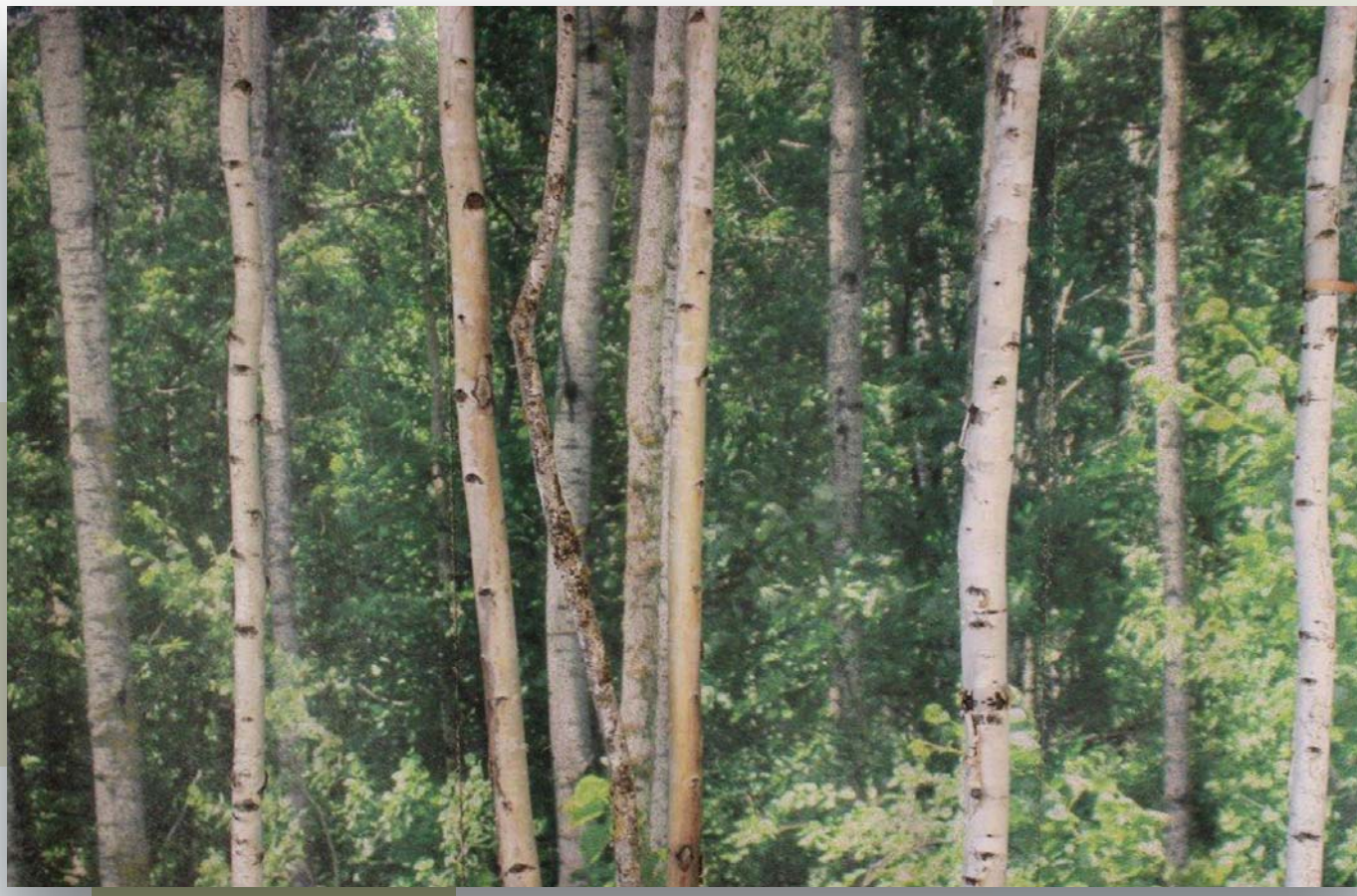
TECTUM INC

The Noise Control Solution

TOUGH, SUSTAINABLE ACOUSTICS

NOVEMBER 2016

Environmental Statement



John Heinz National Wildlife Refuge at Tinicum, PA, required "green" building products. They turned to Tectum Inc. for aesthetically pleasing acoustic wall and ceiling panels.

Tectum: A Green Product

Long before the environmental practices of business were scrutinized, Tectum Inc. was manufacturing sustainable building products in an environmentally safe, non-toxic process. Since 1949, Tectum panels have been made from renewable wood sources, magnesium from seawater, and recovered magnesium waste. The panels contain no toxic binders, no asbestos or formaldehyde, and they never have. Tectum Panels degrade naturally in a landfill.

