

Materials Research Collaborative
Gerald D. Hines College of Architecture and Design
University of Houston

MRC

Professor Donna Kacmar, FAIA, LEED BD+C

dkacmar@uh.edu



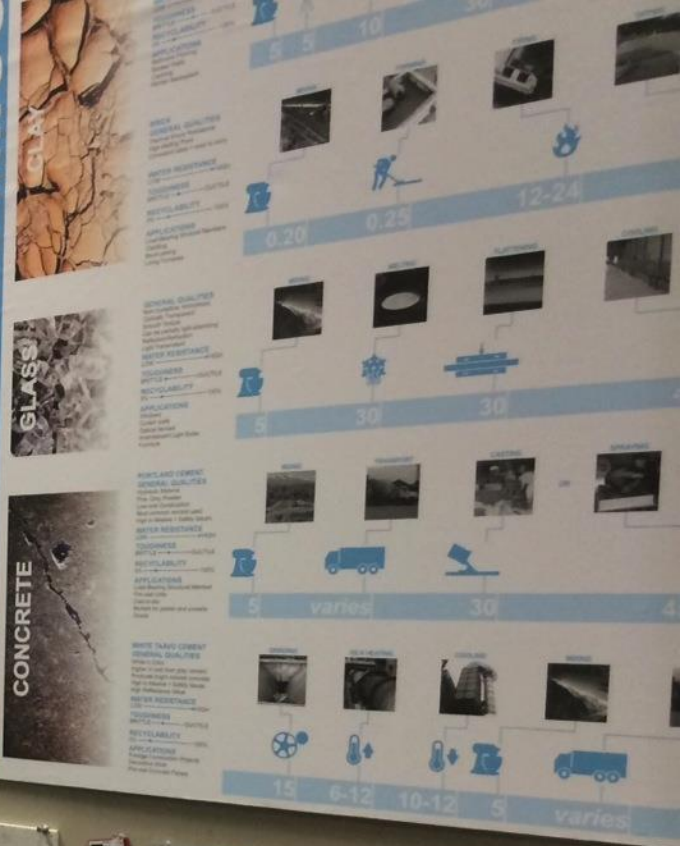
METALS



POLYMERS



CERAMICS





Materials Research Collaborative

Metals

F-ferrous [12]

NF-non ferrous [31]

Polymers

C-composites [27]

E-elastomers [23]

TH-thermosets [20]

TP-thermoplastics [32]

Ceramics

C-concrete [12]

FC-fired clay [12]

G-glass [37]

S-stone [18]

Natural Materials

BP-biopolymers [9]

EM-earthen materials [21]

NF-natural fiber [34]

W-wood [55]

Hybrids

CC-ceramic/ceramic [4]

CM-ceramic/metal [1]

F-fiberglass [1]

MM-metal/metal [0]

MN-metal/natural [0]

PM-polymer/metal [2]

PN-polymer/natural [9]

Materials Research Collaborative

Metals

Polymers

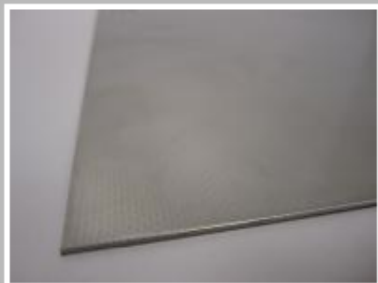
Ceramics

Natural Materials

Hybrids

F-ferrous NF-non ferrous All

M-F-INR



Location: Cab. 1 Shelf 02

InvariWeave

General Description

InvariWeave™ is an embossed finish with a uniform texture, resembling woven linen, designed for use in architectural applications. It is produced with exacting process controls to ensure the highest degree of visual consistency. InvariWeave™ can be applied to wall panels, elevator cabs, coping and trim. Since InvariWeave™ has no coatings to deteriorate, it will last indefinitely with little maintenance.

Manufacturer Contacts

Contrarian Metal Resources

1-866-360-5100

info@metalresources.net

<http://www.metalresources.net>

Country: United States

+ Physical Properties

+ Intrinsic Properties

+ Extrinsic Properties

+ Applications

Metals

Polymers

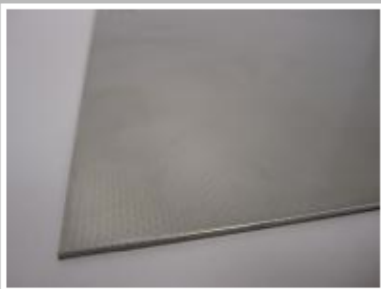
Ceramics

Natural Materials

Hybrids

F-ferrous NF-non ferrous All

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InvariWeave

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InvariWeave™ is an embossed finish with a uniform texture, resembling woven linen, designed for use in architectural applications. It is produced with exacting process controls to ensure the highest degree of visual consistency. InvariWeave™ can be applied to wall panels, elevator cabs, coping and trim. Since InvariWeave™ has no coatings to deteriorate, it will last indefinitely with little maintenance.

Manufacturer Contacts

Contrarian Metal Resources

1-866-360-5100

info@metalresources.net

<http://www.metalresources.net>

Country: United States

Location: Cab. 1 Shelf 02

+ Physical Properties

Standard Size: W 0.75 to 49 x L 240 x T 0.018 to 0.188 inches

Surface Treatments: n/a

Colors Available: **Natural, Black**

Attachment Methods: **Welding, Soldering**

+ Intrinsic Properties

+ Extrinsic Properties

+ Applications

+ Intrinsic Properties

Weight

n/a 4.00

lbs per sq. ft

Density

504.6 558.14

lbs per cu. ft

Compressive Strength

n/a 0.17

psi

Tensile Strength

96000 96000.00

psi

Embodied Energy Manufacturing

n/a n/a

joule per ton

Pre Consumer Waste Recycled Content

n/a 100

% of cost

Post Consumer Waste Recycled Content

80 80

% of cost

VOC Content

n/a 0.035

ppm

Recycable: Yes

100 100

% of recyclability

Fire Resistance Class: **Class A**

n/a n/a

class rating

Fire Resistance Hour Rating

2 2

+ Extrinsic Properties

Embodied Energy Transportation: **n/a** BTU

Distance to Manufacturing Location: **1353.21** miles

Durability: **30** years

Manufacturing Location: **Allison Park, PA**

Shipping Method: **Truck**

Cost (Average in Houston, TX): **n/a** dollar per sq. ft

Cost (Minimum in Houston, TX): **n/a** dollar per sq. ft

Cost (Maximum in Houston, TX): **n/a** dollar per sq. ft



TorZo
sustainable surfaces

www.torzosurfaces.com

PARDA™ Ruby



P-C-PAR

Parida

TorZo Surfaces

CSI # 06 61 16

Location: Cab 1 Shelf 04





Viber



Google Earth



Google

Scan Readers



Scanner



RedLaser



ShopSavvy



Entertainment Entertainment

Language

Italian

Wine

Food

Fitness

Health

H5H

H5h

building materials made within 500 miles of houston



Category	Material	Manufacturer	Website	Contact	Miles from Houston	MR 5 credit	Image
C	Brick	Acme Brick	www.brick.com	Steve Christianson schristianson@brick.com 3024 Acme Brick Plaza Fort Worth, TX 76109-4104 832-256-3394	268	Y	
C	Architectural cast stone product	Advance Cast Stone Tech.	www.advancedcaststone.com	Debbie@AdvancedCastStone.com 115 Lee Street Fort Worth, TX 76140 800-687-4352	261	Y	
P	Agru Drain Liner	Agru America	www.agruamerica.com	salesmkg@agruamerica.com 700 Rockmead Suite 150 Kingwood, TX 77339 358 4741	281 25		
C	Leuders Limestone	Aguado Stone, Inc.	www.aguadostone.com	www.aguadostone.com/contact.htm 3601 CR 239 Georgetown, TX 78628 512-746-5094	202		
C	Spectrum Cement	AHI Supply	www.ahi-supply.com/index.asp	Omar Diosdado omard@ahi-supply.com 2800 North Gordon Alvin, TX 77511 281-331-0088 281-802-5170 (cell)	23	Y	

H1h

H1h






building materials made with 100 miles of Houston



Materials Research Collaborative
January 2016

University of Houston College of Architecture & Design

generously supported by a grant from the
Architecture Center Houston Foundation

CSI	Material	Manufacturer	Contact	Miles from					Image
				Downtown Houston	The WoodLands	Katy	Baytown	Galveston	
03 34 00	Cement	Holcim Inc.	productinfo-us@holcim.com Off 9600 Clinton Dr., Galena Park, TX 77547 713-672-4316 www.holcim.us	7	33	35	18	40	
03 34 00	Cement	Quikrete	3412 US-90, Liberty, TX 77575 (936) 587-4450 http://www.quikrete.com/	5	34	29	24	44	
03 40 00	Precast Concrete	Flexicore	Brian Nami bnami@flexicoretx.com 8634 McHard Road , Houston, TX 77053 281-437-5700 www.flexicoretx.com	14*	42*	28*	30*	43*	
03 50 00	Concrete	Argos South Central	Kim.Quinn@argos-us.com , 5830 Halmart St, Houston, TX 77087 678-368-4300 www.argos.co/usa	5	24	30	17	38	
03 50 00	Sand and Gravel	Campbell Concrete & Materials	105 East Boothe St, Cleveland, TX 77327 281-592-5201 www.lehighhanson.com	43	26	59	42	73	

MADE IN HOUSTON



2012

BERGER IRON WORKS, INC.

Berger Iron Works provides standard miscellaneous metal products such as fire stairs, pipe rails, shelf angles, pipe ballards as well as work with stainless steel, bronze, and aluminum to provide monumental stairs, ornamental rails, artworks, custom canopies, and cladding.

They are able to service any size project with a mix of small, medium-sized, and large jobs running simultaneously and work from preliminary planning to installation to meet the budget constraints of clients. They are often involved in the early design phase of a project.





- Die Cutting
- Oxygen Cutting
- Plasma Cutting



- Lathe
- Turning
- Laser



- Injection Molding
- RIM Molding
- Blow Molding
- Rotational Molding



- Welding
- Chemical
- Fasteners



- Painting
- Coating
- Plating



- Sandcast
- Investment
- Diecast



- SLA (Stereo Lithography)
- SLS (Selective Laser Sintering)
- FDM (Fused Deposition Modeling)
- 3DP (3 Dimensional Printing)
- LOM (Laminated Object Manufacturing)
- Other

- Laser Cutting
- Water Jet
- Other

- CNC Mill
- Others

- Extrusion
- Vacuumforming
- Thermoforming
- Bending
- Roll Forming

- Vibratory
- Ultrasonic
- Other

- Polishing
- Etching
- Texturing

- Stamping
- Compression Molding
- Press Molding
- Spin Molding
- Other

- Artwork/Graphics
- Electrical Circuitry
- Others



BUILDING COMPONENTS



FURNITURE/
MILLWORK



OBJECTS &
DEVICES



INTERIOR
ELEMENTS



EXTERIOR
ELEMENTS



ADAPTATION
TO EXISTING



OTHERS



CUSTOMIZABLE



MANUFACTURE
TO SUIT



LARGE BATCHES
ACCEPTED



SMALL BATCHES
ACCEPTED



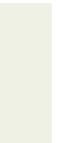
QUICK TURN
AROUND



IN HOUSE
DESIGN STAFF



COMPUTER FILES ACCEPTED



Fabrication Abilities

Applications

Services

HANDMADE IN TEXAS

Handmade in Texas is owned by Alberto Bonomi and has been operating in Houston since the mid 90's.

Alberto has a background in architecture and model building. He works in steel, aluminum, wood and resin with architects and designers on a variety of projects ranging from lighting to furniture.



Made in Houston

A project of the Materials
Resource Collaborative at
the University of Houston



Made in Houston | Materials and Services from the Houston Area

This project is to develop a catalog and web site that can be a useful resource for all designers, architects, students, and faculty in the Houston area to help them find the right fabricator and collaborator for their specific projects. The database will list fabricators by materials with which they work (wood, metal, ceramics, polymers, coatings, and hybrids) + their specific capabilities (casting, molding, forming, folding, bending, 2D or 3D cutting/CNC, sculpting, carving) in the hope of connecting local designers with local makers.

Select from the menus above to browse the catalog of materials, processes and applications or enter your search terms in the box to the right.

SEARCH FOR:



A.B. Controls & Technology Inc.

Lee Fearnough

lee@abtech-inc.com

281.548.3624

1813 Rotary Drive

Houston, TX 77345

www.abtech-inc.com



2D CUTTING



3D CUTTING



FORMING



JOINING



FINISHING



CASTING



RAPID
PROTOTYPE



CUSTOMIZABLE



MANUFACTURE
TO SUIT



SMALL
QUANTITIES
ACCEPTED



LARGE
QUANTITIES
ACCEPTED



QUICKTURN
AROUND



IN HOUSE
DESIGN STAFF



COMPUTER
FILES
ACCEPTED



BUILDING
COMPONENTS



FURNITURE/
MILLWORK



OBJECTS &
DEVICES



INTERIOR
ELEMENTS



EXTERIOR
ELEMENTS



ADAPTATION
TO EXISTING



OTHERS

Accents In Iron

Rich Brian

fe2accents@aol.com

281.974.4400

717 Rosine Street

Houston, TX 77019

fe2accents.com



2D CUTTING



3D CUTTING



FORMING



JOINING



FINISHING



CASTING



RAPID
PROTOTYPE



CUSTOMIZABLE



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ELEMENTS



EXTERIOR
ELEMENTS



ADAPTATION
TO EXISTING



OTHERS

REUSE IN
HOUSTON

ARSHAM METAL INDUSTRIES

Facility Information

Recycling / ReUse Data



Arsham Metal Industries has been in the recycling business and serving the Houston community since 1971. Arsham expanded its facilities in 1994 with the addition of an aluminum alloy division. Arsham provides containers for all scrap metals generated by industrial processes, so it's more convenient. They perform industrial clean-up service, plant closures and expansions and accept one-time or yearly contracts to suit a company's specific needs.



Jeff Arsham
jeff@arshamet.com



713.896.8585



11280 Charles Rd.
Houston, TX 77041



arshamet.com

CITY OF HOUSTON NEIGHBORHOOD DEPOSITORY AND RECYCLING CENTER NORTH

Facility Information



The City of Houston Solid Waste Management Department's (SWMD) mission is to provide solid waste services to the citizens of Houston through the collection, disposal and recycling of discarded material in a manner that is safe, efficient, environmentally sound and cost-effective.

Recycling / ReUse Data



Sarah Mason



713.694.8435



9003 North Main
Houston, TX 77022



houstontx.gov/solidwaste/n_main

CITY OF HOUSTON NEIGHBORHOOD DEPOSITORY AND RECYCLING CENTER NORTH

Facility Information

Recycling / ReUse Data



CONSTRUCTION MATERIALS



PLUMBING



WOOD



ELECTRICAL



MASONRY



WALL FINISHES



INSULATION/ROOFING



FLOORING



DOORS



SPECIALTIES



WINDOWS



FURNISHINGS



DECONSTRUCTION



REUSE



RECYCLE



DONATION CENTER



RECYCLING FACILITY



UNLOADING ASSISTANCE



PICK-UP



PURCHASE
MATERIALS

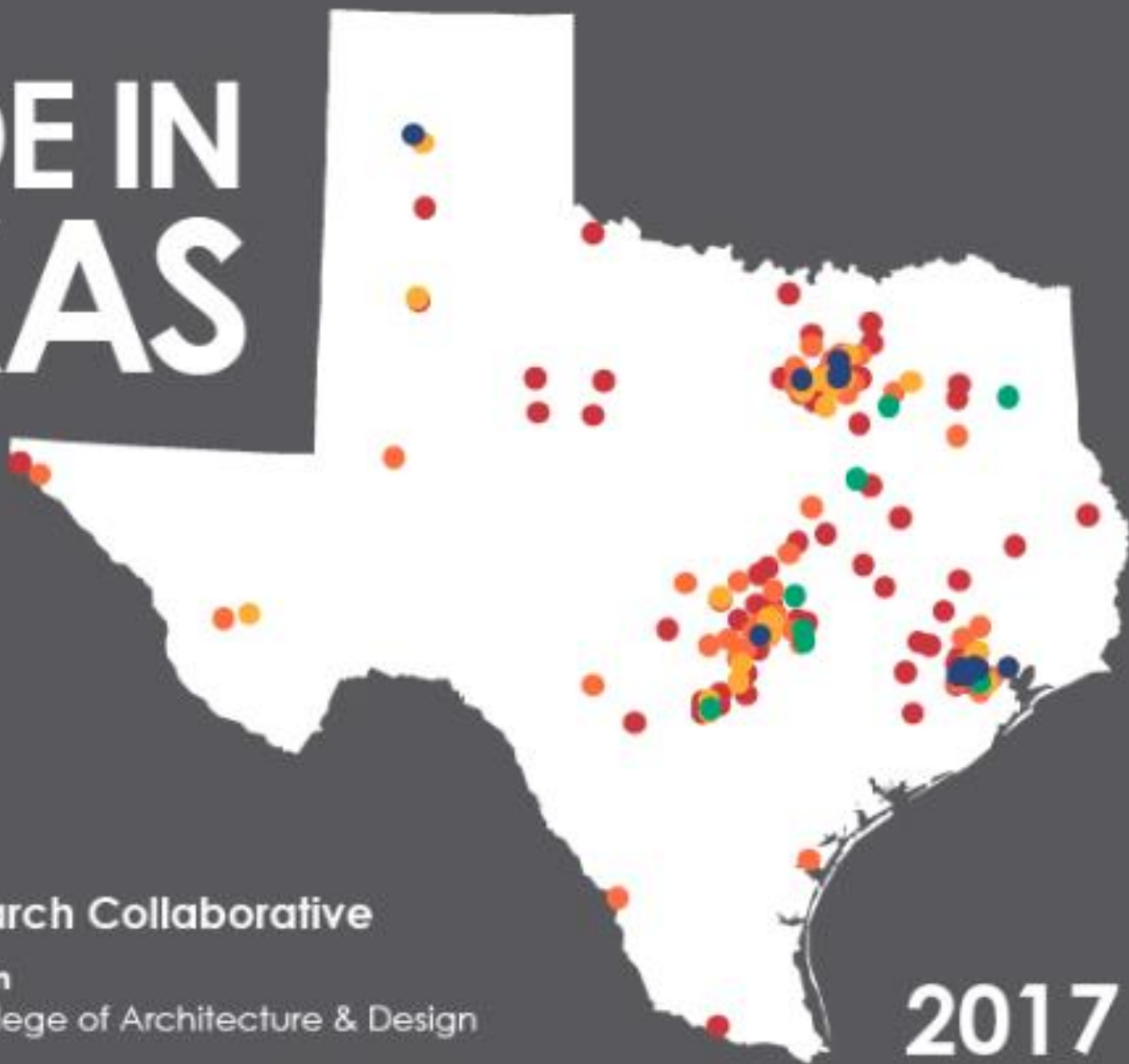


FREE
MATERIALS



DONATE TO GET
TAX EXEMPTION

MADE IN TEXAS



Materials Research Collaborative

University of Houston

Gerald D. Hines College of Architecture & Design

Supported By:

Architecture Center Houston | AIA Austin | AIA Dallas | AIA Fort Worth | AIA San Antonio | Texas Society of Architects

2017

**BUILDING
MATERIALS**



Exterior, interior, and structural building materials such as concrete, wood products, and glass largely used in building assembly.

**FURNITURE
& MILLWORK**



Exterior and interior furniture or millwork.

**OBJECTS
& DEVICES**



Specific products such as lighting, plumbing, and other objects.

