# Baron

Ergonomic Mesh Chair

Environmental
Data Sheet

okamura

# Eco-Conscious Products



## Safe and environmentally friendly products

Okamura's environmental priorities in product design and assessment ensure the delivery of safe, eco-conscious products that give consumers peace of mind.

## A harmony of design, ecology, and economy

Okamura reduces raw material inputs during manufacture by analyzing finite elements with CAD and adopting other leading-edge methods. We harmonize design, ecology, and economy.

## Keeping clean air

The furniture is a critical part of any office space. This is another factor that motivates Okamura to protect the air quality of offices by positively using raw materials and paints free of volatile organic compounds (VOCs).

## Designs for easier reuse and recycling after use

Okamura designs products that can be easily broken down into homogeneous materials to facilitate the reuse of parts recovered from post-use products and material recycling. The materials used in major components are clearly identified.

**Developing eco-conscious products**

Customer needs
Social requirements

Regulations
Industrial standards

Our responsibility

Motto
"Quality pays for itself"

Long-term environmental vision
GREEN WAVE 2010

Action principles
The 3Rs (Reduce, Reuse, and Recycle)

### Product planning assessment

- Functions, performance, design
- Product safety
- Environmental consciousness
- Price
- Responses to regulations

### Product assessment

- Material selection
- Efficiency in material use
- Energy efficiency
- Ease of disassembly
- Recyclability

### Eco-conscious production

- Conserving energy
- Mitigating harmful emissions
- Zero emissions

### Requirements in product design

- Conserving resources and reducing volume
- Using recycled materials
- Reusing materials and product parts
- Ease of recycling
- Sound air quality
- Product safety
- Reduced packaging materials
- Information disclosure

### Design for the environment

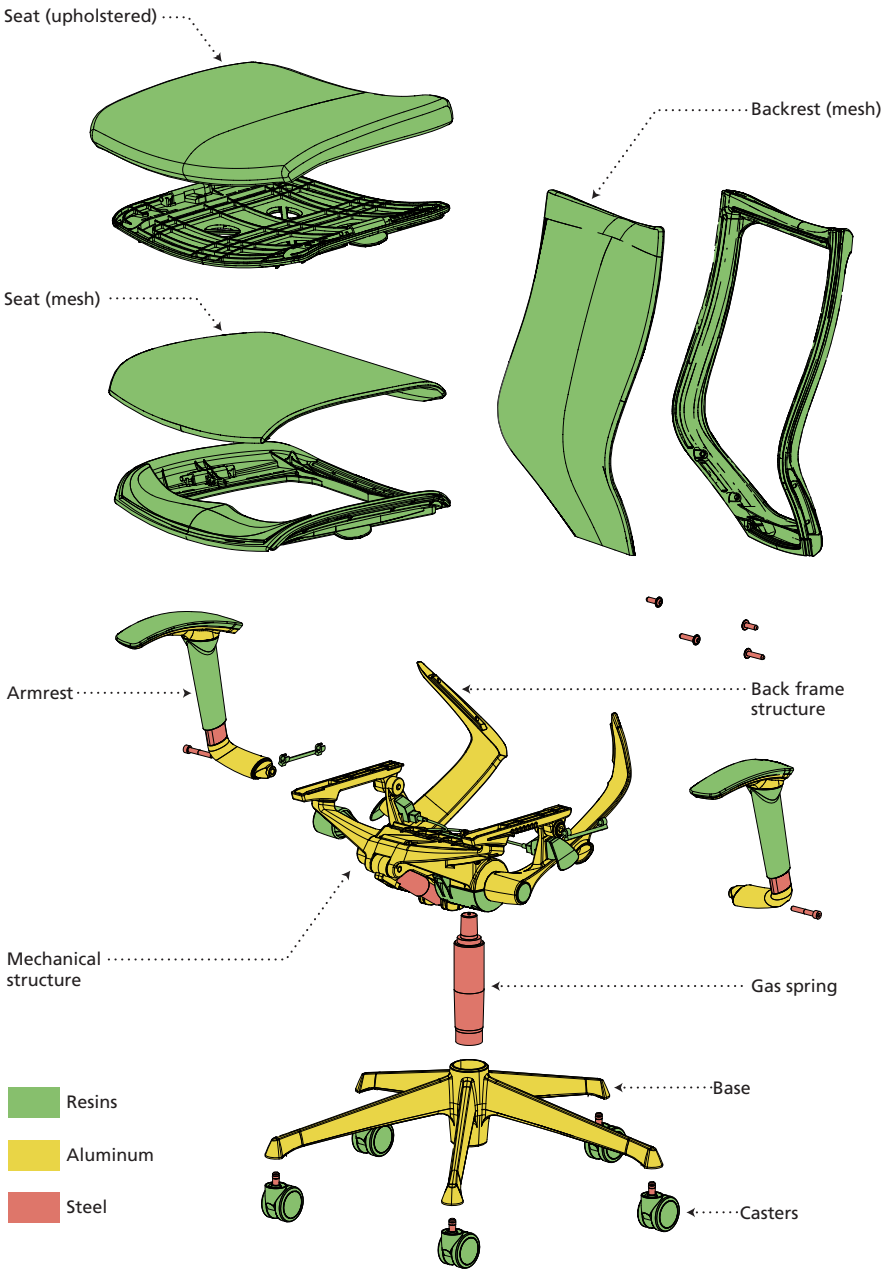
Baron's back frame, a design based on a simulated analysis of finite elements, bespeaks the outstanding efforts behind Okamura's eco-conscious designs. Okamura's product developers optimize the use of resources by minimizing the amounts of materials used without sacrificing the outstanding quality, strength, and safety of the products.

