

ENVIRONMENTAL PRODUCT DECLARATION

# TRU-SPEC<sup>®</sup> ENGINEERED WOOD

PRECISION ENGINEERED WOOD FOR THE MILLWORK APPLICATIONS



Huber Engineered Woods LLC continually strives to create innovative products that suit their customers' needs. Each one delivers outstanding performance, easy installation and greater strength in single family, multifamily and light commercial projects. Tru-spec<sup>®</sup> is a precision engineered wood product designed specifically for the millwork industry. Each product is manufactured by thermally fusing cross-oriented wood strands with a water-resistant adhesive offering a stronger, flatter, more stable product versus competing alternatives. Tru-spec is FSC<sup>®</sup> and SFI Certified and available in a wide range of custom sizes and thicknesses to meet your customer's demands.



# ENVIRONMENTAL PRODUCT DECLARATION



**Tru-spec**  
Engineered Wood Product for the Millwork Industry

According to ISO 14025 and ISO 21930

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025 and ISO 21930. 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	Huber Engineered Wood
DECLARATION NUMBER	4786451831.102.1
DECLARED PRODUCT	Tru-spec® Engineered Wood
REFERENCE PCR	North American Structural and Architectural Wood Products. UN CPC 31. NAICS 321. May 1, 2013. V1.1
DATE OF ISSUE	October 16, 2014
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:	Reviewed by panel
	Wayne B. Trusty (Panel Chair)
This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories <input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL	 Wade Stout, UL Environment
	 Brad McAllister, WAP Sustainability



## Product Classification and Description

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### Product Description

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Huber Engineered Wood Tru-spec® is a family of engineered wood products made especially for the millwork industry. Each product is manufactured by fusing a network of wood strands together with a water-resistant adhesive. The result is a strong, solid and stable part that is moisture resistant, easy to machine and 100% usable. By carefully engineering the mix of resins, the wood and other components, Huber can tailor the product to meet customer's product design and manufacturing needs.

Recognized by the WDMA (Window and Door Manufacturers Association) as a Structural Composite Lumber (SCL), Huber's Tru-spec offers enhanced properties and performance. Tru-spec has exhibited excellent strength and screw holding capability, low dimensional responsiveness, product stability and superior performance to a variety of wood and composite products.



Figure 1: Photograph of Tru-spec cross section

### Product Styles

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This EPD covers the complete Tru-spec product line which is produced in 28 different thicknesses, measured in inches, ranging from 0.625" to 2.19". The results presented in the following tables reflect the minimum thickness produced, 0.625". Scaling factors are provided in Table 1 per product for thicker panels. The environmental impacts can be multiplied by the scaling factor to obtain the total environmental impacts per square meter for each product.



Volume	Tru-Spec®
1 m <sup>3</sup>	62.99
Thickness (in)	Factor
0.625"	1.0
0.725"	1.1600
0.75"	1.2000
0.79"	1.2640
0.875"	1.4000
1.0625"	1.7000
1.125"	1.8000
1.19"	1.9040
1.25"	2.0000
1.312"	2.0992
1.375"	2.2000
1.445"	2.3120
1.5"	2.4000
1.525"	2.4400
1.54"	2.4640
1.55"	2.4800
1.575"	2.5200
1.59"	2.5440
1.61"	2.5760
1.625"	2.6000
1.65"	2.6400
1.688"	2.7008
1.69"	2.7040
1.71"	2.7360
1.75"	2.8000
1.81"	2.8960
2"	3.2000
2.19"	3.5040
2.25"	3.6000
2.26"	3.6160

Table 1: Tru-spec Scaling Factors

### Range of Application

Huber's Tru-spec is designed to meet a wide range of product application needs. Whether producing doors, frames, windows, skylights, furniture, cabinets, or other millwork products, Tru-spec can provide a product that is right for customer's specific needs.