**BUILDING
SYSTEMS**

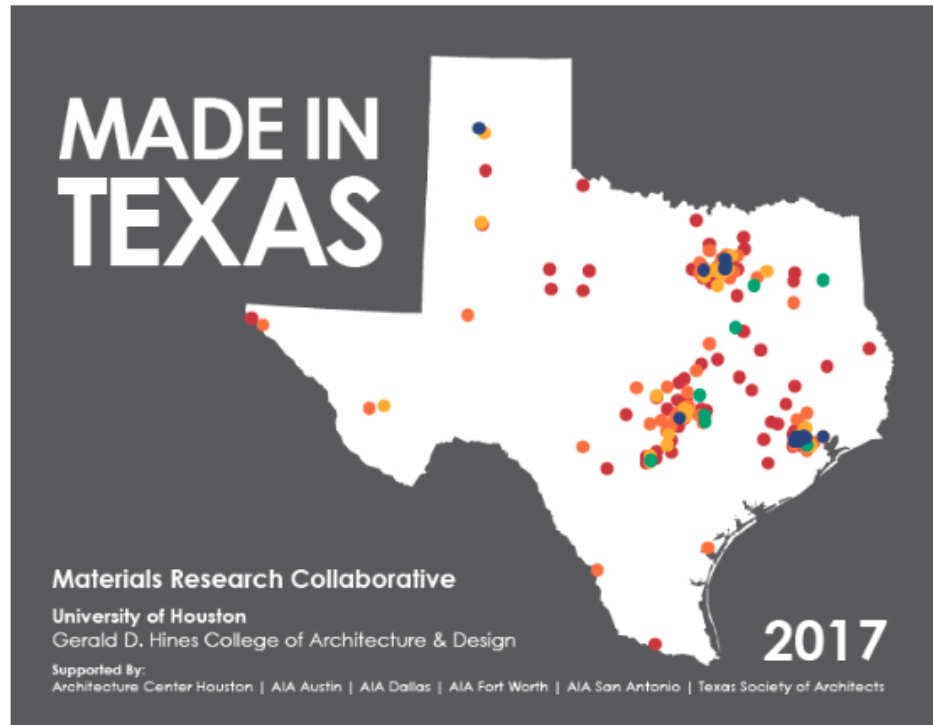


Electrical, plumbing, fire protection, and other systems used in buildings.

OTHER



Lagniappe.



This website, madeintexas.uhmrc.com, and its accompanying catalog and database, is intended to be a useful resource for all architects in Texas to help them find local manufacturers and makers.

The work to compile this resource was funded by the Architecture Center Houston Foundation, AIA Austin, AIA Dallas, AIA Fort Worth, AIA San Antonio, and the Texas Society of Architects.

The work was done through the Materials Research Collaborative (MRC) at the University of Houston Gerald D. Hines College of Architecture and Design and its director, Donna Kacmar, FAIA. The catalog and resource was completed by John Gibson, Angelica Lastra, Travis Mohle, and Jainish Radadia. The website was designed and created by Jessica Bradham.

To learn more about the MRC or to suggest other Texas makers please contact Donna Kacmar at: dkacmar@uh.edu.

[About the MRC](#)

Building Materials

AAA Pallet Co.

www.houstonpallets.com

Houston

CSI: 06 44 00

Contact:

Yusuf Ali

713.674.2000

sales@houstonpallets.com



Acme Brick Company

www.brick.com

Denton, Elgin, Malakoff, Milsap,
Sealy

CSI: 04 21 00

Contact:

Ed Watson

817.332.4101

ewatson@brick.com



Advanced Cast Stone

www.advancedcaststone.com

Fort Worth

CSI: 04 72 00

Contact:

Susie Lindsey

817.572.0018

Slindsey@advancedarchitecturalstone.com





Susie Lindsey

817.572.0018

Slindsey@advancedarchitecturalstone.com



www.advancedcaststone.com



115 Lee Street
Fort Worth
76140

Advanced Cast Stone

04 72 00

➤ **Building Materials: Exterior | Structural**

Architectural Cast Stone and Precast Concrete



Architectural cast stone and precast concrete.





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ATELIER GIET ARCHITECTURE, BORDEAUX, FRANCE

EDUCATIONAL
PROJECTS +
DESIGN
PROCESS

AUGUST 29TH
@ 6PM

Event

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Event

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GEORGE CHOW

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Exhibition

PAN-AMERICAN STUDIO
AUG 9-31ST

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Exhibition

EUROPEAN METROPOLIS STUDIO
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Student Resources

The College of Architecture and Design provides a variety of services in various facilities to its students and faculty.

[Computer Lab](#)

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[Mashburn Gallery](#)

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Materials Research Collaborative (MRC)

The Materials Research Collaborative (MRC) at the University of Houston College of Architecture and Design serves as a materials resource for material discovery, innovation, instruction, and research for the 700 students at the Gerald D. Hines College of Architecture and Design and area professionals. The MRC has developed a [web-based database](#) that catalogs the physical materials in its collection. On-going work of the MRC includes uncovering new and innovative materials, cataloging the physical samples, and researching and inputting data regarding the specific extrinsic and intrinsic properties of these materials. The MRC is also engaged in specific material research projects such as a databases of local materials, LEED v 4 consulting, and carbon emissions analysis of buildings.

This work is funded by our Firm Partner: Page and our Founding Partners: [Page Southerland Page](#), [Kendall/Heaton](#), and [Gensler](#) and our supporters: [Architecture Center Houston Foundation](#), the [University of Houston Green Building Components program](#), [Skanska USA](#), and the University of Houston Gerald D. Hines College of Architecture and Design.

To learn more about the MRC or to suggest other Houston makers please contact Donna Kacmar at dkacmar@central.uh.edu or call 713-743-2400.

MRC Materials Database

<http://uh.edu/archmrc/>

 Material Research Collaborative Summer Hours - 2016

 Local Materials List/H5h (PDF)

 Local Materials List/H1h (PDF)

Made in Houston

<http://madeinhouston.uhmrc.com>

Reuse in Houston

<http://reuse.uhmrc.com/reuse/>

STUDY 01



SUSTAINABLE MATERIAL INVESTIGATION

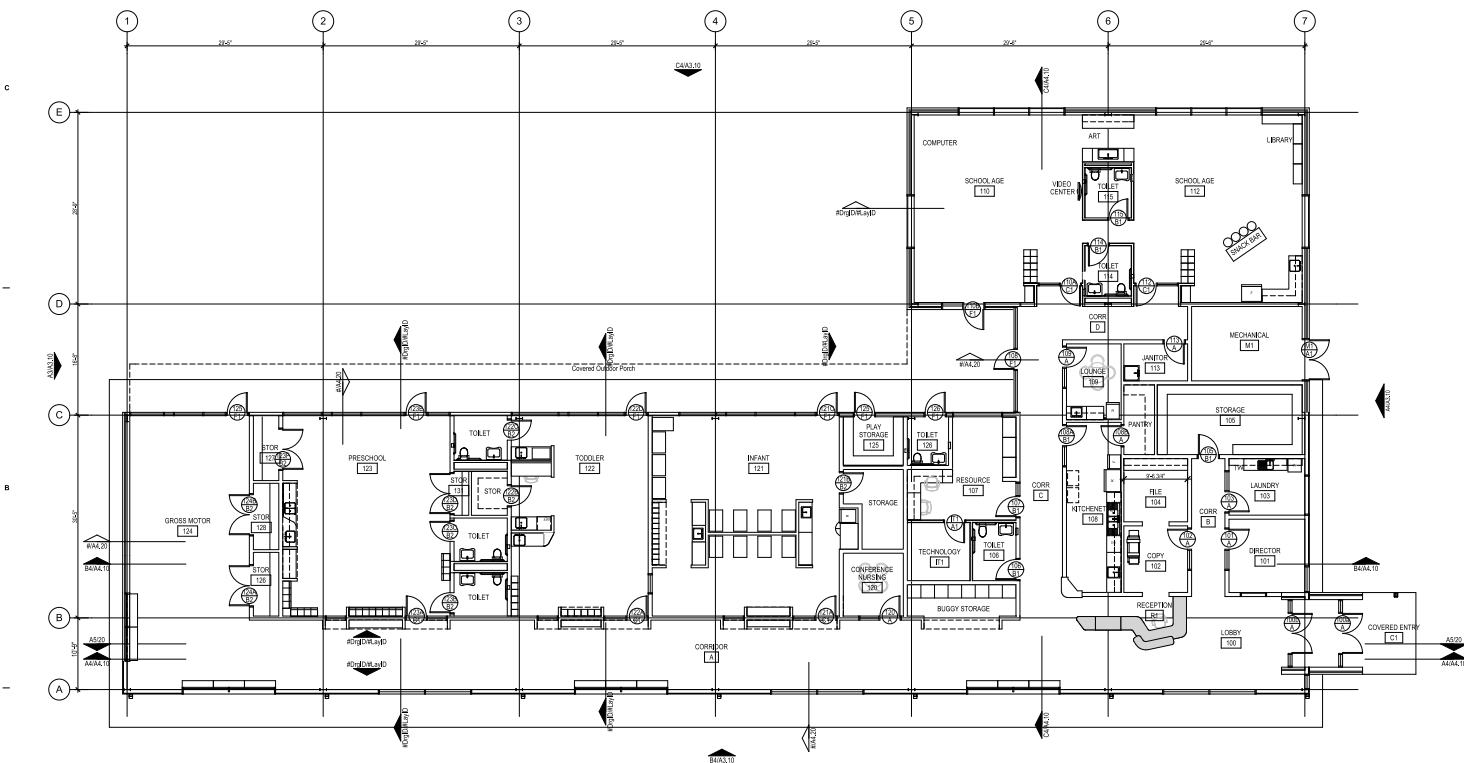
JPMC CHILDCARE
 1400 MAIN STREET HOUSTON, TEXAS 77002
 Design Development Pricing

Kirksey
 ARCHITECTURE

6909 Portwest Drive
 Houston Texas 77024
 713 850 9600
 kirksey.com

PROJECT NO.
 SKANSKA USA COMMERCIAL
 DEVELOPMENT INC.
 OWNER
 1776 YORKTOWN BLVD, SUITE 800
 HOUSTON, TEXAS 77056
 713 850 9600
 JP MORGAN CHASE
 TENANT
 302 N. JPM
 HOUSTON, TEXAS 77002
 BRIGHT HORIZONS
 CENTER DEVELOPMENT
 302 N. VOLLEY STREET, SUITE 100
 HOUSTON, TEXAS 77002
 24.10.2017
 WYLLIE CONSULTING
 ENGINEERS
 MEP ENGINEER
 1715 JACOBY, SUITE 200
 HOUSTON, TEXAS 77056
 713 850 9600
 WALTER P. MOORE
 STRUCTURAL ENGINEER
 1201 K. O. WILSON, SUITE 1100
 HOUSTON, TEXAS 77002
 713 850 9600

PROJECT NAME
 JPMC CHILDCARE
 PROJECT ADDRESS
 1400 MAIN STREET
 HOUSTON, TEXAS 77002
 SKANSKA PROJECT NO.
 SKANSKA DEVELOPMENT NO.
 KIRKSEY PROJECT NO.
 © 2017 Kirksey 2011092




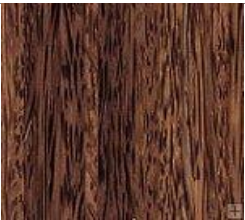



SCALE: 1/8" = 1'-0"

FLOOR PLAN | A4

SYMBOLS	LEGEND	KEYNOTES	GENERAL
		<p>① xxx</p>	<p>1.</p> <p>2.</p> <p>3.</p> <p>4.</p>

EXTC Exterior Panel

Revised: 12/1/11

	material	notes	cost	image
ACCO	Accoya	Pros: C2C Gold. 16%-30% recycled content. Cons: Limited LEED points. Made in Netherlands.		
DURA	Durapalm Coconut Palm Panel	Pros: Rapidly renewable content. Cons: Made in China.		
HARD	Hardiepanel	Pros: Made in Cleburne, Texas. National brand, well known. 5 LEED Cat. Cons: Low recycled content High embodied energy		
TRES	Trespa Meteon	Pros: Longest lifespan. Many reuse options. Cons: Made in Netherlands		
VIVI	VIVIX Formica Series 900 Panel	Pros: Manufactured in US. Cons: Low recycled content		

EXterior Cladding

	ACCO Accoya		DURA Durapalm		HARD Hardiepanel		TRES Trespa		VIVIX VIVIX FORMICA Series 900	
	information	information 2	information	information 2	information	information 2	information	information 2	information	information 2
compostable	yes		yes		no		no		no	
biodegradable	yes		yes		no		no		no	
post-consumer waste	16% - 30%		0%		0%		15%		0%	
pre-consumer waste	0%		0%		10%		0%		3%	
recyclable at Houston recycling centers	yes		yes		no		no		no	
COH Building Materials Reuse Warehouse	yes		yes		yes		yes		yes	
raw materials extraction	Netherlands	5,045 miles*	varies		varies		Netherlands	5,045 miles*	unknown	unknown
manufacturing location	Netherlands	5,045 miles*	China	7700 miles*	Cleburne, TX	240 miles	Netherlands	5,045 miles*	Houston, TX	0 miles
transportation method	truck		truck		truck*		ship, truck*		truck	
VOC content	<10 g/L	ppm	very low*		<150	ppm	low*		low*	
Forest Stewardship Council	yes		yes		not applicable		no		no	
Cradle to Cradle	yes	gold	no		no		no		no	
LEED 2009	mr, id	2 points	mr, eq	6 points	mr, id	9 points	eq, mr	3 points	eq, mr	3 points
Green Guard Children & Schools	no		yes		no		yes		yes*	
CHPS Member	no		no		no		no		no	
Green Spec Directory	no		yes*		yes		no		no	
Pharos Score: VOC	not listed		not listed		not listed		not listed		not listed	
Pharos Score: UseTox	not listed		not listed		not listed		not listed		not listed	
Pharos Score: MfrTox	not listed		not listed		not listed		not listed		not listed	
Pharos Score: RnMTRL	not listed		not listed		not listed		not listed		not listed	
Pharos Score: RnENERG	not listed		not listed		not listed		not listed		not listed	
Life Cycle Analysis	not listed		not listed		not listed		not listed		yes*	see notes
embodied energy	10.40*	MJ/kg	not listed		10.4	MJ/kg	not listed		76.7*	MJ/kg
carbon emissions	.23fox+.63bio	kgCO2/kg	not listed		1.09	kgCO2/kg	not listed		1.57*	kgCO2/kg
Living Building Challenge Red List	off		off		off		off		off	
Kirksey Sustainability Rating	2		2		3		1		3	
Material Safety Data Sheet	yes		no		yes		no		no	
cost	material	labor	material	labor	material	labor	material	labor	material	labor
performance/quality info	warranty		yes	5 years	warranty		warranty		warranty	
local installations	yes, no	number	yes, no	number	yes, no	number	yes, no	number	yes, no	number

* indicates estimate

UH Materials Research Collaborative

ACoustic Deck

	FRST Firestall Roof Deck		PERMD Vulcraft Type 1.5 VPLA Deck		SIPS R-Control FrameGuard Coated SIPS		TECT Tectum Roof Deck		THER N.F.C.R Thermasote Roof Insulation	
	information	information 2	information	information 2	information	information 2	information	information 2	information	information 2
compostable	yes		no		no		yes		yes	
biodegradable	yes		no		no		yes		yes	
post-consumer waste	85%		58.20%		0%		8%		44%	
pre-consumer waste	0%		12%		0%		40%		0%	
recyclable at Houston recycling centers	yes		no		yes		yes		yes	
COH Building Materials Reuse Warehouse	yes		yes*		yes		yes		yes	
raw materials extraction	West Trenton, NJ	1,639 miles max.	unknown	unknown	see notes	213 miles, 1,344 miles*	Rice Lake, WI	1,279 miles	West Trenton, NJ	1,639 miles max.
manufacturing location	West Trenton, NJ	1,589 miles	Grapeland, TX	129 miles	Kerville, TX	255 miles	Newark, OH	1,197 miles	West Trenton, NJ	1,589 miles
transportation method	truck		truck		truck		truck		unknown	
VOC content	0		0		0		0		0	
Forest Stewardship Council	yes		not applicable		yes*		yes		yes	
Cradle to Cradle	no		no		no		no		no	
LEED 2009	mr, ieq	not provided	mr	not provided	ea, mr	max 46 points	ea, mr, ieq, id	not provided	mr, ieq	not provided
Green Guard Children & Schools	no		no		no		no		no	
CHPS Member	yes		no		no		no		yes	
Green Spec Directory	yes		no		yes		yes		no	
Pharos Score: VOC	not listed		not listed		1		not listed		not listed	
Pharos Score: UseTox	not listed		not listed		1		not listed		not listed	
Pharos Score: MfrTox	not listed		not listed		2		not listed		not listed	
Pharos Score: RnMTRL	not listed		not listed		1		not listed		not listed	
Pharos Score: RnENERG	not listed		not listed		1		not listed		not listed	
Life Cycle Analysis	not listed		yes		82.76	MJ/sq. ft.	not listed		not listed	
embodied energy	24.8*	MJ/kg	18.8	MJ/kg	101.6	MJ/kg	15	MJ/kg	24.8*	MJ/kg
carbon emissions	1.29*	kgCO2/kg	1.3	kgCO2/kg	3.51	kgCO2/kg	.42 _{ios} + .54 _{bio}	kgCO2/kg	1.29*	kgCO2/kg
Living Building Challenge Red List	off		off		on		off		off	
Kirksey Sustainability Rating	5		5		6		6		5	
Material Safety Data Sheet	yes		yes		yes		yes		yes	
cost	material	labor	1.25/sq. ft.	labor	material	labor	\$7/sq. ft. installed		material	labor
performance/quality info	yes	1 year limited	yes	1 year	yes	20 years	yes	up to 15 years	yes	1 year
local installations	yes, no	number	yes, no	number	yes, no	number	yes, no	number	yes, no	number

* indicates estimate

UH Materials Research Collaborative

GYPS

	GYPS_REG Eagelroc Regular Gypsum Board	
	information	information 2
compostable	yes	
biodegradable	no	
post-consumer waste	6%	
pre-consumer waste	0%	
recyclable at Houston recycling centers	no	
COH Building Materials Reuse Warehouse	yes	
raw materials extraction	Creta, OK	410
manufacturing location	Duke, OK	473
transportation method	truck	
VOC content	<.22	mg/m ³
Forest Stewardship Council	not applicable	
Cradle to Cradle	no	
LEED 2009	mr. eg	
Green Guard Children & Schools	yes	
CHPS Member	no	
Green Spec Directory	no	
Pharos Score: VOC	7	
Pharos Score: UseTox	4	
Pharos Score: MfrTox	2	
Pharos Score: RnMTRL	5	
Pharos Score: RnENERG	1	
Life Cycle Analysis	36.87	MJ/sq. ft.
embodied energy	3.2	MJ/kg
carbon emissions	0.12	kgCO2/kg
Living Building Challenge Red List	off	
Kirksey Sustainability Rating	9	
Material Safety Data Sheet	yes	
cost	material	labor
performance/quality info	yes	3 years
local installations	YES, NO	number

GYPS_SHEET	
Sheetrock Gypsum Panels	
information	information 2
yes	
no	
4.90%	
94.30%	
no	
no	
Galena Park, TX	12 miles
Galena Park, TX	12 miles
truck	
low*	
yes	
no	
mr. eq	
no	
yes	
yes	
6	
3	
2	
5	
1	
36.87	MJ/sq. ft.
1.8	MJ/kg
0.12	kgCO2/kg
7	
material	labor
yes	30 days
YES, NO	number

GYPS_ZIP	
Green Zip Demountable Drywall System	
information	information 2
city	miles from Houston
city	miles from Houston
no	
no	level
id, mr, eq	
no	
no	
no	
not listed	
not listed	
not listed	
not listed	
not listed	
	MJ/kg
	kgCO2/kg
2	
material	labor
yes	3 years
YES, NO	number

* indicates estimate

UH Materials Research Collaborative



STUDY 02

SKANSKA CARBON EMISSIONS ANALYSIS

Owner: Skanska USA Commercial Development

General Contractor: Skanska USA Building

Architect: Kirksey Architecture

Civil Engineer: WP Moore and Associates

20-floor
302,000 SF building
pre-certified LEED platinum

Service: Commercial development

Market segment: Offices

Start date: 2011

Completion date: 2013

Client: Skanska USA Commercial Development

Country: United States

City: Houston



TRANSPORTATION OF CRAFTWORKERS









HOW DID YOU GET TO 3009 POST OAK BOULEVARD TODAY?

