

*Sabrina*  
*Smart Operation*



Environmental  
Data Sheet

## 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 CAE and adopting other leading-edge methods. We harmonize design, ecology, and economy.

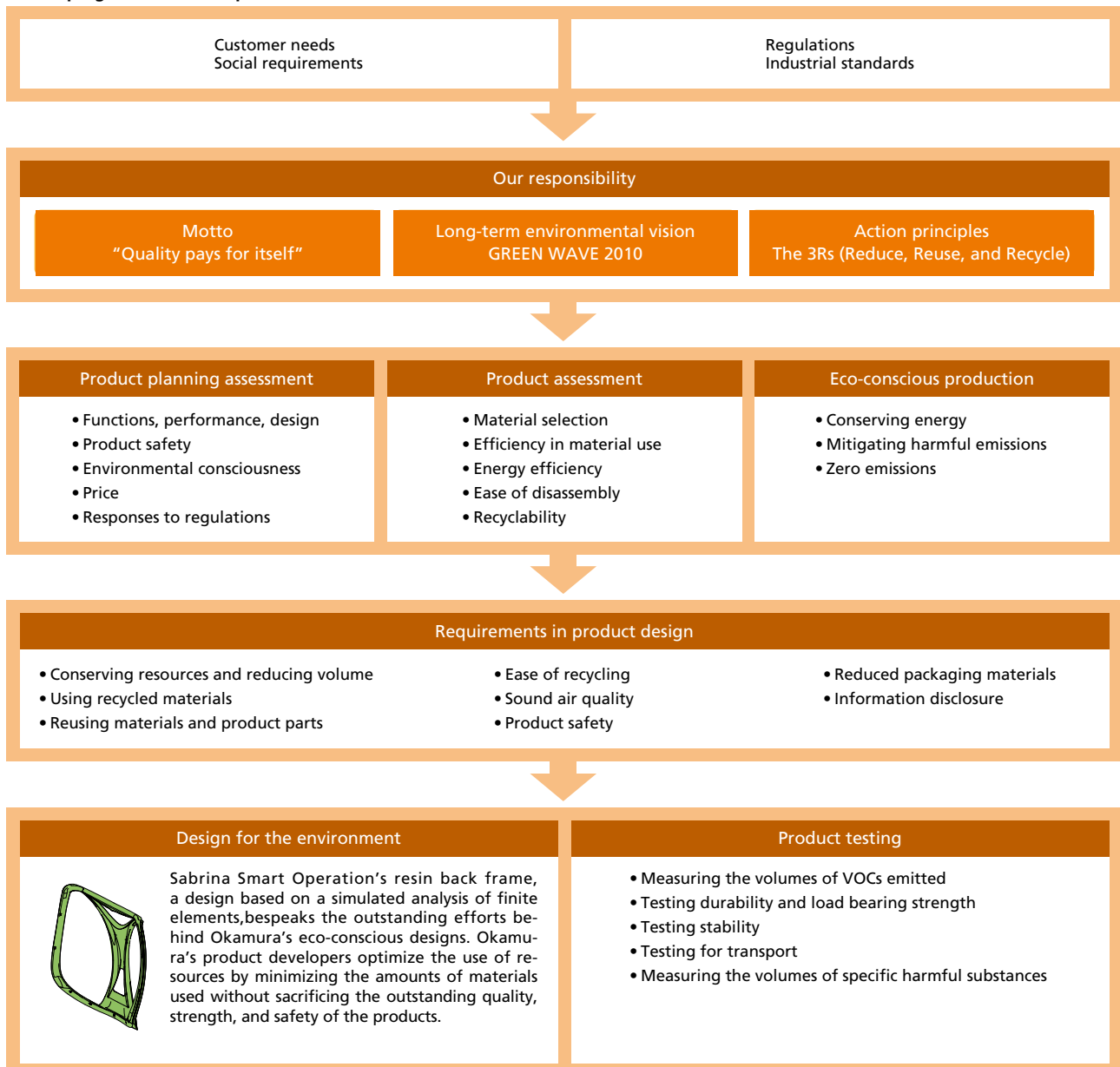
## Keeping clean air

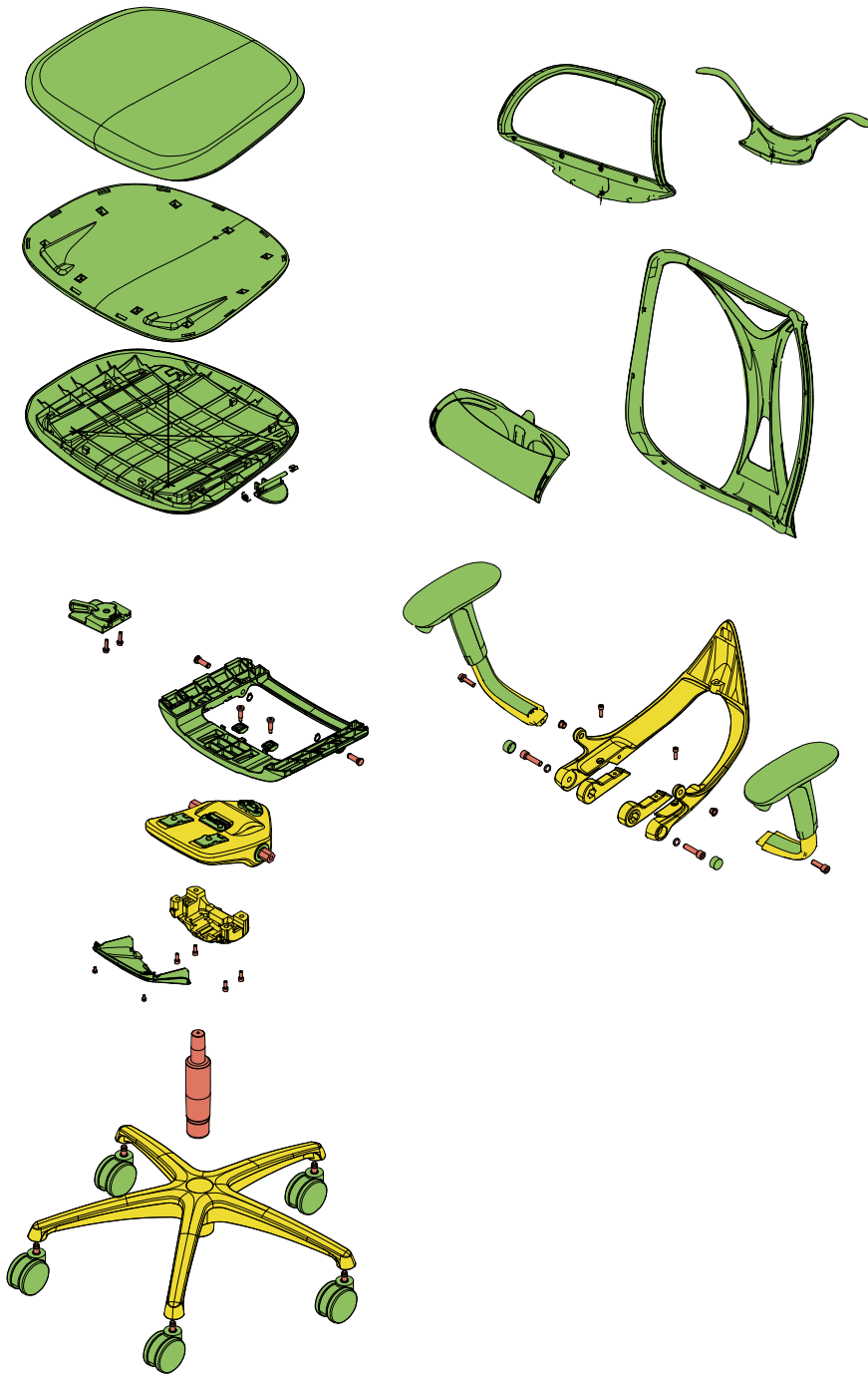
The furniture is a critical part of any office space. This is another factor that motivates Okamura to protect the air quality of offices by positively using raw materials and paints free of volatile organic compounds (VOCs).

## 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





- Resins
- Aluminum
- Steel

## 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: 46%**  
Recycled materials are used in aluminum and resin parts. These materials make up about 46% by product weight.

**Recyclability: 100%**  
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 resins 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.



## GREENGUARD certified

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. Sabrina Smart Operation received GREENGUARD certification in October 2013.



## 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 meshes of Sabrina Smart Operation 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

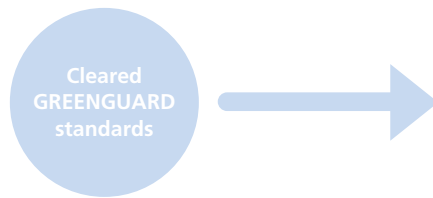
Emission Types	Measure
Individual VOCs	<0.1TLV
Formaldehyde	<0.025ppm (<0.03mg/m3)
4-phenylcyclohexene	<0.0033mg/m3
Total VOCs	<0.25mg/m3
Total aldehydes	<0.05ppm

## 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.

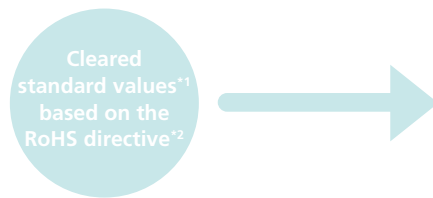
### Reductions in VOCs

- Toluene
