Abstract: Buildings generate a large amount of waste throughout their life cycles, from construction and building operations to demolition. The amount of waste leaving the properly can be reduced, however, through responsible procurement choices, as well as by implementing comprehensive recycling programs throughout the construction, operation, and demolition phases. Consideration for materials and resources focuses on the health and productivity consequences of material selections for building occupants, plus the long term social, economic, and environmental impacts of materials used in the design and construction of the building. Green building addresses two kinds of problems related to materials and resources: waste management and life-cycle impacts. This issue has been discussed by many professionals and researchers and it seems this problem is more likely existed in not developing countries comparing with developing countries. The lack of selecting the right materials, have not been well taken into the consideration . Researchers have developed a number of assumptions that helps to resolve the research problems, which includes the application of the green material and resource in the Jordanian interior designs to provide a healthy environment to the interior spaces. Therefore, the paper aims to search for the possibilities of proposing some indicators using sustainable material and resource in the of internal Jordanian spaces. The theoretical part goes through a brief study to definition of sustainable material and resource in Jordan, and its uses in all the elements of internal and emphasis about the traditional symbols to preserve the identity of Jordan , then we going through the uses of the material and resources by analyses examples of the green interior spaces in Jordan.

Key words: Sustainable, material, rescore, Jordanian interior design, healthy environment.

1. Introduction

Materials are the easiest way for architects to begin incorporating sustainable design principles in buildings. Traditionally, price has been the foremost consideration when comparing similar materials or materials designated for the same function.

Also the analysis of building products, from the gathering of raw materials to their ultimate disposal, provides a better understanding of the long-term costs of materials. These costs are paid not only by the client, but also by the owner, the occupants, and the environment. The principles of Life Cycle Design provide important guidelines for the selection of building materials. Each step of the manufacturing process, from gathering raw materials, manufacturing, distribution, and installation, to ultimate reuse or disposal, is examined for its environmental impact. A material’s life cycle can be organized into three phases: pre-building, building, and post-building. These stages parallel the life cycle phases of the building itself.

2. The Criteria Required for Any Project and the Materials Related to It

2.1 Collection and Storage of Recyclable Materials

Facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills.

Provide an easily accessible area that serves the entire building and is dedicated to the separation, collection and storage of materials for recycling including (at a minimum) paper, corrugated cardboard, glass, plastics, and metals. Overall, design teams and building owners/building managers need to consider:
• How recyclables will be collected from individuals on the various floors of a building (e.g., bins at each desk and bins in central locations such as pantries, lounges, and cafeterias);
• How often recyclables will be collected from each floor;
• Where recyclables will be collected and stored prior to pick-ups;
• How frequent the recyclables will be hauled based on municipal recycling programs and private recycling haulers [1].

2.2 Building Reuse

Reuse existing building or portions of existing buildings, Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport [2], see Figs. 1–2.

Maintain at least 75% of existing building structure and shell (exterior skin and framing, excluding window assemblies and non-structural roofing material) [1].

The directory of green building in Jordan was made a research about the reuse of construction materials in the building just for the one floor 52% of the materials used (Table 1).

2.3 Constriction Waste Management (Divert & Reuse Waste)

Reduce the waste and toxins that are hauled to and disposed of in landfills or incineration facilities. During the daily operation of the building, recycling, reuse, and reduction programs can curb the amount of material destined for local landfills. So we can divide it into two parts:

2.3.1 Construction Demolition Waste
Consists of all waste originating from construction, renovation and demolition activities, such as rubble, bricks and tiles, asphalt, metals, soil and rubble, wood [1] (Figs. 3–4).

2.3.2 Solid Waste Recycling
Recycling refers to the collection and reuse of waste materials such as empty beverage containers. The materials from which the items are made can be reprocessed into new products. Material for recycling may be collected separately from general waste using dedicated bins and collection vehicles, or sorted directly from mixed waste streams (Fig. 5).