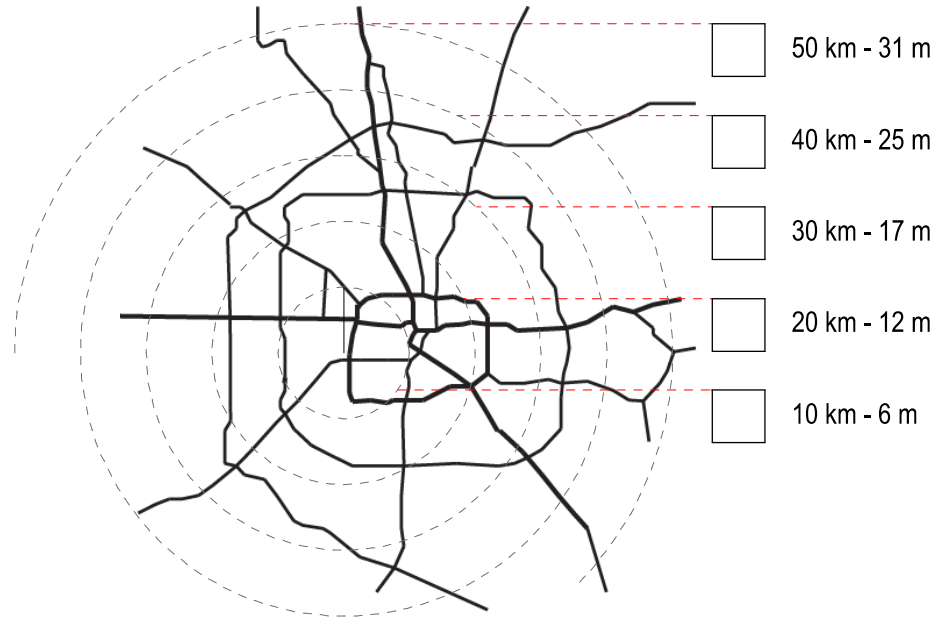
¿Cómo llegaste a boulevard de roble 3009 post hoy?

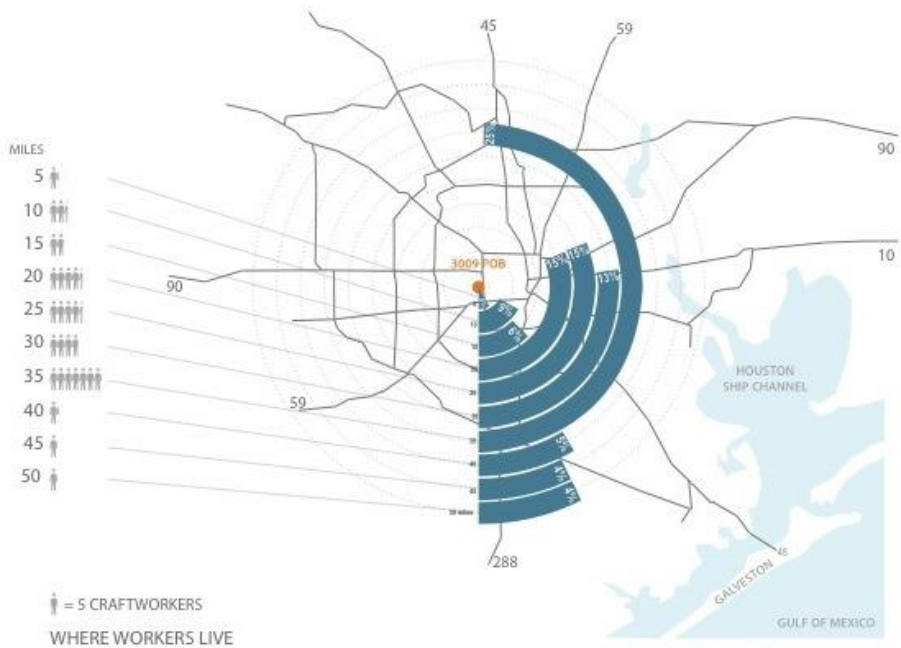
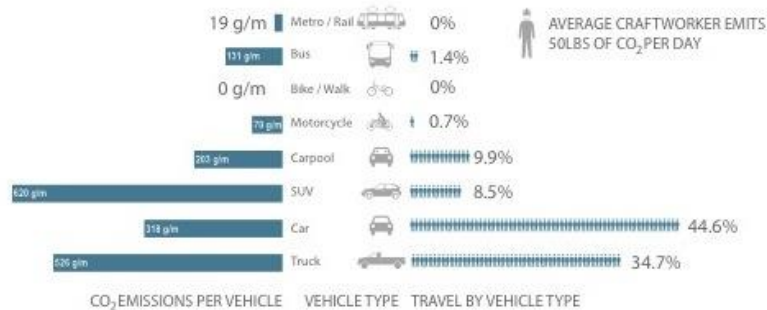
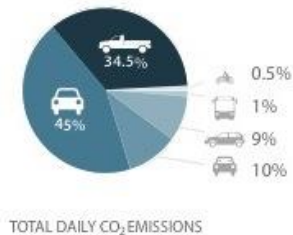
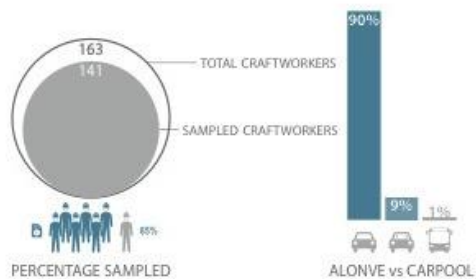
1 **Subcontractor** 
Subcontratista

2 **Transportation Type**
Tipo de Vehículo

- | | | |
|--------------------------|---|---------------------------------------|
| <input type="checkbox"/> |  | Metro / Rail
En Metro |
| <input type="checkbox"/> |  | Bus
Autobus |
| <input type="checkbox"/> |  | Bike Walk
Bicicleta Caminar |
| <input type="checkbox"/> | | Carpool
Carro Piscina |
| <input type="checkbox"/> |  | SUV
Todoterreno |
| <input type="checkbox"/> |  | Car
Carro |
| <input type="checkbox"/> |  | Truck
Camion |

Where do you live?
¿dónde vives?





BUILDING MATERIALS

embodied carbon

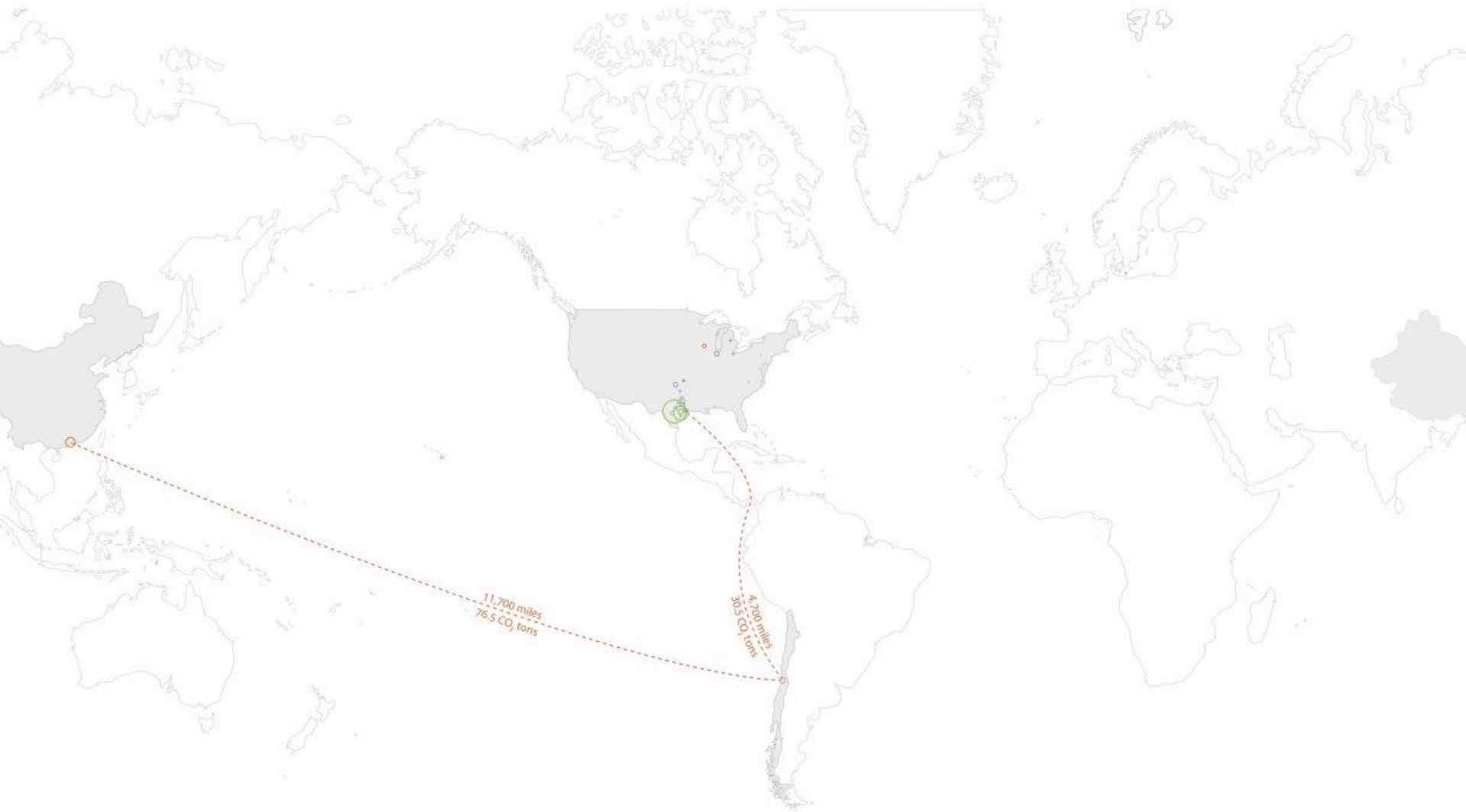


CONCRETE

PRECAST GARAGE

MISCELLANEOUS STEEL

CURTAIN WALL

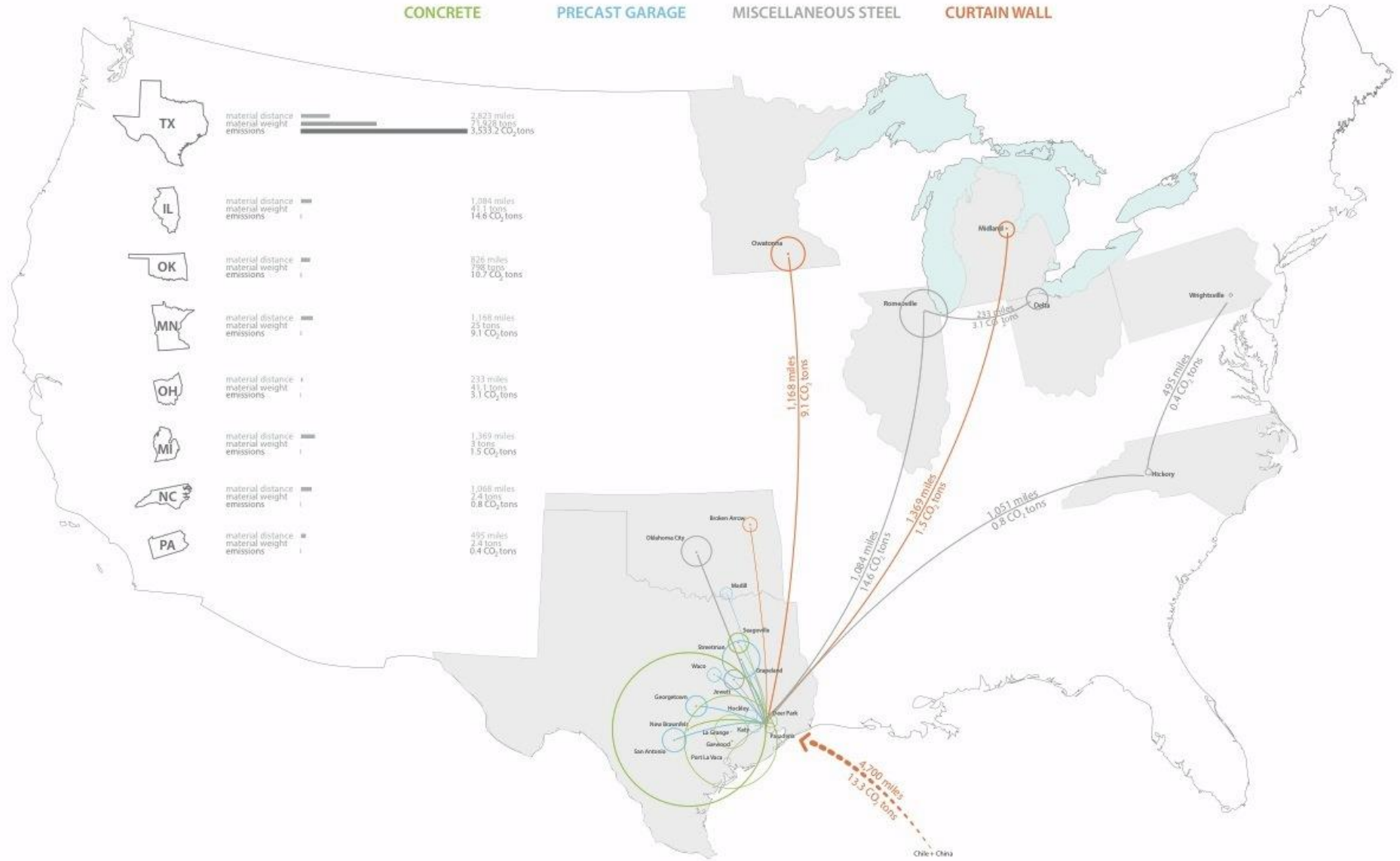


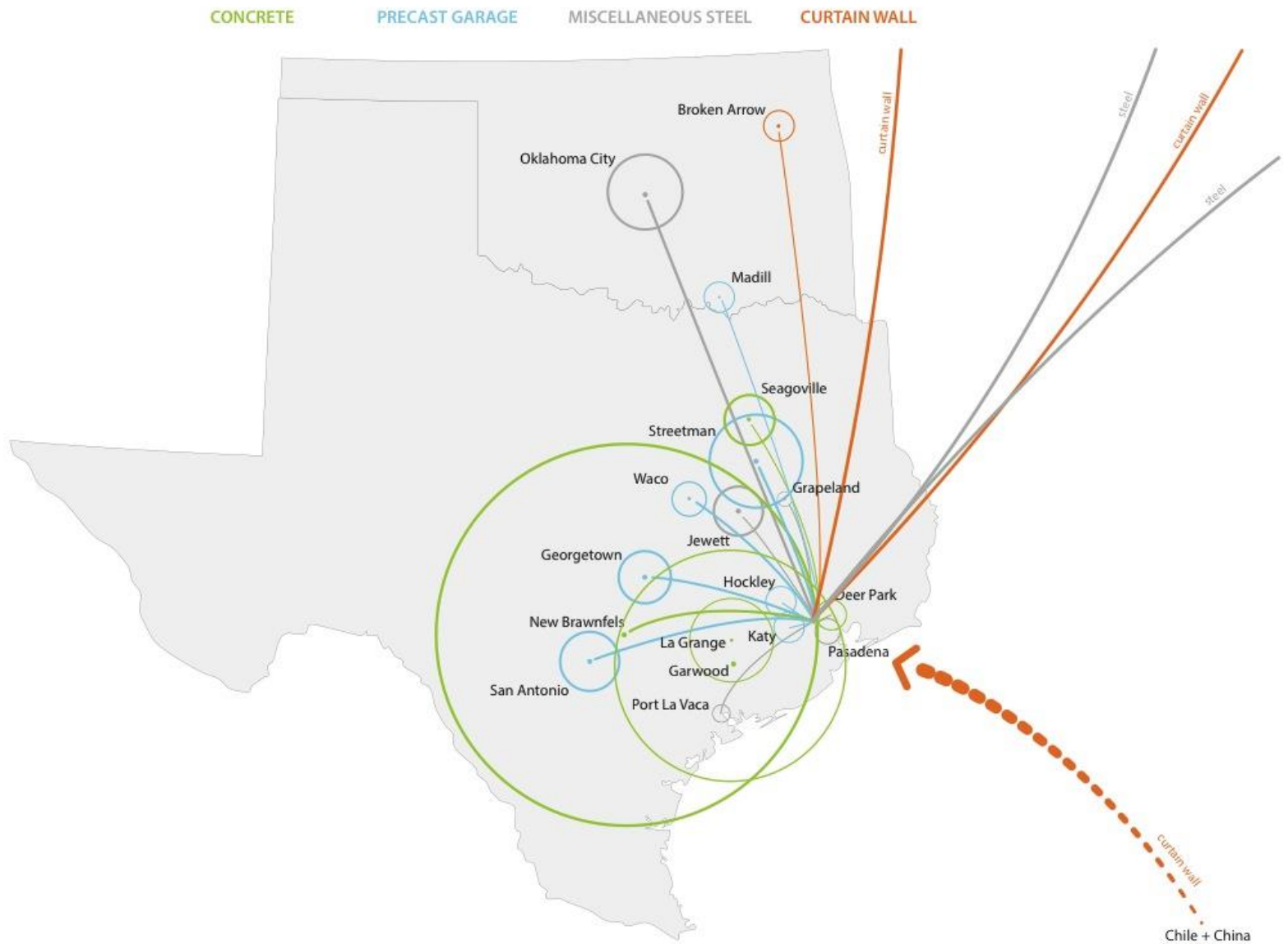
CONCRETE

PRECAST GARAGE

MISCELLANEOUS STEEL

CURTAIN WALL





CONSTRUCTION WASTE



7,825

TOTAL CO₂ OF ON SITE WASTE [tons]

536

TOTAL TIME DURATION

1 YEAR 10 MONTHS

AVG. WASTE PER MONTH [tons]

355.68

AVG. CO₂ EMISSIONS PER MONTH [tons]

26.24

TOTAL NON-RECYCLED WASTE PERCENTAGE

13%

MODE OF TRANSPORTATION

TRUCK

SITE TO LANDFILL DISTANCE [miles]

16

TOTAL TRANSPORTATION DISTANCE [miles]

2,864

ENERGY + WATER

Service Address: 3009 POST OAK BLVD - HOUSTON TX 77056



Gexa Energy
Suite 200
20455 State Highway 249
Houston TX 77070
PUC license #10027

Billing Date	Account Number	Payment Due	Service Number	ESI ID	Usage Month
May 21, 2013	1410395-3	Jun 7, 2013	1410395	1008901006900583790112	May 2013

For emergencies, please call CenterPoint Energy at (800)332 7143
For Customer Service call (713) 961-9399 in Houston or (866) 961-9399 outside Houston only.
Gexa Energy Customer Service hours are 7am - 8pm CST Monday to Friday and 8am - 2pm on Saturday.

The average price you paid for electric service this month was 9.2 cents per kWh, excluding taxes and non-recurring charges or credits. Visit www.GexaEnergy.com/BillingInfo for a glossary of billing terms to better understand your statement.

If you believe this bill is incorrect or includes unauthorized charges, please contact Gexa Energy to dispute the charges. If we fail to resolve the problem to your satisfaction, you may file a complaint with the Public Utility Commission of Texas, P.O. Box 13326, Austin, Texas 78711-3326, (512) 936-7120 or toll-free in Texas at (888) 782-8477. Hearing and speech-impaired individuals with text telephones (TTY) may contact the Commission at (512) 936-7136.

Summary

Total From Last Bill
Payment Received

Balance Forward	
Current Charges	

Balance Due

Current Charges

Gexa Energy	
Offering: Contract CPE000	
Energy Charge	\$6,453.06
Sales Tax	\$543.90
Gross Receipts Reimb.	\$128.87
PUC Assessment	\$10.76
Total Charges	\$7,136.60

Your per kWh rate is
4.9400 cents.

CenterPoint Energy	
Invoice Number: 1333111305191305B30520	Apr 18, 2013-May 19, 2013
Customer Charge	\$65.83

The amount billed may include price changes allowed by law or regulatory actions.

Please allow 5 to 7 days for processing. Detach and return this portion with your payment.



Bill Payment Assistance Program

Gexa Energy is pleased to support this program that helps pay the utility bills of those in need. If you would like to donate, please check the box and fill in the desired amount.

☐ \$ _____

OK Ma
6. 11. 13

Amount Enclosed (Check payable to Gexa Energy):

\$ _____.