## Product Standard

- Standard for Fire Tests of Door Assemblies (UL 10B)
- Standard for Positive Pressure Fire Test of Door Assemblies (UL 10C)

## Accreditation

- Forest Stewardship Council® (license FSC-C089480)
- Sustainable Forestry Initiative (SFI 2010-2014), [NSF-SFIS-4Z968](#)
- UL Fire Door Construction Materials ([GSRJ2.R20786](#))



The mark of responsible forestry



## Product Composition

### Functional Unit

The functional unit utilized for this study is one square meter (1 m<sup>2</sup>) with a service life of 60 years, including end-of-life disposition.

### Product Content

Wood strands represent the largest Tru-spec® formulation component. Resins used to bind the Tru-spec wood strands are the second largest formulation component. The Tru-spec formulation components are displayed in the following table.

Product Recipe	Tru-spec
Wood	90-95%
Core resin	1-6%
Surface resin	1-6%
Wax	1-4%
Release Agent	< 0.5%
Ink	<0.1%
Edge Seal	<0.1%

Table 2: Tru-spec Product Recipe

### Packaging Content

Tru-spec panels are stacked on top of each other onto 3 wood strips to enable loading and unloading via fork truck. The stacks are protected with vertical cardboard side covers and banded together with the wood strips with plastic banding.

Packaging Material	Mass (lbs)
Wood Pallets	8.9E-02
Cardboard	3.3E-02
Plastic Wrap	2.7E-02
Plastic Strapping	3.0E-03

Table 3: Tru-Spec Packaging Materials (lbs/square meter)

## Life Cycle Stages

### EPD Scope

The life cycle analysis performed for this EPD is characterized as a “cradle-to-grave” study, examining the Tru-spec® product from raw material extraction through final disposal.

### Time Boundary

Data for this LCA was collected for the 2013 calendar year.

### Cut-off Criteria

Processes with a cumulative mass or energy of the system flows/model less than 1% may be excluded, provided its environmental relevance is minor. Processes that meet that criteria but contribute at least 2% to the selected impact categories shall be included in the system boundary. In no case shall less than 95% of mass or environmental impact be included in the system boundary.

All hazardous or toxic substances shall be included in the system boundary.

This LCA is in compliance with the cut-off criteria since no known processes were neglected or excluded from this analysis.

### Background Data

SimaPro v8.0.3 software was utilized for modeling the complete cradle-to-grave inventory.

### System Boundaries

This project considers the life cycle activities from resource extraction through product use for a 60 year service life. Figure 2 illustrates the system boundary.

### Allocation

Allocation of multi-output processes was performed following the requirements and guidance of ISO 14044:2006, clause 4.3.4, and was based on mass. Any co-products were less than 10x the economic value of the main products and were not included in the allocation.

