

**City of Portland RFP 111754 – Elevator Modernization
Sustainable Procurement Specifications Excerpt
June 24, 2010**

**5.b. DEMONSTRATED ABILITY TO MEET OR EXCEED ENVIRONMENTAL AND SUSTAINABILITY
REQUIREMENTS
(10 pts)**

Please respond to the following:

1. Describe to what extent your firm will use biobased products for the elevator modernization projects and ongoing maintenance. Biobased products are defined as those that meet the minimum biobased content requirements stated in the USDA Final Rule available at www.biopreferred.gov. Include in your response the following information:
 - a. Type of Product (e.g. chain lube)
 - b. Application
 - c. Product Brand Name and Manufacturer Name
2. Describe your firm's quality control methods that you will utilize to ensure that:
 - a. Your firm will only use low-VOC architectural coatings at the project site. (see the Materials & Workmanship section in the specification documents)
 - b. Your firm will only use Green Seal or EcoLogo certified cleaning products at the project site. (see the Materials & Workmanship section in the specification documents)
 - c. Your firm will not use wood from endangered forests (see Exhibit E)
 - d. If installing carpet in the car enclosures, your firm will only use carpet that is certified to meet the NSF/ANSI 140-2007e standard at its platinum level.
 - e. If installing non-carpet flooring in the car enclosures, your firm will only use non-carpet flooring that is FloorScore certified.
3. Describe the elevator car-enclosure lighting fixtures your firm proposes to use as part of the elevator modernization project for the Portland Building Traction elevators (Exhibit B). Include in your response the following information:
 - a. Product Brand Name and Manufacturer Name
 - b. No. of Fixtures per Car Enclosure
 - c. Wattage use per Fixture
 - d. Lumens per Fixture
 - e. CRI per Fixture
 - f. Color Temperature per Fixture
4. Describe your firm's project site recycling practices. What types of items are typically recycled or reused? How would your firm minimize trash disposal at the project sites?

1.11 ACCIDENT REPORTS

- A. In the event of accidents of any kind, Contractor shall furnish Owner with copies of all accident reports. Reports shall be sent without delay and at same time that they are forwarded to any other parties.

1.12 STORAGE OF MATERIALS

- A. Contractor shall confine storage of materials on job site to limits approved by Owner and shall not unnecessarily encumber premises or overload any portion of building with materials to a greater extent than structure design load.

1.13 REMOVAL OF EQUIPMENT AND RUBBISH

- A. Contractor shall remove and properly dispose of all rubbish as fast as it accumulates including all existing parts and components not retained, keeping building and premises clean during progress of work and leave premises at completion in a condition acceptable to the Owner. Store parts and components identified by Owner as useful for maintenance of units not being modernized as directed by Owner. All other parts and components not retained shall become property of Contractor.

1.14 MATERIALS AND WORKMANSHIP

- A. All materials and equipment furnished shall be new and best quality. Installation shall be accurate, workmanlike, and subject to approval of Owner. All materials and equipment provided shall conform to regulations of enforcement bodies having jurisdiction. Contractor shall furnish material samples for approval.
- B. Contractor shall use biobased products, as available, for the following product categories. Biobased products are defined as those that meet the minimum biobased content requirements stated in the USDA Final Rule available at www.biopreferred.gov. Biobased products must meet all applicable industry performance standards.
 - 1. Penetrating lubricants
 - 2. Chain and cable lubricants
 - 3. Gear lubricants
 - 4. Hydraulic fluids
 - 5. Greases
- C. All architectural coatings applied at the project site shall be low-VOC as defined by meeting the California South Coast Air Quality Management District's (SCAQMD)'s Rule 1113 - Architectural Coatings VOC limits.
- D. All cleaning products used at the project site shall meet one of the following standards:
 - 1. Green Seal GS-37: Cleaning Products for Industrial and Institutional Use
 - 2. Green Seal GS-34: Degreasers
 - 3. EcoLogo 110: Cleaning and Degreasing Compounds - Biologically-based
 - 4. EcoLogo 146: Hardsurface Cleaners
- E. All mercury-containing parts/materials must be visibly labeled as containing mercury.
- F. All lighting products installed by the Contractor shall utilize lighting with high lumens per watt performance while meeting lighting level requirements. Whenever applicable, T5 linear fluorescents, CFLs, LEDs, or cold-cathode CFLs shall be used in place of standard incandescent or halogen lamps/fixtures.