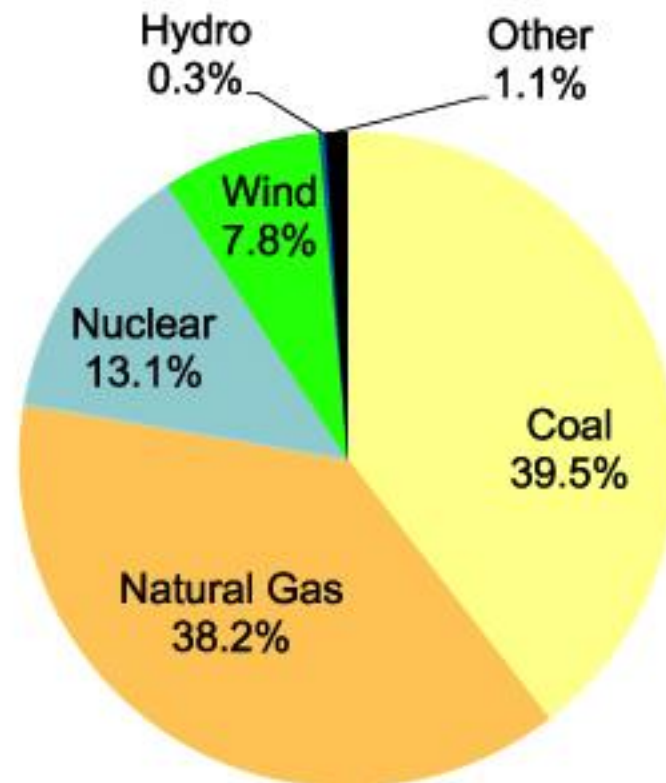
GEXA ENERGY
PO BOX 660100
DALLAS TX 75266-0100

1776 YORKTOWN, SUITE 690
3009 POST OAK BLVD, LLC
C/O Skanska Commercial Development
Houston TX 77056

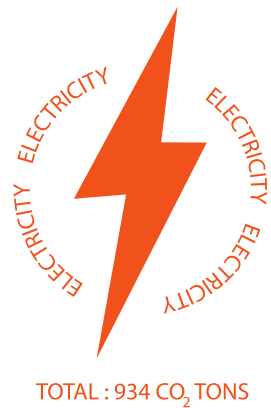
0014103953

1

01310255



Electric Reliability Council of Texas (ERCOT) Electricity Generation Mix



SUMMARY: TOTAL CO2 TONS

SKANSKA 3009 POB
Carbon Analysis Project

Revised: 11/4/13

ADJUSTED

	Category	Total CO2 Tons	%
2%	Cumulative Craftworker Transportation*	822.0	2.5%
	Baker Concrete Materials	6,663.4	20.0%
	Milestone Metals Materials	83.1	0.2%
	East Texas Precast Garage Materials	2,535.4	7.6%
	Haley Greer Curtain Wall Materials	654.2	2.0%
	ESTIMATE OF 56% MATERIALS	12,646.1	
68%	Cumulative Materials**	22,582.3	
	Baker Concrete Materials Transport	3,152.5	9.4%
	Milestone Metals Materials Transport	28.4	0.1%
	East Texas Precast Garage Materials Transport	377.5	1.1%
	Haley Greer Curtain Wall Materials Transport	121.3	0.4%
	ESTIMATE OF 56% MATERIALS	4,683.3	
25%	Cumulative Materials Transport**	8,363.0	
	Non-recycled Waste Material	536.4	1.6%
	Waste Transport	41.0	0.1%
2%	Cumulative Waste***	577.4	
	On Site Electricity	934.2	2.8%
	On Site Water	104.9	0.3%
3%	Cumulative Energy****	1,039.1	

ADJUSTED CUMULATIVE TOTAL CO2 TONS **33,383.8**

ADJUSTED TOTAL CO2 **100.3** KG PER SF

STUDY 03



REFERENCE
GUIDE FOR
BUILDING
DESIGN AND
CONSTRUCTION

v4

BUILDING PRODUCT DISCLOSURE AND OPTIMIZATION

MR2 CREDIT Environmental Product Declarations

MR3 CREDIT Sourcing of Raw Materials

MR4 CREDIT Material Ingredients



MATERIALS AND RESOURCES CREDIT

Building Product Disclosure and Optimization—Environmental Product Declarations

This credit applies to:

New Construction (1-2 points)

Core and Shell (1-2 points)

Schools (1-2 points)

Retail (1-2 points)

Data Centers (1-2 points)

Warehouses and Distribution Centers (1-2 points)

Hospitality (1-2 points)

Healthcare (1-2 points)

INTENT

To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts. To reward project teams for selecting products from manufacturers who have verified improved environmental life-cycle impacts.

REQUIREMENTS

Achieve one or more of the options below, for a maximum of 2 points.

OPTION 1. ENVIRONMENTAL PRODUCT DECLARATION (EPD) (1 POINT)

Use at least 20 different permanently installed products sourced from at least five different manufacturers that meet one of the disclosure criteria below.

Environmental Product Declarations

for **20** products or **50%** of cost

$$\text{Total \# of products} = \left\{ \begin{array}{l} \text{\# of products with} \\ \text{product - specific} \\ \text{declarations} \end{array} \times 0.25 \right\} + \left\{ \begin{array}{l} \text{\# of products with} \\ \text{industry - specific} \\ \text{declarations} \end{array} \times 0.5 \right\} + \left\{ \begin{array}{l} \text{\# of products with} \\ \text{Type III} \\ \text{EPDs} \end{array} \times 1 \right\}$$

$$\% \text{ of materials cost} = \frac{\left[\text{product}_1 \text{ cost} \left(\frac{\text{criterion}}{\text{valuation factor}} \right) \left(\frac{\text{location}}{\text{valuation factor}} \right) \right] + \left[\text{product}_2 \text{ cost} \left(\frac{\text{criterion}}{\text{valuation factor}} \right) \left(\frac{\text{location}}{\text{valuation factor}} \right) \right] + \dots}{\text{Cost of all permanently installed products}} \times 100$$



MATERIALS AND RESOURCES CREDIT

Building Product Disclosure and Optimization—Sourcing of Raw Materials

This credit applies to:

New Construction (1–2 points)
Core and Shell (1–2 points)
Schools (1–2 points)
Retail (1–2 points)

Data Centers (1–2 points)
Warehouses and Distribution Centers (1–2 points)
Hospitality (1–2 points)
Healthcare (1–2 points)

INTENT

To encourage the use of products and materials for which life cycle information is available and that have environmentally, economically, and socially preferable life cycle impacts. To reward project teams for selecting products verified to have been extracted or sourced in a responsible manner.

REQUIREMENTS

OPTION 1. RAW MATERIAL SOURCE AND EXTRACTION REPORTING (1 POINT)

Use at least 20 different permanently installed products from at least five different manufacturers that have publicly released a report from their raw material suppliers which include raw material supplier extraction locations, a commitment to long-term ecologically responsible land use, a commitment to reducing environmental harms from extraction and/or manufacturing processes, and a commitment to meeting applicable standards or programs voluntarily that address responsible sourcing criteria.

- Products sourced from manufacturers with self-declared reports are valued as one half (1/2) of a product for credit achievement.
- Third-party verified corporate sustainability reports (CSR) which include environmental impacts of extraction operations and activities associated with the manufacturer's product and the product's supply chain, are

Documentation of Sourcing of Raw Ingredients

for **20** products or **25%** of cost

$$\text{Total \# of products} = \left[\frac{\text{\# of products with manufacturer-declared reports}}{\text{reports}} \times 0.5 \right] + \left[\frac{\text{\# of products with 3rd party verified reports}}{\text{reports}} \times 1 \right]$$

$$\% \text{ of materials cost} = \frac{\left[\left(\frac{\text{applicable}}{\text{product cost}_1} \right) \left(\frac{\text{criterion}_1}{\text{valuation factor}} \right) \left(\frac{\text{location}}{\text{valuation factor}} \right) \right] + \left[\left(\frac{\text{applicable}}{\text{product cost}_2} \right) \left(\frac{\text{criterion}_2}{\text{valuation factor}} \right) \left(\frac{\text{location}}{\text{valuation factor}} \right) \right] + \dots}{\text{Cost of all permanently installed products}} \times 100$$

DEFINITIONS

As defined in the LEED v4.1 Building for Environmental & Social Performance (BEP) credit, the term "building" refers to any structure that is used for human occupancy or storage, including but not limited to:

• Office buildings
• Retail stores
• Schools
• Hospitals
• Data centers

As defined in the LEED v4.1 Building for Environmental & Social Performance (BEP) credit, the term "building" refers to any structure that is used for human occupancy or storage, including but not limited to:

• Office buildings
• Retail stores
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• Office buildings
• Retail stores
• Schools
• Hospitals
• Data centers

MATERIALS AND RESOURCES CREDIT



Building Product Disclosure and Optimization—Material Ingredients

This credit applies to:

New Construction (1-2 points)
Core and Shell (1-2 points)
Schools (1-2 points)
Retail (1-2 points)

Data Centers (1-2 points)
Warehouses and Distribution Centers (1-2 points)
Hospitality (1-2 points)
Healthcare (1-2 points)

INTENT

To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts. To reward project teams for selecting products for which the chemical ingredients in the product are inventoried using an accepted methodology and for selecting products verified to minimize the use and generation of harmful substances. To reward raw material manufacturers who produce products verified to have improved life-cycle impacts.

REQUIREMENTS

OPTION 1. MATERIAL INGREDIENT REPORTING (1 POINT)

Use at least 20 different permanently installed products from at least five different manufacturers that use any of the following programs to demonstrate the chemical inventory of the product to at least 0.1% (1000 ppm).

- **Manufacturer Inventory.** The manufacturer has published complete content inventory for the product following these guidelines:
 - A publicly available inventory of all ingredients identified by name and Chemical Abstract Service Registration Number (CASRN)

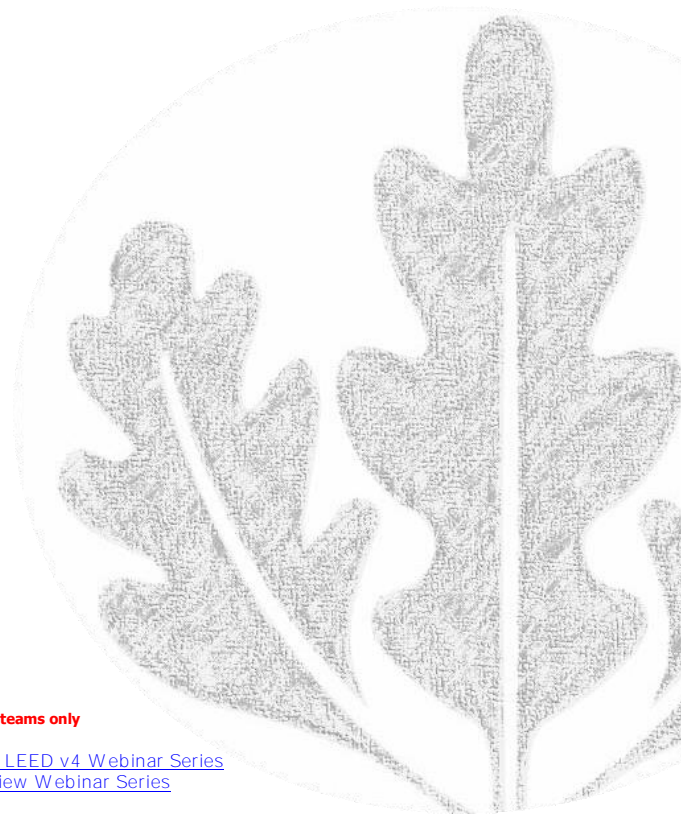
Documentation of Material Ingredients

for **20** products or **25%** of cost

$$\% \text{ of materials cost} = \frac{\left[\text{product}_1 \text{ cost} \left(\begin{smallmatrix} \text{program} \\ \text{valuation} \\ \text{factor} \end{smallmatrix} \right) \left(\begin{smallmatrix} \text{location} \\ \text{valuation} \\ \text{factor} \end{smallmatrix} \right) \right] + \left[\text{product}_2 \text{ cost} \left(\begin{smallmatrix} \text{program} \\ \text{valuation} \\ \text{factor} \end{smallmatrix} \right) \left(\begin{smallmatrix} \text{location} \\ \text{valuation} \\ \text{factor} \end{smallmatrix} \right) \right] + \dots}{\text{Cost of all permanently installed products}} \times 100$$

LEED v4

Beta Program Certification Guide

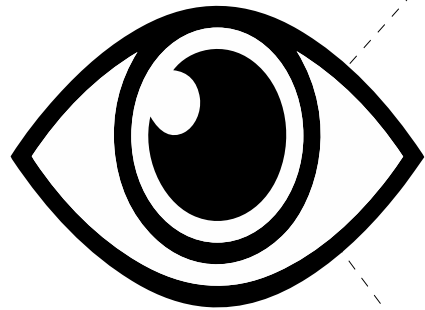


For distribution to LEED v4 Beta project teams only

Access the FREE [Introduction to LEED v4 Webinar Series](#)
Purchase the [Rating System Review Webinar Series](#)

SEARCH

MATERIALS RESEARCH SEARCH



Health Product
DECLARATION



Environmental
Product
Declaration

Declare.



Sustainable Product Databases:

Green Wizard (EPDs, HPDs and Declare product database)

www.greenwizard.com

ICC Evaluation Service (EPDs and PCRs databases)

www.icc-es.org

NSF International (EPDs and PCRs databases)

www.nsf.org

UL Environment (EPDs and GreenGuard Gold databases)

www.ul.com/environment

International EPD System (EPDs and PCRs databases)

www.environdec.com

Third-Party Certification databases:

Declare

www.declareproducts.com

Pharos

www.pharosproject.net

Cradle to Cradle

www.c2ccertified.org

GreenGuard

www.greenguard.org

Other LEED v4 Resources:

ASTM International

www.astm.org

Building Green

www.buildinggreen.com

Green Wizard

<https://www.greenwizard.com>

CSR

CORPORATE SUSTAINABILITY REPORT

Sustainability at
ThyssenKrupp Elevator



Unlimited Possibilities

2011–2012 SUSTAINABILITY REPORT

ThyssenKrupp Elevator Americas



ThyssenKrupp

EPD

ENVIRONMENTAL PRODUCT

DECLARATION

SMaRT® Environmental Product Declaration (EPD)

This Declaration discloses information over the product's life cycle from raw material extraction, transportation, manufacture, use, and reuse or end of life.

ReGeneration by Knoll



Product Description

The model chosen for analysis is the ReGeneration by Knoll fully upholstered work chair with high performance arms and polished aluminum base (pattern no. 442HP4SXHC). This is the heaviest, fully optioned model and therefore the worst case scenario for LCA. This model has post-consumer recycle content of 31%, post-industrial recycle content of 15% and contains 2.5% rapidly renewable content.

ReGeneration is an everyday chair that simply supports the way you work. Innovative in its simplicity, ReGeneration minimizes materials and components, paring down without sacrificing key performance. With an eye toward conserving resources, ReGeneration uses recycled, rapidly-renewable and biobased materials.

Designed by Formway Design for Knoll

sithowyouwant.com

Manufacturer

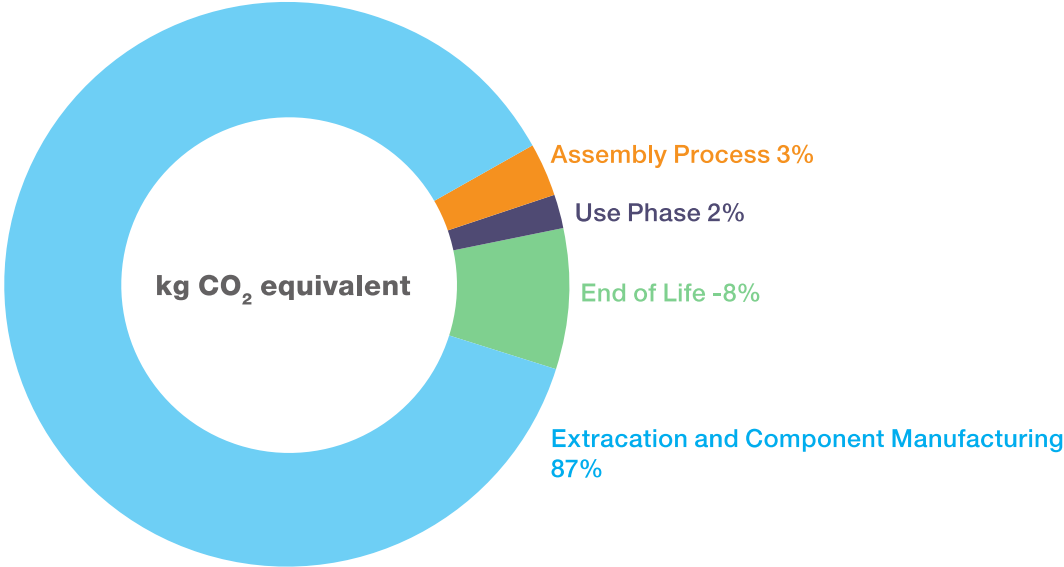
ReGeneration is manufactured in the Knoll Lubin Manufacturing Facility, 1235 Water Street, East Greenville, Pennsylvania—a LEED® Gold and ISO 14001 certified and VPP Star site—using clean technologies.

Knoll is an industry leader in policies and practices designed to protect the biosphere, conserve natural resources and reduce waste.

Knoll is the recipient of the 2011 National Design Award for Corporate and Institutional Achievement from the Smithsonian's Cooper-Hewitt, National Design Museum. Since 1938, Knoll has been recognized internationally for creating workplace and residential furnishings that inspire, evolve and endure. Today, our commitment to modern design, our understanding of the workplace and our dedication to sustainable design has yielded a unique portfolio of products that respond and adapt to changing needs. Knoll is aligned with the U.S. Green Building Council and the Canadian Green Building Council and can help companies achieve Leadership in Energy and Environmental Design LEED® workplace certification. Knoll is the founding sponsor of the World Monuments Fund Modernism at Risk program.

For further information, visit knoll.com.

ReGeneration CO₂ Footprint by Life Cycle Stage



Material Declaration

ReGeneration consists of the materials listed below, comprising 1% or more by weight. The total chair weight is 34.8 pounds excluding packaging. Cardboard packaging weighs 8.0 pounds.

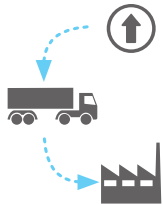
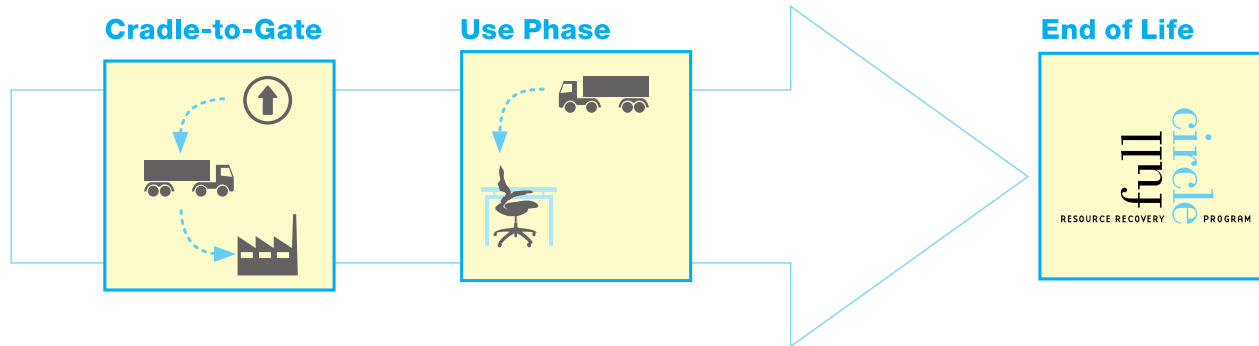
Metals	lbs	%
Aluminum	6.74	19.36
Steel	4.77	13.72
Zinc	0.39	1.13

Plastics	lbs	%
PA 6	2.97	8.52
PA 66	1.073	3.08
PP	0.58	1.67
ABS	1.05	3.02
PU	3.95	11.34
PBT	1.18	3.39
PET	5.36	15.41

Other	lbs	%
Glass	3.305	9.50
Fabric	1.45	4.17

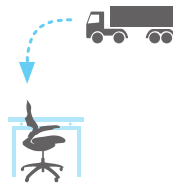
Life Cycle Inventory Analysis

The Life Cycle Inventory Analysis covers the entire life cycle stages as shown below.