FSC www.fsc.org FSC® C109748 The mark of responsible forestry

RAINFOREST ALLIANCE CERTIFIED

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COMPOSITION OF TECTUM PANELS

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The wood fibers (excelsior) used in Tectum Panels come from Wisconsin aspen trees. The Wisconsin aspen is a self-propagating tree. When cut, a new tree will begin to grow back from its root structure. In addition, all Wisconsin Aspen used for Tectum is air-dried. No drying kilns are used. The wood is stored in ranks to age naturally. No chemicals are used in the production of any excelsior purchased by Tectum Inc.

All excelsior used in Tectum Products comes from a single source that is Forest Stewardship Council (FSC) certified. The FSC program is a comprehensive system of objectives and performance measures that integrate the perpetual growing and harvesting of trees with the protection of wildlife, plants, soil and water quality. All loggers are trained to adhere to FSC principles.

Magnesium oxide is mixed with magnesium sulfate (Epsom salts) to form the primary binder. The magnesium sulfate solution has been manufactured on site by reclaiming waste materials since production began in 1949. The secondary binder is composed of sodium silicate and calcium carbonate (limestone). All of the water used in the manufacture of Tectum Products is captured and recycled.

Durability

Tectum Inc. offers a Limited Lifetime Warranty on all Tectum Products. While many other building materials have replacement rates greater than twenty percent, replacement of Tectum Acoustical Panels is seldom required. Tectum Panels can be spray painted up to six times with no loss in acoustical performance, increasing the aesthetic life span of the panels.

When installed as recommended, Tectum panels can be removed and reused.

Disposal

Tectum Panels are a non-hazardous waste and can be safely deposited in landfills. As an alternative, the panel waste has been successfully added to compost and used as a soil amendment. No packaging is required to transport Tectum panels eliminating the need for packaging disposal.

Tectum panels are manufactured in an environmentally friendly process from sustainable raw materials and can be renewed by painting or reused by demounting. They have a demonstrated service life of over 65 years, and waste may be safely deposited in landfills or ground up for use as a soil amendment.

Happy Feet Plus in Clearwater, FL is the first LEED Gold certified retail building in the country. Tectum Roof Deck helped contribute to the 39 overall points that Happy Feet earned.

ASBESTOS HAS NEVER BEEN USED IN TECTUM PRODUCTS.

THERE IS NO ADDED UREA FORMALDEHYDE IN ANY TECTUM PRODUCTS.

TECTUM PRODUCTS AND LEED

The LEED* Green Building Certification Program has been established to evaluate every aspect of the construction process and building components used in new and existing buildings. Tectum Inc. fully endorses the LEED Green Building Certification Program. A number of representatives of Tectum Products are LEED accredited professionals.

Our products contribute to the following credits of the LEED rating system:

EA Prerequisite 2: Minimum Energy Performance –
Tectum Structural Roof Deck Systems provide high R-Values. Installations have few thermal shortcuts providing complete R-Value coverage.

EA Credit 1: Optimized Energy Performance –
Tectum Structural Roof Deck Systems provide high R-Values, up to R-43.

MR Credit 2: Construction Site Waste Management –
Tectum Products are typically cut to 1" length increments at the factory reducing or eliminating field cuts and waste at the site. Tectum Products are shipped without the need for boxing and minimal if any crating, reducing packaging for minimal site waste. Tectum Products are biodegradable and can be ground up for soil amendment, eliminating landfill needs.

MR Credit 4: Recycled Content -
Tectum Fabri-Tough Wall Panels and Finalé Fabri-Tough Wall Panels have 23% post-consumer recycled content by value and 8% post-consumer recycled content by weight as the Hytex Acoustical Fabric is 100% recycled material.

MR Credit 5: Regional Materials -
Project must be within 500 miles of the manufacturing site and 500 miles of the raw material extraction sites. Tectum Products are manufactured in Newark, OH. Tectum Inc.'s raw materials are extracted in the following locations:

Aspen Wood Fibers – Rice Lake, WI (44%)
Magnesium Oxide – Manistee, MI (25%)
Sodium Silicate Glass – Gurnee, IL (16%)
Magnesium Sulfate – Newark, OH (9%)
Calcium Carbonate – Piqua, OH (6%)

MR Credit 6: Rapidly Renewable Resources –
The Wisconsin Aspen reproduces by suckering from existing rootstock. Please see Tectum Marketing Bulletin M-83 for more information.

MR Credit 7: Certified Wood –
Tectum Products are made from Wisconsin aspen wood fibers harvested by Johnson Timber Corporation and shredded by American Excelsior Company. Forty-four percent of Tectum panels are wood excelsior and are considered FSC Mix Credit.