- E. Fire-Retardant Treated Particle Board Panels: Minimum 3/4" thick backup for natural finished wood and plastic laminate veneered panels, edged and faced as shown, provided with suitable anti-warp backing; meet ASTM E84 Class "I" rating with a flame-spread rating of 25 or less, registered with Local Authorities for elevator finish materials.
- F. Paint: Clean exposed metal parts and assemblies of oil, grease, scale, and other foreign matter and factory paint one shop coat of standard rust-resistant primer. After erection, provide one finish coat of industrial enamel paint. Galvanized metal need not be painted. All paint products used at the project site shall be low-VOC as defined by meeting the California South Coast Air Quality Management District's (SCAQMD)'s Rule 1113 - Architectural Coatings VOC limits.
- G. Baked Enamel Finish: Prime finish per above. Unless specified "prime finish" only, apply and bake three additional coats of enamel in the selected solid color.
- H. Refinishing of natural metals: Remove existing protective finish. Buff as necessary to remove scratches. Regrain or finish as specified and protect as indicated for particular metal type. All coating products used at the project site shall be low-VOC as defined by meeting the California South Coast Air Quality Management District's (SCAQMD)'s Rule 1113 - Architectural Coatings VOC limits.
- I. Entrance Support Equipment within Hoistway: Include strut angles, headers, sill support angles, fascia, hanger covers, etc. Clean, remove, and check for corrosive activity. Replace components which exhibit severe deterioration. Tighten all fastenings. Repaint exposed surfaces with two coats of rust preventive primer.

2.04 CAR AND GROUP PERFORMANCE

- A. Car Speed: $\pm 3\%$ of contract speed under any loading condition.
- B. Car Capacity: Safely lower, stop and hold 125% of rated load.
- C. Car Stopping Zone: $\pm 1/4$ " under any loading condition.
- D. Door Opening Time: Seconds from start of opening to fully open.
 - 1. Cars 1-6: 1.7 seconds.
 - 2. Car 7: 2.5 seconds.
- E. Door Closing Time: Seconds from start of closing to fully closed.
 - 1. Cars 1-6: 2.7 seconds.
 - 2. Car 7: 4.5 seconds.
- F. Car Floor-to-Floor Performance Time: Seconds from start of doors closing until doors are 3/4 open (1/2 open for side opening doors) and car level and stopped at next successive floor under any loading condition or travel direction (typical floor height: 12'-0").
 - 1. Cars 1-6: 8.5 seconds.
 - 2. Car 7: 12.0 seconds.
- G. Car Ride Quality:
 - 1. Horizontal and vertical acceleration within car during all riding and door operating conditions. Not more than 15 mg peak to peak (adjacent peaks) in the 1-10 Hz range.
 - 2. Acceleration and Deceleration: Smooth constant and not less than 3 feet/second² with an initial ramp between 0.5 and 0.75 second.
 - 3. Sustained Jerk: Not less than 6 feet/second³.

dialer with automatic rollover capability with minimum two numbers. Provide consolidator to allow multiple phones connected to one line.

- a. "Push to Call" button or adjacent light jewel shall illuminate and flash when call is acknowledged. Button shall match car operating panel pushbutton design. Provide uppercase "PUSH TO CALL" "HELP ON THE WAY" engraved signage adjacent to button.
 - b. Provide "Push to Call" button tactile symbol, engraved signage, and Braille adjacent to button mounted integral with car front return panel.
2. Firefighters' telephone jack in car and firefighters' panel, with four shielded wires to machine room junction box. Jack bezel shall match adjacent controls.

