

Technology supporting the production of furniture from recycled materials**Prof. Bassem Hassan Abdo**

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The use of recycled materials in the internal design reduces the product or design cost, and the fact that the furniture industry acquires great importance in the investment which amounts to reflect Art Ata Art, the cost reduction is vital for those in charge of the industry, there are some organizations that financially support designs sustainability products which **can be one of the followings:**

- The term sustainable building can be called a building that achieves integration in terms of environmental performance and its conformity with social and economic requirements, thereby minimizing the negative impact on the environment. Prevention of pollution and adaptation to the environment and the use of recyclable construction materials, in addition to meeting the requirements of users and their needs.

The idea of sustainable design can be achieved through three concepts:

1: Reuse.**2: Recycle.****3: Reduce.**

Reduce consumption of natural raw materials and energy

To apply these concepts in the field of interior design and furniture, it must be considered that raw materials used in the implementation are recycled and environmentally safe, for example, the use of particle board, which is made of wood and 100% fiber. None of the natural wood is consumed. Another example is fibers are made from recycled green raw materials and can also be recycled after being used. Furniture, achieving the concept of sustainability is based on several axes, including the re-use of furniture in another function after being consumed in the main function, which is called (Reuse) and also the use of recycled materials and implementation of designs in a manner of energy-conserving and reducing the use of natural raw materials.

Technical Requirements for Recycling Requirements:

Recycling Process When done in the designated laboratories, it is in fact a set of requirements and successive steps technically in order to reach the last step which is the process of recycling. In order to achieve the desired economic and environmental results, the necessary requirements must be accomplished according to precise and **successive coordination steps, namely:**

1: Collection Process:

It is the first technical requirement in the recycling process to reach the sources of waste production which may be houses, restaurants, hotels, factories of different specialties, state institutions, private sectors, shops, ovens, agricultural establishments, tourist resorts, schools, universities etc. All of these generate wastes in different forms, types, sizes and grades. In this regard, Germany is the first country in the world that is concerned with the system of recovery of materials used or consumed in the field of electronics and automobile packaging in various forms. To this end, it has designed a dual system for material recovery across the distribution network and it is spread throughout the country.

Duals System Deutschland (DSD) since 1995 This system is based on the recovery of all materials that are destroyed by vendors and distributors, who are committed to transferring waste to be delivered to recycling companies for reuse again.

This method and the method of aggregation are based on the nature of countries, their social and cultural development, and the degree of environmental concern. However, it is not disputed that the method of collection is through the cars dedicated to the collection of waste and through containers placed in the streets, which is dumping domestic or generated waste at the institutions and various agencies. In some developed countries, we can find various types of containers, according to the colors chosen for this, to put the waste allocated to them according to each color. At this stage, as mentioned above, waste collection is linked to cultural, social and environmental concerns. Housewives and managers of various institutions and factories can contribute to simplifying waste recycling and raising their efficiency through serious contribution to pre-sorting waste types. The waste is discarded according to its type in the container, which will facilitate the subsequent sorting process and accelerate the recycling process without any damage or risk in the output of the recycling process.

The idea of recycling began during World War I and II, where countries suffered from a severe shortage of some basic materials such as rubber, forcing them to collect those materials from waste for reuse.

After years, recycling has become one of the most important methods of solid waste management, due to the many environmental benefits of this method. Indirect recycling; this means the manufacture of waste materials to provide other products based on the same raw material such as: recycling paper, cardboard, plastic, metal, especially aluminum and other materials that are recycled in the current period.

The decomposition of waste leads to the leakage of its toxins to water sources, whether underground or surface. This is in addition to the emission of unpleasant odors. It also harms the consideration of the pile of waste caused by the tyranny of the landscape and the distortion of the aesthetic value of human keenness.

To avoid or minimize environmental pollution, a sequence of waste management strategies (including the efficiency and productivity of materials and energy) must be applied. These strategies are based on the following principles: the use of clean production techniques, the formation of closed circuits (recycling) and the environmentally appropriate disposal of waste and waste sorting.