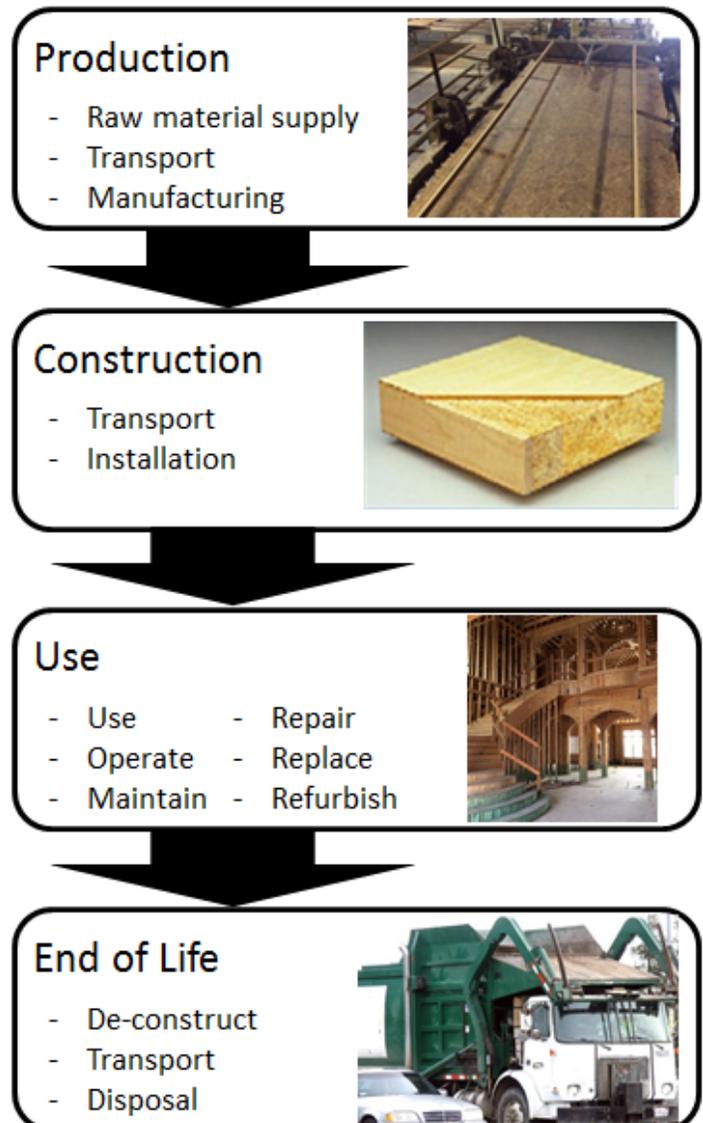


Figure 2: EPD Scope



## Data Quality

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For consistency in the model, specific, primary data from the manufacturing process was provided by the relevant facilities. Upstream and downstream raw materials and other data were modeled using secondary data obtained from relevant databases as documented in the LCA Report. These databases are from nationally accepted and publicly available databases, ensuring reproducibility. This study is representative only of Huber Tru-spec.

## Production of Tru-spec OSB Products

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### Production Process

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The incoming logs are delivered by truck to the scale house. The logs are stripped of bark and fed into a strander which slices the material into small pieces (strands). The strands then enter a drying process and are dried down to a low moisture content. The strands are then sent through a cyclone where they are separated from the dryer airstream and into a screening process where any unusable fines are removed. These newly screened flakes are sent to dry bins for storage. From there, the strands are blended with resins, waxes, and other binders to hold them together. A forming machine lays down the strands into a forming belt. During this forming process, the strands are oriented in alternating directions as they are conveyed, resulting in a more structurally consistent panel. The mats are trimmed into the desired lengths, and heat and pressure are applied to activate the resin and bond the strands into a solid panel. The panel edges are trimmed and cut to length. Panels are sanded, labeled and edge coated. Finished panels are stacked, packaged, and shipped to customers.

Tru-spec® products are produced at Huber's Broken Bow, Oklahoma facility. Detailed operational and production data were collected in collaboration with process experts.

## Construction

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### Delivery

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Final products were modeled as being shipped by truck and rail. Records of customer sales were used to generate the average distances.

### Installation

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Huber products are designed for superior durability and installation ease. Since Tru-spec is used in a number of millwork applications, nails are not generally required for installation. No other inventory items were identified for installation.

### Waste

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During installation, saw dust, wood scrap, and packaging waste are generated. A 5% product scrap rate was assumed based on product installation expertise.

## Use Stage

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### Product Service Life

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The Tru-spec products are weather and moisture resistant and can withstand a long duration when exposed to the elements during the construction process. Once properly installed in a finished Code complying building, this study assumes that these products can last the duration of an average building, that is, at least 60 years.



## Use Stage Assumptions

During the use stage, the product is integrated into the permanent structure of the building. Tru-spec products use no energy or water during the use stage. Tru-spec products require no maintenance, repair, replacement, or reburishment during their service life.

## End of Life

### Disposal

The end-of-life scenario was modeled based on the 2011 US EPA solid waste and waste diversion statistics . The study assumes a 14.8% recycling rate with the remaining 85.2% being disposed as the average US municipal solid waste disposition. The average US disposition includes 82% landfill and 18% incineration. The cut-off methodology (also known as the recycled content method in the GHG Protocol for Products) was used for any materials that were sent to recycling such as scrap and the end of life disposition.