2.10 CAR ENCLOSURE

- A. Passenger Elevators 1-6: Provide as specified herein. Provide the following features.
 1. Front Return Panels and Integral Entrance Columns: Reinforced 14 gauge satin finish stainless steel. Swing entire unit on substantial pivot points (minimum three) for service access to car operating panels. Locate pivot points to provide full swing of front return panel without interference with side wall finish or handrail. Secure in closed position with concealed three-point latch. Provide service compartment with recessed flush cover and cutouts for operating switches, etc.
 2. Transom: Provide coverplate for existing car position indicator.
 3. Interior Wall Finish: Remove existing protrusions at rear and side walls, and replace with a flat insert to be flush with existing wall finishes above and below.
 4. Lighting: Provide low voltage direct incandescent or LED fixtures with wiring and hookup. Coordinate with emergency lighting requirements. Provide emergency lighting integral with portion of normal car lighting system. Include required transformer.
 5. Suspended Ceiling: Multi-section mirror finish stainless steel mounted with no exposed suspension. Cutouts in each panel for low voltage light fixture.
 6. Handrails: Minimum 1¼" diameter stainless steel tubular grab bar across rear and side walls.
- B. Passenger Elevators 1-6 and Freight Elevator 7: Finishes for the car enclosure shall incorporate the following:
 1. Wood finishes: Any wood paneling or flooring shall not be sourced from endangered forests as listed in Exhibit E: Guidelines for Avoiding Wood from Endangered Forests, unless they are from second-growth forests that carry independent certification by an organization accredited by the Forest Stewardship Council (<http://www.fscus.org>).
 2. Composites: Any composite panels or agrifiber products shall not contain any added urea-formaldehyde resins.
 3. Carpet Flooring: Any installed carpet shall be certified to meet the NSF/ANSI 140-2007e standard at its platinum level.
 4. Non-Carpet Flooring: Any installed hard surface flooring shall be FloorScore certified (www.scs-certified.com/gbc/floorscore.php).
 5. Flooring Adhesives and Sealants: Adhesives and sealants shall have a VOC content less than the current VOC content limits of the South Coast Air Quality Management District (SCAQMD) Rule #1168, or sealants used as fillers shall meet or exceed the requirements of the Bay Area Air Quality Management District Regulation 8, Rule 51 (<http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/Rules%20and%20Regs/reg%2008/rg0851.ashx>).

- C. Lubricate all equipment in accordance with Manufacturer's instructions.
- D. Adjust motors, power conversion units, brakes, controllers, leveling switches, limit switches, stopping switches, door operators, interlocks, and safety devices to achieve required performance levels.

3.06 CLEANUP

- A. Keep work areas orderly and free from debris during progress of project. Remove packaging materials on a daily basis.
- B. Remove all loose materials and filings resulting from work.
- C. Final Cleaning: As a minimum:
 - 1. Elevator hoistways and all equipment therein shall be cleaned and left free of rust, filings, welding slag, rubbish, loose plaster, mortar drippings, extraneous construction materials, dirt, and dust. Include walls, building beams, sill ledges, and hoistway divider beams.
 - 2. Care shall be taken by workers not to mark, soil, or otherwise deface existing or new surfaces. Clean and restore such surfaces to their original condition.
 - 3. Clean down surfaces and areas which require final painting and finishing work. Cleaning includes removal of rubbish, broom cleaning of floors, removal of any loose plaster or mortar, dust and other extraneous materials from finish surfaces, and surfaces which will remain visible after the work is complete.
- D. All cleaning products used at the project site shall meet one of the following standards:
 - 1. Green Seal GS-37: Cleaning Products for Industrial and Institutional Use
 - 2. Green Seal GS-34: Degreasers
 - 3. EcoLogo 110: Cleaning and Degreasing Compounds - Biologically-based
 - 4. EcoLogo 146: Hardsurface Cleaners

3.07 OWNER'S FINAL OBSERVATION AND REVIEW REQUIREMENTS

- A. Review procedure shall apply for individual elevators, portions of groups of elevators and completed groups of elevators accepted on an interim basis, or elevators and groups of elevators completed, accepted, and placed in operation.
- B. Contractor shall perform review and evaluation of all aspects of its work prior to requesting Owner's final review. Work shall be considered ready for Owner's final contract compliance review when all Contractor's tests are complete and all elements of work or a designated portion thereof are in place and elevator or group of elevators are deemed ready for service as intended.
- C. Furnish labor, materials, and equipment necessary for Owner's review. Notify Owner five working days in advance when ready for final review of elevator or group of elevators.
- D. Owner's written list of observed deficiencies of materials, equipment and operating systems will be submitted to Contractor for corrective action. Owner's review shall include as a minimum:
 - 1. Workmanship and equipment compliance with Contract Documents.
 - 2. Contract speed, capacity, floor-to-floor, and door performance comply with Contract Documents.
 - 3. Performance of following is satisfactory:
 - a. Starting, accelerating, running
 - b. Decelerating, stopping accuracy



Guidelines for Avoiding Wood from Endangered Forests

Introduction

The world's forests are in crisis. Earth's forest ecosystems have experienced an unprecedented rate of destruction and degradation, most of which has occurred in the last 200 years.

