007-2013. Therefore, temporal representativeness is warranted. **Geographical representativeness:** All primary and secondary data were collected specific to the countries or regions under study. Where country-specific or region-specific data were unavailable, proxy data were used. Geographical representativeness is considered to be high. **Technological representativeness:** All primary and secondary data were modeled to be specific to the technologies or technology mixes under study. Where technology-specific data were unavailable, proxy data were used. Technological representativeness is considered to be high. **Precision:** As the majority of the relevant foreground data are measured data or calculated based on primary information sources of the owner of the technology, precision is considered to be high. All background data are sourced from GaBi databases with the documented precision.

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Disclaimer: 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.