2: The requirement of waste sorting is one of the basic, important and difficult stages in the recycling process.

***First:** manual sorting and it is the most used in developing countries, which adopt simple methods and do not have advanced technology in recycling. The human element in the screening process which is used to minimize labor costs and provides low wages for this work.

***Second:** automatic sorting, which is the advanced method in the recycling process, which is based on advanced techniques to identify the quality of each article to be sorted and separated from other materials automatically.

Perhaps one of the first commandments that people knew about sorting waste to use or recycle the beneficial of them is what the Prophet (peace and blessings of Allah be upon him) said: "The delegation of Jan Nusaybin came to me and asked me to increase it. The Prophet (peace and blessings of Allah be upon him) said of the jinn: "They will not find a bone unless they find his flesh on the day of eating, and there is no dung unless they find love in it when they are eaten. Every bone mentioned in the name of God is in your hands the most flesh, and every rug or dung feed for your animals. " Waste needs to be handled with a specific type of material to be extracted. Waste must be sorted; There are wastes made of one material and others contain several materials. On the basis of classification are waste and waste sorting of institutional waste.

Usually, large factories and commercial enterprises sort waste before disposal in large garbage bins or prepare it for transport to centers directly by garbage collection vehicles, because factories usually operate in one industry and control the collection of waste which is huge in quantity and low in items. The waste is also sorted and transported to landfills, incinerators, power plants or recycling centers.

-Household waste sorting

Domestic waste is sorted in one of two ways:

- Sorting on the edge of the pavement: The residents sort the waste before collection according to the classification agreed upon earlier.

Voluntary screening: Residents isolate some recyclable materials from waste such as paper, cans and bottles.

- Mechanical sorting: sorting in the recycling center without the obligation of the parents to sort the waste of their homes.

3: Disassembly

Dismantling is often used in recycling in electrical and household appliances, old cars and mechanical equipment that require a clear human effort in this process, despite the costs of this work, it is being a difficult kind of work. However, the process of manual disassembly can be bypassed by grinding the material and eventually come out with grinding materials that can be sorted by mechanical methods later. The problem is that these materials are not cleaned and may reach a high level of risk. But scientific progress has been able to find a solution and perhaps a partial solution to this problem nowadays was the manufacture of a robot (robot) to carry out the dismantling process. Berlin in 2550by making a robot With the cooperation and funding of Siemens, this robot has a great ability to unscrew nuts (bolts) of all kinds and sizes

and in different positions, Bosch and Bosch Siemens, which reduces the dependence on human effort, to be in charge of the present.

4: Transport

This requirement is a critical nerve in the recycling process and to achieve the efficiency required by the completion of recycling later and suffice only to indicate, here what could happen from serious environmental pollution if waste is not collected from their places for a day or more in a densely populated city. The process of transporting waste is mainly in modern cities with dedicated cars so-called waste presses and in some developed countries specialized in the transport of waste according to the specificity of the container in which the waste is placed. Or it contains multiple boxes to put waste by type, whether glass, plastic, paper, solid waste, etc.

Plastic recycling numbers and symbols:

Often we see these symbols on plastic cans, but everything is made of plastic, do you know what we mean?

A triangle means recyclable, and each number inside a triangle represents a particular plastic material.

The letters are the abbreviation of the plastic name that is synonymous with the number in the triangle.

Figure 1: Safe and recyclable, used for water cans, juice, soda and peanut butter.

Figure 2: Safe and recyclable: Used for shampoo boxes, detergents, milk and toys, and is considered safe plastic types, especially the transparent ones.

Figure 3: Harmless decoration if used for a long time, which is called vinyl or PVC used in plumbing pipes and shower curtains, and often used in children's toys and cover meat and cheese as transparent plastic, so be careful of this particular type because it is one of the most dangerous and cheapest types of plastic so it is used frequently.

Figure 4: Relatively safe and recyclable, used to make CDs and some bottles and shopping bags.