According to the World Resources Institute (WRI), only 20% of Earth's original forests remain today in areas large enough to maintain their full complement of biological and habitat diversity and ecological functions. These "frontier" forests are: (1) dominated by native trees; (2) provide a variety of habitat types; (3) are large enough to support viable populations of native species and withstand natural disasters; and (4) have been subjected to limited human disturbance.

The remainder of Earth's native forests consist of (1) old growth forests lacking the size or continuity to maintain all of their ecological functions and biodiversity; (2) fragmented old-growth forests; (3) and second growth forests that may or may not support full natural biodiversity and ecological functions. Many of these forests are under threat of destruction or degradation from various civilized human disturbances such as conversion to agriculture, fuelwood cutting, conversion to housing, industrial development, oil and gas drilling, mining, flooding for hydroelectric dams, overhunting (such as bushmeat) or overcollection of wildlife (such as parrots), and introduction of invasive species. But repeatedly, studies have shown that logging for timber is the main factor leading to the loss or degradation of Earth's forests.

Of particular concern due to their incredible and unmatched biodiversity are primary tropical forest, especially rainforests (what scientists call closed-canopy moist forests). The total loss of tropical forests is estimated at 37 million acres per year by the United Nations, but new research indicates the amount of forest degradation due to logging and other disruptive extractive activities may be double or triple that amount. Tropical forest loss is leading to the greatest mass extinction of plants and animals that has occurred on Earth in 65 million years, estimated at over 300 species per day. The leading factor in the loss of tropical forests is unsustainable and often illegal logging for timber. Loggers bulldoze roads into pristine forests seeking high-value trees such as mahogany, ipe, virola, padauk, greenheart, ramin, apitong, wenge and others.

The world's boreal (cold region) forests are a leading depository of atmospheric carbon dioxide, the main gas causing global warming. These forests have recently come under siege. In Canada, old-growth boreal forests are being clearcut by Canadian and foreign companies for wood products markets in the US, Europe and Asia. Trees from Russia's boreal forests are now being sold to the highest bidder in an effort to raise desperately-desired cash.

Old-growth temperate forests in developed countries have largely been converted to plantations or cleared. Less than 1% of original old-growth forests remain in Europe, and less than 5% of original old-growth forests remain in the U.S. Remaining old-growth temperate

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rainforests in Canada, Chile, and other areas are being rapidly logged for timber and pulp for paper.

Certain species in commercial trade are simply being overtargeted, leading to excessive demands on fragile or recovering temperate forests.

Wood products from plantation forests are offered as a solution to declining native forests by some industry and government representatives. Unfortunately, many native forests are still being eliminated in favor of new plantations with fast-growing, often non-native species such as eucalyptus and Radiata pine (this is a particular problem in tropical and coastal temperate rainforests). Also, wood products importers and retailers have learned that claims of plantation origin for woods actually originating from native forests will allay fears of ill-informed consumers. For these reasons, wood products from plantations must be evaluated on a case-by-case basis.

The demand for timber is driving unsustainable logging around the world, fueling a rate of forest loss unprecedented in Earth's history. _____ is committed to reducing its effects on the world's endangered forests by avoiding key high-demand tree species and wood from particularly threatened areas, seeking non-wood, recycled and reclaimed alternatives, and supporting the use of independently-certified wood products in construction.

Woods to Avoid

As of _____, _____ does not sell or trade woods originating from endangered forests or does not use in construction or remodeling off all its facilities woods originating from endangered forests .

"Endangered forests" are defined to include the following (additional areas may become threatened in the future and be added to future guidelines):

- tropical forests (excluding plantations);
- old growth or overharvested temperate forests;
- old growth boreal forests.

_____ does not use woods from the above forest types unless they are reused (such as antique furniture), reclaimed (coming from non-living submerged forests, deconstructed buildings or a secondary product made from production remains), recycled (such as medium density fiberboard made from waste wood) or carry independent certification by an organization accredited by the Forest Stewardship Council*

The remainder of this document includes *examples* of key high-demand species extracted from endangered forests.

The document also includes *examples* of more environmentally sound alternative materials and their sources.

*The Forest Stewardship Council, or FSC, is an independent oversight organization based in Oaxaca, Mexico. FSC accredits independent certifiers based on peer-reviewed standards that have been accepted by most major environmental organizations.

