

TECHNICAL BULLETIN

LEED® OPPORTUNITIES FOR INTERIOR WOOD DOORS

LEED®-NC version 2.2

Date Issued: 05-17-07

The United States Green Building Council (USGBC) has developed a program to promote commercial building design, construction and material use that is sensitive to environmental issues. The program uses the acronym LEED®, which stands for Leadership in Energy and Environmental Design. The program sets guidelines for earning credits that go toward a certification for an environmentally sound building upon completion. While the LEED® program addresses many design and construction aspects of a building, this Bulletin's focus is on interior wood doors.

There are seven specific credits of the LEED® program applicable for wood doors. It is important to point out that contributing to credits by meeting guidelines for wood doors does not automatically grant the project a LEED® certification. All earned credits for the whole building are combined to determine the certification level. Listed below are the attributes with a basic description and intent. The following pages describe in much more detail the components of each credit.

Credit No.	Description	Intent
MR 4.1	10% Recycled Content	Increase demand for building products that incorporate recycled materials.
MR 4.2	20% Recycled Content	Increase demand for building products that incorporate recycled materials.
MR 5.1	10% Regional Materials	Use of materials that have been extracted and manufactured within 500 miles of the project site, promoting use of indigenous resources and reducing environmental impacts of transportation.
MR 5.2	20% Regional Materials	Use of materials that have been extracted and manufactured within 500 miles of the project site, promoting use of indigenous resources and reducing environmental impacts of transportation.
MR 6.0	Rapidly Renewable Materials	Reduce the use of finite or long cycle renewable resources in favor of rapidly renewable resources.
MR 7.0	Certified Wood	Encourage environmentally responsible forest management.
EQ 4.4	Low Emitting Materials	Eliminate or reduce formaldehyde emissions from composite wood, agri-fiber products and adhesives used in product construction.

Every project may earn different credits due to design and location. It is also important to note that credits should be calculated by the General Contractor or Project Manager, with cost information supplied by the distributor of the material, as the value of the material is based on the cost delivered to the project.

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General Information:

LEED® Certification

There are 69 possible LEED® points. The four levels of certification are:

- LEED® Certified 26 - 32 points
- Silver Level 33 - 38 points
- Gold Level 39- 51 points
- Platinum Level 52+ points

Note only 26 of the 69 available points are needed to earn certification.

LEED®-NC Rating System

Credits	Points
• Sustainable Sites (SS)	14
• Water Efficiency (WE)	5
• Energy and Atmosphere (EA)	17
• Material and Resources (MR)	13
• Indoor Environmental Quality (EQ)	15
• Innovation and Design Process (ID)	4
• LEED® Accredited Professional	1

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LEED® CREDIT	LEED® CRITERIA	LEED® REQUIREMENTS	INTENT
Materials & Resources (MR)			
4.1	Recycled Content: 10% (post-consumer + 1/2 pre-consumer)	<p>Use materials with recycled content such that the sum of post-consumer plus one-half of the pre-consumer content constitutes at least <u>10% (based on cost) of the total value</u> of the materials in the project in CSI Master Format 1995 Divisions 2-10.</p> <p>The recycled content value of the material assembly shall be determined by weight. The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value.</p> <p><u>WDMA note:</u> Agrifiber and particleboard core doors usually contribute to this credit. Any recycled content in the door itself can contribute to the 10% requirement for the project. The greater the recycled content of the door, the greater the contribution to the project.</p>	Increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin material.
4.2	Recycled Content: 20% (post-consumer + 1/2 pre-consumer)	<p>Use materials with recycled content such that the sum of post-consumer plus one-half of the pre-consumer content constitutes at least <u>20% (based on cost) of the total value</u> of the materials in the project in CSI Master Format 1995 Divisions 2-10.</p> <p>The recycled content value of the material assembly shall be determined by weight. The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value.</p> <p><u>WDMA note:</u> Agrifiber and particleboard core doors usually contribute to this credit. Any recycled content in the door itself can</p>	Increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin material.

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		contribute to the 20% requirement for the project. The greater the recycled content of the door, the greater the contribution to the project.	
5.1	Regional Materials: 10% Extracted, Processed & Manufactured Regionally	<p>Use building materials or products that have been extracted, harvested or recovered, as well as manufactured within 500 miles of the project site for a minimum of <u>10% (based on cost) of the total materials value</u> in CSI Master Format 1995 Divisions 2-10.</p> <p>If only a fraction of a product or material is extracted, harvested, or recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.</p> <p><u>WDMA note:</u> The location of the harvest point of the raw materials in the door components and the location of the door manufacturer must be within 500 miles of the jobsite. <u>See Note on Regional Materials.</u></p>	Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the indigenous resources and reducing the environmental impacts from transportation.
5.2	Regional Materials: 20% Extracted, Processed & Manufactured Regionally	<p>Use building materials or products that have been extracted, harvested or recovered, as well as manufactured within 500 miles of the project site for a minimum of <u>20% (based on cost) of the total materials value</u> in CSI Master Format 1995 Divisions 2-10.</p> <p>If only a fraction of a product or material is extracted, harvested, or recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.</p> <p><u>WDMA note:</u> The location of the harvest point of the raw materials in the door components and the location of the door manufacturer must be within 500 miles of the jobsite. <u>See Note on</u></p>	Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the indigenous resources and reducing the environmental impacts from transportation.

