

STAGES OF DEVELOPMENT OF CORRUGATED CARDBOARD FURNITURE IN THE XX CENTURY AND ITS FEATURES

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Abstract. *This article examines the design of modern-looking furniture of various shapes, created from European and Central Asian corrugated board of the mid-twentieth century. The unconventional, durability and comfort as well as the advantages of these furniture are highlighted.*

Keywords: *layers of corrugated cardboard, environmentally friendly, recycled materials, cardboard furniture, product packaging, modern furniture, designer paper and cardboard.*

Cardboard furniture is classified as furniture made of corrugated cardboard (including inverted corrugated cardboard), thick cardboard, honeycomb board, fibrous pipes or a combination of these materials.

Cardboard was first used as a material for engineering light structures at the Triennial in Milan in 1954, where Richard Buckminster Fuller demonstrated a cardboard geodesic dome. In 1968, German designer Peter Rake demonstrated the possibilities of creating a cardboard chair for five minutes on NBC, calling it "the first real modern piece of furniture."

In his interview, he says: "At a time when there are more and more reports that our passion for plastics is destroying our oceans and seas, among other things, affecting the environment, this has prompted designers to experiment with environmentally friendly materials."

Canadian-born architect Frank Gehry (born in 1929) in 1972 came up with the idea to develop a series of pieces of furniture made of cardboard. This innovative set, dubbed Easy Edges, included an upholstered armchair, tables and a folding side chair. He used cardboard to create architectural. Sculptural models, but this furniture experiment was of a completely different dimension with practical requirements. The rocking chair is like a sculptural masterpiece an early understanding of Gehry's vision, which later found expression in his famous buildings, including the Guggenheim Museum in Bilbao, Spain.

For this furniture set, it is strengthened by layering ordinary corrugated cardboard – many layers glued together in different directions. Swiss furniture manufacturer Vitra has been producing a rocking chair since 1986, and although the original vision was a cheap product made from recycled materials, the rocking chair now costs about 1,000 euros. BERNICE HARRISON

The method of lamination of corrugated cardboard in several layers, developed by Gehry, allows you to achieve strong, flexible bends, as well as right angles, while the corrugated cardboard in each layer is in opposite directions. There is no sense of masked cardboard boxes in these designs.

Gehry decided that most of the furniture was heavy, overpriced and oppressive." Refusing to limit himself to what the furniture was like in the past, he approached his material with an open mind. Using cardboard made from recycled fibers and waste sources, these designers create furniture with impeccable information for a sustainable lifestyle, as well as reduce the amount of energy needed to turn it into usable furniture. In addition, cardboard furniture is not as fragile and

discarded as we can imagine. In most cases, it is durable and waterproof, so we don't have to worry about the chair falling apart if we spill a glass of water on it.

Cardboard furniture also attracted the attention of the public at the Tokyo 2020 Olympic Games, when the Japanese mattress brand airveave created cardboard beds for the Olympic Village, which were among the most advanced options for housing athletes. Cardboard still inspires designers half a century after Frank Gehry explored this resource.

Cardboard as a cheap material can have a real mass market if it can recreate its image of a thin disposable material - the room of the German cardboard furniture brand in a box (which opens on a new tab) hopes to achieve. Although our cardboard furniture is recyclable, it should not be thrown away," says Gerald Dissen, co-founder of the brand.

For example, one of the rooms on cardboard bed bases in a box can be 280 times more acclimatized than a standard bed, which consumes 8000 times less energy. Gerald explains that the corrugated cardboard we use is very resource efficient because it consists of at least 70% recycled material and only 30% new fibers. The furniture is decorated with vegan glue made of potatoes, corn or wheat starch and environmentally friendly water-based paints.

Japanese architect Shigeru Ban is known for his innovative use of materials, in particular, he used recycled cardboard tubes to create durable and lightweight structures. His projects include impressive architectural structures, but he is also known for his temporary housing projects for disaster relief.

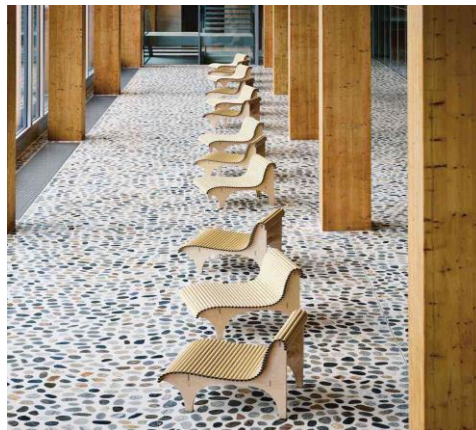
The CARTA collection by Japanese architect Shigeru Ban includes tables, chairs, stools and armchairs made of paper tubes used to store architectural drawings and birch plywood frames.



Milan 2017-Shigeru Ban Swiss furniture design label expands its collection of cards for the DB form. The Pritzker Prize-winning architect is known for using paper tubes with a waterproof coating as a building material.



The development of the kit took almost two years. The CARTA collection consists of eight different designs, including a chair, a stool, a bench, a lounge chair, a chair, a bedside table. Thin cardboard tubes are neatly bent around birch plywood frames.



Cardboard boxes for the CARTA collection, known as paper tubes, come from Japan. Here they are treated with resin to make them resistant to liquids and the environment. Cardboard boxes for the CARTA collection, known as paper tubes, come from Japan. Here they are treated with resin to make them resistant to liquids and the environment. The furniture is made in Italy and uses a sophisticated technique to attach to an ordinary birch plywood frame with just a few invisible screws.



Shigeru ban's first furniture was paper furniture in 1990, which was used at the Miyake Design Studio gallery in Tokyo. Later, the DB form acquired the rights to produce and sell a collection of cards from 2016.



For almost 30 years, Shigeru Ban has been exploring the possibilities of paper for use in architectural design. In fact, this non-structural material is very versatile and durable. For more than 20 years, he has used this recyclable material to build emergency shelters after natural disasters such as the 1995 Great Earthquake in Hanshin, Japan and similar social emergencies.

The largest companies in the world have created the wohnbedarf brand, OI form produces and sells high-quality reissues of design classics from famous designers and architects, as well as modern design products around the world. The wohnbedarf company, founded in 1931, produced iconic furniture by such famous masters as Alvar Aalto, Marcel Breuer, Le Corbusier and Max Bill.



According to Maximilian Hansen, CEO of the cardboard furniture brand NORDVERK, you do not need to worry about the durability of your cardboard products, because the idea that they pose a fire hazard or that they will fall into the water is not true. The fact is that thick hard cardboard belongs to the same classification of fire as wood. And it is easy to make it fireproof. In addition, these cardboard products are a more ethical choice because of their recyclability, and not to the detriment of the environment.

Corrugated cardboard waste is considered hazardous to the environment due to landfills. They saw the potential benefits of corrugated box furniture products, as their reuse reduces the impact of global warming on the environment.

The study consisted of three main stages. Firstly, the research team expressed an opinion about the use of corrugated cardboard waste and the team decided to produce furniture because it provides economic benefits by increasing the cost of waste. In the early 1980s, the research team also tried to use corrugated cardboard, and it turned out that its use had a positive impact on the environment, and in the 1990s it was a new approach to product design, green design, environmentally conscious design and Eco-design, which means that at the design stage, the priority goal is to reduce the impact on the environment.

The second step is to study the theory of DfE in product design. The theory suggests that taking environmental impacts into account when developing a product is not a new idea.

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