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Examples of Woods from Endangered Tropical Rainforests

(species in italics are also listed as endangered in one or more country lists)

WOOD	ORIGIN	APPEARANCE	COMMON USES
<i>Andiroba</i>	West Indies, C. America, Brazil	Heartwood is reddish brown.	Boat building, furniture, flooring, mill work, cabinetry and decorative plywood.
<i>Apitong</i>	Malaysia, Thailand, Burma, Philippines.	Light to dark reddish brown color.	Commonly used in truck flooring and structural & utility wood skids (pallets).
Balsa	Ecuador, Latin America	Pale white to pinkish color. The lightest of commercial hardwoods; very soft.	Used as insulation, sound deadener and in models.
<i>Cedar — Spanish (Cedro)</i>	Tropical America from s. Mexico to n. Argentina	Light red, very soft.	Boat building, outdoor furniture, exterior doors, decking, paneling, musical instruments and cigar boxes.
Cocobolo	Mexico, C. America, Columbia	Dark brown to reddish brown, with dark streaks.	Used in furniture, pipes, decorative crafts and veneers.
Cordia (Bocote)	Mexico, C. and S. America, Fiji	Heartwood is dark brown and streaky.	Turnery, expensive furniture, flooring and inlay work.
Dakua makade, salusalu (Fiji birch)	Fiji	Heartwood is pale cream to golden brown.	Furniture, veneer, plywood, paneling, picture frames, machined items, window parts, turned items. Plywood manufactured by Georgia-Pacific.
<i>Ebony</i>	W. Africa with related species in India and Sri Lanka	Black to black with streaks of dark brown.	Musical instruments, inlays, marquetry and small articles of turnery.
Greenheart (beeberoe)	Guyana, (British Guiana), West Indies	Heartwood varies in color from light olive green to nearly black.	Construction of ships and docks, pilings, marine uses.
Ipê (bethabara, Pau d'arco)	Mexico, Central and S. America	Heartwood is light brown to olive brown.	Truck flooring, railroad crossties, boardwalks, decking, benches, handrails, tool handles, veneers.
<i>Iroko (African teak)</i>	Ivory Coast, Liberia, Ghana	Pale yellowish brown to dark brown.	Joinery, furniture, marine work, veneer.
Jatoba (curbaril, jatoby)	Central and South America, West Indies.	Heartwood is salmon-red to orange-brown with dark and russet brown streaks.	Furniture, joinery, cabinets, turnery.
<i>Jelutong</i>	Indonesia and Malaysia	White or straw colored.	Pattern work, pencils, picture frames, drawing boards.

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WOOD	ORIGIN	APPEARANCE	COMMON USES
<i>Kapur</i> (<i>Borneo teak</i>)	Southeast Asia, Sumatra, Borneo, Sarawak	Heartwood is reddish brown.	Joinery, construction, decking. Kapur is used extensively in plywood either alone or with lauan.
<i>Lauan/</i> <i>Meranti</i> <i>Grouping</i>	Southeast Asia	The term lauan or “Philippine mahogany” is applied to three genera. The various species of the three genera can be categorized into 4 groups, based on heartwood color (meranti and seraya are names applied only to the genus Shorea), all have a stringy grain; 1. balau or selengan batu — light to deep red brown; 2. dark red meranti or tanguile — dark red to red brown; 3. light red meranti or bagtikan or white lauan — almost white to pale pink to dark red or pale brown to deep brown; 4. white meranti — light yellow or yellow brown. Uses: low grade furniture, fixtures, veneer, plywood, door skins, and wall paneling , moldings, general construction, mobile home interiors, set building, speaker cabinets. Plywood manufactured by Georgia-Pacific. The U.S.’s main tropical timber import*.	
<i>Mahogany,</i> <i>African</i>	West Africa	Heartwood varies from a pale pink to a dark reddish brown.	Decorative wood, furniture, boat construction, veneers, interior finishes.
<i>Mahogany,</i> <i>American or</i> <i>Honduras</i> (<i>true</i>)	Mexico, Central and South America (also, a few plantations in Indonesia)	Heartwood varies from pale pink to reddish brown.	Cabinets, expensive furniture, fixtures, interior trims, paneling, structural part and trimming of fine boats, veneers**.
<i>Merbau (ipil,</i> <i>kwila, vesi)</i>	Southeast Asia	Heartwood is brown or dark red brown.	Joinery, flooring, construction, furniture, turnery and musical instruments.
Nyotah (njatuh, padang)	Malaysia and S.E. Asia.	Heartwood varies by species but generally from pale pink to reddish brown, sometimes with darker streaks.	Furniture (often outdoor), cabinets, joinery, interiors.
Obeche (sam- ba, African whitewood)	West central Africa	Creamy white to yellow.	Flooring, railroad crossties, boat construction, veneers.
Paduak (vermillion, pradu)	Africa, Thailand, Andaman Islands	Heartwood is orange to orange red.	Heavy construction, wall paneling, some furniture, decorative crafts.
Purpleheart (amaranth)	Brazilian Ama- zon, Mexico, C. America	Heartwood is deep purple.	Turnery, expensive furniture, specialty items, cabinet work, park benches, framing, musical instruments.
<i>Ramin</i> (<i>melawis</i>)	Malaysia, Borneo, Indonesia, Sumatra, Philippines, Fiji	One of the few moderately heavy woods “blond” woods from the region.	Furniture, moldings, plywoods, flooring, dowels, tool handles, drying racks, picture frames — stained to match veneers of more valuable species.