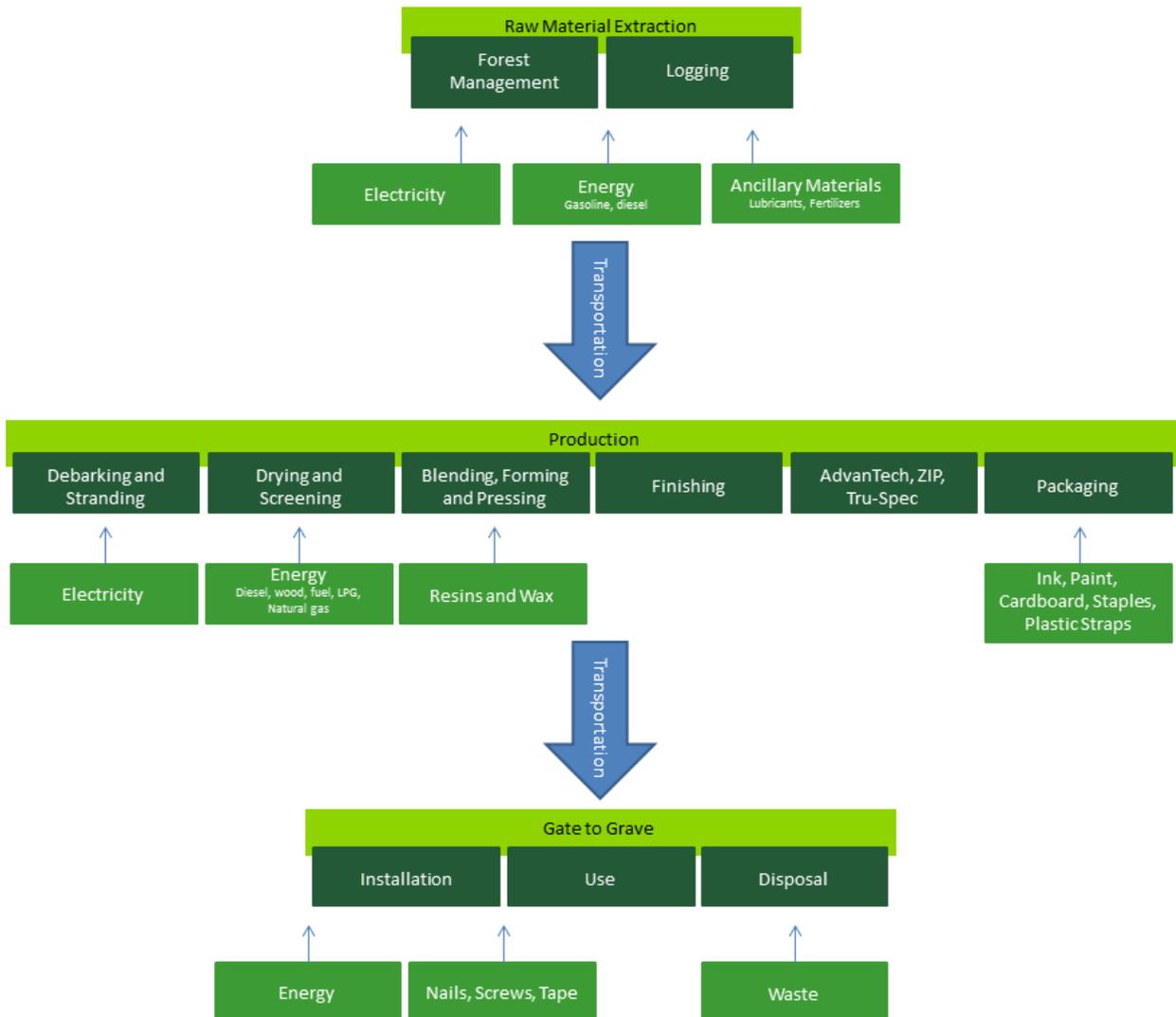


Figure 3: System Flow Diagram



## Potential Environmental Impacts

### Cradle-to-Grave Potential Environmental Impacts

The tables below present the five selected categories of potential environmental impacts (global warming, acidification, eutrophication, smog creation, and ozone depletion) as well as primary energy consumption, material resources consumption, and waste generated for each cradle-to-grave life cycle stage for 1 square meter Tru-spec® OSB. Refer to the scaling factors above to convert these results to other product thicknesses.

Impact Category	Unit (per sq. meter)	Production	Construction	Use	End of Life	Total
<b>Global warming</b>	kg CO <sub>2</sub> eq	7.1E+00	1.3E+00	0	9.1E-01	9.3E+00
<b>Acidification</b>	kg SO <sub>2</sub> eq	7.9E-02	8.0E-03	0	2.4E-03	9.0E-02
<b>Eutrophication</b>	kg N eq	3.6E-03	5.1E-03	0	4.9E-02	5.8E-02
<b>Smog</b>	kg O <sub>3</sub> eq	9.9E-01	2.2E-01	0	6.6E-02	1.3E+00
<b>Ozone Depletion</b>	kg CFC-11 eq	9.3E-08	7.7E-10	0	3.3E-08	1.3E-07
<b>Total primary energy consumption</b>						
<b>Non-renewable fossil</b>	MJ	2.3E+02	1.8E+01	0	4.9E+00	2.6E+02
<b>Non-renewable nuclear</b>	MJ	7.5E-01	5.3E-03	0	1.3E-01	8.9E-01
<b>Renewable (solar, wind, hydro, and geothermal)</b>	MJ	1.3E-01	0	0	1.6E-02	1.5E-01
<b>Renewable (biomass)</b>	MJ	1.4E+02	0	0	8.0E-03	1.4E+02
<b>Material resources consumption</b>						
<b>Non-renewable materials</b>	kg	7.5E+01	4.7E-01	0	1.3E-01	7.6E+01
<b>Renewable materials</b>	kg	1.7E+01	0	0	0	1.7E+01
<b>Fresh water</b>	l	5.1E+01	6.6E-02	0	1.6E+02	5.3E+01
<b>Waste</b>						
<b>Non-Hazardous waste generated</b>	kg	1.1E-01	5.1E-01	0	1.7E+01	1.8E+01