Tectum Inc. Chain-of-Custody #: RA-COC-007078
American Excelsior Chain-of-Custody #: RA-COC-007186
Johnson Timber Chain-of-Custody #: SW-COC-002249

EQ Prerequisite 3: Minimum Acoustical Performance (LEED For Schools) –
Tectum Products reduce the reverberant noise in a space. In classrooms or gymnasiums, Tectum Products are a practical, efficient and long-term acoustical solution. Tectum products can be field painted up to six times without degrading acoustical performance, offering a life-of-the-building, low maintenance acoustical solution.

EQ Credit 3.1 and 3.2: Construction IAQ Plans –
Tectum Products can be field painted if required, but do not need to be painted for use. Tectum may contribute to this strategy by eliminating the need for field painting. If field painting is desired, Tectum Products do not require priming. Consult Tectum Bulletin M-77 for field painting information.

EQ Credit 4.1: Low-Emitting Materials, Adhesives and Sealants –
Tectum Products do not contain VOC's.

EQ Credit 4.4: Low-Emitting Materials, Composite Wood & Agrifiber Products –
Tectum Products contain no Urea Formaldehyde.

EQ Credit 10: Mold Prevention (LEED for Schools) –
Tectum Products do not support the growth of mold or bacteria. Tested per ASTM D3273, three Tectum product samples scored 10, 9 & 9 out of a possible 10. Tectum Products are available with an anti-microbial paint if desired.

EQ Credit 11: Low-Impact Cleaning and Maintenance Equipment Policy (LEED for Schools) –
Tectum Products contribute favorably to this strategy, as they are extremely abuse-resistant and intended for life-of-the-building service. Tectum Products can be cleaned using a vacuum cleaner or a broom and require no special cleaning supplies.

ID 1 - 1.4: Innovation in Design –
Tectum Composite Structural Roof Decks may qualify for this credit as they provide structural roof deck, finished ceiling, acoustics, thermal value and nailable roofing substrate in one quick-to-install panel. Use of Tectum Structural Roof Deck Systems provides the synergy of four trades in one product, reducing construction time, shipping miles and energy, as the panels are factory-assembled and shipped ready for installation.

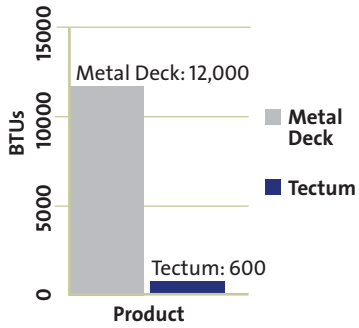
*Trademark of The U.S Green Building Council

TECTUM PRODUCTS' CARBON FOOTPRINT

A CARBON FOOTPRINT is the total set of GHG (greenhouse gas) emissions caused directly and indirectly by an individual, organization, event or product. An organization's carbon footprint is measured by undertaking a GHG emissions assessment.

Tectum Roof Deck Panels vs. Steel Roof Deck

- Tectum Products require approximately 600 BTU's of energy per square foot of material produced.
- Steel decking requires approximately 12,000 BTU's of energy per square foot of material produced.*
- Tectum Products are 20 times more energy efficient to produce than steel. This reduces the need for fossil fuels and the CO_2 produced by burning those fuels.



* As reported by the American Iron and Steel Institute, October, 2005.

Air Quality Testing –
California's Section 01350 for the Classroom

The Tectum cementitious 3-in. thick wood fiber product was monitored for emissions of total volatile organic compounds, individual volatile organic compounds, formaldehyde and other aldehydes over the test period. Air samples were collected following installation of the floor assembly in the chamber. Measurements were made and predicted exposures were calculated according to California's Section 01350 protocol. As specified in this protocol, results at 96 hours and after 10 days of conditioning, were compared to one-half the current Chronic Reference Exposure Levels as adopted from the California OEHHA list, February 2005. All identified VOCs were also compared to the California-EPA OEHHA Proposition 65 list and the California-EPA Air Resource Board list of Toxic Air Contaminants.

CLASSROOM		
Ventilation Rate	Room Volume	Surface Area Product Covers
0.90 ach*	12.19 m x 7.32 m x 2.59 m = 231.07 m^3 (40 x 24 x 8.5 ft. = 8,160 $ft.^3$)	94.6 m^2

* air changes per hour

TEST RESULTS

The Tectum cementitious wood fiber product meets the IAQ emission requirements of California's Section 01350 for the classroom.

Test available from Tectum Inc. upon request.

Fungus Resistance Tests:
(Engineering Report Nos. 31106-1JJ and 31106-1KK)

Two tests were conducted in accordance with ASTM D3273. The first subjected three samples of Tectum Panels with a natural finish to the Fungus Resistance Test. The second subjected three samples of Tectum Panels painted white to the same test.

Conclusions

Test 1 (Report No. 31106-1JJ): Post-exposure examination found minimal fungal growth on the front surface of the samples and moderate growth on the back surfaces. The three test units had an ASTM D3273 rating of 10, 9, 9 on the front surfaces with a 10 rating being the total absence of mold.