<table>
<thead>
<tr>
<th>Non-structural element</th>
<th>Current area</th>
<th>Reuse area</th>
<th>The Percentage of reuse %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gypsum wall</td>
<td>40%</td>
<td>20%</td>
<td>50%</td>
</tr>
<tr>
<td>Carpet</td>
<td>80%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Parke floor</td>
<td>60%</td>
<td>30%</td>
<td>50%</td>
</tr>
<tr>
<td>Gypsum ceiling</td>
<td>70%</td>
<td>70%</td>
<td>100%</td>
</tr>
<tr>
<td>Internal wooden door</td>
<td>20%</td>
<td>18%</td>
<td>90%</td>
</tr>
<tr>
<td>Internal windows</td>
<td>6%</td>
<td>6%</td>
<td>100%</td>
</tr>
<tr>
<td>Internal aluminum door</td>
<td>2%</td>
<td>2%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Fig. 1  Recycling Bins [1].
Fig. 2  Building reuse [2].
2.4 Reuse Material

The intent of it is to encourage the reuse of building materials through salvage or refurbishment. Reusing resources reduces the extraction of materials from virgin resources, saves landfill space and saves money. Reuse and recycling of building material is a growing area of interest and concern in many parts of the world. Current practices and trends in the building material waste management area are examined from a building life cycle standpoint or cradle to reincarnation concept. Strategies include zero waste, integrated recycling, international approaches, and reuse of materials, resource optimization, waste reduction, and deconstruction. Examination of the waste management hierarchy and life cycle management of material is used to improve the understanding of reuse and recycle opportunities. Other considerations include cost, economic factors, social factors and environmental factors. From all of this we can divide the reuse material into two important parts.

Reclaimed, and the salvaged materials are incorporated into the new building, thereby extending the lifetime of materials that would otherwise be discarded. We can see in Table 2 the Maximum transport distances for reclaimed materials in Jordan.

<table>
<thead>
<tr>
<th>Material</th>
<th>Distance (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reclaimed tile</td>
<td>100</td>
</tr>
<tr>
<td>Reclaimed slate</td>
<td>300</td>
</tr>
<tr>
<td>Reclaimed bricks</td>
<td>250</td>
</tr>
<tr>
<td>Reclaimed timber</td>
<td>1,000</td>
</tr>
<tr>
<td>Reclaimed steel</td>
<td>2,500</td>
</tr>
</tbody>
</table>

Purchase reclaimed or salvaged materials are shown in Figs. 6–8.
2.5 Green Material

Recycled content, regional and local material, rapid renewable material, certified wood, non toxic material.

2.5.1 Recycled Content

The percentage of material in a product that is recycled from the manufacturing waste stream (pre-consumer waste) or the consumer waste stream (post-consumer waste), and used to make new materials [6]. Recycled content is typically expressed as a percentage of the total material volume or weight. To key building materials that have potential for recycling include paper, glass, plastics [7], metals, concrete or brick, and wood. These generally make up the bulk of interior building’s fabric. And purchasing recycled-content materials supports sustainability through the creation of an end market for materials that would otherwise be sent to the landfill and reduces the use of virgin materials [7], see Fig. 9.

Aluminum can be recycled for 10–20% of the energy required to transform raw ore into finished goods. Although the majority of textile waste originates from household sources, waste textiles also arise during yarn and fabric manufacture, garment-making processes and from the retail industry. These are termed post-industrial waste, as opposed to the post-consumer waste which goes to jumble sales and charity shops. Together they provide a vast potential for recovery and recycling [8], see Fig. 10. Corian is the brand name for a solid surface material created by DuPont. It is composed of acrylic polymer and alumina trihydrate. Corian can be thermoformed by heating it to 300°F (150°C), allowing unique shapes to be created. Its primary use is in kitchen countertops, bathroom vanity tops, and wall cladding in showers [9, 10], see Fig. 11.

Glass recycling is the process of turning waste glass into usable products. Glass waste should be separated by chemical composition, and then, depending on the end use and local processing capabilities, might also have to be separated into different colors. Many recyclers collect different colors of glass separately since glass retains its color after recycling. The most common types used for consumer containers are colorless glass, green glass, and brown/amber glass [11] (Fig. 12).

Concrete is the second most consumed material after water — an estimated 25 billion tones of concrete is manufactured globally every year. It is a durable material — most concrete waste is generated not because the concrete is worn out, but usually because the structure itself has become redundant with
changing infrastructure needs and planning [6], see Fig. 13.

2.5.2 Regional and Locally Sourced Materials

In order to enable comparative analysis of sustainability implications, life cycle analysis of building materials is necessary. In addition to the local economic benefits of the use of locally extracted and manufactured building materials, less overall embodied energy, and therefore less overall energy, is spent due to shorter distances traveled in transport of these materials. The intent of selecting regional materials is that it stimulates the local economy and decreases the overall amount of energy used to transport building materials to the site.