Figure 5: One of the best and safest types of plastic, suitable for liquids and cold and hot materials and is never harmful, used in the manufacture of food containers, dishes, cans and everything related to food. Beware of using health water cans more than once because they are made for one-time use and become toxic if reused or repackaged.

Figure 6: Dangerous and unsafe which is called polystyrene or Styrofoam, burgers, hotdogs and cork cups that have been used until recently in our global fast food restaurants, knowing that they were banned for more than twenty years in America by the government. Beware of this substance, which is still used in restaurants and popular buffets, as well as this article is one of the reasons for the lack of the ozone layer because it is manufactured using harmful gas CFC.

Figure 7: This type does not fall under any classification of the six types of the previous, and may be a mixture of them, and it is important here that many international companies began to avoid, including the American company TOYS R US Games, which also makes baby bottles. And this article is still causing Controversy among the scientific community.

Avoid this substance as much as possible unless it is stated that it is BPA-free and written on bottles as follows (BPA-free bottles) and is transparent.

Humans started to recycle materials from time immemorial. The term recycling emerged during World War I and II, when countries were severely short of some basic materials such as rubber, forcing them to collect those materials from reused waste.

This research aims to show the advantages of recycling and its use; on individuals, societies and countries and the effects of its absence as well and how our status will be then, and also to show a set of ideas that help to reuse our household and other waste on a personal level and ideas for recycling, also how to promote the idea within the community through stimulation and the use of propaganda to promote the principle and idea and not commit to a particular product.

Despite the many advantages of industry and services it provides, they cause many types of pollution and environmental poisoning that are dangerous to the planet and the atmosphere. It is essential to draw attention to such issues among school students, housewives and members of environmental associations. The main problem of the research is the non-exploitation of recycled ores.

I believe that we can be one of the most beneficiaries of this technology, where we can get raw materials with positive employment specifications directly, with a lower cost than most of those made from raw materials which are not recycled significantly, in addition to respecting our environmental and social responsibility. But we must also respect and study the natures and specifications of these modern materials to prevent their failure to design products that achieve their goal.

Recycling is a term that evolves in a world that is changing with a clear dynamic in which economic and environmental issues play an inescapable role. The operative term in itself unleashes a multi-directional expectations and questions; whether this recycling aims to get rid of waste accumulations, to search for valuable items that have been used and consumed, or to obtain raw materials or components at low prices. In fact, all these legal questions constitute outputs for recycling, but what concerns us as Egyptian specialists in the furniture industry that it will benefit from this modern technology.

Recycling is one of the most solvable processes at one time. Therefore, this process has been very popular with all countries concerned with solving the waste problem and many other troublesome problems that result in many sub-problems

Recycling is not a modern process, but an old process, but it was not as large as it is now, it was in the old times much simpler, and is to feed some organisms on the waste of other beings, naturally without the intervention of man, as man in the Bronze Age, they were able to melt metal materials to form new materials.

Hence recycling means reusing materials used to produce new materials, which may sometimes be of lower quality than products made from original materials. The following are some of the highlights of the importance of this process in different communities.

The importance of waste recycling saves energy significantly. Waste recycling helps to produce new products with less energy consumption than the process of producing products from natural products, which helps to reduce the major problems that the world is suffering

from such as global warming. Reduces the depletion of raw materials in the production of new products, as depletion of these materials helps to destroy the different environments from which these materials are extracted, and this mainly helps to increase pollution in some cases. It provides a lot of job opportunities, as recycling provides many jobs, it is a series of operations and not just one job, which helps to solve the problem of unemployment. It saves money and increases the profit margin. The cost of recycled materials is not the cost of raw materials extracted from nature, which is why employers sometimes rely on recycling that lower costs for manufacturers, increase the exports of countries abroad, and increase their revenues. Reduces the problems of accumulation of waste and diseases it brings to different people, through the accumulation of pathogens above the waste, and also rid the environment of non-degradable waste such as plastic materials that may cause many problems for the different environments in which they exist.

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