Test 2 (Report No. 31106-1KK): Post-exposure examination found minimal fungal growth on the front surface of the samples and medium growth on the back surfaces. The three test units had an ASTM D3273 rating of 9, 9, 9 on the front surfaces with a 10 rating being the total absence of mold.

TEST REQUESTED

Subject the test samples to a Fungus Test in accordance with ASTM D3273-94 *Standard Test Method: Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.*

The fungus used in the test shall be: (1) Aureobasidium pullulans, (2)Aspergillus niger, and (3) Penicillium. The test soil shall be greenhouse-grade potting soil containing 25% peat moss. The test soil shall be spread across the bottom of the test cabinet. The soil shall be inoculated with mold suspensions prepared using the three fungi. Allow 2 weeks of continuous operation for the mold to sporulate and equilibrate with the environment before starting the test. Viability of the mold growth shall be checked by placing several agar plates in the cabinet. Mold growth should be medium-heavy to heavy and cover the complete surface of the agar plates.

The test specimens shall be suspended vertically with the bottom of each specimen approximately 3 inches above the surface of the inoculated soil. There shall be sufficient spacing between test units to allow free air movement. The samples shall be incubated at 90°F ± 2°F and 95% to 98% relative humidity for 7 weeks. The test articles shall be inspected every week and mold growth recorded.

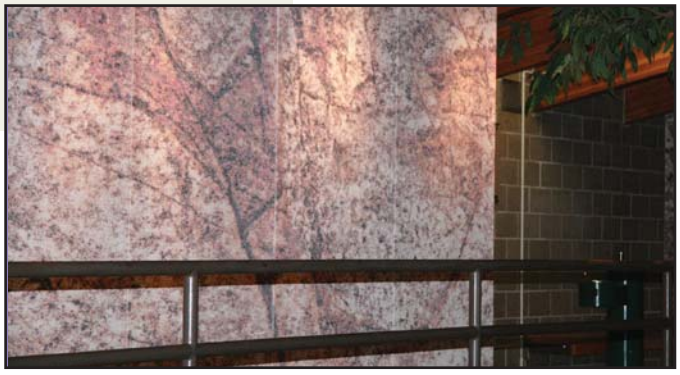
The final rating in the following table is in accordance with ASTM D3273-94. An ASTM rating of 10 is the total absence of mold growth. (For more information on mold growth on Tectum Products or to request a copy of the test results, please contact Tectum Inc.)

SAMPLE	% FUNGAL GROWTH ON FRONT FACE	FINAL ASTM RATING ON FRONT FACE
Tectum Natural		
1	5%	10
2	10%	9
3	10%	9
Tectum Painted White		
1	10%	9
2	10%	9
3	10%	9

Astrimex BV in Utrecht Fugi Test
The following are the results of a test performed by Crailo Tectum B.V. in Amsterdam to determine the growth of fungi on Tectum panels.

After 10 weeks of exposure at 23°C and 70 – 75% R.A., no growth of fungi had been observed (magnification 8x) on the surface of the Tectum panels, both natural and coated with paint.

SAMPLE NUMBER	PERCENTAGE MASS INCREASE AFTER 10 WEEKS 23°C/ 70 - 75% R.A.	VISUAL INSPECTION (MAGNIFICATION 8X) OF GROWTH OF FUNGI ON THE TECTUM PANELS AFTER 10 WEEKS EXPOSURE
A, natural	14.0	None
B, natural	12.1	None
C, painted white	11.2	None
D, painted white	9.9	None



One-inch Tectum Panels on a C-20 mounting fixed the noise problem at Como Park Primate House.

Ecospun – Hytex Fabrics for Fabri-Tough® Wall Panels
Fabri-Tough Wall Panels are manufactured with a non-woven fabric facer produced by Hytex Industries, Inc. Hytex Industries, Inc. is committed to providing environmentally sensitive products to the commercial interiors market.

Ecospun is a high-quality polyester fiber made from 100% certified recycled plastic PET bottles. It can go into any textile product such as clothing, blankets, carpets, wall coverings, auto interiors or home furnishings. Fabrics made from Ecospun fiber are chemically and functionally nearly identical to those made from non-recycled fabrics. But Ecospun fiber is made without depleting the Earth's natural resources. With properties such as strength, softness, shrinkage-resistance and colorfastness, market applications for Ecospun are expanding every day. Hytex fabrics are Ecospun, produced with no PVC (polyvinylchloride) or chlorine, no VOC's or plasticizers, no ODS's (ozone depleting substances), heavy metals or formaldehyde.

MinWool-1200®, a component of Tectum Finale Wall Panels, is a high-density, non-combustible insulation made of organic basalt (volcanic rock) fibers. MinWool absorbs noise while resisting moisture, mold, mildew and fungi growth.

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TECTUM INC.
The Noise Control Solution