### Product testing

- Measuring the volumes of VOCs emitted
- Testing durability and load bearing strength
- Testing stability
- Testing for transport
- Measuring the volumes of specific harmful substances

# Materials & Recycling






## Total control of every material used

Okamura collects thorough information on the materials, surface finishing methods, and other aspects of the parts used in its products, from the main components of its office equipment to individual screws. Detailed data on materials are provided upon request.

## Recycled materials: 53%

Recycled materials are used in aluminum and resin parts. These materials make up about 53% by product weight.

## Recyclability: 97%

With future recyclability firmly in mind during the design stage, we use homogeneous materials as much as possible. After use, our products can be collected and disassembled into homogeneous materials.

### Resins

Polyamide resin is used to ensure recycling in the future. Resins recovered after use are reprocessed and reused by resin manufactures. Okamura is an active user of recycled resins for its products.


### Aluminum

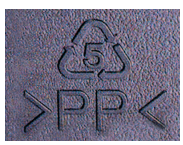
Recovered aluminum is processed into a recycled form by alloy manufacturers and later into aluminum. Energy consumption can be reduced by 97% by generating recycled metal from recovered aluminum rather than creating aluminum from its source material bauxite.

### Steel

Steelmakers use recovered steel to produce new steel. Steelmaking with recovered steel consumes 75% less energy than steelmaking from iron ore.

### Indicating materials

Okamura indicates the materials used to facilitate recycling after use.



# Reducing Chemicals



## GREENGUARD certificated

GREENGUARD is an indoor environment air quality standards used to certify products with low chemical emissions for the protection of interior environments. Certification is granted only to products that pass the pollutant emissions testing conducted in process-controlled dynamic environmental chambers following test protocols developed by Air Quality Sciences, Inc. The test protocols comply with ASTM, U.S. EPA, LEED, and BIFMA standards and requirements. Baron received GREENGUARD certification in December 2007.

## Reducing VOCs to safeguard health

Okamura minimizes the use of formaldehyde, toluene, xylene, and other VOCs, which can result in sick building syndrome and allergic dermatitis. To cite just one example, the snugly fitting backrest and seat meshes of Baron were accomplished using an original design requiring a minimal amount of adhesive. Environmental load can be reduced while achieving outstanding comfort and strength.

GREENGUARD Emission Criteria

| Emission Types | Measure |
|---|---|
| Individual VOCs | <0.1TLV |
| Formaldehyde | <0.025ppm (<0.03mg/m³) |
| 4-phenylcyclohexene | <0.0033mg/m³ |
| Total VOCs | <0.25mg/m³ |
| Total aldehydes | <0.05ppm |

## Minimizing environmental load

Amid calls to limit the use of the earth's resources, the reuse and recycling of post-use products are now a global agenda. To ensure safe and sure progress in recycling, manufacturers must limit the use of substances with environmental loads. The latest round of enhancements in the regulatory framework started with the European Parliament's Restriction of Hazardous Substances (RoHS) directive. Though office furniture is not currently included among the targets of this regime, Okamura is working to reduce substances with environmental impacts in response to customer demand and in anticipation of future legislation.

### Reductions in VOCs

Toluene
Xylene
Formaldehyde
Aldehydes
4-phenylcyclohexene

Cleared GREENGUARD standards

### Reducing substances with environmental load

Lead
Mercury
Cadmium
Chromium VI
PBB (Polybrominated biphenyl)
PBDE
(Polybrominated diphenyl ether)

Cleared standard values*1 based on the RoHS directive*2

*1 These standard values contain exemptions set in the RoHS directive.
*2 Directive put into effect in European Union member states in July 2006 to restrict the use of hazardous substances in electronic and electrical equipment.

# Global Sales Network




As of January, 2008

## Baron design wins awards around the world

October 2005 Good Design Award 2005 (Japan)
February 2006 iF product design award 2006 (Germany)
March 2006 red dot design award 2006 (Germany)
October 2007 Ergonomics Excellence Award (UK)

## Conforms to reliable safety standards

Baron has been certified under the American National Standard regulating Office Furnishings and General-Purpose Office Chairs (ANSI/BIFMA X5.1), the European Standard regulating the dimensions, safety, and strength of general office work chairs (DIN EN1335-1/2/3), and the British Standard regulating the strength of general office work chairs (BS5459-2).


Baron also bears the GS Mark (safety certification) issued under the German Equipment and Product Safety Act, which is recognized throughout EU countries as a symbol of safety and quality

For inquiries and consultation requests:

Visit the Okamura website for the latest updates on Okamura products.
http://www.okamura.co.jp/

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