- Xylene
- Formaldehyde
- Aldehydes
- 4-phenylcyclohexene



### Reductions in VOCs

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



\*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.

# LEED Credit Summary

Program	Category	Item		Contribution	Point of contribution
LEED 2009 for Commercial Interiors	Materials & Resources	MR 3.2	Materials Reuse –Furniture and Furnishings	This product (Sabrina Smart Operation) is designed to be refurbished and easy replacement. And it can be used any longer by having proper maintenance. Product can contribute to the this point by reusing.	1
		MR 4	Recycled Content	51% (1/2 Pre-Consumer: 5.2%, Post-Consumer: 48.4%)	1-2
		MR 5	Regional Materials	Assembled in Yokosuka city, Kanagawa, Japan. Please contact us in case of the delivery outside of Japan.	1-2
	Innovation & Design	ID 1	Innovation in Design	High percentage of recycled content.	1-5
LEED 2009 for New Construction and Major Renovations	Materials & Resources	MR 3	Material Reuse	This product (Sabrina Smart Operation) is designed to be refurbished and easy replacement. And it can be used any longer by having proper maintenance. Product can contribute to the this point by reusing.	1-2
		MR 4	Recycled Content	51% (1/2 Pre-Consumer: 5.2%, Post-Consumer: 48.4%)	1-2
LEED 2009 for Existing Buildings, Operations and Maintenance	Materials & Resources	MR 1	Sustainable Purchasing –Ongoing Consumables	51% (1/2 Pre-Consumer: 5.2%, Post-Consumer: 48.4%)	1
		MR 2	Sustainable Purchasing –Durable Goods		1-2

# Global Sales Network



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