Cradle-to-gate

Includes raw materials extraction, transport of materials to Knoll suppliers, transformation of materials to parts and components, including the manufacturing processes for main parts, and the transport of parts to Knoll. The Cradle to Gate also includes receipt of parts to Knoll and all production and assembly processes through to the Knoll shipping dock.



Use Phase

This phase includes transport to the customer and use of the product, where no relevant environmental impact occurs including for installation.



End of life

Recycling and resource recovery are included in the LCA. It is assumed that the metals used to construct the chair are recovered. Knoll encourages customers to pursue the Knoll Full Circle program at the end of life, depending on condition of the product, options include resale, repurpose to non-profit organizations in their community, recycling, and/or converting materials not readily recyclable to clean Energy-from-Waste (EfW). Visit www.knoll.com/fullcircle for more details.

Environmental Impact Potential

LCA Criteria	Cradle-to-gate	Use Phase	End of Life	Total
Global Warming <i>kg CO₂ equivalent</i>	78.17	1.6	-7.22	72.54
Stratospheric Ozone Depletion <i>kg CFC equivalent</i>	8.9e-7	0	-4.37e-7	4.54e-7
Acidification <i>kg H⁺ moles equivalent</i>	20.570	6.561	-1.399	19.419
Eutrophication <i>kg N equivalent</i>	0.074	0.001	-0.017	0.057
Photochemical Smog <i>kg O₃ equivalent</i>	4.180	0.23	-0.25	4.16
Ecological Toxicity <i>Air, Water, Soil PAF m3 day/kg</i>	97.12	0.06	-73.1	24.08
Human Health Toxicity <i>kg DCB equivalent</i>	8.19	.02	-4.59	3.62
Human Health Criteria <i>Air-kg of PM10 equivalent</i>	.115	0.00	-.003	.112
Fossil Fuel Depletion <i>kg Oil equivalent</i>	32.522	.336	-2.134	30.724
Solid /Hazardous Waste <i>kg disposed Gate to Gate</i>	N/A	0.00	0.00	0.00
Water Depletion <i>m3</i>	83.05	.068	-21.934	61.184

HPD

HEALTH PRODUCT DECLARATION

CLASSIFICATION:

PRODUCT DESCRIPTION:



Section 1: Summary

CONTENT INVENTORY

Threshold (per material)

☐ 100 ppm☐ 1,000 ppm☐ Per GHS SDS☐ Per OSHA MSDS☐ OtherResiduals and impurities
considered in
X of Y materials☐ see Section 2: Material Notes☐ see Section 5: General Notes

Based on the selected Content Inventory Threshold:

Characterized.....

☒ Yes ☐ NoAre the Percent Weight and Role provided
for all substances?

Screened.....

☒ Yes ☐ NoAre all substances screened using Priority
Hazard Lists with results disclosed?

Identified.....

☒ Yes ☐ NoAre all substances disclosed by Name
(Specific or Generic) and Identifier?

CONTENT IN DESCENDING ORDER OF QUANTITY

Summary of product contents and results from screening individual chemical substances against HPD Priority Hazard Lists and the GreenScreen for Safer Chemicals*. The HPD does not assess whether using or handling this product will expose individuals to its chemical substances or any health risk. Refer to Section 2 for further details.

MATERIAL | **SUBSTANCE** | **RESIDUAL OR IMPURITY**

GREENSCREEN SCORE | HAZARD TYPE

Number of GreenScreen BM-4/BM-3 contents:

Contents highest concern GreenScreen

Benchmark or List Translator Score:

Nanomaterial:

INVENTORY AND SCREENING NOTES

VOLATILE ORGANIC COMPOUND (VOC) CONTENT

Material (g/l):

Regulatory (g/l):

Does the product contain exempt VOCs?

Are ultra-low VOC tints available?

CERTIFICATIONS AND COMPLIANCE

VOC Emissions: Name of Certification

Type of Certification: Name of Certification

Type of Certification: Name of Certification

See Section 3 for additional listings.

☒ Self-Published*

VERIFIER:

☐ Third Party Verified

VERIFICATION #:

SCREENING DATE:

RELEASE DATE:

EXPIRY DATE*:

* or within 3 months of significant
change in product contents

* See HPD website for details



Section 2: Content in Descending Order of Quantity

This section lists materials in a product and the substances in each material based on the Inventory Threshold for each material. If residuals or impurities from the manufacturing or extraction processes are considered for a material, these are inventoried and characterized to the extent described in the Material and/or General Notes. Chemical substances are screened against the HPD Priority Hazard Lists for human and environmental health impacts. Screening is based on best available information; "Not Found" does not necessarily mean there is no potential hazard associated with the product or its contents. More information about Priority Hazard Lists and the GreenScreen can be found online: www.hpd-collaborative.org and www.greenscreenchemicals.org.

MATERIAL NAME

% :HPD URL:

INVTRESHOLD:RESIDUALS/IMPURITIES:

MATERIAL NOTES:

SUBSTANCE NAME

ID:

%:GS:RC:NANO:ROLE:

HAZARDS:AGENCY(IES) WITH WARNINGS:

SUBSTANCE NOTES:

SUBSTANCE NAME

ID:

%:GS:RC:NANO:ROLE:

HAZARDS:AGENCY(IES) WITH WARNINGS:

SUBSTANCE NOTES:

SUBSTANCE NAME

ID:

%:GS:RC:NANO:ROLE:

HAZARDS:AGENCY(IES) WITH WARNINGS:

SUBSTANCE NOTES:

RESIDUAL OR IMPURITY

ID:

%:GS:RC:NANO:ROLE:

HAZARDS:AGENCY(IES) WITH WARNINGS:

SUBSTANCE NOTES:



Section 3: Certifications and Compliance

This section lists applicable certification and standards compliance information for VOC emissions and VOC content. Other types of health or environmental performance testing or certifications completed for the product may be provided.

VOC EMISSIONS

Name of Certification or Compliance

CERTIFYING PARTY:

ISSUE DATE:

EXPIRY DATE:

CERTIFIER OR LAB:

APPLICABLE FACILITIES:

CERTIFICATE URL:

CERTIFICATION AND COMPLIANCE NOTES:

TYPE OF CERTIFICATION

Name of Certification or Compliance

CERTIFYING PARTY:

ISSUE DATE:

EXPIRY DATE:

CERTIFIER OR LAB:

APPLICABLE FACILITIES:

CERTIFICATE URL:

CERTIFICATION AND COMPLIANCE NOTES:



Section 4: Accessories

This section lists related products or materials that the manufacturer requires or recommends for installation (such as adhesives or fasteners), maintenance, cleaning, or operations. For information relating to the contents of these related products, refer to their applicable Health Product Declarations, if available.

ACCESSORY PRODUCT OR MATERIAL NAME

PD URL:

CONDITION WHEN RECOMMENDED OR REQUIRED AND/OR OTHER NOTES:



Section 5: General Notes



MANUFACTURER INFORMATION

MANUFACTURER:

CONTACT NAME:

ADDRESS:

TITLE:

PHONE:

EMAIL:

WEBSITE:

KEY

OSHA MSDS	Occupational Safety and Health Administration Material Safety Data Sheet
GHS SDS	Globally Harmonized System of Classification and Labeling of Chemicals Safety Data Sheet

Hazard Types

AQU	Aquatic toxicity	GLO	Global warming	PHY	Physical Hazard (reactive)
CAN	Cancer	MAM	Mammalian/systemic/organ toxicity	REP	Reproductive toxicity
DEV	Developmental toxicity	MUL	Multiple hazards	RES	Respiratory sensitization
END	Endocrine activity	NEU	Neurotoxicity	SKI	Skin sensitization/irritation/corrosivity
EYE	Eye irritation/corrosivity	OZO	Ozone depletion	LAN	Land Toxicity
GEN	Gene mutation	PBT	Persistent Bioaccumulative Toxic	NF	Not found on Priority Hazard Lists

GreenScreen (GS)

BM-4	Benchmark 4 (prefer-safer chemical)	LT-P1	List Translator Possible Benchmark 1
BM-3	Benchmark 3 (use but still opportunity for improvement)	LT-1	List Translator Likely Benchmark 1
BM-2	Benchmark 2 (use but search for safer substitutes)	LT-UNK	List Translator Benchmark Unknown (insufficient information from List Translator lists to benchmark)
BM-1	Benchmark 1 (avoid - chemical of high concern)		
BM-U	Benchmark Unspecified (insufficient data to benchmark)	UNK	Unknown (no data on List Translator Lists)

Recycled Types

PreC Preconsumer (Post-Industrial)**PostC** Postconsumer**Both** Both Preconsumer and Postconsumer**Unk** Inclusion of recycled content is unknown**None** Does not include recycled content

Other

Nano Composed of nanoscale particles or nanotechnology

Declaration Level

Self-declared	Manufacturer's self-declaration (First Party)
Independent Lab	Manufacturer's self-declaration using results from an independent lab
Second Party	Verification by trade association or other interested party
Third Party	Verification by independent certifier
Applicable facilities	Manufacturing sites to which testing applies

The Health Product Declaration (HPD) Open Standard provides for the disclosure of product contents and potential associated human and environmental health hazards. Hazard associations are based on the HPD Priority Hazard Lists, the GreenScreen List Translator, and when available, full GreenScreen assessments. The HPD Open Standard does not provide an assessment of health impacts throughout the product life cycle. It does not provide an assessment of exposure or risk associated with product handling or use. It also does not address potential health impacts of: (i) substances used or created during the manufacturing process unless they remain in the final product, or (ii) substances created after the product is delivered for end use (e.g., if the product burns, degrades, or otherwise changes chemical composition).

The HPD Open Standard was created and is maintained and evolved by the Health Product Declaration Collaborative (the HPD Collaborative), a customer-led organization composed of stakeholders throughout the building industry. The HPD Collaborative is committed to the continuous improvement of building products through transparency, openness, and innovation throughout the product supply chain.

A disclosure completed in compliance with the HPD Open Standard is referred to as a "Health Product Declaration," or "HPD." The product manufacturer and any applicable independent verifier are solely responsible for the accuracy of statements and claims made in this HPD and for compliance with the HPD Open Standard noted.

CRADLE TO CRADLE

At its core, Cradle to Cradle design perceives the safe and productive processes of nature's 'biological metabolism' as a model for developing a 'technical metabolism' flow of industrial materials. Product components can be designed for continuous recovery and reutilization as biological and technical nutrients within these metabolisms.



Find more Certified products at
www.C2Certified.org

This list of nearly 250 product lines for the Built Environment represent more than 1000 sku's that are Cradle to Cradle Certified and will to contribute to LEED v4 MRc4 Option 1

CSI Sub-Category	Organization Name	Product Name	Protocol Version	Overall Certification Level
06 10 00 - Rough Carpentry	Accsys Technologies PLC	Accoya® Wood (Radiata Pine & Alder)	2.1.1	Gold
	AGC Glass Europe	Coated Glass	2.1.1	Silver
08 50 00 - Windows	AGC Glass Europe	Lacobel, Matelux, Matelac and Mirox	2.1.1	Silver
08 50 00 - Windows	AGC Glass Europe	Float Glass and Magnetron Coated Glass	2.1.1	Silver
	Alcoa, Inc.	Versoleil™ Sunshade Outrigger System and Ver:	2.1.1	Silver
05 10 00 - Structural Metal Framing	Alcoa, Inc.	Kawneer 1600 Wall® System1 and System2	2.1.1	Silver
	Alcoa, Inc.	Kawneer InLighten® Light Shelf	2.1.1	Silver
	Allied Concrete	Oyster Castles®	2.1.1	Gold
03 30 00 - Cast-in-Place Concrete	Allied Concrete	Allied Concrete 3000/3500/4000 PSI Concrete	2.1.1	Silver
03 50 00 - Cast Decks and Underlayment	Allied Concrete	Allied Concrete Company Pervious Concrete	2.1.1	Silver
03 40 00 - Precast Concrete	Allied Concrete	Allied Concrete Products, LLC Concrete Masonry	2.1.1	Silver
03 40 00 - Precast Concrete	Allied Concrete	Allied Redi-Rock Retaining Wall Units	2.1.1	Silver
	Anderson Hardwood Floors	Anderson Hardwood Flooring	2.1.1	Silver
09 50 00 - Ceilings	Armstrong Building Products	Alpina	2.1.1	Silver
09 50 00 - Ceilings	Armstrong Building Products	Perla OP 0.95	2.1.1	Silver
09 50 00 - Ceilings	Armstrong World Industries	BioAcoustic Infill Panel	2.1.1	Silver
07 20 00 - Thermal Protection	BAUFRITZ-GmbH & CO. KG	HOIZ Insulation	2.1.1	Gold
09 60 00 - Flooring	Bentley Mills, Inc.	Piece-dyed and Solution Dyed Broadloom Carpe	2.1.1	Silver
07 40 00 - Roofing and Siding Panels	Bonar Xeroflor GmbH	xero flor® vegetation	2.1.1	Silver
04 20 00 - Unit Masonry	Boral Bricks, Inc.	Boral Bricks	2.1.1	Silver
	Boral Composites	Boral Trim	2.1.1	Silver
07 40 00 - Roofing and Siding Panels	Boral Roofing (US Tile Co)	Clay Tiles (Corona Facility)	2.1.1	Silver

PHAROS


[the signal news & notes](#)
[building product library](#)
[chemical and material library](#)
[certifications and scoring](#)

Building Product Library

There are 1266 products profiled in the Building Product Library

Get the details on a product's pros, cons, material contents and alternatives.

- Learn what's inside each product thanks to manufacturer participation and disclosure and independent research by the Pharos team.
- See how products score on VOCs, Toxic Content, Manufacturing Toxics, Renewable Materials, Renewable Energy and Reflectance.
- Evaluate and compare alternatives according to your needs or preferences.
- See health hazards of material contents without leaving the product profile.

Find Out What's Really in Building Products

- Detailed material contents listings automatically screen for health hazards in the Chemical and Material Library
- In-depth research by the Pharos team fills in the gaps where contents are undisclosed

Material Content

Material	Max% - Min%	Toxic Content
LIMESTONE; CALCIUM CARBONATE CAS RN: 1317-65-3	84.0 - 84.0	RESPIRATORY
POLYVINYL CHLORIDE (PVC) CAS RN: 9002-86-2	12.0 - 12.0	RESPIRATORY
BUTYL BENZYL PHTHALATE (BBP) CAS RN: 85-68-7	4.0 - 1.0	REPRODUCTIVE
DISONONYL PHTHALATE (DINP) CAS RN: 28553-12-0	4.0 - 1.0	DEVELOPMENTAL

Impact Category Scores

7	VOC :: Volatile Organic Compounds
4	ToxCon :: Toxic Content
2	MtTox :: Manufacturer Toxics
1	RnMtrl :: Renewable Materials
3	RnEng :: Renewable Energy

Pros

- Content: Fully disclosed
- No Bisphenol A (BPA) listed
- No Formaldehyde listed
- No Halogenated Flame Retardants (HFRs) listed
- No Perfluorocarbons (PFCs) listed
- No Nanomaterials listed

Cons

- Contains LBC Red List chemicals
- Contains EPA Chemicals of Concern
- Contains 1100 Blueprints 11

Easily Compare Product Pros and Cons

- Pros and cons are highlighted for easy comparison
- Products are scored for VOCs, Toxic Content, Manufacturing Toxics, Renewable Materials, Renewable Energy and Reflectance impacts
- Scoring details link to transparent scoring protocols and extensive certifications library

Product Categories

Adhesives [\(description\)](#)

- Carpet Adhesives
- Resilient Flooring Adhesives
- Resilient Flooring Adhesive Components
- Roofing Membrane Adhesives
- Roofing Membrane Adhesive Components
- Wall Protection Adhesive
- Wood Flooring Adhesives
- Wood Flooring Adhesive Components

Ceilings [\(description\)](#)

- Acoustical Ceilings
- Acoustical Ceilings Components
- Specialty Ceilings
- Specialty Ceiling Components

Composite Wood [\(description\)](#)

- Composite Wood Components
- [\(description\)](#)
- MDF
- OSB [\(description\)](#)
- Particle Board
- Plywood
- Wheatboard

Countertops

- Decorative Laminates [\(description\)](#)
- Solid Surfaces [\(description\)](#)

Decorative Laminates [\(description\)](#)

Search Results for Solid Surfaces

CSI Masterformat 2004 Designation: 12 36 23

[Reset Search](#)

There are 13 products that meet your search criteria.

Sort by: [VOC](#) | [ToxCon](#) | [MfrTox](#) | [RnMtrl](#) | [RnEnrg](#) | [Manufacturer Participation](#) | [Product Title](#) | [Manufacturer](#)

Corian® Terra Collection

<u>VOC</u>	<u>ToxCon</u>	<u>MfrTox</u>	<u>RnMtrl</u>	<u>RnEnrg</u>
7	5	5	1	1

DuPont Canada

No Manufacturer Participation

Chroma

<u>VOC</u>	<u>ToxCon</u>	<u>MfrTox</u>	<u>RnMtrl</u>	<u>RnEnrg</u>
7	5	5	2	1

3form

Complete Manufacturer Participation

Hanex Solid Surfaces

<u>VOC</u>	<u>ToxCon</u>	<u>MfrTox</u>	<u>RnMtrl</u>	<u>RnEnrg</u>
7	5	5	1	1

Hanwha L&C

No Manufacturer Participation

HI-MACS Eden Plus Surfaces (colors: Sugar Maple, Poplar, Horse Chestnut, Walnut, Birch Bark, Pecan, Hickory, and Mountain Ash)

<u>VOC</u>	<u>ToxCon</u>	<u>MfrTox</u>	<u>RnMtrl</u>	<u>RnEnrg</u>
7	5	5	2	1

LG Hausys America, Inc

No Manufacturer Participation

Staron Solid Surface (Pebble Fennel, Sanded Noir)

<u>VOC</u>	<u>ToxCon</u>	<u>MfrTox</u>	<u>RnMtrl</u>	<u>RnEnrg</u>
7	5	5	2	1

Samsung Chemical USA, Inc

No Manufacturer Participation

Wilsonart Solid Surface

<u>VOC</u>	<u>ToxCon</u>	<u>MfrTox</u>	<u>RnMtrl</u>	<u>RnEnrg</u>
7	5	5	1	1

Wilsonart International

No Manufacturer Participation

Wilsonart Solid Surface

Wilsonart International


Impact Category Scores

7	VOC :: Volatile Organic Compounds	Meets CDPH office or school VOC emissions test - 3rd party independent certification
5	ToxCon :: Available Toxic Content	Base score of 5 for Orange flagged content POLYMETHYL METHACRYLATE (PMMA) No Adjustment - Content Available. Hazard Sublist: (Association of Occupational and Environmental Clinics)
5	MfrTox :: Manufacturing Toxics	Red Flag Frequent Manufacturing Chemical Aromatic naphtha, type 1 Hazard Sublist: (European Commission)
1	RnMtrl :: Renewable Materials	Low amount of medium value renewable materials
1	RnEnrg :: Renewable Energy	No or insignificant renewable energy used

[Detail >>](#)

Material Content

Total renewable content: 12% Pre-consumer recycled

Material	Min% - Max%	Toxic Content	Manufacturing Toxics	Renewable
ALUMINA HYDROXIDE CAS RN: 21645-51-2	40.0 - 70.0		RESPIRATORY	
POLYMETHYL METHACRYLATE (PMMA) CAS RN: 9011-14-7	20.0 - 50.0	RESPIRATORY	CANCER	
METHYL METHACRYLATE CAS RN: 80-62-6	0.1 - 1.0	RESPIRATORY	RESPIRATORY	

No Manufacturer Participation , Complete Content Record 

[Detail >>](#)

Product Certifications

- [GreenGuard \(Children & Schools\)](#) - [GreenGuard Environmental Institute \(GEI\)](#)
- [SCS Material Content \(Recycled content\)](#) - [Scientific Certification Systems \(SCS\)](#)

Pros

- No LBC Red List chemicals listed
- No EPA Chemicals of Concern listed
- No LEED Pilot Credit 11 chemicals listed
- No Bisphenol A (BPA) listed
- No Formaldehyde listed
- No Phthalates listed
- No Halogenated Flame Retardants (HFRs) listed
- No Perfluorocarbons (PFCs) listed
- No Nanomaterials listed
- Medium value renewable material content

[Detail >>](#)

Cons

- No Manufacturer Participation
- Low amount of renewable material content

[Detail >>](#)

Unknown

- Antimicrobials unknown

[Detail >>](#)

DECLARE



Product Database

HOW TO USE THE DECLARE DATABASE:

Products are listed by CSI division number, and are filterable by CSI division. Each product has a Declare label that can be viewed by clicking on the product name.