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WOOD	ORIGIN	APPEARANCE	COMMON USES
Rosewood, Amazon	Brazil	Heartwood is golden brown with reddish purple stripes.	Veneer, furniture.
<i>Rosewood, Brazilian</i>	Eastern forests of Brazil to Rio de Janiero	Colors range from shades of brown to red and violet, irregularly streaked with black.	Veneer for decorative plywood, cutlery handles, picture frames, billiard cues and craft items.
Rosewood, Honduras	Honduras	Heartwood is striped with purple or brown.	Veneers.
Rosewood, Indian	Southern India, Sri Lanka	Heartwood varies from golden brown to dark purplish brown with denser black streaks.	Decorative wood for expensive furniture, cabinets, veneers, inlays, marquetry, turnery, picture frames.
Teak	Burma, Thailand, Laos, Cambodia (also plantations in Indonesia, Ecuador, Costa Rica and Africa	Heartwood is medium brown or golden brown	Flooring, ship building and decking, turnery, outdoor and indoor furniture, household items, salad bowls.
Utile (sipo)	Ivory Coast and Ghana	Heartwood is reddish brown.	Quality joinery.
<i>Wenge (panga panga)</i>	West Africa	Heartwood is striped dark brown to black.	Carving wood, cabinetry, expensive furniture, interior and exterior joinery, paneling, turnery, flooring.
Zebrawood (zebrano)	Nigeria, West Africa	Heartwood is pale brown with distinct dark brown stripes.	Decorative crafts, inlays, veneer, wall paneling.

* Lauan is the most commonly used tropical veneer. It is poor to medium quality wood generally used for inexpensive plywood and door skins. The tragic part: if compensation for indigenous peoples losing their homelands and the loss of biodiversity are factored in, the *real* cost of lauan is extremely high.

** The demand for true mahogany from Latin America has also caused numerous logging companies to encroach on indigenous peoples' reserves in Brazil. The forest people are endangered by log poachers who fell the trees and sell the wood to middlemen, who in turn sell it to importers from the U.S. and other industrialized countries

*** Teak from Burma and teak products from Thailand are not only environmentally-unsound, but associated with some of the worst human rights violations in the world. The market for Burmese teak and teak products helps keep one of the most brutal military regimes in power, as teak is one of the only sources of foreign exchange for the Burmese military. In order to bolster its army, the Burmese military government is rapidly selling off its teak and other natural resources because the U.S. and other nations canceled foreign aid due to the junta's 1988 massacre of thousands of pro-democracy demonstrators.

The Burmese government has also sold teak concessions to Thai logging companies, who then export the teak. Thailand has imposed a ban on logging since massive deforestation caused flooding which killed hundreds of people. So Thai loggers have moved their operations to the Burmese border, which still has large tracts of teak. This area is home to ethnic minorities who are fighting to defend their homeland. The roads built by the Thai loggers have helped the Burmese military gain access to this area.