The Bani Hamida Women’s Weaving Project: The Bani Hamida Women’s Weaving Project, The Bani Hamida Mountain is situated in the Madaba Governorate, in the middle part of the Kingdom. It is located 35 km away from Madaba City and 80 km away from the capital city, Amman. It’s originated by the Save the Children Federation in 1985 and merged into the Jordan River Foundation in 1998, revived traditional Bedouin rug weaving, helping to maintain the social fabric of the Makawir area. This project grew throughout the years, it has become the largest and most famous rug weaving project in Jordan and the neighboring countries [12, 13] (see Figs. 14 and 15).

Pottery manual and iron industry in Jordan: A Jordanian potter makes pottery products in Amman and it is the ceramic ware made by potters. It can also refer to the material of which the pottery ware is made [14].
of which major types include earthenware, stoneware and porcelain. The place where such wares are made is also called a pottery, with the plural being potteries [14] (see Figs. 16 and 17).

Stone and marble in Jordan: Marble is a metamorphic rock composed of recrystallized carbonate minerals, most commonly calcite or dolomite. Geologists use the term “marble” to refer to metamorphosed limestone, however stonemasons use the term more broadly to encompass unmetamorphosed limestone. Marble is commonly used for sculpture and as a building material, and the art of mosaic making has been revived in traditional as well as modern designs [15] (see Fig. 18).

2.5.3 Rapidly Renewable Material

The intent of this credit is to select and incorporate rapidly renewable materials into the building and site design in order to encourage the development of those markets and to promote efficiency in the production of the building materials and it is the amount of a building’s agricultural products (fiber or animal) that are quickly grown or raised and can be harvested in a sustainable fashion, expressed as a percentage of the total materials cost. It must take 10 years or less to grow or raise. We can divide this material into: Bamboo flooring, Cotton batt insulation, Linoleum flooring Sunflower seed board panels, Wheatboard cabinetry, Wool carpeting and Cork flooring.

Bamboo floors and furniture: are manufactured from the bamboo plant. The majority of today’s bamboo flooring products originates in China and other portions of Asia. Bamboo is an attractive alternative for flooring because of its physical similarities to hardwoods. Bamboo floor manufacturers and sellers promote its strength, durability as well as resistance to insects and moisture while having the added benefit of being eco friendly [17] (see Figs. 19 and 20).
Bamboo is touted for being strong and inexpensive, but there is more to bamboo furniture that is now catching the public eye: Bamboo is renewable. Bamboo furniture is a stylish and inexpensive way to go green, especially in the home. Also bamboo can help us to choose the more environmentally friendly furniture [17].

Cotton batt insulation: Cotton insulation is increasing in popularity as an environmentally preferable option for insulation. It has an R-value of around 3.7 (RSI-0.65), a higher value than most fiberglass batts. The cotton is primarily recycled industrial scrap, providing a sustainability benefit. Also with any batt insulation, proper installation is important to ensure high energy efficiency.

The insulation that will be installed in the building’s walls is made from recycled blue jeans. The product contains 85% post-industrial recycled content and uses cotton, a rapidly renewable resource, as one of its main ingredients (see Fig. 21) [18].

Linoleum flooring, Wool carpeting and Cork flooring: Linoleum (informally abbreviated to lino) is a floor covering made from renewable materials such as solidified linseed oil (linoxyn), pine rosin, ground cork dust, wood flour, and mineral fillers such as calcium carbonate, most commonly on a burlap or canvas backing. Linoleum was invented by Englishman Frederick Walton. In 1855, Linoleum tile can be made to various designs and inlaid with various colors to form patterns reflecting the shape and use of a room [5]. Wool carpet is a textile floor covering consisting of an upper layer of “pile” attached to a backing. The pile is generally either made from wool. It has excellent durability, can be dyed easily and is fairly abundant. And the Characteristics of Wool Carpet: Natural resilience, good resistance to abrasion, good texture retention, good resistance to soil, and good clean ability [19]. Cork trees live for about 200 years. The first two harvests produce poorer quality cork. The cork industry is generally regarded as environmentally friendly [7]. The sustainability of production and the easy recycling of cork products and by-products are two of its most distinctive aspects, varnished cork tiles can be used for flooring, as an alternative for linoleum, stone or ceramic tiles (Fig. 22).