- FOR CONSUMERS
- FOR MANUFACTURERS
- PRODUCT DATABASE

➤ DECLARE LABEL EXPLANATION

Select a division to refine your listing

Select a State/Province

Apply

Reset

Declare ID	Product Name	CSI Master Format Division	Manufacturer Name	City	State/Province	Country	LBC Red List Status
ALP-0002	DeTerra Biobased polymer wall protection w/ Aluminum – Natural	Division 10 - Specialties	Alpar Architectural Products, LLC	Wassaic	NY	USA	Red List Free
ALP-0001	DeTerra Biobased polymer wall protection – Natural	Division 10 - Specialties	Alpar Architectural Products, LLC	Wassaic	NY	USA	Red List Free
ASA-0001	Trio-E Steel Stiffened Hollow Metal Door	Division 8 - Doors and Windows	Assa Abloy	Milan	TN	USA	
ACY-0001	Accoya® wood	Division 6 - Wood and Plastics	Accsys Technologies, PLC	Arnhem	Gelderland	the Netherlands	Red List Free
CAC-0005	Aluminum Coil Drapery	Division 12 - Furnishings	Cascade Coil Drapery, Inc.	Tualatin	OR	USA	Red List Free

ENVIRONMENTAL PRODUCT DECLARATIONS	MR2	MR3	MR4
HEALTH PRODUCT DECLARATIONS			MR4
CRADLE TO CRADLE	MR2		MR4
PHAROS	MR2		
DECLARE	MR2		
INDUSTRY DECLARATIONS (AT 50%)	MR2		
PRODUCT DECLARATIONS (AT 25%)	MR2		
CORPORATE SUSTAINABILITY REPORT		MR3	
MANUFACTURERS INVENTORY (AT 50%)		MR3	MR4
GREEN SCREEN			MR4
CERTIFIED BY R.E.A.C.H.			MR4

Capital Tower LEEDv4 Pre-Certification MR 2, 3 and 4

September 18, 2013

	CSI Category	Sub category	Manufacturer	Genier Specified Product	MRC Suggested Product	EPD MR 2,3,4	Declare MR2	Pharos MR 2	C2C MR 2, 4	Industry Spec MR 2	C. S. Report MR3	Great Screen MR 3, 4	HPD MR 4	MR 2 Credit Value	MR 3 Credit Value	MR 4 Credit Value	Contact Info	Web Sites
03 54 16	Underlayment	Tendon supports	Ardex	K-15						1			0	0.5	1		info@ardexamericas.com	http://www.ardexamericas.com/en-us/Americas/environ/Pages/EnvironmentalCommitment.aspx
		Sound Mat	Dura Undercushions	Duracoustic						1			0	0.5	1		info@dura-undercushions.com	http://www.duracushion.com/environment/
			Maxxon	Enkasonic													greeninfo@maxxon.com	http://www.maxxon.com/go_green
			USG Corp	Levelrock Brand Sound Reduction Mat					1				0	1	0		info@dura-undercushions.com	http://www.usg.com/ecoblueprint/sustainable-solutions.html
04 22 13	Concrete Masonry Units	CMU	Allied Concrete Co		CMU		1	1					1	0	1		alliedsales@allied-concrete.com, http://www.alliedconcrete.com/	http://c2ccertified.org/products/scorecard/allied_concrete_products_llc_concrete_masonry_units
04 42 00	Exterior Stone	Stone	Coldspring		Dimensional Granite	1							1	0	0		(800) 328-5040	http://www.declareproducts.com/node/73
			Consentino group		Eco	1		1					1	1	1		adama@cosentinousa.com	http://www.environdec.com/en/Detail?Epd=7938#_UijqHxbj6AP
04 72 00	Cast Stone	Cast Stone	Boral		Cultured Stone				1				0	1	0		(800) 255-1727	http://www.boralna.com/stonemasonryveneer/PDF/Green-Data-Sheet.pdf
05 12 00	Structural Steel Framing	Non Shrink Grout	USG Corp	Five Star Grout					1				0	1	0		sales@fivestarprouducts.com	http://www.fivestarprouducts.com/cementgrouts/grout.html
		Building system			ConXtech			1					1	0	1			http://c2ccertified.org/products/scorecard/ConXtech_ConXL_ConXR
05 75 00	Decorative Formed Metals	Coating	Superior Products		Enamo Grip			1					1	0	1		http://www.spicoatings.com	http://c2ccertified.org/products/scorecard/enamo_grip
06 10 53	Dimensional Lumber	Particle board	Collins Pine		Free Form	1	1	1	1				1	0.5	1		Brian Hurdle (800) 329-1219 x2242	http://www.declareproducts.com/node/99











	CSI Category	Sub category	Manufacturer	Gensler Specified Product	MRC Suggested Product		EPD MR 2,3,4	Declare MR2	Pharos MR 2	C2C MR 2, 4	Industry Spec MR 2	C. S. Report MR 3	M. Inventory MR 3	Green Sc	HF
03 54 16	Underlayment	Tendon supports	Ardex	K-15								1			
		Sound Mat	Dura Undercushions	Duracoustic								1			
			Maxxon	Enkasonic											
			USG Corp	Levelrock Brand Sound Reduction Mat						1					
04 22 13	Concrete Masonry Units	CMU	Allied Concrete Co		CMU			1	1						
04 42 00	Exterior Stone	Stone	Coldspring		Dimensional Granite		1								
			Consentino group		Eco	1			1						

		EPD MR 2,3,4	Declare MR2	Pharos MR 2	C2C MR 2, 4	Industry Spec MR 2	C. S. Report MR 3	M. Inventory MR 3, 4	Green Screen MR 4	HPD MR 4	MR 2 Credit Value	MR 3 Credit Value	MR 4 Credit Value	Contact Info
		1								1	0	0		
		1								1	0	0		
			1							1	0	1		
		1								1	0	0		

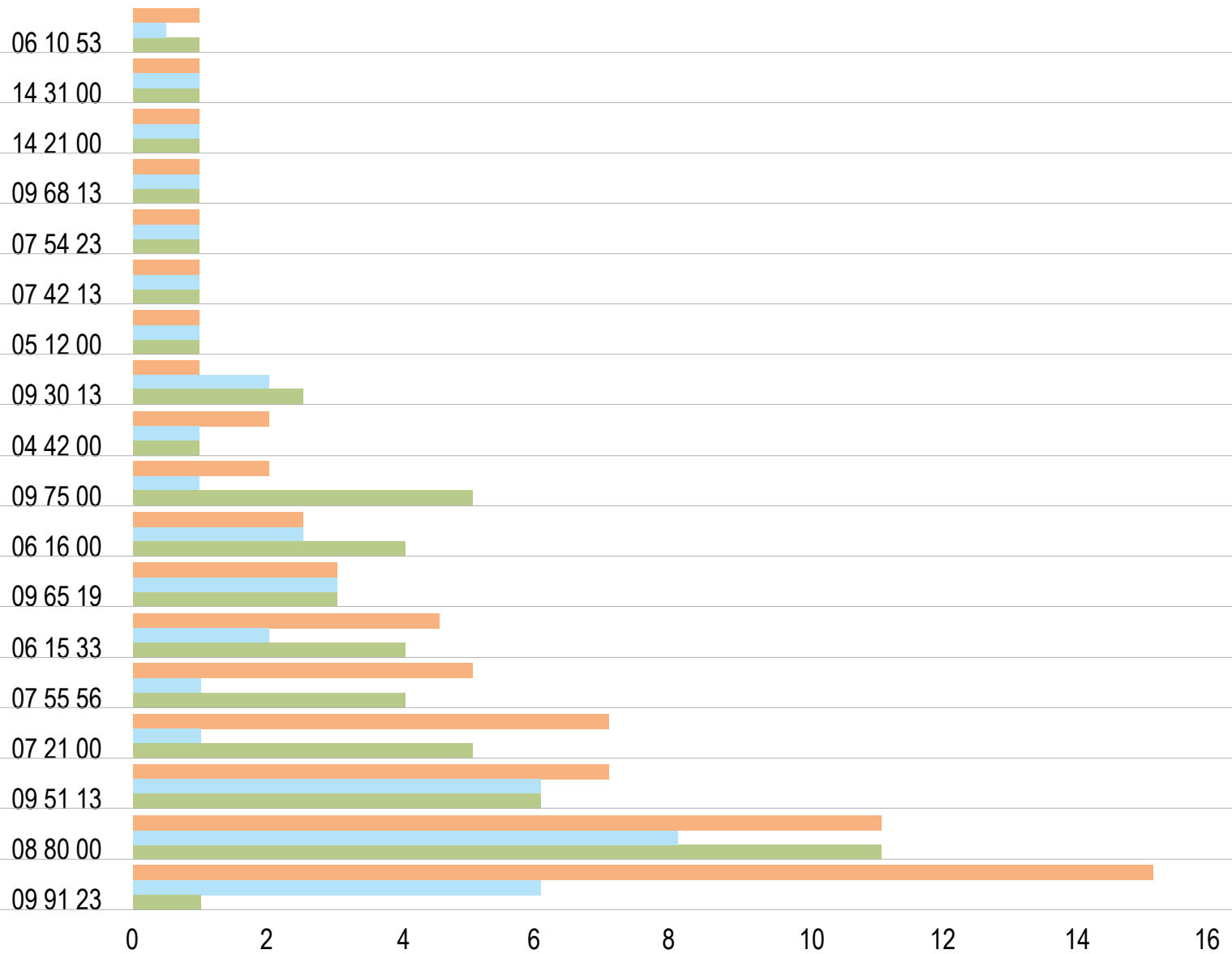
Capital Tower LEEDv4 Pre-Certification MR 2, 3 and 4

September 18, 2013

CSI Category	Sub category	Manufacturer	General Specified Product	MRC Suggested Product	EPD MR 2,3,4	Declare MR2	Pharos MR2	CIC MR2, 4	Industry Spec MR2	C S Report MR2	M Inventory MR3	Green Screen MR3	HPD MR 4	MR 2 Credit Value	MR 3 Credit Value	MR 4 Credit Value	Contact Info	Web Sites
09 91	Coatings	Dunn Edwards		W 603		1							1	0	0			http://www.pharosproject.net/product/show/id/1000898
		Dunn Edwards		ENSO Primer		1							1	0	0			http://www.pharosproject.net/product/show/id/1000898
				Enamo grip			1						1	0	1			http://c2ccertified.org/products/scorecard/enamo_grip
09 91 23	Interior Paint	Benjamin Moore		Ultra Spec 500, Eco Spec WB		1							1	0	0			http://www.pharosproject.net/product/show/id/1003179 , http://www.pharosproject.net/product/show/id/1000884
		Benjamin Moore		Ultra Spec 500, Eco Spec WB		1							1	0	0			http://www.pharosproject.net/product/show/id/1003179 , http://www.pharosproject.net/product/show/id/1000884
		Kelly Moore		Enviro Coat Acrylic		1							1	0	0			http://www.pharosproject.net/product/show/id/1001369 , http://www.pharosproject.net/product/show/id/1000922
		Kelly Moore		Enviro Coat Enamel		1							1	0	0			http://www.pharosproject.net/product/show/id/1001369 , http://www.pharosproject.net/product/show/id/1000922
		PPG Architectural Finishes		Lifemaster Interior SemiGloss_Pure		1		1					1	1	0			http://www.pharosproject.net/product/show/id/1002030 , http://www.pharosproject.net/product/show/id/1003424
		PPG Architectural Finishes		Lifemaster Interior SemiGloss_Pure		1		1					1	1	0			http://www.pharosproject.net/product/show/id/1002030 , http://www.pharosproject.net/product/show/id/1003424
		PPG Architectural Finishes		Lifemaster Interior SemiGloss_Pure		1		1					1	1	0			http://www.pharosproject.net/product/show/id/1002030 , http://www.pharosproject.net/product/show/id/1003424
		PPG Architectural Finishes		Lifemaster Interior SemiGloss_Pure		1		1					1	1	0			http://www.pharosproject.net/product/show/id/1002030 , http://www.pharosproject.net/product/show/id/1003424
		PPG Architectural Finishes		Lifemaster Interior SemiGloss_Pure		1		1					1	1	0			http://www.pharosproject.net/product/show/id/1002030 , http://www.pharosproject.net/product/show/id/1003424
		PPG Architectural Finishes		Lifemaster Interior SemiGloss_Pure		1		1					1	1	0			http://www.pharosproject.net/product/show/id/1002030 , http://www.pharosproject.net/product/show/id/1003424
		PPG Architectural Finishes		Lifemaster Interior SemiGloss_Pure		1		1					1	1	0			http://www.pharosproject.net/product/show/id/1002030 , http://www.pharosproject.net/product/show/id/1003424
12 48 13	Resilient Entrance Mats	CS Group		Pedisystems			1						1		1		kip@thekipco.com	http://www.pedisystems.com/
		Entrance Mats		EMCO Ecoline Pioneer				1					1	0	1			http://c2ccertified.org/products/scorecard/emco_ecoline_pioneer
		ThyssenKrupp Elevator	TAC50		1				1				1	1	1		Brad Nemeth, Monica Miller	http://thyssenkruppelevator.com/downloads2/CSR_Report.pdf
14 31 00	Escalators	ThyssenKrupp Escalators			1				1				1	1	1		Brad Nemeth, Monica Miller	http://thyssenkruppelevator.com/downloads2/CSR_Report.pdf
		Mechosystems		Mechosystems			1						0	1	0			http://c2ccertified.org/products/category/building_materials/reg_product_name/IP60
TOTAL					29	12	34	32	5	23	7	0	3	94	45	62		

-  03 10 00 EPD Nord Zinc Hot Dip Galvanizing Coating.pdf
-  03 20 00 EPD Alfa Acciai Round Steel Bars.pdf
-  03 20 00 EPD Celsa Steel Service Round Steel Bars.pdf
-  03 20 00 EPD Feralpi Round steel bars.pdf
-  03 20 00 EPD Ferriera Valsabbia Deformed Steel Bars.pdf
-  03 20 00 EPD Riunite Round Steel Bars.pdf
-  03 30 00 EPD Buzzi Unicem Ready-Mix Concrete.pdf
-  04 42 00 EPD Consentino Group Eco.pdf
-  04 72 00 EPD Calstar brick.pdf
-  06 15 33 EPD Accoya Wood Products.pdf
-  06 15 33 EPD Parklex Wood Cladding.pdf
-  06 16 00 EPD Gyproc Saint Gobain Glasroc Glass Mat Sheathing.pdf
-  06 20 23 EPD Financiera Maderera Particle boards.pdf
-  06 20 23 EPD Tokyo Board Industries Particleboard.pdf
-  07 21 00 EPD CertainTeed Kraft Faced and Unfaced Sustainable Insulation.pdf
-  07 21 00 EPD Dow Corning Vacuum Insulated panels

CSI NUMBER



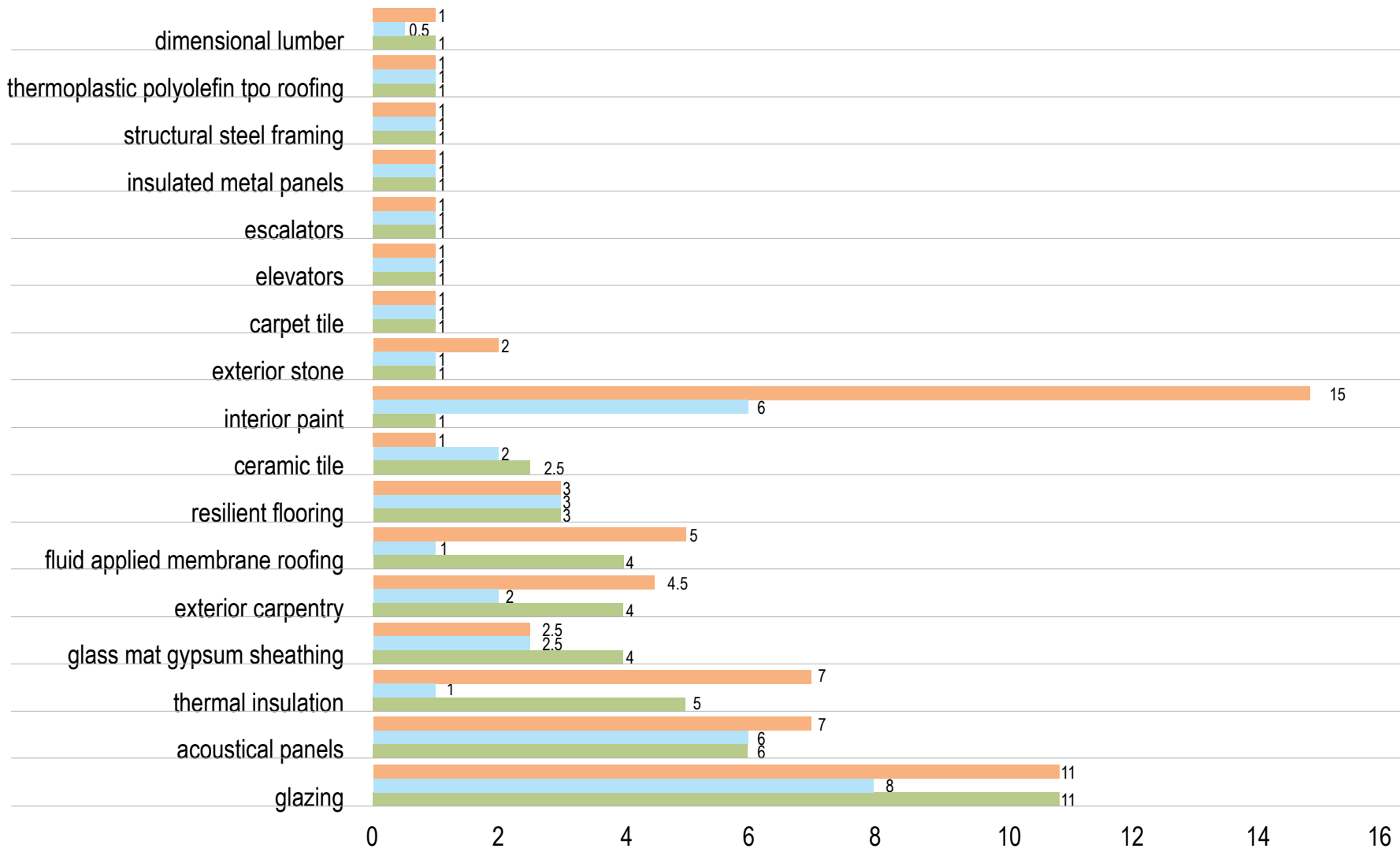
MATERIALS & RESOURCES MEETING LEED V4 CRITERIA