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Examples of Woods to Avoid from Endangered Temperate Rainforests

SPECIES	ORIGIN	APPEARANCE	COMMON USES
Alaskan Cedar	Coastal British Columbia and Coastal Alaska	Pale yellowish	Decking, exterior shingles, outdoor furniture, trellises, fencing,
<i>Alerce (lahuan, Patagonian cypress, Fitzroy cypress)</i>	Central Chile and southern Argentina	A softwood. Heartwood brownish red, sharply demarcated from the narrow light-colored sapwood; fine texture, straight grain, resembles California redwood	Shakes and shingles, general construction, interior & exterior cladding, pencil slats, musical instruments, vats and tanks, lumber cores, and furniture components
<i>Arucaria (Monkey Puzzle tree)</i>	Chile, Argentina	Pale yellowish	Timber
Coigue (anis, coihue, lengue, roble, South American beech)	Chilean coast and up the river valleys into the high cordilleras	Heartwood varies from pale pinkish brown to reddish brown to bright cherry red; sapwood often wide, light brown; straight grain	Furniture components, cabinet work, flooring, millwork, cooperage, an all-purpose timber in Chile
Eucalyptus (old growth)	Australia	Yellowish blond with a pattern of lighter and darker sheen	Paneling, furniture
Jarrah	Australia	Heartwood is rich dark brownish red with even but moderately coarse texture	Marine work, shingles, flooring, furniture, tool handles, paneling, veneers
Lenga	Chile	Heartwood is orange-brown with medium grain	Flooring, veneer, molding, decking, shingles, turnery
Redwood	Coastal northwestern US	Heartwood is pale reddish orange to pale brown, sapwood is pale yellow	Decking, exterior paneling and shingles, interiors, picnic tables, outdoor furniture, trellises, fencing, window frames
Rimu (red pine)	New Zealand	Medium density softwood; seasoned heartwood is reddish-brown, sometimes yellowish-brown, straight-grained	Furniture, interior paneling, flooring, interior trim, plywood, framing, architectural veneers
Sitka Spruce	Coastal British Columbia and Coastal Alaska	White to pale yellow	Two-by-fours, plywood
Tepa	Chile	Yellowish-white wood; similar in appearance to Cypress Pine	Furniture, interior doors and ceiling, interior and exterior sheathing, packing crates, plywood & veneers, concrete forms, etc.

R A I N F O R E S T R E L I E F

Sparing Earth's Rainforests from Consumption

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Ulmo (gnulgu, muermo, roble de Chile)	Chile	Heartwood reddish- or grayish-brown; texture fine and uniform; grain generally straight	Flooring, general construction, furniture, and joinery
Western Red Cedar	British Columbia, Northwest US	Light brick red to pale orange	Decking, exterior paneling and shingles, interiors, picnic tables, outdoor furniture, trellises, fencing

Examples of Woods to Avoid from Endangered Boreal Forests

SPECIES	ORIGIN	APPEARANCE	COMMON USES
Ash	Canada, Russia	Light yellow to yellow with medium grain	Furniture, flooring, veneers, paneling
Cherry	Canada, Russia	Cinnamon to light brown with very fine grain	Furniture, paneling, frames
Korean pine	Russia, west Asia	Light yellow to whitish	Construction, furniture
Spruce	Canada, Russia	Light yellow to whitish with pale grain	Construction, furniture
Walnut	Canada, Russia*	Dark brown to cocoa with fine grain	Furniture, paneling, plaques, frames
White birch	Canada, Russia	Light yellow to whitish with light grain	Flooring, veneers, paneling, furniture, plywood, doors
White oak	Canada, Russia*	Cream to yellow-white with heavy grain	Furniture, stairs, railings, paneling, trim, flooring, veneers, plywood, doors

* These woods are being used extensively by furniture manufacturers in China.

Woods to Avoid from Overharvested Temperate Forests

SPECIES	ORIGIN	APPEARANCE	COMMON USES
Cherry	US	Cinnamon to light brown with very fine grain	Furniture, paneling, frames
Pine (native)	Mexico	Pale-colored with wide grain	Furniture, construction, interior trim, packing cases and boxes, pallets, paneling

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Suggested Alternatives to Woods from Endangered Forests

Below are some suggested alternatives to woods from endangered forests. There are many more. Further research can be done by contacting some of the organizations listed below or viewing their websites. A particularly useful guide is the GreenSpec Binder published by Environmental Building News (ph: 802/257-7300, http://www.buildinggreen.com/orders/gs_info.html).

USE SUGGESTED ALTERNATIVES

Note: All woods listed as Suggested Alternatives column are second growth — no old growth will be used.

