



Mirra™ Seating Material Content and Recyclability

Design Story

The German design group Studio 7.5, based in Berlin, designed the Mirra chair. Studio 7.5's principals are experts at observing how workers interact with their environments and finding ways to make that interaction more organic. The Mirra chair is a product of their collective imagination and talent.

Designing products with consideration for their environmental impact is a central corporate strategy of Herman Miller. The Mirra chair was the first Herman Miller product to be evaluated using the McDonough Braungart Design Chemistry (MBCD) Cradle to Cradle Design Protocol.

The MBDC protocol goes beyond regulatory compliance to thoroughly evaluate new product designs in three key areas:

- **Material Chemistry and Safety of Inputs**—What chemicals are in the materials we specify, and are they the safest available?
- **Disassembly**—Can we take products apart at the end of their useful life to recycle their materials?
- **Recyclability**—Do the materials contain recycled content, and more importantly, can the materials be recycled at the end of the product's useful life?

Among the Mirra materials that come from nonrenewable sources (petrochemicals and metals), 42 percent are made from recycled materials. The chair contains no polyvinyl chloride (PVC). And, 96 percent of Mirra's materials can be recycled at the end of its useful life.

Manufacturing Process

The Mirra chair consists of more than 65 different components and subassemblies from more than 18 direct suppliers. These components are constructed from variations of four major material categories: aluminum, plastic, steel, and foam/fabric.

Aluminum

The aluminum components, which compose seven percent of the chair, can be segregated and returned into the recycling stream to be made into the same or other components.

Plastics

The plastic components, which account for roughly one-third (29 percent) of the chair by weight, are identified with ISO recycling symbols and ASTM material designations to help channel them back into the recycling stream. The plastics are low emitting.

Steel

The steel used in the Mirra chair, which accounts for a little over half (56 percent) of its composition, can be reentered into the recycling stream in a manner similar to aluminum.

Powder Coat

Most of Mirra's metal components are powder coated, a process that emits negligible amounts of volatile organic compounds (VOCs) during or after the application and curing process.

Foam/Fabric

The foam/fabric materials used in the chair, which compose less than one percent of its makeup, can be converted into something else, from automotive components to carpet padding, at the end of Mirra's useful life.

Transportation and Delivery/End Use

Mirra's packaging materials include corrugated paper and a polyethylene plastic bag to protect it from soiling or dust. Each of these materials is part of a closed-loop recycling system, meaning they can be recycled repeatedly.

For large orders within North America, disposable packaging can be replaced with reusable shipping blankets.

The Mirra chair is designed to last at least 12 years under normal use conditions, and longer with adequate maintenance. Most of its components are easy to remove and replace, as the chair was designed with disassembly in mind.

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	Material-Type Recycled Content (%)	Percent PIR of Total Weight	Percent PCR of Total Weight	Percent of Total Product Weight (%)	Percent of Total Product Recyclable
Aluminum Total	100%	6%	6%	12%	100%
Foam Total	0%	0%	0%	2%	100%
Plastic Total	0%	0%	0%	29%	89%
Steel Total	53%	5%	25%	56%	100%
Textile Total	0%	0%	0%	0%	0%
	42%	11%	31%	100%	96%

PIR=Post Industrial Recycled
PCR=Post Consumer Recycled

Visit the HermanMiller.com product showroom for photos and additional information about the [Mirra](#) chair.