MR 2

MR 3

MR 4

ASSEMBLY CATEGORY

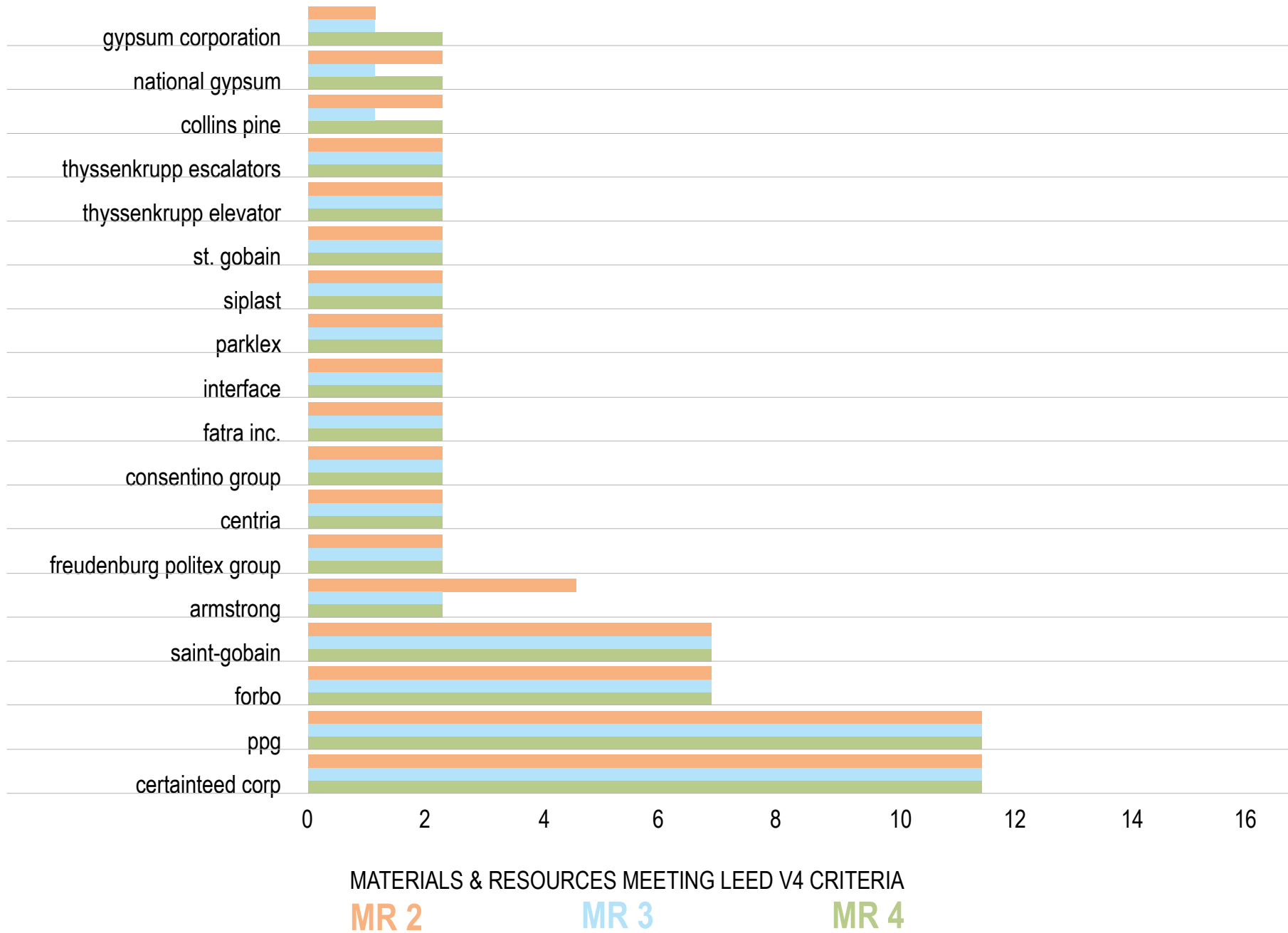


MATERIALS & RESOURCES MEETING LEED V4 CRITERIA

MR 2

MR 3

MR 4



Donna-

We do not have any EPD's as stated previously, as for MR 3 and MR 4 we do not provide sourcing or material ingredient due to proprietary reasons.

Thanks,

What is EPD?

STUDY 04

CARPET RECYCLERS

LOCATION	ADDRESS	CITY	ST	ZIP CODE	TELEPHONE	WEBSITE	E-MAIL
ARIZONA							
A-1 PLANET RECYCLING INC	1600 South Central Ave	Phoenix	AZ	85004	605 258 5600	www.planetre recyclingphoenix.com/	sal@planeta1.net
AMERICAN CARPET RECYCLERS LLC	2724 W McDowell Rd	Phoenix	AZ	85009	602 821 2226	no website	n/a
CALIFORNIA							
A-1 PLANET RECYCLING	1564 Jayken Way	Chula Vista	CA	91911	602 258 5600	www.planetre recyclingphoenix.com	rachel@planeta1.net
BEN LOMOND TRANSFER STATION	9835 Newell Creek Rd	Ben Lomond	CA	95005	831 336 3951	www.dpw.co.santa-cruz.ca.us/www.santacruzcountyrecycles/Facilities/index.html	Kasey Kolassa dpwwweb@co.santa-cruz.ca.us
BENTLEY PRINCE STREET	12641 Don Julian Rd	City of Industry	CA	91746	626 333 4585	www.bentleymills.com/	answers@bentleymills.com
BLACK BUTTE RECYCLING / TRANSFER STATION	3710 Springhill Drive	Mt. Shasta	CA	96067	530 842 8272	www.ci.mt-shasta.ca.us/bbts.php	aboyd@co.siskiyou.ca.us
BUENA VISTA TRANSFER STATION	6500 Buena Vista Rd	lone	CA	95640	209 274 2237	aceswaste.com/site/pages/bvtransferstation.cgi	paulsr@aceswaste.com
CAL SIERRA TRANSFER STATION	2 S Green St	Sonora	CA	95370	209 533 5604	no website	bbarlow@co.tuolumne.ca.us
CARPET PAD CONVERSION USA INC	1429 W 130th St	Garddena	CA	90249	714 299 4206	carpetpadconversion.com	carpetrecycler@gmail.com
	7551 Acacia Ave	Garden Grove	CA	92841	714 299 4206	carpetpadconversion.com	carpetrecycler@gmail.com
	1539 S State College Blvd	Anaheim	CA	92806	714 299 4206	carpetpadconversion.com	carpetrecycler@gmail.com
	2501 Commercial St	San Diego	CA	92113	714 299 4206	carpetpadconversion.com	carpetrecycler@gmail.com
CARPET SOLUTIONS DELLEKER	17100 Margay Ave	Carson	CA	90746	310 886 3800	www.carpetsolutions.com	jinsu@carpetsolutions.com
TRANSFER STATION	73980 Industrial Way	Delleker	CA	96122	530 283 6268	www.intermountaindisposal.com/disposal_sites.html	rickyross@intermountaindisposal.com

CEILING TILE RECYCLERS

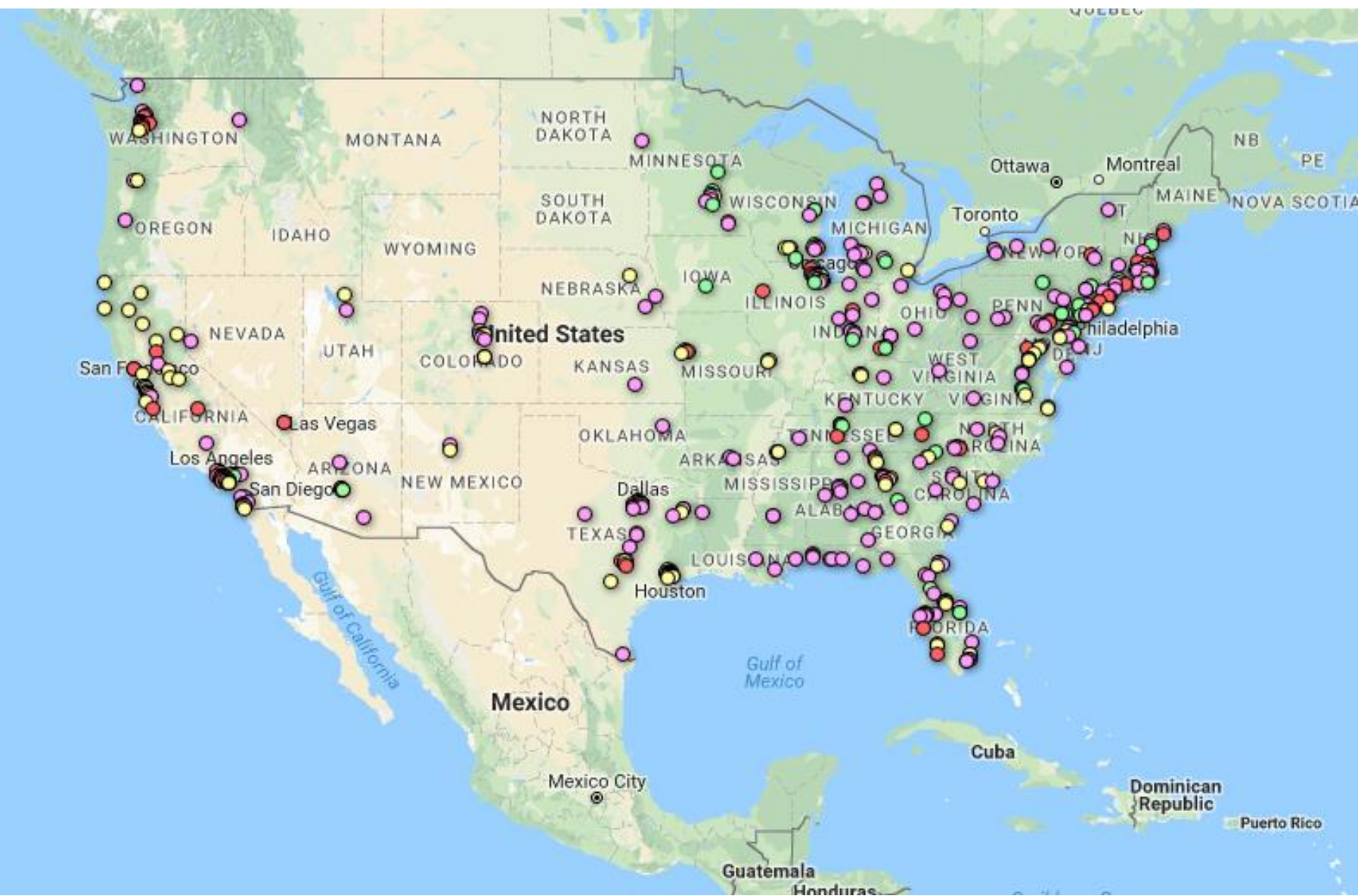
LOCATION	ADDRESS	CITY	ST	ZIP CODE	TELEPHONE	WEBSITE	E-MAIL
ALABAMA							
CAPITOL MATERIALS OF AL	340 Ball St	Birmingham	AL	35234	(205) 841-6100	www.capmat.com	contact thru website
	8548 E 1-65 Service Rd	Mobile	AL	36617	(251) 452-6161	www.capmat.com	contact thru website
CEMEX #1291	5540 Hamilton Blvd	Theodore	AL	36582	(251) 653-4277	www.cemexusa.com/	contact thru website
DIXIE ACOUSTICAL CONTRACTORS INC	1901 29th Ave N	Birmingham	AL	35207	(205) 251-8131	www.dixieacoustical.com/	dixiea@dixieacoustical.com.
FLINT RIVER MATERIALS INC OF DOTHAN	482 Bic Rd	Dothan	AL	36303	(334) 673-9747	www.gms.com/	contact thru website
MARJAM SUPPLY OF ALABAMA LLC	941 Plantation Way	Montgomery	AL	36117	(334) 263-5555	www.marjam.com	contact thru website
	One 15 St W	Birmingham	AL	32508	(518) 435-1111	www.marjam.com	contact thru website
	346 Industry Dr	Auburn	AL	36830	(334) 887-8510	www.marjam.com	contact thru website
	113 Sky Lab Dr	Huntsville	AL	35806	(256) 851-6667	www.marjam.com	contact thru website
	183 Post Oak Rd	Alexandria	AL	36250	(256) 847-0135	www.marjam.com	contact thru website
	101 Cahaba Valley Pwy W	Pelham	AL	35124	(205) 733-8025	www.marjam.com	contact thru website
	3100 Kauloosa Ave	Tuscaloosa	AL	35401	(205) 345-2625	www.marjam.com	contact thru website
ARIZONA							
BARRETT-HOMES CONTRACTORS INC	4350 N 42nd Ave	Phoenix	AZ	85019	(602) 269-2348	www.barrett-homes.com/	n/a
WINROC	2001 N 9th Ave	Tucson	AZ	85705	(520) 628-7990	www.winroc.com/	tucson@winroc.com
	4225 W Glen Rosa Ave	Phoenix	AZ	85019	(602) 477-0341	www.winroc.com/	phoenix@winroc.com
	2235 N Concord Dr	Prescott Valley	AZ	86327	(928) 775-3311	www.winroc.com/	prescott@winroc.com
ARKANSAS							

GYPSUM BOARD RECYCLERS

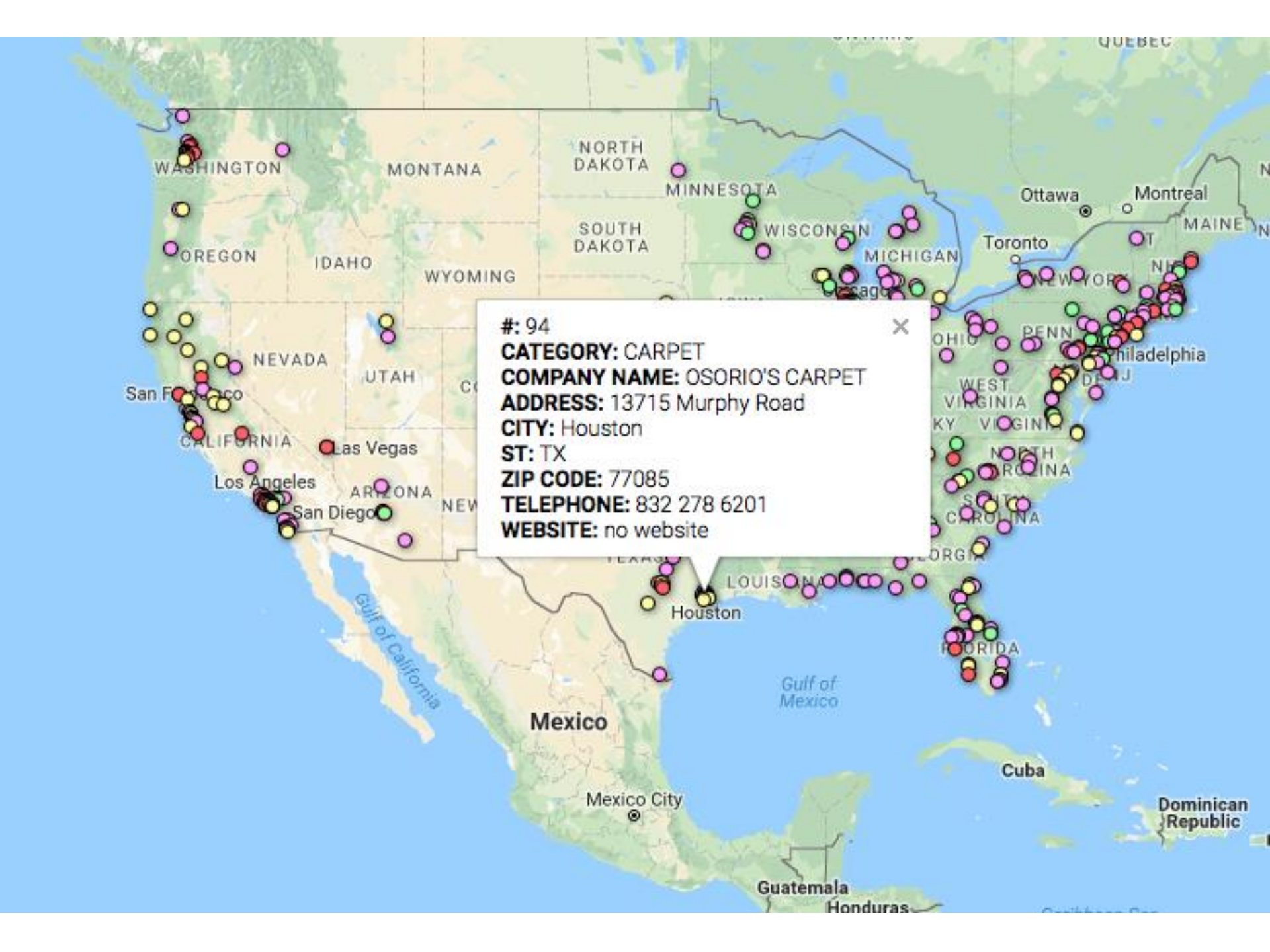
LOCATION	ADDRESS	CITY	ST	ZIP CODE	TELEPHONE	WEBSITE	E-MAIL
ALASKA							
CENTRAL RECYCLING SERVICES	2400 Railroad Ave	Anchorage	AK	99501	907 748 7400	www.centralrecyclingservices.com	kauai@crs-alaska.com
ALABAMA							
C&C GRINDERS LLP	4374 Fathbrook Lane	Mobile	AL	36693	251 605 1704	no website	gcobb242@bellsouth.net
CALIFORNIA							
ALLIED WASTE FALCON	3031 E I St	Wilmington	CA	90744	562 590 8531	http://www.republicservices.com/	contact thru website
AKITA ENTERPRISE	4533 Feather River Blvd	Marysville	CA	95901	530 742 9114	no website	artclegg@aol.com
AMERICAN RECLAMATION	4560 Doran St	Los Angeles	CA	90039	323 245 0125	www.americanreclamationinc.com	n/a
ATHENS SERVICES	BOX 60009	Industry	CA	91716	888 336 6100	www.athensservices.com	touzonian@athensservices.com
BURRTEC SERVICES	9890 Cherry Ave	Fontana	CA	92335	909 429 4200	www.burrtec.com	ranchocs@burrtec.com
CALIFORNIA WASTE SERVICES	621 W 152nd St	Gardena	CA	90247	800 839 5550	www.californiawasteservices.com	info@californiawasteservices.com.
CLEAN UP AMERICA	2900 E Lugo St	Los Angeles	CA	90023	323 980 9930	no website	n/a
CONSTRUCTION AND DEMOLITION RECYCLING	9309 Rayo Ave	South Gate	CA	90280	323 357 6900	no website	n/a
DIRECT DISPOSAL	3720 Noakes St	Los Angeles	CA	90023	323 262 1604	www.directdisposal.com	contact thru website
DOWNTOWN DIVERSION	2424 E Olympic Blvd	Los Angeles	CA	90021	213 612 5005	www.downtowndiversion.com	jkanetak@wm.com
EAST VALLEY DIVERSION	11616 Sheldon St	Sun Valley	CA	91352	818 252 0019	no website	n/a
EAGLE HAULING & RECYCLING INC	15440 Meridian Rd	Salinas	CA	93907	831 594 5858	www.eaglehauling.com	chuck@eaglehauling.com
GLOBAL MATERIALS RECOVERY SERVICES	3899 Santa Rosa Ave	Santa Rosa	CA	95407	707 585 0511	no website	icart1@pacbell.net

LIGHT FIXTURE RECYCLERS

LOCATION	ADDRESS	CITY	ST	ZIP CODE	TELEPHONE	WEBSITE	E-MAIL
CANADA							
LIGHTING RESOURCES INC	805 E Francis St	Ontario	CA	91761	888 923 7252	http://www.lightingresourcesinc.com	support@lightingresources.com
ALASKA							
ECOLIGHTS	12101 Industry Way	Anchorage	AK	99515	907 561 0544	http://www.ecolights.com	info@ecolights.com
ARIZONA							
LIGHTING RESOURCES INC	1545 E Victory St	Phoenix	AZ	85040	602 276 4278	http://www.lightingresourcesinc.com	support@lightingresources.com
CALIFORNIA							
AERC RECYCLING SOLUTIONS	30677 Huntwood Ave	Hayward	CA	94544	510 429 1129	http://www.aerc.com	info@aerc.com
	1475 Crocker Ave	Hayward	CA	94544	510 429 1129	http://www.aerc.com	info@aerc.com
	1256 East 3rd St	Pomona	CA	91768	510 429 1129	http://www.aerc.com	info@aerc.com
CONNECTICUT							
NLR-GREEN	250 Main St	East Windsor	CT	6088	860 292 1992	http://www.nlr-green.com	Brian Watson watson@nlr-green.com
FLORIDA							
AERC RECYCLING SOLUTIONS	4317 J Fortune Place	West Melbourne	FL	32904	321 952 1516	http://www.aerc.com	info@aerc.com
	4301 Woodland Park Dr	West Melbourne	FL	32904	321 984 1772	http://www.aerc.com	info@aerc.com
LIGHTING RESOURCES INC	1007 SW 16th Lane	Ocala	FL	34471	352 509 3001	http://www.lightingresourcesinc.com	support@lightingresources.com
GEORGIA							
AERC RECYCLING SOLUTIONS	120 Willingham Dr	Bolingbroke	GA	31004	321 952 1516	http://www.aerc.com	info@aerc.com
SOUTHEAST RECYCLING TECH INC	2260 Moon Station Ct	Kennesaw	TN	30144	770 426 5000	http://www.recyclebulbs.com	Richard Hall srtrichard@bellsouth.net
ILLINOIS							
AIR CYCLE CORP	2200 Ogden Avenue, Suite 1	Lisle	IL	60532	800 909 9709	http://www.aircycle.com	info@aircycle.com
EVERLIGHTS	8027 N Lawndale Ave	Skokie	IL	60076	877 934 9873	https://www.everlights.com	contact thru website







MATERIALS RESEARCH COLLABORATIVE at the **UH** College of Architecture and Design

Hours of Operation

Monday – Friday: 1 – 5 pm

Summer + Winter break: By Appointment

The **Materials Research Collaborative** (MRC) at the University of Houston College of Architecture and Design serves as a materials resource for material discovery, innovation, instruction, and research.