<i>ALL USES</i>	Reclaimed or salvaged wood. These are woods recovered from existing structures, submerged logs or mill scraps. The former two are an excellent source of woods with old growth characteristics. The category excludes wood from dry-land "salvage" logging unless independently certified.
<i>ALL USES</i>	Woods carrying independent certification by an organization accredited by the Forest Stewardship Council*.
<i>Stick Frames, 2 x 4s, etc.</i>	Second growth: western fir, Douglas fir, white oak, southern yellow pine, loblolly pine; glu-lam beams, straw bale, cob
<i>Roofing & Sheathing</i>	Straw board or other boards made from agricultural residue; second growth hem-fir, oak or birch plywood; oriented strand board
<i>Siding, Shakes and Shingles</i>	Concrete board, fiberglass, metal
<i>Interior Trim</i>	Second growth: alder, white basswood, eastern fir, western white pine, butternut, cherry, western fir, maple, red oak, lodgepole pine, larch, black oak, sweetgum, southern yellow pine, northern white pine, spruce pine, yellow poplar, sycamore, sugar pine, ponderosa pine; high-density fiberboard
<i>Stairs</i>	Second growth red or white oak, maple, ash
<i>Wood Flooring</i>	Bamboo [†] , Linoleum [™] , reclaimed cork [†] , certified woods, bay, beech, pecan, hickory, red oak, white oak, live canyon oak, black oak, tanoak, sycamore, eastern cedar, red pine, lodgepole pine, soft and hard maple, European spruce, fir

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<i>Veneers</i>	Second growth: aspen, ash, beech, bay, birch, butternut, cottonwood, elm, claro, walnut, magnolia, maple, red oak, white oak, black oak, sycamore, sweetgum, tanoak, tupelo, black willow, pecan, ponderosa pine, hickory, red gum, aromatic cedar, basswood, poplar
<i>Exterior Doors & Trim</i>	Second growth: alder, birch, northern white pine, white basswood, ponderosa pine, magnolia, spruce, pine, white oak, cypress, sugar pine, western white pine, Douglas fir, larch, western fir, redwood; aluminum, steel, composites
<i>Decking & Boardwalks</i>	Recycled plastic lumber**; second growth: eastern cedar, redwood; pressure-treated wood*; palmwood
<i>Cabinets, Counters & Bar Tops</i>	LUMBER: Second growth ash, bay, beech, butternut, chinquapin, redgum, madrone, black oak, walnut, larch, ponderosa pine, lodgepole pine, live canyon oak, tanoak PLYWOOD: Second growth: birch, fir, maple, poplar, red oak, white oak, red alder; strawboard, particle board, medium-density fiberboard SURFACES: Tile (particularly from recycled glass), stone
<i>Interior Furniture</i>	Antiques; palmwood††, twig furniture; rattan; second growth: sada, alder, ash, bay, beech, birch, buckeye, butternut, chinquapin, elm, hackberry, juniper, magnolia, hard maple, red oak, white oak, black oak, sycamore, tupelo, tanoak, live canyon oak, walnut, yellow poplar, Douglas fir, sweet gum, northern white pine, true hickory, black willow; rubberwoods (from southeast Asian rubber plantations); metal
<i>Exterior Furniture</i>	Recycled plastic lumber**, second growth: white oak§, sassafras, eastern cedar§§, larch, second growth redwood, locust, red mulberry, juniper, catalpa, northern cedar, Pacific yew, eastern fir, Finnish or Baltic birch plywood; metal
<i>Household Items & Novelties</i>	White basswood, pakkawood, osage orange, persimmon, olive, fruitwoods, almond, beech, sassafras, European boxwood
<i>Pencils</i>	Recycled newsprint (Eberhard Faber's EcoWriter), incense cedar
<i>Tool, Broom & Mop Handles</i>	Recycled plastic, plastic, steel, aluminum, second growth: hickory, ash, acacia, European boxwood, beech, black locust, red oak, sycamore, olive
<i>Bulkheads & Pilings</i>	Recycled plastic lumber**, recycled plastic sheet pile**.

<i>Trellises and Fencing</i>	Recycled plastic lumber**, second growth Eastern white cedar
<i>Picnic tables</i>	Recycled plastic lumber**
<i>Plaques</i>	Medium density fiberboard, second growth: walnut, oak
<i>Frames</i>	Recycled materials, second growth: birch, maple

* Pressure-treated wood should only be used as a last resort. CCA (chromium/copper/arsenic) is used as the treating agent. It is highly toxic to humans and other animals and will likely leach toxins into the surrounding environment. CCA is being phased out for sale for residential use by January 1, 2004.

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