<b>Hazardous waste generated</b>	kg	4.2E-06	0	0	0	4.2E-06

Table 4: Environmental Impacts using the TRACI 2.1 Methodology of Tru-spec Products





## References

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- AdvanTech, ZIP System, and Tru-spec Life Cycle Assessment, Sustainable Solutions Corporation, August 2014
- Product Category Rules for North American Structural and Architectural Wood Products, FPInnovations, version 1.1, May 2013
- ISO 14025 Environmental labels and declarations - Type III environmental declarations
- ISO 14040 Environmental management - Life cycle assessment – Principles and framework
- ISO 14044 Environmental management - Life cycle assessment – Requirements and guidelines
- ISO 21930 Sustainability in building construction – Environmental declaration of building products
- UL 10B Standard for Fire Tests of Door Assemblies
- UL 10C Standard for Positive Pressure Fire Test of Door Assemblies
- EPA, Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI)
- SimaPro v8.0.3 Software
- Ecoinvent v2.2 Database for Life Cycle Engineering

## LCA Development

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This EPD and corresponding LCA were prepared by Sustainable Solutions Corporation of Royersford, Pennsylvania.



**SustainableSolutions**  
CORPORATION

## Contact Huber Engineered Woods

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Huber Engineered Woods  
10925 David Taylor Drive  
Suite 300  
Charlotte, NC 28262  
1.800.933.9220

For more information, please visit: <http://www.huberwood.com/other-products/truspec>

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