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		<u>Regional Materials.</u>	
6.0	Rapidly Renewable Materials	<p>Use rapidly renewable building materials and products (made from plants that are typically harvested within a ten-year cycle or shorter) for 2.5% of the total value of all the building materials and products used in the project, based on cost.</p> <p><u>WDMA note:</u> Agrifiber and some particleboard cores may contribute to this credit. Rapidly renewable materials in the door itself contribute to the requirement for the project. The greater the content in the door, the greater the contribution to the project.</p>	Reduce the use and depletion of finite raw materials and long-cycle renewable materials by replacing them with rapidly renewable materials.
7.0	Certified Wood	<p>Use a minimum of 50% wood-based materials and products, which are certified in accordance with the Forest Stewardship Council's (FSC) Principles and Criteria, for wood building components. These components include, but are not limited to, structural framing and general dimensional framing, flooring, sub-flooring, wood doors and finishes.</p> <p><u>WDMA note:</u> This is the only credit that requires third party certification. FSC requires 70% of the door construction to be made with an FSC certified product. FSC stave core constructions meet this requirement.</p> <p>In addition if a door contains material FSC recognizes as "Neutral", such as agrifiber core, it is deducted from the total weight or volume of the door. <u>The neutral material cannot exceed 75% of the total door, and then what remains must be 70% FSC certified wood.</u> Only the wood can contribute to credit achievement.</p>	Encourage environmentally responsible forest management.

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Indoor Environmental Quality (EQ)			
4.4	Low-Emitting Materials: Composite Wood & Agrifiber Products	<p>Composite wood and agrifiber products used on the interior of the building (defined as inside of the weatherproofing system) shall contain no added urea-formaldehyde resins. <u>Laminating adhesives to fabricate on-site and shop-applied composite wood and agrifiber assemblies shall contain no added urea-formaldehyde resins.</u></p> <p>Composite wood and agrifiber products are defined as particleboard, medium density fiberboard (MDF), plywood, wheatboard, strawboard, panel substrates and door cores.</p>	Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well being of installers and occupants.

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Notes:

Regional Materials

- Manufacturing refers to the final assembly of components into the building product that is furnished and installed by the tradesman.
- Credits MR 5.1 and 5.2 have changed significantly due to the addition of "extraction, harvested or recovered" of the building materials.

Conventional Particleboard

- Conventional LD-1 and LD-2 particleboard contains Urea-formaldehyde resins. Not eligible for EQ 4.4.
- Composed of pre-consumer recycled material only.
- Check with core manufacturer for recognition by FSC for Certified Wood.
- Check with core manufacturer for rapidly renewable material content.

UF Free Particleboard

- UF Free Versions Available in LD-1 and LD-2 particleboard that contains NO Urea-formaldehyde resins. Eligible for EQ 4.4.
- Composed of pre-consumer recycled material only.
- Check with core manufacturer for recognition by FSC for Certified Wood.
- Check with core manufacturer for rapidly renewable material content.

Agrifiber Components

- Available as LD-1 and LD-2 door core.
- Composed of pre-consumer recycled material only. Recycled content is in the 90% range. Check with manufacturer for exact percentage.
- Current manufacturers of agrifiber composites do not use urea-formaldehyde resins. Consult with composite manufacturer for verification.
- Check with core manufacturer for rapidly renewable material content.

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Structural Composite Lumber

- Does not contain recycled material.
- Current manufacturers of SCL components do not use urea-formaldehyde resins. Consult with SCL manufacturer for verification.
- At this time SCL is not recognized by FSC as certified wood.

Stave Core

- Available as FSC certified.
- Check with supplier to insure it is not manufactured with urea-formaldehyde resins.
- Does not contain recycled material.

Adhesives

- EQ Credit 4.1: Low-Emitting Adhesives and Sealants are only applicable for on-site applications; it is not applicable for door manufacturers.
- EQ Credit 4.4 has added a statement that laminating adhesives shall contain no added urea-formaldehyde resins. This is applicable for on-site and shop applied laminates.

Finishing

- EQ Credit 4.2 Low-Emitting Materials: Paints and Coatings are only applicable for on-site applications; it is no longer applicable for door manufacturers.

Other components

- HPDL, MDO, HDF crossbands, hardboard, molded skins and composite moulding materials may contain added urea-formaldehyde resins that will prevent obtaining the LEED® Credit 4.4. Consult with the component supplier for verification.