Sunflower seed board panels and Wheatboard cabinetry: Sunflower Seed Board is manufactured from sunflower hulls, a rapidly renewable agriculture product. Through the process, no out-gassing solvents, such as urea formaldehyde, are added to create safe indoor air quality, and it can be used in residential to
commercial applications ranging from cabinetry and furniture to tables and architectural applications [20]. Research has shown that today’s consumer has a desire for environmentally friendly Green products. The formaldehyde free wheat board cabinets do not require to sacrifice either design or quality. As we can see in the photos below there is a wide selection to enhance any multifamily project [21] (see Fig. 23).

Certified wood. The intent of this credit is to specify and utilize wood certified by the FSC (Forest Stewardship Council) for structure, framing, rough carpentry and finish carpentry. The use of FSC certified wood promotes the long term health and productivity of forests. The goal of the Sustainability Principle is to “demonstrate institutional practices that promote it, including measures to increase efficiency and use of renewable resources, and to decrease production of waste. Also FSC is a commitment to good forestry practices, carried from forest to consumer. The Forest Stewardship Council was founded after the 1992 UN Conference on Sustainable Development in Rio de Janeiro to address the environmental impact of poor forest management. Today, FSC is the only standards body recognized by both the corporate sector and the environmental organizations for its sound forest management standards and principals [12] (see Fig. 24).

Non toxic material (Paint and Stains, Polishes and Waxes)

The non-toxic material is environmentally green like (safe paints and Stains, Polishes and Waxes) contain neither volatile organic compounds nor toxins such as formaldehyde, ammonia, and acetone or odor-masking agents. Because of their potential toxicity, they also do not contain mildew-or fungus-killing properties. Also there are different needs depending on the project function, there is a variety of paints that offer benefits in different areas. Low-VOC paints address the issues of indoor air quality and allergies and insulating paint saves energy. Depending on the projects needs, any of these paints might be the preferred choice [23] (Fig. 25).

3. The Analysis of Sustainable Material Usage in the Elements of Jordanian Interior Design

In this paragraph we will discuss the use of the criteria required for the sustainable materials in the
The Ideal Usage of Sustainable Materials and Local Resources of the Interior Space Design in Jordan

Jordanian interior design. By using Descriptive analytical approach, we chose two case studies of the restaurants, one of them is in Amman (modern style) and another one is in Madaba (traditional style), to analyze the uses of sustainable materials, functionally and aesthetically.

3.1 The First Example Was (Haret Jdoudna Restaurant)

Village of food & crafts in Madaba, which lies 30 km to the south of Amman, They use the same architectural elements building like walls, ceilings staircases, iron windows and doors. Also they use many reclaimed furniture and materials. The southern part of the restaurant was built in 1905 using the cross vault construction method with stone floor “acquired” at the time from the Roman Road, see Fig. 26.

3.2 The Second Example is Wild Jordan Café in Amman

Wild Jordan Café is located in the Wild Jordan Nature Center, which has a magnificent location overlooking the old city of Amman. Modernity in this project is the process of the tapping into innovative and new ways of thinking about architecture, within the wide background of a natural search for new Jordanian identity. It is about incorporating technical and aesthetic solutions that are on the cutting edge of contemporary thinking. Most of the recycled materials, and specialty aluminum in the form of soft drink containers, is to be used as finish in many parts of the building. It can be used to create the finish of the main front desk, as sun blinds. Modern canopy as tensile structure for shading outdoor areas and as roof finish to reflect the sun, shade roofs and hide mechanical fittings. Much of this material can be collected through a national campaign, giving individuals and groups the chance of feeling that they have contributed something personal to this building. One of the important materials used in this building is Aluminum. It is an exciting material, it weathers nicely without rust, it is non toxic friendly to the environment [21], see Fig. 27.

Fig. 25 Non toxic material (paint and stains, polishes and waxes) [23].

Fig. 26 Haret jdoudna reuse building and reclaimed material in interior design elements, author’s photo, 2009.

Fig. 27 Wild Jordan café reuse and reclaimed materials in interior design elements, author’s photo, 2009.
4. Conclusions

After the discussion of the two case studies and analysis the usage of sustainable material in them, the paper found a set of indicators, which includes the application of the ideal usage of sustainable material and resource in the Jordanian interior designs to provide a healthy environment in the interior spaces. The table below shows the ideal usage of the sustainable material and resource in traditional restaurant (Haret Jdoudna) in Maddabe, Jordan, see Table 3, and modern spaces in wild Jordan café, see Table 4.