MRC Website

www.uh.edu/archmrc

Materials Database - <http://uh.edu/archmrc/>

The MRC has developed a web-based database that catalogs the 600 physical materials in its collection. On going work of the MRC includes uncovering new and innovative materials, cataloging the physical samples and researching and inputting data regarding the specific extrinsic and intrinsic properties of these materials. In addition the MRC has a physical collection of almost 200 material tabulas from Material ConneXion. The MRC is also engaged in specific material research projects funded by grants, gifts or other sources:

Local Materials List/H5h - List of materials made within 100/500 miles of Houston, Texas.

http://www.uh.edu/architecture/_images/files/UH%20mrc%20H1H%20local%20materials.pdf

<http://www.arch.uh.edu/uploads/pdf/localhoustonmaterialsh5h.pdf>

work supported by Architecture Center Houston Foundation

Made in Houston - <http://madeinhouston.uhmrc.com>

This website is a resource for all designers, architects, students, and faculty in the Houston area to help them find the right fabricator and collaborator for their special projects. The database lists fabricators by materials with which they work (wood, metal, ceramics, polymers, coatings, and hybrids) + their specific capabilities (casting, molding, forming, bending, 2D or 3D cutting/CNC, sculpting, carving) in the hope of connecting local designers with local makers.

work supported by Architecture Center Houston Foundation and Rice Design Alliance Initiatives grant

Reuse in Houston - <http://reuse.uhmrc.com/reuse/>

The Materials Research Collaborative (MRC) at the University of Houston has developed this site for the Houston professional community, local businesses and non-profit groups to help reuse or recycle building materials. This database lists the local companies and organizations along with the types of services they offer and the building materials they house. You can find the material/service you require by either utilizing the search box to the right or by selecting the "Materials" link above.

work supported by Architecture Center Houston Foundation and Balfour Beatty Construction

Interior Products Reuse Guide – Nationwide guide of resources for recycling the most common materials in an office renovation project in a fusion table

https://fusiontables.googleusercontent.com/fusiontables/embedviz?q=select+col3+from+1JP9ISGQz4hJ08RD5LD9D3hmlaDlIRnznUtyGsc2F&viz=MAP&h=false&lat=35.52911995055612&lng=-95.62291925&t=1&z=4&l=col3&y=2&tmplt=2&hml=ONE_COL_LAT_LNG

work supported by Page

Made in Texas - <http://madeintexas.uhmrc.com>

This website is a resource for all architects to find building materials and products that are Made in Texas.

work supported by Architecture Center Houston Foundation, AIA Austin, AIA Dallas, AIA, Fort Worth, AIA San Antonio, and the Texas Society of Architects.

Other Web Resources for Materials:

www.globalspec.com

www.arc4t.com

www.azom.com

www.matweb.com

<http://www.mrs.org/home>

ul.com/SPOT

www.ides.com

www.pharosproject.net

www.healthybuilding.net

<https://www.archdaily.com/catalog/us>

www.transstudio.com

www.instituteofmaking.org.uk/materials-library

www.materialicious.com

www.soa.utexas.edu/matlab/search/

www.materia.nl

www.haute-innovation.com

Material ConneXion Website

www.materialconnexion.com

(requires account – available for UH students, with CougarNet account, through Library, architectural databases)

Embodied Energy of Materials:

Geoff Hammond and Craig I. Jones, Inventory of Carbon and Energy,

http://opus.bath.ac.uk/12382/1/Hammond_%26_Jones_Embodied_energy_%26_carbon_Proc_ICE-Energy_2008_161%282%29_87-98.pdf

Books:

Material Revolution: Sustainable Multi-Purpose Materials for Design and Architecture, Dr. Sascha Peters

A History of Technology, volume 1-5 edited by Charles Singer. NY: Oxford University Press, 1958.

Technics and Architecture by Cecil Elliott. Massachusetts: MIT Press, 1994.

The Ecology of Building Materials by Bjorn Berge. NY: Elsevier Press, 2009.

Constructing Architecture: Materials, Processes, Structures A Handbook edited by Andrea Deplazes

Materialogy: The Creative's Guide to Materials and Technologies by Daniel Kula and Elodie Ternaux

Material Architecture: Emergent Materials for Innovative Buildings and Ecological Construction by John Fernandez

Smart Materials and Technologies for the Architecture and Design Profession by Michelle Addington and Daniel Schrodeck

Transmaterial + Transmaterial 2 + Transmaterial 3 by Blaine Brownell

Manufacturing Material Effects: Rethinking Design and Making in Architecture by Branko Kolarevic and Kevin Kinger

Birkhasuer Series: *Timber Construction Manual, Concrete Construction Manual, Steel Construction Manual, Roof Construction Manual,*

Façade Construction Manual, Construction Materials Manual

Other references:

Material Matters, Michael Geiser

Elements of Materials Science and Engineering, Van Vlack

Materials Selection in Mechanical Design, Third Edition, Michael Ashby

Materials for Inspirational Design, Chris Lefteri

Wood, Metals, Ceramics, Plastics 2, and Glass (Materials for Inspirational Design), Chris Lefteri

Materials for Design, Victoria Ballard Bell

Materials, Structures, Standards, Julia McMorrough

Mamuscrypt, Alex Muller-Scholl

Emerging Technologies and Housing Prototypes, Arroyo, Atena, Kebel,

Eco Design: The Sourcebook, Alastair Fuad-Luke

Materials and Design: The Art and Science of Material Selection in Product Design, Michael Ashby and Kara Johnson

Making It: Manufacturing Techniques for Product Design, Chris Lefteri

Process, Materials, and Measurements: All the Details Industrial Designers Need to Know But Can Never Find, Dan Cuffaro

Architectural Graphic Standards

Constructing Architecture: Materials, Processes, Structures A Handbook edited by Andrea Deplazes

Material Precedents: The Typology of Modern Tectonics, Gail Peter Borden

Materials Matters IV

Smart Materials in Architecture, Interior Architecture and Design, Axel Ritter

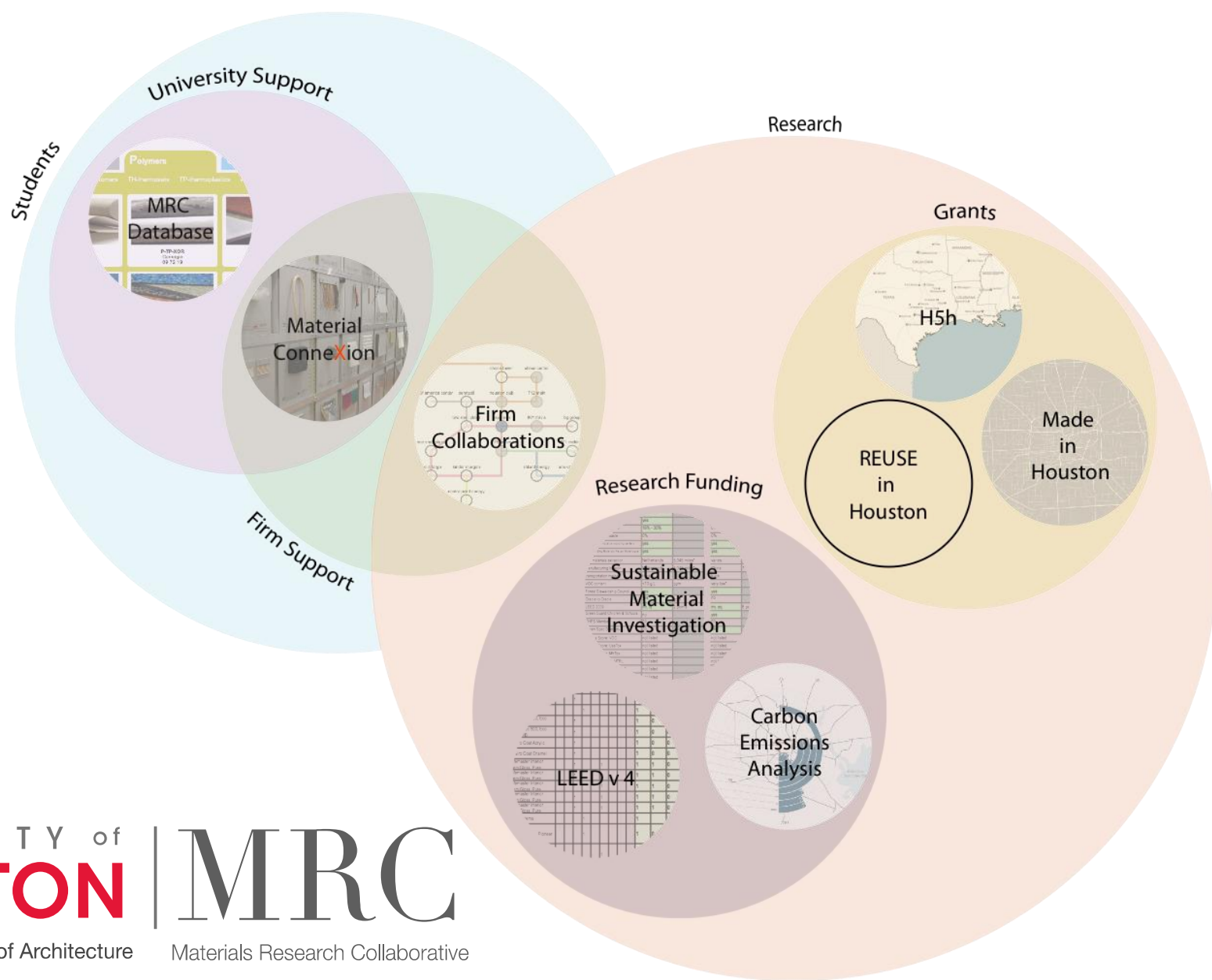
Nano Materials in Architecture, Interior Architecture and Design, Sylvia Leydecker

Living Systems: Innovative Materials and Technologies for Landscape Architecture, Margolis and Robinson

Ultra Materials: How Materials Innovation is Changing the World, Beylerian and Dent

Material Skills: Evolution of Materials

For more information contact Professor Donna Kacmar, FAIA, LEED BD+C, at dkacmar@uh.edu, 713-743-2400



UNIVERSITY of HOUSTON | MRC

Gerald D. Hines College of Architecture

Materials Research Collaborative

Donna Kacmar, FAIA, LEED BD+C

dkacmar@uh.edu

PRIORITIZATION

INDOOR AIR QUALITY?

CARBON EMISSIONS?

DISCLOSURE?

RECYCLED MATERIALS?

WATER RESISTANCE?



AIA HOUSTON
Disaster Recovery Task Force

HOMEOWNER GUIDE

Replacement of materials after flooding

AIA HOUSTON DISASTER RECOVERY TASK FORCE

Architects must design Houston's built environment to be resilient to storm surge, flooding, drought, power outages, and wind damage due to increasing frequency and magnitude of major natural disasters. AIA Houston supports the Industry Statement on Resilience: aia08.prod.acquia-sites.com/sites/default/files/2016-08/Res-IndustryStatement-080916.pdf and the AIA statement on Climate Change: aia.org/resources/77541-where-we-stand-climate-change

MATERIALS*

After a storm event damaged your home, it is essential to make sure your home is safe, structurally sound, free of wet and damaged materials, and certified to be mold-free before you begin to repair and rebuild with the required building permits. Consider building back better with these replacement materials:

Interior Wall Strategies (see diagram)

- Install detachable mold- and moisture-resistant cladding on the bottom four feet using corrosion-resistant screws
- Raise electrical outlets and equipment above flood line
- Design and build interior walls to vent/breathe so cladding does not need to be removed for wall to dry
- Use mold-resistant non-paper-faced gypsum wallboard

Interior Wall Materials

- Install non-paper-faced gypsum wallboard such as: GP DensArmor Plus, GP DensShield, USG Fiberock Aqua-tough Interior Panels, USG Sheetrock Brand Mold Tough Gypsum Panels
- Use trim material that is rubber or other water-resistant material

Cabinetry

- Elevate cabinets off the floor as high as possible above the flood line
- Build cabinets out of moisture-resistant materials such as marine-grade plywood or metal

Flooring Strategies

- Use non-absorbent materials
- Refer to manufacturers specification for water-resilient installation
- Clean and re-seal tile and grout on an annual basis to maintain its water-resistant properties

Flooring Materials

- Non-absorbent stone: Slate, Granite, Travertine
- Ceramic or Porcelain Tile with waterproof grout
- Sealed Concrete

Doors/Window frames

- Solid core wood door with treated wood frame
- Metal door (hollow, wood or foam-filled core) and metal frame
- Fiberglass door (wood or foam-filled core) and fiberglass frame

Exterior Cladding Strategies

- Use non-absorbent materials
- Design with an air space or drainage plane for water and moisture to drain from wall cavity

Exterior Cladding Materials

- Cement Board / Fiber Cement Board Siding: Hardie Board, GAF WeatherSide
- Ceramic Materials: Brick, Clay Tile
- Stone: Natural or Man-made Manufactured Stone (non-absorbent)
- Concrete: precast or cast-in-place), Concrete Block
- Composite Siding: Recycled Plastic or Resin-impregnated Lumber; Certainteed Icon Composite Siding, NewTechWood UltraShield Wall Cladding
- Metal Siding: Galvalume, CorTen, Zinc, Aluminum

Air and Vapor Barrier, Waterproofing and Flashing

- Consider insulation values and vapor barrier of majority of existing building when replacing in limited areas
- Sheet Material: Tyvek House Wrap or Building Paper (#15 felt)
- Fluid Applied: Sto Gold Coat or Henry Air-bloc

Sheathing Strategies

- Gypsum-based products should be non-paper-faced gypsum board
- Wood products should be moisture/water resistant

Sheathing Materials

- Gypsum-based: American Gypsum Exterior Gypsum Sheathing, GP Densglass Fiberglass Mat Sheathing, USG Securock Brand Glass-Mat Sheathing
- Wood / Plywood: Marine-grade, Pressure Treated, or Exterior Grade Plywood Sheathing

Insulation

- Consider insulation values and vapor barrier of majority of existing building when replacing in limited areas
- Mineral wool insulation
- Sprayed polyurethane foam (closed cell)

Wall Structure Strategies

- Evaluate structure to ensure it can support any added weight

Wall Structure Materials

- Pressure Treated wood studs
- Galvanized Metal studs
- Fiberglass studs (not widely available in Houston)
- Concrete: Concrete Masonry Units, Insulated concrete forms, AAC- Autoclaved aerated concrete blocks

Floor Structure

- Pressure Treated wood framing
- Concrete Slab
- Insulated concrete forms
- AAC Block (If structural evaluation confirms that it will support)

Roof

- Collect rainwater from roof using barrels, tanks, or swales
- Install gutters to collect and distribute roof water from eaves and scuppers for collection or to move off site

Hardscape: Driveway / Patio / Sidewalk

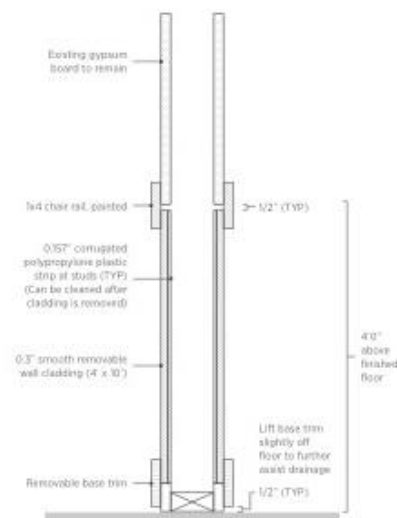
- Collect pavement runoff on site
- Ensure that paved areas do not sheet flow water toward residence
- Replace paved areas with permeable pavements with absorbent subsurface base material
- Excavate and lower paved areas to create additional storm water storage

Softscape: Landscape /Gardens

- Be aware of the drainage patterns around your home. Observe where water drains during a heavy storm; note any obstructions to flow, especially those above the masonry weep holes or finished floor of the residence. Contact a surveyor if you would like a topographic survey to document drainage patterns.
- Ensure that water does not collect below pier and beam structures and that water drains completely after a storm. Over time, collection of water below the residence can cause subsidence and foundation settlement.

*Note: specific products and manufacturers listed for reference; other equivalent products may be available.

INTERIOR WALL STRATEGIES FOR HOMES THAT FLOODED LESS THAN THREE FT



HIRE A QUALIFIED CONTRACTOR

Inform your contractor that you are rebuilding for resilience and want to reduce damage and replacement in the event of a future natural disaster. Ask them follow-up questions to be sure they are familiar with resilient building practices. Contact local contractor associations and the BBB to confirm past references and complaints.

ADDITIONAL RESOURCES

FEMA Technical Bulletin 2

www.fema.gov/media-library-data/20130726-1502-20490-4764/fema_tb_2_rev1.pdf

Building Science Corporation - Rebuilding Houston

www.buildingscience.com/documents/building-science-insights/bci-101-rebuilding-houston

How to Hire a Contractor









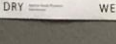


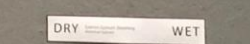


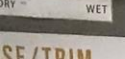






www.consumer.ftc.gov/articles/0242-hiring-contractor
www.sbpusa.org/public/uploads/general/5BP_ContractorFraudChecklist-2017_170310_162735.pdf

Journal of Lightweight Construction - Flood Hardy Wall Construction

www.jlconline.com/how-to/framing/flood-hardy-wall-construction_0



WATER-RESISTANT MATERIALS

SE/TRIM	MILLWORK	INTERIOR CLADDING	INSULATION	SHEATHING	BARRIERS	EXTERIOR CLADDING
 DRY WET	 DRY WET	 DRY WET	 DRY WET	 DRY WET	 DRY WET	 DRY WET
 DRY WET	 DRY WET	 DRY WET	 DRY WET	 DRY WET	 DRY WET	 DRY WET
 DRY WET	 DRY WET	 DRY WET	 DRY WET	 DRY WET	 DRY WET	 DRY WET

SE/TRIM

MILLWORK

INTERIOR CLADDING

INSULATION

SHEATHING

BARRIERS

EXTERIOR CLADDING



GULF COAST GREEN 2018

RESILIENCE: *Beyond Recovery*

**Gulf Coast Green 2018
Symposium and Green EXPOntial
June 1, 2018**

After 12 successful years, Gulf Coast Green has proven to be the leading green building conference in the Gulf Coast region. In addition to a lineup of groundbreaking speakers in the field of sustainability, a brand new Green EXPOntial experience, featuring hand-selected green building products and services, will be open to attendees concurrently with the symposium.

Gulf Coast Green 2018 Symposium and EXPOntial continues to bring like-minded green building professionals together to experience next-generation sustainable and resilient building solutions. Registration for the event coming soon.

Conference Theme

RESILIENCE: Beyond Recovery

Geared toward attendees with an intermediate to high level of knowledge about buildings and sustainability issues, we welcome presentations related to:

- Society – Providing connections, fostering community, and recognizing culture
- Site – Providing mobility at all scales, disaster avoidance and recovery, reducing the impact on resources
- Structure – Meeting current and future needs for building occupants through healthy choices and efficient design



Gulf Coast Green 2018

June 1, 2018

Online Registration Coming Soon

[Moody Center for the Arts, Rice University](#)
 6100 Main Street, MS-480
 Houston, TX 77005

[Staff Liaison](#) | [Committee Chair](#)

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2018 Platinum Sponsors



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