4.1 The Ideal Usage of Sustainable Material and Resource in Jordanian Interior Design

- The collection and storage of materials for recycling including (at a minimum) paper, corrugated cardboard, glass, plastics, and metals;
- The Pre-Building Phase describes the production and delivery process of the materials. And Raw Jordanian material like (marble, stone, iron, wood, wool, mosaic, clay, etc.) procurement methods, the manufacturing process itself, and the distance from the manufacturing location to the building site all have environmental consequences. Also using the Use Reclaimed, Salvaged and Refurbished Materials, see Table 2. To know Maximum transport distances for reclaimed materials in Jordan;
- The Building Phase refers to a building material’s useful life. This phase begins at the point of the material’s assembly into a structure, includes the maintenance and repair of the material, the selection of building materials for reduced construction waste, and waste that can be recycled, is critical in this phase of the building life cycle. Also the designer must used all the green material As much as possible like (Recycled content, Regional and local material, rapidly renewable material, Certified wood and Non toxic material);
- The Post-Building Phase refers to the building materials when their usefulness in a building has expired. At this point, a material may be reused in its entirety, have its components recycled back into other products.

Table 3  The analysis of the uses of sustainable material and resource in Jordanian interior traditional spaces.

<table>
<thead>
<tr>
<th>Interior design elements</th>
<th>Building reuse</th>
<th>Construction waste</th>
<th>Reuse material</th>
<th>Reclaimed material</th>
<th>Recycling content</th>
<th>Local material</th>
<th>Renewable material</th>
<th>Certified wood</th>
<th>Non toxic material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceiling</td>
<td>Wood, concrete stone</td>
<td>Gypsum ceiling, use 100%</td>
<td>Wood</td>
<td>Timber 200 miles</td>
<td>Wood, iron, stone</td>
<td>Wood, stone</td>
<td>Non use</td>
<td>Take wood</td>
<td>Safe coat paint</td>
</tr>
<tr>
<td>Wall</td>
<td>Stone concrete iron</td>
<td>Gypsum wall use 50%</td>
<td>Stone, brake</td>
<td>Stone, slate, 100 miles</td>
<td>Stone, wood mosaic</td>
<td>Iron, mosaic, wood, stone</td>
<td>Wood, wool</td>
<td>Non use</td>
<td>Metal coat paint, safe coat paint</td>
</tr>
<tr>
<td>Floor</td>
<td>Wood, stone brake</td>
<td>Parka floor use 50%</td>
<td>Wood, stone, brake</td>
<td>Tile and wood 100 miles</td>
<td>Mosaic, wood, stone and brake</td>
<td>Wool, stone, brake</td>
<td>Bamboo flooring</td>
<td>Bamboo flooring</td>
<td>Premium furniture polish</td>
</tr>
<tr>
<td>Furniture</td>
<td>Wood, iron, stone</td>
<td>Wood, iron, stone use 50%</td>
<td>Wood, wool, iron, leather</td>
<td>Wood 100 miles</td>
<td>Fabric, wood,</td>
<td>Wool lined metal, iron, clay wood, banana leaves</td>
<td>Wool, bamboo, banana leaves, leather, melamine</td>
<td>Take wood bamboo</td>
<td>Premium furniture polish</td>
</tr>
<tr>
<td>Column</td>
<td>Concrete stone</td>
<td>Concrete stone use 100%</td>
<td>Stone, iron</td>
<td>Non use</td>
<td>Concrete</td>
<td>Non use</td>
<td>Non use</td>
<td>Non use</td>
<td>Safe coat paint</td>
</tr>
<tr>
<td>Door</td>
<td>Iron wood</td>
<td>Internal wooden 90%</td>
<td>Iron, wood</td>
<td>Iron 150 miles</td>
<td>Wood, stone, iron</td>
<td>Bamboo wood</td>
<td>Take wood</td>
<td>Metal coat paint</td>
<td></td>
</tr>
<tr>
<td>Window</td>
<td>Iron glass</td>
<td>Iron 100% glass 20%</td>
<td>Iron, glass</td>
<td>Iron 150 miles</td>
<td>Iron, glass</td>
<td>Non use</td>
<td>Non use</td>
<td>Non use</td>
<td>Metal coat paint</td>
</tr>
<tr>
<td>Accessories</td>
<td>Stone, metal, wood</td>
<td>Wood 50% iron, stone 80%</td>
<td>Metal, stone, wood, wool</td>
<td>Metal, wood, stone, 100 miles</td>
<td>Paper, glass, wood</td>
<td>Wool, clay stone metal wood,</td>
<td>Wool, wood, banana leaves</td>
<td>Take wood bamboo</td>
<td>Premium furniture polish</td>
</tr>
</tbody>
</table>
Table 4  The analysis of the uses of sustainable material and resource in Jordanian interior modern spaces.

<table>
<thead>
<tr>
<th>interior design elements</th>
<th>Building reuse</th>
<th>Construction waste</th>
<th>Reuse material</th>
<th>Reclaimed material</th>
<th>Recycling content</th>
<th>Local material</th>
<th>Renewable material</th>
<th>Certified wood</th>
<th>Non toxic material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceiling</td>
<td>Steel, concrete gypsum</td>
<td>Gypsum ceiling, use 100%</td>
<td>gypsum, linen, steel</td>
<td>Timber, steel, 200 miles</td>
<td>Wood, iron, stone, steel</td>
<td>Wood, stone, Non use</td>
<td>Take wood</td>
<td>Safe coat paint, aluminum</td>
<td></td>
</tr>
<tr>
<td>wall</td>
<td>Stone concrete iron</td>
<td>Gypsum wall, use 50%</td>
<td>Stone, brake, aluminum</td>
<td>Stone, slate, 100 miles</td>
<td>Stone, wood mosaic, glass</td>
<td>Iron, mosaic, wood, stone</td>
<td>Wood, wool</td>
<td>Non use</td>
<td>Metal coat paint, safe coat paint</td>
</tr>
<tr>
<td>floor</td>
<td>Wood, stone brick, marble</td>
<td>Parka floor, use 50%</td>
<td>Wood, stone, brake, marble</td>
<td>Tile, marble and wood 100 miles</td>
<td>Mosaic, wood, stone and brake</td>
<td>Wool, stone, brake, Bamboo flooring</td>
<td>Bamboo flooring</td>
<td>Premium furniture polish, aluminum</td>
<td></td>
</tr>
<tr>
<td>Furniture</td>
<td>Wood, iron, stone</td>
<td>Concrete stone, use 100%</td>
<td>Wood, wood, iron, leather, ceramic</td>
<td>Wood, 100 miles, ceramic, concrete,</td>
<td>Fabric, wood, concrete, aluminum, glass</td>
<td>Wool, steel, iron, wood, clay banana leaves</td>
<td>Wool, bamboo flooring</td>
<td>Take wood bamboo</td>
<td></td>
</tr>
<tr>
<td>Column</td>
<td>Concrete steel</td>
<td>Concrete stone, use 100%</td>
<td>Stone, iron, steel 150 miles</td>
<td>Concrete, concrete</td>
<td>Non use</td>
<td>Non use</td>
<td>Safe coat paint, steel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>door</td>
<td>Iron, wood, steel</td>
<td>Internal wooden, steel 100%</td>
<td>Iron, wood, iron, steel, 150 miles</td>
<td>Wood, iron, steel, glass</td>
<td>Iron, stone, Non use</td>
<td>Non use</td>
<td>Metal coat paint</td>
<td></td>
<td></td>
</tr>
<tr>
<td>window</td>
<td>Iron glass</td>
<td>Iron 100% glass 20%</td>
<td>Iron, steel, glass</td>
<td>Iron, steel, 150 miles</td>
<td>Iron, glass</td>
<td>Non use</td>
<td>Non use</td>
<td>Metal coat paint</td>
<td></td>
</tr>
<tr>
<td>Accessories</td>
<td>Stone, metal, wood</td>
<td>Wood 50% iron 100% stone 80%</td>
<td>Metal, stone, wood, wool</td>
<td>steel, wood, iron, 100 miles</td>
<td>Paper, glass, wood, wool</td>
<td>Wool, clay, stone, linen wood, marble</td>
<td>Wool, wood, banana leaves</td>
<td>Take wood bamboo</td>
<td></td>
</tr>
</tbody>
</table>

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[5] G. W. Frederick, Jr. FHWA Recycled Materials Policy, Federal Highway Administration, Nov. 20, 2006, p. 120.
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